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FLORA VITIENSIS:

A DESCRIPTION OF THE PLANTS

OF THE

VITI OR FIJI ISLANDS

WITH

AN ACCOUNT OF THEIR HISTORY, USES, AND PROPERTIES.

BY

BERTHOLD SEEMANN, PH.D., F.L.S., F.R.G.S.,

ADJUNCT. PRÆSIDIUM OF THE IMPERIAL GERMAN L. C. ACADEMY NATURÆ CURIOSORUM;

COMMISSIONED BY H.B.M. GOVERNMENT TO EXPLORE THE VITI ISLANDS;

AUTHOR OF 'THE BOTANY OF THE VOYAGE OF H.M.S. HERALD.'

WITH ONE HUNDRED PLATES BY WALTER FITCH, F.L.S.

WE KNOW NOTHING OF THE VITI ISLANDS BOTANICALLY, EXCEPT THAT THEY CONTAIN RICH FORESTS OF SANDALWOOD."

Endlicher: Flora of the South Sea Islands, 1836.

LONDON:

L. REEVE AND CO., 5, HENRIETTA STREET, COVENT GARDEN.

1865-73.

Mo. Bot. Garden,

1900.

FLORIDA WATERWAYS

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P R E F A C E .

WHEN, in 1860, the British Government determined upon sending a mission of inquiry to Viti, it was at first their intention to make it a strictly political one; but on the representation of the late Sir William J. Hooker (who took a warm interest in the vegetation of the group) that it would be highly desirable to attach a botanist to it, the Colonial Office agreed to give a free passage to the islands and a sum of money (though quite inadequate to provide outfit, travelling expenses, and maintenance in the group) to any scientific man willing to go under such circumstances. Though the acceptance of this involved, as intimated, a pecuniary loss which it was then hoped would be covered by the sale of duplicate specimens, yet I gratefully accepted a proposal which offered an opportunity of exploring so little known a part of the world; and on the 10th of February, 1860, one of the Under-Secretaries of State for the Colonies wrote to me:—"I am directed by the Duke of Newcastle to acquaint you that, adverting to your known experiences and labours as a naturalist, His Grace is willing to accept your services to proceed in that capacity to the Fiji Islands, attached to the mission of inquiry."

Sir William Hooker, when first writing to me about the subject, said,—“You might provide materials for a ‘Flora Vitiensis,’ and I do not doubt of getting money to enable you to carry out the publication;” and that he had grounds for holding out this hope was proved by what I subsequently learnt at the Colonial Office. It was therefore an extreme disappointment to me when, after my return in 1861, with a large collection of plants, and when my official report ‘On the Resources and Vegetable Productions of the Vitian Islands’ had been presented to Parliament by command of Her Majesty, and the nature and possible value of the projected publication was evident, I found that the Government did not see fit to assist me in bringing out such a work. Sir William Hooker did all he could to urge the matter, and His Grace the late Duke of Newcastle made an application to the Treasury to that effect, “but was sorry to inform me that his application had been

unsuccessful." Thinking what had been collected at so much expense, under great difficulties, dangers, and privations, and in a country only partially reclaimed from cannibalism, was worth being made known, and, moreover, having made it a point in life never to relinquish an idea which I have once made up my mind to carry out, I resolved on the present volume, which Messrs. Reeve and Co. were induced to publish. The time it took to work up the materials and the expense I had to incur were much greater than I had ever calculated upon, and I might have been altogether unable to proceed with the task had I not succeeded in supplying myself with funds for the purpose by undertaking (during the course of publication) three arduous voyages to tropical America. Subscribers will therefore kindly excuse the delay that has occurred in the issue of the different parts, as without it they would probably not have seen the completion of this 'Flora.'

It is now my pleasing duty to offer my best thanks to all those who aided, directly and indirectly, in the production of this work. Sir W. J. Hooker, who originated the idea, and who, during the whole time of my exploration of Viti, took the liveliest interest in my proceedings and encouraged me with letters, is unfortunately beyond the reach of my thanks; nevertheless, I desire to express here my deep sense of obligation and gratitude for having afforded me the opportunity of exploring so interesting a group of islands, and, moreover, I shall always regard his memory with profound and affectionate regard. My sincere thanks are also due to Dr. J. D. Hooker for having by his counsel materially contributed to the results I have obtained. My grateful acknowledgments are due to Messrs. J. J. Bennett and W. Carruthers, of the British Museum, for much assistance rendered in determining my plants and for correcting my proof-sheets. I have also to tender my special thanks to Professor Reichenbach, for working up the Orchids; to Mr. Herm. Wendland, for the Palms; to the late Mr. Schott, for the Aroids; to Mr. Carruthers, for the Ferns; to Mr. Mitten, for the Mosses and Hepaticæ; to the Revv. Churchill Babington and J. M. Crombie, for the Lichens; and to the Rev. M. J. Berkeley and Mr. W. G. Smith, for the Fungi. I am much indebted to Professor A. Gray for comparing a set of my Viti plants with those collected by the United States Exploring Expedition, and sending me the result for publication. I should record the names of other friends who have given me assistance in the progress of the work, especially of Major-General Munro, Messrs. Casimir de Candolle, J. Smith, and Ch. Prentice, and the Rev. W. W. Newbould. Last, not least, I beg to tender my thanks to Mr. Walter Fitch for gracing this work by the beautiful productions of his pencil.

I have already expressed in the narrative of our expedition, and I have great pleasure in repeating in this place, the many obligations I am under to the Wesleyan missionaries in Viti, to whom the leaders of their church in London and Sydney kindly gave me letters of introduction, and all of whom received me with cordiality, doing all that lay in their power to further the object of my investigation. Several of them had formed small collections of plants, of which I have been allowed to avail myself in working up this 'Flora.' We

are also indebted to them for an alphabetical list of the vernacular names of Vitian plants known to them in 1850, and published in Hazlewood's 'Dictionary.' A more intimate acquaintance with the vegetation of the group; and the possession of a complete flora of it, will enable them not only to make that list more complete whenever any new edition of the 'Dictionary' shall have been determined upon, but also to identify more accurately than was formerly possible, these vernacular names with corresponding scientific ones. Though many vernacular names will be found in my 'Flora' which are not in Hazlewood's list; yet there are, *vice versâ*, many names in the latter which I have as yet not been able to refer to the plants to which they belong. I give a list of these unidentified ones, in hopes that missionaries and others residing in Viti may help us to make them out,—a single leaf or flower sent home in a letter would, in most cases, be sufficient to settle the points.*

In working up this 'Flora' I have availed myself of all the material—plants, notes, drawings, etc.—existing in this country and relating to the Polynesian flora. I have carefully gone over all the old collections preserved at the British Museum, commencing with those of the first voyage of Captain Cook; and I have rectified the synonymy by referring to the original specimens and drawings of the Forsters, Solander, Parkinson, and others, and it is pleasing to observe that this part of my labours, tedious as it has been, is duly appreciated by botanists. It was my intention to add to this volume a complete critical list of all Polynesian plants found between 25° N. and 25° S., but in consequence of having intro-

* The following is the list of the desiderata :—

Balabalasà.	Damarau.	Male.	Taqalitu.
Balavatu.	Damuni.	Masa.	Tikau.
Bama.	Dawamoli.	Matakadokado.	Totolu.
Bau.	Didi.	Me.	Toloko.
Baucana.	Dredre.	Mere.	Tuimosi.
Baulevu.	Gadoa.	Mulokaka = Vulo-	Tukiyadre.
Bauvuli.	Gasau.	kaka.	Ture.
Bausomi.	Gi.	Qaiqai.	Uko.
Bawaki.	Gigia.	Qalaka.	Uvitavu.
Bitu.	Kabuta.	Qatima.	ai Vakabulaninama.
Bituvatu.	Kaniki.	Qato.	ai Vakabulaniuto.
Boiboidà } = Kau-	Karou.	Qori.	ai Vakarusanibola.
Boidada } = kauta.	Kaseakula.	Qoriqori.	Vasakinikini.
Boroniveiwere.	Kasokaso.	Rara.	Vauvula.
Bovu-damu.	Katakatakana.	Rata.	Vere.
Buadromu.	Kauloa.	Roqa.	Vulokaka = Mulo-
Buatoko.	Kesa.	Sasaqilu.	kaka.
Bulou.	Keu.	Satabua.	Vuso.
Cagolaya.	Keva.	Sea.	Vuturakaraka.
Caukuro leka.	Lagakali.	Selavo.	Waciwaci.
Cevua.	Lagolago.	Sevua.	Walu.
Coboi.	Lewe.	Soqe.	Warowaro.
Codamu.	Lobau.	Suanibu.	Ya.
Cotava.	Lumi.	Taitaite.	Yagai.
Dalici.	Maba.	Taka.	Yasiyasi.
Daliganiduna.	Màdà.		

duced so many general remarks and new (non-Vitian) species into the body of this 'Flora,' want of space prevents me from carrying out the intention in this form, but I hope to be able to publish it as a separate book, which might become the groundwork for the as yet unwritten botanical geography of the Polynesian Islands.

The first set of specimens collected by me were deposited at the Royal Herbarium, Kew, and from these the plates accompanying this work have chiefly been taken, eked out by drawings made by Mrs. Smythe and Miss Pritchard, as well as the public ones existing at the British Museum. All the duplicate specimens, after being, by the late Sir William Hooker's kind permission, arranged and preliminarily named at the Royal Herbarium, were sold to cover part of the expenses incurred in collecting them.

The arrangement followed in this 'Flora' is, with some modifications, that adopted by Bentham and J. D. Hooker in their 'Genera Plantarum,' as far as that valuable work has been published.

As the publication of this work extended over several years, I have thought it desirable to date each sheet of eight pages of letterpress, so that there may be no doubt about the rights of priority.

In the spelling of the Vitian geographical plant and other native names, I have adopted the orthography sanctioned in Hazlewood's Feejeean and English Dictionary (Viwa, Fiji, 1850), and wherever anything at variance with it may be discovered, it must be regarded as a mistake. The name of the group should be written Viti, and that of its inhabitants Vitians, which is in strict accordance with their own pronunciation; all other forms, as Feejee, Feejee, etc., which have found their way into European languages, should be gradually suppressed; they having been learnt, in the first instance, from Polynesians, who, like the Tongans, have no V in their language, and naturally take the sound nearest to it.

BERTHOLD SEEMANN.

LONDON,
October 30, 1869.

FLORA

OF THE

VITIAN ISLANDS.

HISTORICAL NOTICE.

WHEN in 1836 Steffan Endlicher* summed up all then known respecting the vegetation of the Polynesian Islands, he was forced to make the humiliating confession that our botanical knowledge of the Viti group was limited to the fact that it abounded in rich forests of sandal-wood; and it is not a little remarkable that it was this single fact which led to the existing intercourse between the savage Vitian and the rest of mankind, enabling us at the present day to institute, with comparatively little danger from falling victims to cannibalism, peaceful scientific inquiries.

When Europeans first came in contact with the vegetation of Viti, it was not, strictly speaking, virgin. We know, from traditional sources,† that from time immemorial an intercourse was maintained between Viti and the islands composing the Tongan (Friendly) and Samoan (Navigator) group; and that the products of these were exchanged by means of large canoes, chiefly built in Viti, where tree vegetation assumed greater dimensions than in the other islands just named. In this way not only useful and ornamental plants, but also weeds, and a knowledge of the qualities, virtues, and names of different herbs, shrubs, and trees were doubtless interchanged. The Samoans and Tongans made voyages to Viti for the sake of obtaining timber for canoes, and above all sandal-wood for scenting cocoa-nut oil. There is no mention in this early intercourse of Tahiti, and we may therefore assume that none took place, sandal-wood, the staple article of this incipient commerce, having in those days not yet become extinct either in the Society or neighbouring Marquesas Islands. Nor is any mention made of New Zealand, which has but few phanerogamous plants in common with Viti (and these all species widely

* 'Annalen des Wiener Museums,' 4to, Wien, 1836; p. 129.

† Compare B. Seemann's 'Viti; a Government Mission to the Vitian or Fijian Islands,' 8vo, London, 1862, p. 236, *seq.*; and W. T. Pritchard's 'Polynesian Researches,' 8vo, London, 1866, p. 376, *seq.*

diffused over Polynesia); whilst among the plants upon which the Maoris principally relied for food and clothing there are only five, the Taro, Sweet Potato, Pumpkin, Sow-thistle (*Sonchus asper*), and the Paper-mulberry, also known in Viti before the arrival of Europeans; and these five the Maoris seem to have brought along with them when they left their (conjectured) tropical home in the Raratonga group and Humphrey's Island.*

Europeans became first acquainted with Viti in the year 1643, when Abel Jansen Tasman, the celebrated Dutch navigator, discovered it, conferring upon it the name of Prince William's Islands. But two centuries elapsed before this archipelago was more than a mere name in geographical science. Captain Cook, who sighted Vatoa (Turtle) Island; Captain Bligh, of the 'Bounty,' who passed twice through parts of this group; and Captain Wilson, of the 'Duff,' whose vessel was nearly lost on the reef off Taviuni, adding scarcely any but secondhand and vague information to our stock of knowledge. It was not until Viti had been visited by D'Urville, Belcher, and Wilkes that sound scientific facts began to accumulate.

Captain Sir Edward Belcher visited Viti in 1840 in H.B.M.S. Sulphur. He was accompanied by Mr. B. Hinds and Mr. G. Barclay,—the former, surgeon, the latter, botanist of the expedition. Their collections were principally made near the sea, about Rewa, in Viti Levu, and afterwards described by Mr. Bentham in the 'London Journal of Botany,' Vol. II., and the 'Botany of H.M.S. Sulphur.' They were mostly species common to other Polynesian islands, and few in number. A much more extensive collection was made by the officers who accompanied the United States Exploring Expedition, commanded by Commodore Wilkes,—Messrs. Brackenridge, Pickering, and Rich; the importance of which has been enhanced by its having been placed in the hands of Professor Asa Gray, of Cambridge, Massachusetts, who has made known the greater portion of it in his 'Botany of the United States Exploring Expedition,' and the Proceedings of the

* See Seemann's 'Journal of Botany,' 8vo, London, 1867, p. 215.—The following is a List of Plants common to Viti and New Zealand:—

Oxalis corniculata, Linn.

Dodonæa viscosa, Forst.

Cucurbita Pepo, Linn. (cult.)

Hydrocotyle Asiatica, Linn.

Myriogyne minuta, Less.

Bidens pilosa, Linn.

Sonchus asper, Vill.

Batatas edulis, Choisy. (cult.)

Pisonia umbellifera, Seem.

Broussonnetia papyrifera, Vent. (cult.)

Typha angustifolia, Linn.

Colocasia antiquorum, Schott, var. (cult.).

Dianella intermedia, Endl.

Paspalum scrobiculatum, Linn.

Pteris esculenta, Forst.

Schizæa dichotoma, Sw.

Lycopodium cernuum, Linn.

L. volubile, Forst.

Psilotum triquetrum, Sw.

The *Elatine* of Viti, which was thought to be *E. Americana* of New Zealand, is *E. ambigua*, Wight; and one of the *Lemnas* of Viti, which was thought identical with *L. minor* of New Zealand, turns out to be *L. paucicostata*, Hegelm. The Cryptogams will have yet to be gone into more closely before any definitive comparison can be made.

American Academy; the Ferns and allied Orders being worked up by Mr. Brackenridge.*

The next botanical explorer was Professor W. H. Harvey, of Dublin, who, embarking at Sydney in the missionary vessel 'John Wesley,' touched at Viti in August, 1855, and thence proceeded to the Tongan group, returning home by way of South America. No account of this visit has been published, owing to a mental affliction which overtook this accomplished botanist during his passage to the west coast of South America. But it appears that Harvey collected at Lakeba, Bau, Viwa, and Nadi, on the southern shores of Vanua Levu. His specimens, as far as they exist at the British Museum and at Kew, have been incorporated with this Flora.†

In 1852 the British Admiralty determined to recommission H.M.S. Herald for the purpose of surveying some of the little-known groups of islands in the South Polynesian Ocean, and to entrust the command of her to Captain Denham, R.N. Mr. John M'Gillivray and Mr. William Milne were appointed to her as naturalists, the latter as assistant to the former.‡ No connected narrative of this voyage has been published, but a sketch of an excursion made (August 14 to September 24, 1856), up the Rewa River to Namosi, in Viti Levu, has been described by Mr. Milne,§ and also by Dr. Macdonald, the surgeon of the expedition.|| Both M'Gillivray and Milne were excellent collectors, who gathered a great number of specimens in Qvalau, Viti Levu, Matuku, Narai, Gau, and Vanua Levu. M'Gillivray was a man of great promise, but for some weighty reason

* With the exception of a few presentation copies of Mr. Brackenridge's portion of this work which happened to have been sent off to Europe, the whole stock was burnt in the fire which destroyed the storehouse, so that it has now become extremely rare. As the publications of the United States Exploring Expedition have not yet been completed, it would be desirable to republish Brackenridge's portion, either unaltered, or brought up to the present state of science. The United States Government ought cheerfully to grant the sums, a mere bagatelle to so rich a nation, which may be required to finish in the same style as begun, the botanical record of a scientific expedition of which the great American people may well be proud.

† A few dates respecting Harvey's visit to Viti may be gathered from a letter published in Hooker's 'Journal of Botany,' London, 1856, p. 22, and the labels attached to his distributed specimens. Though he was on very friendly terms with me, and never refused his assistance to me, I could not get him to write a line on his Vitian visit for this Historical Notice; and knowing the subject to be a painful one to him, I could not urge it beyond a certain point. He told me, however, in conversation that he did not collect many, if any, Seaweeds in Viti. Harvey died May 15, 1866, and an obituary notice of him was published in Seemann's 'Journal of Botany,' 1866, p. 236.

‡ I held the appointment of Naturalist of H.M.S. Herald from July, 1845, to June, 1851, and was after that time employed by the Admiralty in publishing the results of that voyage, and could, therefore, not accept the reappointment to a vessel with which my name is so intimately connected. Some of the results which I obtained during her voyage in the Hawaiian or Sandwich Islands, are utilized in this Flora, as want of space prevented me from dealing with them in my 'Botany of the Voyage of H.M.S. Herald.'

§ Hooker's 'Journal of Botany,' 1857, p. 106.

|| 'Journal of the Royal Geographical Society of London,' vol. xxvii.

he was dismissed the service; and after returning to New South Wales, and accepting engagements there for exploring the flora and fauna of several Polynesian islands, he joined some sandal-wood traders, and died, still a young man, June 6th, 1867.* Milne, who succeeded M'Gillivray in his post, did not keep the situation very long, but was dismissed as his predecessor, and having returned to Scotland, and engaged once more as a plant-collector, died on the West Coast of Africa in May, 1866.†

In 1859 Mr. W. T. Pritchard, H.B.M. Consul in Viti, arrived in England with a document purporting to be the cession of these islands to the Queen of Great Britain; but, though the acceptance of the cession was warmly recommended by the Legislative Assembly of New South Wales, and by eminent naval authorities, the British Government, before coming to any decision, determined to obtain more ample information than was at hand, and early in 1860 the Colonial Office dispatched for that purpose a mission, to which I was attached as Naturalist. Leaving Southampton on the 12th of February, 1860, by the Overland Mail, I arrived at Sydney, New South Wales, on the 16th of April, and thence proceeded in the missionary ship 'John Wesley' to Viti, which was sighted on the 12th of May. The first island I landed at was Lakeba (May 11); and re-embarking, I touched at Wairiki, Island of Taviuni (erroneously termed Vuna in some charts), and thence went to Somosomo, in the same island, where I arrived on May 22, and remained until June 20, making excursions to the lake on the top, and to other parts of the island, as well as running over in boats to the southern coast of Vanua Levu, and some of the smaller islands in the Strait of Somosomo. On leaving Taviuni in the schooner 'Paul Jones,' I touched at the southern parts of Vanua Levu, and on the 22nd of June arrived at Levuka, Ovalau, whence I proceeded to the small island of Lado Alewa, off the south-west side of Ovalau, where I remained till June 28th, making various excursions not only on Ovalau itself, but the adjacent islands of Yanuca and Moturiki. On the 28th of July Mr. Pritchard and myself set out in the consular gig for Navua, Viti Levu, touching at Bau, the capital of Viti, and passing through the Rewa River and the Kele Musu Canal. Lingered a day or two at Mataisuva, and visiting the island of Naigani and various places on the south coast of Viti Levu, we safely reached Navua, where we remained until the 9th of July, and then returned once more to Lado, which we reached on the 15th of the same month. On the 24th of July I again started in company with Mr. W. T. Pritchard from Lado, this time in the schooner 'Paul Jones.' We called at Bau; made excursions to Namara, Koroivau, and other parts of Viti Levu, and went to Rewa by the canal, and afterwards to Kadavu (Kandavu), landing at Tavuki Bay, the northern side of that island. An attempt made to land at the foot of the mountain of Buke Levu failed, on account of the rough sea; but I was able to pay a visit to Galoa Bay, crossing the Isthmus of Yarabali, and botanizing on the islets in that bay. A second attempt to reach the foot of Buke Levu was also unsuccessful; and we, therefore, crossed over to Viti Levu, ascending the Navua river as far as navigable, a town called Nagadi,

* Seemann's 'Journal of Botany,' 1867, p. 163.

† *Ibid.* 1866, p. 272.

and thence proceeding to Namosi, the mountain residence of Chief Kuruduadua, situated in a rich valley (see Frontispiece). From Namosi we paid a visit to Voma, the highest peak of Viti Levu, never before ascended by white man. I remained at Namosi until the 2nd of September, and then returned to the coast with a goodly collection of rare or new plants. Mr. Pritchard, who had previously gone back, met me at the mouth of the Navua River with our little schooner; we thence proceeded to the island of Bega (Benga), and afterwards to Kadavu, where we effected a landing near Buke Levu, and succeeded in ascending that mountain on September 6th, no European having ever reached the top before. The vegetation was found to be similar to that of Voma Peak in Viti Levu, though the two are separated by sea. Calling once more at Taulalia, we thence crossed over to Rewa (encountering a fearful gale), and returned to Lado. Our schooner having been repaired, we again left Lado (October 10), landing at Nananu Levu (Annan of the charts, by mistake), and afterwards proceeded to Bua, or Sandalwood Bay, in Vanua Levu, where we landed. We continued our voyage to the northern coast of Vanua Levu, called Macuata (Mathuata), where we went on shore in various places, and rounding Mua i Udu (the eastern extremity of Vanua Levu), we touched at the island of Rabe, and anchored at Waikava, whence I paid a hasty visit to Somosomo, to inspect the experimental cotton plantation I had established there. On the 26th of October, we left Waikava for Matei, in Taviuni; and thence once more proceeded to Macuata, and afterwards to Lado, which we reached on the 2nd of November. On the 16th of that month I left Ovalau for Europe, arriving at Southampton on the 12th of March, 1861, very much shattered in health from a violent attack of dysentery on the homeward voyage. Desirous of making the most of the limited time and opportunity, I engaged at Sydney, at my own expense, a young German, Mr. Jacob Storck, as assistant, who proved very able and zealous; but, unfortunately, nearly during the whole time that he was with me he was incapacitated for work through various kinds of illness. On my departure he expressed a wish to remain in Viti as a cotton grower; and he has since that time made several collections of plants, which are duly incorporated with this Flora. On my return to England I wrote a full official report "On the Resources and Vegetable Productions in the Vitian or Fijian Islands," which was printed with other matters relating to the subject which the Viti mission was dispatched to elucidate, and presented to Parliament by command of her Majesty; and also published and figured in the 'Bonplandia' several new genera and species, as well as a preliminary list of the plants collected by me. A general account of the expedition was brought out by me in 1862 under the title of 'Viti; an Account of a Government Mission to the Vitian or Fijian Islands in the years 1860-61. With Illustrations and a Map (London and Cambridge, Macmillan),' which met with a favourable reception from the press. Colonel Smythe, the head of the expedition, wrote a short official report, which is reprinted in the Appendix to my 'Viti,' where it fills nine pages; but his wife, who accompanied him, afterwards published a narrative of the Mission in a separate form.

In 1862, Viti was visited by Dr. Græffe, a native of Switzerland, for the purpose of making collections in Natural History, principally zoology; but during his short stay in the group he did not neglect to gather botanical specimens, and a set of them was forwarded to the Melbourne Museum, and kindly lent to me whilst the preparation of this Flora was going on. A preliminary list of them was published by me in the 'Journal of Botany,' 1864, p. 70, and in that place it is pointed out that Dr. Græffe made several highly important additions to the Viti flora. Some of the Orchids of that collector seemed to have come into Dr. G. Reichenbach's possession, and are enumerated by him in this work. Dr. Græffe's expenses were defrayed by the great commercial firm of Godeffroy and Sons, of Hamburg, and a short popular account of his visit was published in one of the German periodicals.*

In August, 1865, Viti was visited by Mr. John Gould Veitch, of Chelsea, for the purpose of collecting there such ornamental plants as were suitable for cultivation in English gardens. Mr. Veitch touched at Ovalau, Bau, and Kadavu; and not only succeeded in this object, but also discovered several plants new to science. An account of the visit was published in the 'Gardeners' Chronicle' for 1866, p. 243, *seq.*

The last visitor to the group, of whom I have any knowledge, was Mr. William B. Guilfoyle, of Sydney, who went thither in H.M.S. Challenger, Commodore Lambert, in May, 1868, and who also published a sketch of his trip.† Mr. Guilfoyle was principally on the look-out for ornamental and useful plants; whether he also collected specimens for herbaria is unknown to me.

Notwithstanding these numerous efforts to explore Viti, botanically a great part, perhaps the most interesting of the group, remains yet unknown. Little more than the coast of the larger islands has been skimmed, and the interior of Viti Levu and its numerous peaks and mountain-ridges still offer a rich field for botanical discovery. Many of these parts are at present inaccessible, owing to the savage nature of the inhabitants; and we can only hope, by slow degrees, to lift the veil which hangs over these botanical haunts. But civilization is making fresh strides every day, and ere many years will have passed, we may expect to traverse the whole group with comparative safety, though not without great physical exertion and considerable expense. Even if a good collector went merely over the ground already explored, he might expect to make many valuable additions to the flora; not only would he find plants which, from their geographical range over other Polynesian islands, may safely be expected to occur in Viti, but also genera and species entirely new to science. It has been one of my day-dreams to revisit the islands, and complete, as much as lies in my power, the work here begun.

* If I remember rightly, in 'Das Ausland.'

† Seemann's 'Journal of Botany,' 1869, p. 117. (Much of the information in this sketch is taken verbatim, and without acknowledgment, from the various publications that issued from my pen.—B. S.)

INTRODUCTION.

VITI, or Fiji, is an archipelago in the South Pacific Ocean, midway between the Tongan Islands and the French Colony of New Caledonia, having, according to Dr. Petermann's calculations, a superficial area equal to that of Wales, or eight times that of the Ionian Islands. The exact number of islands and islets comprising it is merely approximately known, only a partial hydrographical survey of the whole group having as yet been made; 230 would probably be rather below than above the number. Viti Levu, Kadavu, Vanua Levu, and Taviuni are of primary, Rabe, Koro, Gau, and Ovalau, of secondary magnitude. Situated between latitudes $19^{\circ} 47'$ S. and $15^{\circ} 47'$ S., and longitudes $180^{\circ} 8'$ W. and $176^{\circ} 50'$ E., the climate is tropical, but the heat is moderated, in the winter season by the south-east, and in the summer by the north-east trade-wind. 62° Fahr. is the lowest temperature observed in Lakeba by Mr. Williams, and in Kadavu by Mr. Royce; but, though the mean temperature of the whole group may be stated to be 80° Fahr., the thermometer has been known to rise to 121° Fahr. The country is remarkably free from fever,—that curse of the Samoan group,—and the only disease Fijians and Europeans have reason to fear is dysentery, unknown, if a current belief may be relied upon, before the visits of foreigners and the introduction of foreign bananas to these shores, and hence often termed by the natives "the white man's disease."

The time from October till April is the hottest, that extending over the other months the coolest, part of the year. It is during the former when the most rain falls; but the dry and rainy seasons do not strictly correspond with this division, nor is the difference between the wet and dry very marked. There are occasional showers during the so-called dry season in all parts of the group; and in localities like the Straits of Somosomo they may even be termed frequent. The fine weather is expected to set in about May. June, July, August, September, and October are generally dry, and from their low temperature, looked forward to by European settlers. How many inches of rain annually fall has not been ascertained; nor would a gauge kept in a single locality only give a fair approximate result of the average amount, since the difference of the meteorological conditions existing

between the leeward and windward islands, and the lee side and the weather side of the larger islands, is too great.*

There are, at present, no active volcanoes; but several of the highest mountains, for instance, Buke Levu, in Kadavu, and the summit of Taviuni, must, in times gone by, have been formidable craters. Hot springs are met with in different parts, earthquakes are occasionally experienced, and between Fiji and Tonga a whole island has of late years been lifted above the level of the ocean, whilst masses of pumice-stone are drifted on the southern shores of Kadavu and Viti Levu; all showing that Fiji, though not the focus of volcanic action, is not secure against plutonic disturbances and their effects. The deltas and alluvial deposits of the great rivers excepted, there is little level land. Most of the ground is undulated; all the larger islands are hilly, and the largest have peaks 4000 feet high; Voma in Viti Levu, and Buke Levu in Kadavu (both of which were ascended by me), being the most elevated. The soil consists in many parts of a dark red or yellowish clay, or decomposed volcanic rock, which soon becomes dry, but being plentifully supplied with water proves very productive. There is hardly a rod of land that might not be converted into pasture, or be cultivated. Almost at every step one discovers that most of the land has at one time or other produced some crop. Though on the weather side dense and extensive woods exist, few of them can be regarded as virgin forests, most having established themselves after the plantations once occupying their site had been abandoned. Kadavu does not appear to have an acre of virgin forest beyond what is clustered around the very summit of Buke Levu. The re-establishment of the woods on ground at one time under cultivation can scarcely be adduced as a proof that the population has seriously diminished, but rather that the Fijians have for ages followed the same system of agriculture as they do at present, that of constantly selecting new spots for their crops when the old ones, which their ignorance prevents them from fertilizing by the introduction of manure, become exhausted.

The aspect of the weather side of the islands is essentially different from that of the lee side. The former teems with a dense mass of vegetation, huge trees, innumerable creepers, and epiphytical plants. Hardly ever a break occurs in the green mantle spread over hill and dale, except where effected by artificial means. Rain and moisture are plentiful, adding ever fresh vigour to, and keeping up the exuberant growth of, trees, shrubs, and herbs. Far different is the aspect of the lee side. Instead of the dense jungle, interlaced with creepers and loaded with epiphytes, a fine grassy country, here and there dotted with Screw-pines, presents itself. The northern shores of Viti Levu and Vanua Levu bear this character in an eminent degree, and their very aspect is proof that rain falls in only limited

* "A gauge, kept by the Rev. Mr. Whitby [probably at Levuka, B. S.], showed that ninety inches of rain had fallen in six months, and four in the night of February 12th, 1860." This statement I find in an obscure publication, 'The Primitive Methodist Juvenile Magazine,' London, 1862, vol. xi. p. 50. Not having seen it confirmed, it may possibly be incorrect, like several others in the article from which it is taken.

quantity; the high ridge of mountains which form, as it were, the backbone of the two largest islands, intercepting many showers, and sending down perpetual streams to fertilize the low lands of the coast. The lee side would, therefore, more readily recommend itself to the white settler, as it requires hardly any clearing, and would be immediately available for cattle-breeding, sheep runs, and cotton-growing.

The general physiognomy of the flora is decidedly tropical; Tree-ferns, branching Grasses, several kinds of Palms, Scitamineous Plants, epiphytical Orchids, Ferns, and Peppercorns, fully accounting for this fact. Whole districts, however, possess a strictly South Australian look, owing to the presence of phyllodineous Acacias (*A. laurifolia*, Willd., and *A. Richii*, A. Gray), Casuarinas, *Geitonoplesium*, and *Metrosideros* with either scarlet or yellow blossoms, as well as to the peculiar habit of various other species of *Myrtaceæ* and *Epacrideæ*.

Mangroves are restricted to but few parts of the larger islands, and here as elsewhere principally consist of plants with leathery glossy foliage. The leading trees among them are *Rhizophora mucronata*, *Bruguiera Rheedei*, *Heritiera littoralis*, *Lumnitzera coccinea*, and *Excæcaria Agallocha*. Kitlitz says of the vegetation of the Pacific Islands, that Mangroves are never accompanied by creepers or twiners, which, with the exception of *Entada scandens*, is a rule that will apply to Viti. In places where the tide has little play, whole districts are covered with *Acrostichum aureum*, which, however, does not attain that luxuriant development it does in countries nearer the line.

The coast-line of most of the islands just above high-water mark is enriched by a dense, more or less broken, belt of Cocoa-nut Palms. White beaches, formed of decomposed corals, may be traced for miles; whilst good soil in many instances extends quite to the water's edge, and trees, not numbering strictly amongst the coast plants, overhang the sea. But there is a varied littoral vegetation, though but few of its component parts are endemic to Viti, or even to the South Sea Islands. The leading trees are *Calophyllum Inophyllum*, *Thespesia populnea*, *Pongamia glabra*, *Acacia laurifolia*, *Eugenia Richii*, *Barringtonia speciosa*, *Terminalia littoralis*, *Gyrocarpus Jacquini*, *Guettarda speciosa*, *Cerbera lactaria*, *Cordia subcordata*, *Hernandia peltata*, and *Pandanus verus*. The leading shrubs, several of them occasionally becoming arborescent, are *Hibiscus tiliaceus*, *H. tricuspidis*, *Ximenia elliptica*, *Colubrina Asiatica*, *Tephrosia piscatoria*, *Sophora tomentosa*, *Scævola Kænigii*, *S. sericea*, *S. floribunda*, *Symplocos spicata*, *Tournefortia argentea*, *Clerodendron inerme*, *Vitex trifolia*, *Wikstrœmia fœtida*, and *Drymispermum Burnettianum*. Creepers and twiners are numerous, the principal ones being *Smythea Pacifica*, *Cardiospermum Halicacabum*, *Canavalia obtusifolia*, *Vigna lutea*, *Dalbergia monosperma*, *Derris uliginosa*, *Cæsalpinia Bonducella*, *C. Bonduc*, *Barringtonia racemosa*, *Pharbitis insularis*, *Ipomœa Pes-capræ*, and *I. denticulata*. Smaller herbs are chiefly represented by the following types:—*Triumfetta procumbens*, *Desmodium umbellatum*, *Tacca pinnatifida*, *T. littoralis*, *Wollastonia strigulosa*, *Euphorbia Atoto*, and *Crinum Asiaticum*.

The banks of the rivers and rivulets are densely crowded with vegetation, mostly composed of plants found elsewhere in the group, though not in such a luxuriant state. But there are also several species peculiar to these localities, among them *Eugenia rivularis*, *Lindenia Vitiensis*, *Acalypha rivularis*, *Ficus bambusæfolia*, *Polygonum glabrum*, *Podocarpus bracteata*, *Eulalia Japonica*, *Schizostachys glaucifolia*, and another undetermined *Bambusacea*, all of which would have to be classed, physiognomically, with Humboldt's "Willow form," a set of plants which, unaffected by the occasional rising and turbulence of the streams, not only have the same kind of foliage, habit, and mode of growth as genuine Willows, but evidently serve the same purpose in Nature's economy, that of protecting and keeping together the river banks, though they are not related to the genus *Salix*. The frequency of plants belonging to this Willow form on river banks in all countries of the globe is worthy of more attention than it has as yet received; and out of it arise, among others, the questions:—What possible connection can there be between river banks and the so-called Willow form of leaves? Do plants of that kind grow on rivers because they have Willow leaves, or do they have Willow leaves because they grow on rivers? It is in fact the old question over again, Does the duck swim because it has webbed feet, or has it webbed feet because it swims.*

* It would not be difficult to show that most plants bearing leaves of the true Willow form do grow by running streams. To say nothing of those species of *Salix* having Willow leaves, and growing, or those *Salices* not having Willow leaves (*S. herbacea*, etc.), and not growing by running streams, I would direct attention to the different species of *Nerium*, *Epilobium hirsutum* (vulgo Anglicè, Willow herb), *Lythrum Salicaria*, *Polygonum Persicaria*, et sp. pl.; *Lindenia rivalis*, *Astianthus longifolius*, etc. That many plants are found on rivers which have no Willow leaves has nothing to do with the question, how it comes to pass that the Willow form predominates in such localities? Some years ago Dr. Schultz-Bipontinus pointed out that in the *Compositæ*, the largest Phanerogamous Order, the habit of almost every other cropped up again. In *Euphorbiaceæ* and other large Orders, similar instances are noted. Sometimes this outer resemblance is startling. I remember coming across a Sandwich Island plant which looked exactly like *Thomasia solanacea*, a well-known Buettneriaceæ, of New Holland, but which, on closer examination, proved to be a variety of *Solanum Nelsoni*, the resemblance between the two being as striking as that pointed out in Bate's 'Travels on the Amazon,' between a certain moth and a humming bird. These outer resemblances between different species which have no organic relationship, have played us Botanists many a trick, and have been the cause of some otherwise incomprehensible synonyms in our systematic works—*Daviesias* having been described as *Acacias*, *Cycads* as *Ferns*, and *Veronicas* as *Conifers*, by really good botanists relying too implicitly upon them,—resemblances to which the term "Mimicry in Nature" has been applied. I have objected ('Gardeners' Chronicle,' 1868, June 27, and 'Journal of Botany,' 1868, p. 213) to this term, because, in applying it either in zoology or botany, the whole question here cropping up is prejudged, it being assumed that (1) organisms have the power to mimic other organisms; and (2) that they have come in contact with those organisms which they are supposed to mimic. I suggested the term "Outer resemblances." Mr. Leo H. Grindon has since proposed that of "Echoes," and given a popular illustration of it ('Echoes in Plant and Flower Life,' London, F. Pitman, 1869, 117 pp); but the term is more poetical than scientifically correct, as an echo is simply a repetition, more or less distinct, of one and the same utterance, which the "echoes" here meant are

Among the principal plants found in swamps and marshes must be enumerated the following:—*Elatine ambigua*, *Hibiscus diversifolius*, *Limnanthemum Kleinianum*, *Adenosma triflora*, *Ceratophyllum demersum*, *Sagus Vitiensis*, *Typha angustifolia*, *Pandanus caricosus*, *Colocasia antiquorum*, *Alocasia Indica*, *Cyrtosperma edulis*, *Lemna paucicostata* and *L. melanorrhiza*, *Lepironia mucronata*, *Hypolytrum latifolium*, *Eleocharis articulata*, *Mariscus flavus*, *Coix Lachryma*, and *Equisetum debile*. Only one of these (*Sagus Vitiensis*) attains the dimensions of a tree, and all the others are herbaceous, with the exception of *Hibiscus diversifolius*.

In the windward islands, Lakeba and its dependencies, the weeping Ironwood (*Casuarina equisetifolia*, Forst.), intermingled with Screw-pines (*Pandanus verus*, Rumph., and *Dodonæa viscosa*), abounds, and considerable tracts of country are covered with the brake (*Pteris esculenta*, Forst.) and other hard-leaved Ferns: they prefer an open country, and have taken possession where little else will grow. Wherever these forms of vegetation occur on the weather side of the group, the soil may be expected to be rather poor. It would, however, be erroneous to apply the same rule to the leeward side, where they are also tolerably abundant, not because the soil is too poor to support a dense herbaceous or woody vegetation, but because the air is destitute of that excessive moisture, and the country less visited by those fertilizing showers of rain, which promote the luxuriant growth on the weather side.

There is little change in the nature of the vegetation until one reaches about 2000 feet elevation, where the plants peculiar to the coast region are replaced by mountain forms. Hollies, Myrtaceous, Melastomaceous, and Laurinaceous trees, Epacridaceous and Vacciniaceous bushes, forming the bulk; scarlet Orchids, Astelias, delicate Ferns, Mosses, and Lichens, crowding their branches. None of the explored peaks have as yet disclosed any genuine alpine vegetation,—perennial herbs forming cæspitose masses and prostrate shrubs, generally bearing large and gay-coloured flowers. Should it ever be met with, there would, indeed, be a rich botanical harvest.

The weeds of a country are, according to my opinion,* never indigenous productions of the soil on which they grow, but they have always been translated, though the distance whence they have come may be very limited. Nor are all countries indiscriminately, having a climate similar to that in which weeds gain a footing, been the sources of them. Thus, whilst European species spread with rapidity over the southern parts of North America and Australasia, North American and Australasian do not show any great disposition to become

not. Mr. Grindon states that his essay was written before the appearance of my remarks in the 'Gardeners' Chronicle;' I first published on the subject in the 'Journal of Botany,' June 1, 1868; but, I believe, that neither of us can lay much claim to originality, for the subject in its general outline has been already dealt with by Humboldt in his 'Ansichten der Natur.'

* 'Journal of Botany,' 1867, p. 195; and 'Dottings on the Roadside in Panama, Nicaragua, and Mosquito;' London, 1869, p. 117.

naturalized in such parts of Europe as are suitable to them in climate and soil; the reason seeming to be that weeds do not spread except in countries or areas to them altogether virgin, which, for geological reasons, Australia and the southern parts of North America are not held to be with regard to Europe, Australian vegetation having covered Europe during the Eocene period, and North-American during the Lignite. Polynesia, situated as it is between three great continents, presents a most interesting problem with regard to its weeds, which, however, cannot be satisfactorily solved until the whole flora shall have been properly worked out; but we may make an attempt to deal with it as far as Viti is concerned. There we have 64 species, which may be regarded as troublesome weeds. Some of these are diffused throughout the tropics; but the bulk of them (48) are common to America, only 16 being strictly confined to the Old World, principally Asia. It may be argued that several of those found in America are also common to Asia, or that Asia is their true native country; but even admitting this reduction, it must be conceded that the bulk of the weeds of Viti is of American origin, or, at all events, is now found in America. This is the more singular, as the majority of the species of these islands, as far as they are not endemic, is Asiatic. Polynesia seems to have acted as a bridge by means of which the weeds of the Old World crossed over to the New, and those of the New World to the Old; and the fact that American weeds show a greater disposition than Asiatic to spread in Viti, must be held to prove, if my theory be sound, that Viti is to American plants altogether virgin ground. In the following list of Vitian weeds those marked with an asterisk (*) have also been found in America, but I have excluded all swamp and water plants, as well as herbs growing close to the seaside, just above high-water mark, such as *Ipomœa Pes-capræ*, *Triumfetta procumbens*, etc., which cannot properly be regarded as weeds in my definition of the term, because they lack one of the most essential characteristics, viz. to spread on land cultivated or otherwise disturbed by the agency of man:—

**Cardamine sarmentosa*, *Forst.*

**Portulaca oleracea*, *Linn.*

Portulaca quadrifida, *Linn.*

**Talinum patens*, *Willd.*

Sida microphylla, *Cav.*

**S. rhombifolia*, *Linn.*

**S. linifolia*, *Cav.*

**Urena lobata*, *Linn.*

**Waltheria Americana*, *Linn.*

**Oxalis corniculata*, *Linn.*

**Cardiospermum Halicacabum*, *H. B. K.*

**Crotalaria quinquefolia*, *Linn.*

**Indigofera Anil*, *Linn.*

**Desmodium polycarpum*, *De Cand.*

Uraria lagopodioides, *De Cand.*

**Phaseolus Truxillensis*, *H. B. K.*

**Lablab vulgaris*, *Sav.*

**Abrus precatorius*, *Linn.*

**Cassia lævigata*, *Willd.*

C. Sophora, *Linn.*

**C. obtusifolia*, *Linn.*

**C. glauca*, *Lam.*

**C. occidentalis*, *Linn.*

**Mimosa pudica*, *Linn.*

**Hydrocotyle Asiatica*, *Linn.*

Hedyotis Cratæogonum, *Spr.*

**Oldenlandia tenuifolia*, *Forst.*

O. paniculata, *Linn.*

**Geophila reniformis*, *Oham. et Schlecht.*

**Ageratum conyzoides*, *Linn.*

Adenostemma viscosum, *Forst.*

**Erigeron albidum*, *A. Gray.*

**Eclipta prostrata*, *Linn.*
Siegesbeckia orientalis, *Linn.*
 **Bidens pilosa*, *Linn.*
Dichrocephala latifolia, *De Cand.*
Myriogyne minuta, *Less.*
 **Sonchus asper*, *Vill.*
 **Batatas paniculata*, *Chois.*
Pharbitis insularis, *Chois.*
 **Calonyction speciosum*, *Chois.*
 **Solanum oleraceum*, *Dun.*
 **Physalis Peruviana*, *Linn.*
 **P. angulata*, *Linn.*
 **Datura Stramonium*, *Linn.*
 **Vandellia crustacea*, *Benth.*
 **Ocimum gratissimum*, *Linn.*
Leucas decemdentata, *Sm.*

**Teucrium inflatum*, *Swartz.*
 **Plantago major*, *Linn.*
Plumbago Zeylanica, *Linn.*
 **Amarantus paniculatus*, *Moq.* var. *cruentus.*
 **A. melancholicus*, var. *tricolor*, *Lam.*
 **Euxolus caudatus*, *Moq.*
 **Achyranthes aspera*, *Linn.*
 **Cyathula prostrata*, *Blume*, var. *debilis*, *Moq.*
Mollugo stricta, *Linn.*
 **Euphorbia pilulifera*, *Linn.*
Acalypha bœhmerioides, *Miq.*
 **Ricinus communis*, *Linn.*
Fleurya interrupta, *Gaud.*
 **Commelyna Pacifica*, *Vahl.*
 **Canna Indica*, *Linn.*
 **Eleusine Indica*, *Gærtn.*

The Vitian Flora does not embrace any Natural Order exclusively confined to it, but a number of genera and species as yet not found out of the group. The lists of them given below, will doubtless receive many additions, but they will also be reduced by several of their number being discovered in neighbouring islands.

Genera peculiar to the Viti Flora :—

Richella, *A. Gray.* (Anonaceæ.)
Trimenia, *Seem.* (Ternstroemiæ.)
Pimia, *Seem.* (Sterculiaceæ.)
Græffea, *Seem.* (Tiliaceæ.)
Thacombauia, *Seem.* (Humiriaceæ.)
Amarouria, *A. Gray.* (Simarubaceæ.)
Smythea, *Seem.* (Rhamnaceæ.)
Oncocarpus, *A. Gray.* (Anacardiaceæ.)

Haplopetalon, *A. Gray.* (Rhizophoraceæ.)
Nesopanax, *Seem.* (Hederaceæ.)
Bakeria, *Seem.* (Hederaceæ.)
Pelagodendron, *Seem.* (Rubiaceæ.)
Paphea, *Seem.* (Ericaceæ.)
Carruthersia, *Seem.* (Apocynæ.)
Couthovia, *A. Gray.* (Loganiaceæ.)
Canthiopsis, *Seem.* (Loganiaceæ.)

Species peculiar to the Viti Flora :—

Wormia biflora, *Seem.*
W. membranifolia, *Seem.*
Uvaria (?) *amygdalina*, *A. Gray.*
Polyalthia Vitiensis, *Seem.*
Richella monosperma, *A. Gray.*
Capparis Richii, *A. Gray.*
Agatea violaris, *A. Gray.*
Alsodeia (?) *Storckii*, *Seem.*
Pittosporum Richii, *A. Gray.*
P. Brackenridgei, *A. Gray.*
P. tobiroides, *A. Gray.*

P. Pickeringii, *A. Gray.*
P. rhytidocarpum, *A. Gray.*
Garcinia Vitiensis, *Seem.*
G. (?) *pseudoguttifera*, *Seem.*
Ternstroemia Vitiensis, *Seem.*
Trimenia weinmanniæfolia, *Seem.*
Eurya Vitiensis, *A. Gray.*
Saurauja rubicunda, *Seem.*
Hibiscus Storckii, *Seem.*
Sterculia diversifolia, *Seem.*
S. Vitiensis, *Seem.*

- Pimia rhamnoides*, *Seem.*
Grewia persicæfolia, *A. Gray.*
G. prunifolia, *A. Gray.*
Græffea calyculata, *Seem.*
Trichospermum Richii, *Seem.*
Elæocarpus Storckii, *Seem.*
E. Græffei, *Seem.*
E. Milnei, *Seem.*
E. laurifolius, *A. Gray.*
E. pyriformis, *A. Gray.*
Hiptage myrtifolia, *A. Gray.*
Thacombauia Vitiensis, *Seem.*
Acronychia petiolaris, *A. Gray.*
Brucea (?) *quercifolia*, *Seem.*
Amaroria soulameoides, *A. Gray.*
Brackenridgea nitida, *A. Gray.*
Canarium Vitiense, *A. Gray.*
Vavæa Harveyi, *Seem.*
V. Vitiensis, *Seem.*
Melia (?) *elegans*, *Seem.*
Aglaia multijuga, *Seem.*
A. basiphylla, *A. Gray.*
Chailletia Vitiensis, *Seem.*
Lasianthera Vitiensis, *Seem.*
Ilex Vitiensis, *A. Gray.*
Celastrus Richii, *A. Gray.*
Ventilago (?) *Vitiensis*, *A. Gray.*
Smythea Pacifica, *Seem.*
Gouania Richii, *A. Gray.*
Vitis Vitiensis, *Seem.*
Cupania rhoifolia, *A. Gray.*
C. leptobotrys, *A. Gray.*
C. (?) *Brackenridgei*, *A. Gray.*
Ratonia falcata, *Seem.*
R. Storckii, *Seem.*
Sapindus Vitiensis, *A. Gray.*
Rhus simarubæfolia, *A. Gray.*
Oncocarpus Vitiensis, *A. Gray.*
Dracontomelon (?) *pilosum*, *Seem.*
Connarus Pickeringii, *A. Gray.*
Storckiella Vitiensis, *Seem.*
Cynometra grandiflora, *A. Gray.*
C. falcata, *A. Gray.*
Acacia Richii, *A. Gray.*
Serianthes Vitiensis, *A. Gray.*
Eugenia quadrangulata, *A. Gray.*
E. neurocalyx, *A. Gray.*
E. gracilipes, *A. Gray.*
E. Grayi, *Seem.*
E. Brackenridgei, *A. Gray.*
E. effusa, *A. Gray.*
E. confertiflora, *A. Gray.*
E. rivularis, *Seem.*
Calyptranthes (Acicalyptus) myrtoides, *Seem.*
C. (Acicalyptus) Seemanni, *A. Gray.*
C. eugenoides, *Seem.*
Barringtonia edulis, *Seem.*
Memecylon Vitiense, *A. Gray.*
Astronia confertiflora, *A. Gray.*
A. tomentosa, *Seem.*
A. (?) *robusta*, *Seem.*
Astronidium parviflorum, *A. Gray.*
A. Storckii, *Seem.*
Amplectrum (?) *ovalifolium*, *A. Gray.*
Medinilla heterophylla, *A. Gray.*
M. rhodolæna, *A. Gray.*
M. Waterhousei, *Seem.*
M. parvifolia, *Seem.*
Haplopetalon Richii, *A. Gray.*
H. Seemanni, *A. Gray.*
Crossostylis Harveyi, *Seem.*
Homalium Vitiense, *Benth.*
Disemma (?) *Barclayi*, *Seem.*
D. Storckii, *Seem.*
D. Vitiensis, *Seem.*
Casearia (?) *acuminatissima*, *A. Gray.*
C. disticha, *A. Gray.*
C. Richii, *A. Gray.*
Geissois ternata, *A. Gray.*
Weinmannia affinis, *A. Gray.*
W. Vitiensis, *Seem.*
W. Richii, *A. Gray.*
W. spiræoides, *A. Gray.*
Spiræanthemum Vitiense, *A. Gray.*
S. Græffei, *Seem.*
S. Katakata, *Seem.*
Nothopanax multijugum, *Seem.*
Agalma Vitiensis, *Seem.*
Schefflera Vitiensis, *A. Gray.*
Nesopanax Vitiensis, *Seem.*
Bakeria Vitiensis, *Seem.*
Plerandra Pickeringii, *A. Gray.*
P. Grayi, *Seem.*
Loranthus Vitiensis, *Seem.*

- Dolicholobium oblongifolium*, *A. Gray*.
D. latifolium, *A. Gray*.
D. longissimum, *Seem.*
Gardenia Vitiensis, *Seem.*
G (?) *pentagonioides*, *Seem.*
Stylocoryne Harveyi, *A. Gray*.
Pelagodendron Vitiense, *Seem.*
Ophiorrhiza peploides, *A. Gray*.
O. leptantha, *A. Gray*.
O. laxa, *A. Gray*.
Lerchia calycina, *A. Gray*.
Morinda myrtifolia, *A. Gray*.
M. Grayi, *Seem.*
M. mollis, *A. Gray*.
M. bucidæfolia, *A. Gray*.
Timonius sapotæfolius, *A. Gray*.
T. affinis, *A. Gray*. *
Guettarda inconspicua, *Seem.*
G. Vitiensis, *A. Gray*.
Canthium sessifolium, *A. Gray*.
C. flavidum, *Seem.*
Calycosia petiolata, *A. Gray*.
C. pubiflora, *A. Gray*.
Ixora Vitiensis, *A. Gray*.
I. pelagica, *Seem.*
I. maxima, *Seem.*
I. (?) Storckii, *Seem.*
Psychotria sulphurea, *Seem.*
P. Broweri, *Seem.*
P. Pritchardii, *Seem.*
P. Brackenridgei, *A. Gray*.
P. Forsteriana, *A. Gray*.
P. turbinata, *A. Gray*.
P. Storckii, *Seem.*
P. tephrosantha, *A. Gray*.
P. gracilis, *A. Gray*.
P. calycosa, *A. Gray*.
P. filipes, *A. Gray*.
P. pelagica, *Seem.*
P. hypargyræa, *A. Gray*.
P. cordata, *A. Gray*.
P. Pickeringii, *A. Gray*.
P. tetragona, *Seem.*
P. bullata, *Seem.*
P. platycocca, *A. Gray*.
Myrmecodia imberbis, *A. Gray*.
Hydrophytum longiflorum, *A. Gray*.
Coprosma persicæfolia, *A. Gray*.
Blumea Milnei, *Seem.*
Lagenophora Pickeringii, *A. Gray*.
Scævola floribunda, *A. Gray*.
Paphia Vitiensis, *Seem.*
Mæsa Pickeringii, *A. Gray*.
M. Vitiensis, *Seem.*
M. persicæfolia, *A. Gray*.
M. corylifolia, *A. Gray*.
Myrsine (?) Brackenridgei, *A. Gray*.
Ardisia grandis, *Seem.*
A. (?) capitata, *Seem.*
A. Storckii, *Seem.*
A. Vitiensis, *Seem.*
Sapota (?) pyrulifera, *A. Gray*.
S. (?) Vitiensis, *A. Gray*.
Maba foliosa, *Rich.*
Jasminum tetraquetrum, *A. Gray*.
Olea Vitiensis, *Seem.*
Carruthersia scandens, *Seem.*
Tabernæmontana pacifica, *Seem.*
Lyonsia lævis, *A. Gray*.
Alstonia Vitiensis, *Seem.*
Tylophora Brackenridgei, *A. Gray*.
Gymnema subnudum, *A. Gray*.
G. stenophyllum, *A. Gray*.
Hoya diptera, *Seem.*
Goniostema (?) microphyllum, *Seem.*
Fagræa gracilipes, *A. Gray*.
Couthovia corynocarpa, *A. Gray*.
C. Seemanni, *A. Gray*.
Canthiopsis odorata, *Seem.*
Solanum Vitiense, *Seem.*
Cyrtandra Pritchardii, *Seem.*
C. coleoides, *Seem.*
C. Harveyi, *Seem.*
C. ciliata, *Seem.*
C. Denhami, *Seem.*
C. acutangula, *Seem.*
C. Vitiensis, *Seem.*
C. anthropophagorum, *Seem.*
C. Milnei, *Seem.*
C. dolichocarpa, *A. Gray*.
C. involucrata, *Seem.*
Eranthemum laxiflorum, *A. Gray*.
E. insularum, *A. Gray*.
Faradaya ovalifolia, *Seem.*

- F. Vitiensis*, *Seem.*
Vitex Vitiensis, *Seem.*
Cinnamomum pedatinervium, *Meisn.*
Tetranthera palmatinervia, *Meisn.*
T. Seemanni, *Meisn.*
T. Vitiana, *Meisn.*
T. Pickeringii, *A. Gray.*
Myristica castaneæfolia, *A. Gray.*
M. grandiflora, *A. Gray.*
Hedycarya dorstenioides, *A. Gray.*
Drymispermum pubiflorum, *Seem.*
D. lanceolatum, *A. Gray.*
D. subcordatum, *Seem.*
D. montanum, *Seem.*
Santalum Yasi, *Seem.*
Euphorbia Fidgiana, *Boiss.*
Antidesma pacificum, *Müll. Arg.*
Phyllanthus Vitiensis, *Müll. Arg.*
P. Seemannianus, *Müll. Arg.*
P. venulosus, *Müll. Arg.*
P. cordatus, *Müll. Arg.*
P. podocarpus, *Müll. Arg.*
P. amentuliger, *Müll. Arg.*
P. heterodoxus, *Müll. Arg.*
P. Wilkesianus, *Müll. Arg.*
Baccaurea Wilkesiana, *Müll. Arg.*
B. Seemanni, *Müll. Arg.*
B. stylaris, *Müll. Arg.*
Croton metallicus, *Seem.*
C. heterotrichus, *Müll. Arg.*
C. leptopus, *Müll. Arg.*
Claoxylon fallax, *Müll. Arg.*
C. echinospermum, *Müll. Arg.*
Acalypha consimilis, *Müll. Arg.*
A. rivularis, *Seem.*
A. latifolia, *Müll. Arg.*
A. denudata, *Müll. Arg.*
A. repanda, *Müll. Arg.*
A. lævifolia, *Müll. Arg.*
Macaranga secunda, *Müll. Arg.*
M. membranacea, *Müll. Arg.*
M. macrophylla, *Müll. Arg.*
Stillingia pacifica, *Müll. Arg.*
Laportea Milnei, *Seem.*
L. Harveyi, *Seem.*
L. Vitiensis, *Seem.*
Pellionia filicoides, *Seem.*
P. australis, *Wedd.*
Elatostema nemorosum, *Seem.*
Pipturus platyphyllus, *Wedd.*
Leucosyke corymbulosa, *Wedd.*
Ficus Vitiensis, *Seem.*
F. Harveyi, *Seem.*
F. Barclayi, *Seem.*
F. bambusæfolia, *Seem.*
F. Storckii, *Seem.*
F. Pritchardii, *Seem.*
F. theophrastoides, *Seem.*
Caturus pelagicus, *Seem.*
Trophis anthropophagorum, *Seem.*
Piper insectifugum, *Casim. de Cand.*
Dammara Vitiensis, *Seem.*
Podocarpus affinis, *Seem.*
P. Vitiensis, *Seem.*
Kentia exorrhiza, *Herm. Wendl.*
Veitchia Storckii, *Herm. Wendl.*
V. Joannis, *Herm. Wendl.*
V. subglobosa, *Herm. Wendl.*
Ptychosperma Seemanni, *Herm. Wendl.*
P. perbreve, *Herm. Wendl.*
P. pauciflorum, *Herm. Wendl.*
P. Pickeringii, *Herm. Wendl.*
P. Vitiense, *Herm. Wendl.*
P. filiferum, *Herm. Wendl.*
Sagus Vitiensis, *Herm. Wendl.*
Freycinetia Vitiensis, *Seem.*
F. Pritchardii, *Seem.*
F. Storckii, *Seem.*
Freycinetia Milnei, *Seem.*
Rhaphidophora Vitiensis, *Schott.*
R. Storckiana, *Schott.*
Cuscuaria spuria, *Schott.*
Cyrtosperma edulis, *Schott.*
Alpinia Vitiensis, *Seem.*
A. Boia, *Seem.*
Amomum Cevunga, *Seem.*
Habenaria tradescantifolia, *Rchb. fil.*
H. superflua, *Rchb. fil.*
H. supervacanea, *Rchb. fil.*
Anecochilus longiflorus, *Rchb. fil.*
Tropidia effusa, *Rchb. fil.*
Epiphanes micradenia, *Rchb. fil.*
Tæniophyllum Seemanni, *Rchb. fil.*
Thrixspermum Godeffroyanum, *Rchb. fil.*

Saccolabium Bertholdii, *Rchb. fil.*
Sarcanthus Nagarensis, *Rchb. fil.*
Calanthe ventilabrum, *Rchb. fil.*
C. hololeuca, *Rchb. fil.*
Appendicula bracteosa, *Rchb. fil.*
Eria stenostachya, *Rchb. fil.*
E. sphærocarpa, *Rchb. fil.*
E. rostriflora, *Rchb. fil.*
Microstylis platychila, *Rchb. fil.*
Dendrobium Mohlianum, *Rchb. fil.*
D. Tokai, *Rchb. fil.*
D. catillare, *Rchb. fil.*
Chrysoglossum vesicatum, *Rchb. fil.*
Smilax (?) *trifurcata*, *Seem.*

Pleiosmilax Vitiensis, *Seem.*
Cordyline sepiaria, *Seem.*
Astelia montana, *Seem.*
Aneilema Vitiensis, *Seem.*
Alsophila Vitiensis, *Carr.*
A. truncata, *Brack.*
Davallia Fejeensis, *Hook.*
D. ferulacea, *T. Moore.*
D. Denhami, *Hook.*
Microlepia papillosa, *Brack.*
M. tenuis, *Brack.*
Hymenophyllum affine, *Brack.*
H. dilatatum, *Sw.*, and several other Cryptogams.

A comparison of the flora of Viti with that of New Holland shows that, with the exception of *Rhamnus* (?) *Vitiensis*, *Homalium Vitiense*, *Tacca maculata*, and *Marlea Vitiensis*, the exact limits as species and geographical range of which are as yet hardly traced out, the two floras have only such species in common as enjoy a wide distribution either in the Old or the New World, as weeds, freshwater or seaside plants; and that the Vitian Phanerogamous vegetation does not embrace a single species which may be considered of genuine New Holland type. Moreover, eight out of the ten indigenous Phanerogams common to Viti and New Zealand, are also found in New Holland.

Plants Common to both New Holland and Viti:—

Portulaca oleracea, *Linn.*
Sida rhombifolia, *Linn.*
Urena lobata, *Linn.*
Hibiscus diversifolius, *Jacq.*
H. tiliaceus, *Linn.*
Thespesia populnea, *Corr.*
Heritiera littoralis, *Ait.*
Waltheria Americana, *Linn.*
Triumfetta procumbens, *Forst.*
Oxalis corniculata, *Linn.*
Carapa Moluccensis, *Lam.*
Ximения elliptica, *Forst.*
Rhamnus (?) *Vitiensis*, *Benth.*
Colubrina Asiatica, *Brongn.*
Vitis saponaria, *Seem.*
Leea sambucina, *Willd.*
Cardiospermum Halicacabum, *Linn.*
Dodonæa viscosa, *Linn.*

Crotalaria quinquefolia, *Linn.*
Tephrosia piscatoria, *Pers.*
Ormocarpum sennoides, *De Cand.*
Desmodium umbellatum, *De Cand.*
D. polycarpum, *De Cand.*
Uraria lagopodioides, *De Cand.*
Glyzine tabacina, *Benth.*
Erythrina Indica, *Lam.*
Mucuna gigantea, *De Cand.*
Canavalia obtusifolia, *De Cand.*
Phaseolus Truxillensis, *H. B. K.*
P. Mungo, *Linn.*
Vigna lutea, *A. Gray.*
Abrus precatorius, *Linn.*
Derris uliginosa, *Benth.*
Pongamia glabra, *Vent.*
Sophora tomentosa, *Linn.*
Guilandina Bonducella, *Linn.*

- Cassia lævigata*, Willd.
C. Sophera, Linn.
Ceratophyllum demersum, Linn.
Rhizophora mucronata, Lam.
Bruguiera Rheedii, Blume.
Lumnitzera coccinea, Wight et Arn.
Gyrocarpus Jacquini, Roxb.
Barringtonia speciosa, Linn. f.
Melastoma Novæ-Hollandiæ, Naud.
Homalium Vitiense, Benth.
Tacca maculata, Seem.
Hydrocotyle Asiatica, Linn.
Marlea Vitiensis, Benth.
Guettarda speciosa, Linn.
Canthium odoratum, Seem.
Morinda citrifolia, Linn.
Ageratum conyzoides, Linn.
Adenostemma viscosum, Forst.
Siegesbeckia orientalis, Linn.
Eclipta prostrata, Linn.
Bidens pilosa, Linn.
Glossogyne tenuifolia, Cass.
Myriogyne minuta, Less.
Sonchus asper, Fuchs.
Scævola Kœnigii, Vahl.
S. sericea, Forst.
Plumbago Zeylanica, Linn.
Jasminum didymum, Forst.
J. simplicifolium, Forst.
Ochrosia elliptica, Labill.
 (?) *Tabernæmontana orientalis*, R. Br.
Hoya bicarinata, A. Gray (*H. australis*, R. Br.).
Erythræa australis, R. Br.
Limnanthemum Kleinianum, Griseb.
Cordia subcordata, Lam.
C. aspera, Forst.
- Tournefortia argentea*, Linn. f.
Batatas paniculata, Chois.
Ipomœa peltata, Chois.
I. Turpethum, R. Br.
I. denticulata, Chois.
I. Pes-Capræ, Sw.
I. longiflora, R. Br.
Aniseia uniflora, Chois.
Solanum oleraceum, Dunn.
S. tetrandrum, R. Br.
Physalis Peruviana, Linn.
Limnophila fragrans, Seem.
Vandellia crustacea, Benth.
Vitex trifolia, Linn.
Plantago major, Linn.
Pisonia inermis, Forst.
Boerhaavia diffusa, Linn.
Euxolus caudatus, Moq.
Euphorbia Atoto, Forst.
Excæcaria Agallocha, Linn.
Casuarina equisetifolia, Forst.
Cocos nucifera, Linn.
Typha angustifolia, Linn.
Lemna melanorrhiza, F. Muell. et Kurz.
Dioscorea sativa, Linn.
Geitonoplesium cymosum, A. Cunn.
Lepironia mucronata, L. C. Rich.
Gahnia aspera, Spr.
Rhynchosia aurea, Vahl.
Fimbristylis communis, Kunth.
Mariscus flavus, Kunth.
Andropogon refractus, R. Br.
Imperata arundinacea, Cyrill.
Paspalum scrobiculatum, Linn.
Lycopodium volubile, Forst. (and various other Cryptogams).

CLASSIFICATION OF THE NATURAL ORDERS ACCORDING TO THE
SYSTEM ADOPTED IN THE PRESENT WORK.*

CLASS I. **DICOTYLEDONS.**

Stem, when perennial, consisting of a pith in the centre, of one or more concentric circles of woody tissue, and of the bark on the outside. Embryo with 2 cotyledons (rarely 0), the young stem in germination proceeding from between the 2 lobes of the embryo, or from a notch at its summit.

SUBDIVISION I. **ANGIOSPERMÆ.** *Ovules enclosed in an ovary, and the seeds in a seed-vessel.*

SUBCLASS I. **POLYPETALÆ.**

Petals several, distinct, sometimes 0, rarely united.

Series I. **THALAMIFLORÆ.** *Torus small or elongated, rarely expanded in a disk. Ovary superior. Stamens definite or more frequently indefinite.*

I. **Ranunculaceæ.** Herbs with radical or alternate leaves, or climbers with opposite leaves. Stipules 0. Sepals usually coloured and deciduous. Petals in 1 series or 0. Stamens ∞ . Arillus 0. (p. 3.)

II. **Dilleniaceæ.** Trees shrubs or undershrubs, with alternate leaves. Stipule 0. Sepals usually herbaceous and persistent. Petals in 1 series. Stamens usually ∞ . Seeds with an arillus or strophiola. (p. 3.)

III. **Anonaceæ.** Shrubs trees or woody climbers, with alternate leaves. Stipules 0. Sepals 3. Petals in 2 series of 3 each (rarely combined in a mass). Petals smaller than the inner sepals or 0. Stamens definite, opposite the petals. Carpels 6 or fewer. (p. 4.)

IV. **Cruciferæ.** Herbs with alternate leaves. Stipules 0. Sepals 4. Petals 4. Stamens 6, tetradynamous, or rarely 4 or ∞ . Placentas 2, connected by a false dissepiment. Albumen 0. Embryo curved. (p. 5.)

V. **Capparidææ.** Herbs shrubs or trees. Stipules often prickly. Sepals 4 (2 outer ones sometimes united). Petals 4 (rarely more, or 0 or

united). Stamens ∞ , or, if few, not tetradynamous. Placentas 2 or 0. Albumen 0. Embryo curved. (p. 6.)

VI. **Violaceæ.** Herbs or shrubs. Stipules herbaceous or small. Sepals 5. Petals 5 (often irregular). Anthers 5, on short filaments, connivent or connected in a ring round the pistil. Placentas usually 3. Albumen fleshy. Embryo rather large. (p. 6.)

VII. **Bixineæ.** Trees or shrubs. Stipules 0. Sepals 5 or fewer. Petals various, often 0. Stamens ∞ . Placentas 2, 3, or more. Albumen fleshy. Embryo rather large. (p. 7.)

VIII. **Pittosporeæ.** Trees shrubs and undershrubs, or twiners with alternate leaves. Stipule 0. Flowers regular or oblique. Stamens as many as petals. Embryo minute. (p. 7.)

IX. **Portulacææ.** Herbs often succulent, with alternate or opposite leaves. Stipules scarious or changed into hair. Sepals 2. Petals more numerous than the sepals. Stamens ∞ or rarely definite. Placentas central. (p. 8.)

X. **Elatineæ.** Herbs or undershrubs, with small opposite leaves. Stipules small. Flowers hermaphrodite. Stamens definite. (p. 10.)

XI. **Guttiferæ.** Trees or shrubs, with opposite leaves. Stipules 0. Flowers polygamous or 1-sexual. Stamens ∞ . (p. 10.)

XII. **Ternstroemiaceæ.** Trees or shrubs, with alternate leaves. Stipules 0. Flowers hermaphrodite. Stamens ∞ or very rarely definite. (p. 13, et Suppl. p. 425.)

XIII. **Malvaceæ.** Herbs shrubs or trees, with alternate leaves. Stipules usually persistent. Stamens monadelphous. Anthers 1-celled. (p. 15 et Suppl.)

XIV. **Sterculiaceæ.** Herbs shrubs or trees, with alternate leaves. Stipules usually present. Stamens monadelphous, or, if free, definite and altering with petals. Anthers 2-celled. (p. 23.)

XV. **Tiliaceæ.** Trees or shrubs, rarely herbs, with alternate leaves. Stipules usually present. Stamens ∞ , free, or scarcely united at the base. Anthers 2-celled. (p. 26.)

* In drawing up this Key I have freely availed myself of the writings of Endlicher, Lindley, Bentham, and J. D. Hooker.

Series II. **DISCIFLORÆ.** *Torus usually thickened or expanded into a disk, either free or adnate to the ovary or to the calyx, or to both, rarely reduced to glands or wanting. Stamens as many, or twice as many as petals, or fewer. Ovary superior, or partly immersed in the disk (inferior in Rhamnaceæ), divided into cells with axile placentas, or the carpels distinct.*

XV*. **Humiriaceæ.** Trees or shrubs, often with balsamic juice. Leaves alternate, undivided, coriaceous, exstipulate. Sepals small. Disk often lobed or toothed. Stamens 10-∞; anthers with a fleshy conical connective. Ovary entire, 5-7-celled. Ovules 1 or 2 in each cell. Fruit drupaceous. Albumen fleshy. (See Suppl.)

XVI. **Malpighiaceæ.** Woody climbers, rarely trees or erect shrubs, with opposite, rarely alternate leaves. Stipules present. 2 glands on the outside of some or all the calyx-lobes (wanting in some genera). Disk not large. Gynœcium lobed or apocarpous. Ovules 1 in each cell. Albumen 0. (p. 29.)

XVII. **Geraniaceæ.** Herbs or shrubs, articulate or not, with toothed divided or compound leaves without glandular dots. Stipules usually present. Disk reduced to 5 glands or obsolete. Ovary angular or lobed. Ovules 1, 2 or rarely more in each cell. Albumen 0, or rarely fleshy. (p. 30.)

XVIII. **Rutaceæ.** Trees or shrubs, very rarely herbs, with compound or rarely simple leaves, always marked with pellucid dots. Stipules 0. Disk within the stamens. Ovary rarely entire, usually lobed or the carpels distinct, with the styles connate or gynœcium entirely apocarpous. Ovules 2 in each cell. Albumen fleshy or 0. (p. 30.)

XIX. **Simarubeæ.** Trees or shrubs, of bitter taste, with compound or rarely simple leaves, without any glandular dots. Stipules 0. Disk within the stamens. Ovary rarely entire, usually lobed or the carpels distinct, with the styles connate or gynœcium entirely apocarpous. Ovules usually 1 in each cell. (p. 33.)

XX. **Ochnaceæ.** Trees or shrubs, with alternate leathery simple leaves. Stipules present. Disk after anthesis enlarging. Anthers elongated. Ovary generally lobed. Ovules 1, 2, or ∞ in each cell. (p. 34.)

XXI. **Burseraceæ.** Trees or shrubs not dotted, but with a balsamic juice. Leaves ternately or pinnately compound. Stipules 0. Disk free or adnate to the calyx-tube. Ovary entire. Ovules usually 2 in each cell. Albumen 0. Cotyledons much folded, or rarely thick and fleshy. (p. 34.)

XXII. **Meliaceæ.** Trees or shrubs, with compound or rarely simple leaves. Stipules 0. Stamens monadelphous. Anthers sessile, or rarely

stipitate within or on the top of the staminal tube. Ovary entire. Ovules 2 in each cell. Albumen 0 or fleshy. (p. 35.)

XXIII. **Chailletiacæ.** Trees or shrubs, with alternate simple leaves. Stipules present. Petals 2-lobed. Disk cupshaped or divided into 4 scales. Ovary entire. Ovules 2 in each cell.

XXIV. **Olacineæ.** Trees or shrubs. Stipules 0. Stamens twice as many as petals, or, if the same number as petals, opposite to them. Petals valvate. Ovary 2- or 3-celled at the base, 1-celled at least at the top; placenta central, with 2 or 3 pendulous ovules. (p. 38.)

XXV. **Icacineæ.** Trees or shrubs. Stamens as many as petals or corolla-lobes, and alternate with them. Petals valvate. Ovary 1-celled, with 2, rarely 1 ovule, pendulous from one side or the apex of the cavity. Seed pendulous. (p. 39.)

XXVI. **Ilicineæ.** Trees or shrubs. Stipules 0. Petals or corolla-lobes imbricate. Ovary 3- or more celled. (p. 39.)

XXVII. **Celastrineæ.** Trees or shrubs, with simple leaves. Stipules 0 or minute and deciduous. Calyx-lobes imbricate. Petals spreading, imbricate. Stamens alternating with the petals or fewer. Ovary entire. (p. 40.)

XXVIII. **Rhamneæ.** Trees or shrubs, with simple leaves. Stipules usually present. Calyx-lobes valvate. Petals small concave or 0. Stamens opposite the petals. Ovary entire, often inferior. (p. 41.)

XXIX. **Ampelideæ.** Small trees or shrubs, often climbers, with simple or compound leaves, the petiole usually expanded into a stipule. Calyx-lobes imbricate. Petals valvate. Stamens opposite the petals. Ovary entire. Albumen cartilagineous. Embryo small. (p. 44.)

XXX. **Sapindaceæ.** Trees shrubs or climbers, with simple or compound leaves. Stamens anisomerous with the petals, or twice as many as petals, or of the same number, often within the disk. Style 1. Ovules ascending. (p. 45.)

XXXI. **Anacardiaceæ.** Trees or shrubs, with simple or compound leaves. Stamens as many or twice as many as petals, never within the disk. Ovules suspended from an erect panicle or from the top or side of the cell with an inferior micropyle. (p. 49.)

Series III. **CALYCIFLORÆ.** *Stamens and petals usually inserted on the margin of a thin disk lining the base or the whole of the calyx-tube, and free from the ovary, unless the calyx-tube is also adnate to it. Stamens definite or ∞. Ovary either free and superior, or enclosed in the calyx-tube, or inferior and adnate to the calyx-tube.*

XXXII. **Connaraceæ.** Trees or shrubs.

Leaves alternate, 1-3-foliolate or pinnate. Stipules 0. Flowers regular. Stamens definite. Carpels of the gynœcium 1-5, free. Ovules 2, ascending from the base, orthotropous. Albumen copious. (p. 53.)

XXXIII. Leguminosæ. Trees shrubs or herbs. Leaves alternate or rarely opposite, often compound. Stipules rarely wanting. Gynœcium free, consisting of a single excentric carpel with a terminal style, the ovules inserted along the upper or inner angle of the cavity. Albumen usually scanty or 0. (p. 54.)

XXXIV. Chrysobalanæ. Trees or shrubs. Leaves alternate, simple, with stipules. Gynœcium free, consisting of a single carpel, 1-2-celled, with a style proceeding from its base. Albumen 0. (p. 74.)

XXXV. Rosaceæ. Shrubs or herbs. Leaves alternate, with stipules. Flowers regular. Stamens usually indefinite. Carpels of the gynœcium 1 or several, free and distinct, or, if adnate to the calyx-tube, either distinct or combined into a single ovary. Styles distinct, proceeding from the apex of the ovaries. Albumen usually 0. (p. 75.)

XXXVI. Myrtaceæ. Trees or shrubs, rarely half-shrubs. Leaves without stipules, opposite or rarely alternate, feather-veined or seldom 3-5-nerved, generally dotted. Calyx-lobes imbricate or open. Stamens ∞ , or rarely definite. Ovary very often inferior, 2- ∞ -celled, with 2- ∞ ovules in each cell or rarely 1-celled, with subbasilar placentas. Albumen 0. (p. 76 and Suppl.)

XXXVII. Melastomaceæ. Trees shrubs or herbs. Leaves without stipules, opposite, 3-9-nerved, or rarely feather-veined. Calyx-segments often imbricate or open. Stamens very often definite; anthers at the apex 1-2-porous or rarely with 2 slits. Ovary adhering to calyx or free, 2- ∞ -celled, cells with ∞ ovules. Albumen 0. (p. 84.)

XXXVIII. Rhizophoreæ. Trees or shrubs, often maritime, with opposite leaves. Stipules deciduous. Flowers regular. Calyx-lobes valvate. Petals usually notched or jagged. Stamens twice as many as petals or more. Ovary usually inferior, several-celled, with 2 or more ovules pendulous from the apex of each cell. Style undivided. Seeds usually solitary, with or without albumen. (p. 90.)

XXXIX. Combretaceæ. Trees shrubs or woody climbers. Leaves opposite or alternate, without stipules. Flowers regular or nearly so. Stamens definite or rarely indefinite. Ovary inferior, 1-celled, with 2 or more solitary ovules pendulous from the apex of the cavity. Style undivided. Seed solitary, without albumen. Cotyledons convolute. (p. 92.)

XL. Homalineæ. Trees or shrubs. Leaves alternate, rarely almost opposite or verticillate, with

or rarely without stipules. Calyx free or adhering to ovary, 4-15-merous. Petals 4-15. Stamens equal in numbers to petals and opposite to them, and, when indefinite, collected in fascicles placed opposite the petals, and alternating with the glands which are opposite the sepals. Ovary 1-celled, with parietal placentas. Styles 1-6. Seeds albuminous. (p. 95.)

XLI. Passifloreæ. Trees or shrubs, generally climbers. Leaves alternate, with stipules. Flowers regular. Petals persistent with the calyx-lobes, and often resembling them. Stamens definite. Ovary stalked, 1-celled, with parietal placentas. Style branched. Seeds albuminous. (p. 97.)

XLII. Papayaceæ. Trees, rarely herbs, milky, with simple spongy stem. Leaves simple. Stipules 0. Flowers 1-sexual, generally dioecious. Calyx 5-merous. Corolla gamopetalous in σ , 5-petalous in ρ . Stamens 10 in fl. σ , 0 in fl. ρ . Ovary 1-5-celled, with parietal placentas. Ovules ∞ . Seeds albuminous. (p. 97.)

XLIII. Samydeæ. Trees or shrubs. Leaves alternate, often with pellucid dots. Stipules small or 0. Flowers regular or nearly so. Calyx free, 4-5-merous. Petals 0, or 4-5, sometimes ∞ . Stamens definite or indefinite, arranged in single or double series. Ovary 1-celled with parietal placentas. Style entire or branched. Seeds albuminous. (p. 97.)

XLIV. Balanophoreæ. Succulent, leafless, root parasites. Flowers much reduced, usually 3-merous, 1-sexual. Stamens various, usually 3. Ovary 1-celled. Ovules solitary, pendulous. (p. 98.)

XLV. Taccaceæ. Perennial herbs, with tuberos root and radical leaves. Flowers regular, hermaphrodite. Perianth 6-merous, limb petaloid. Stamens 6, filaments hooded at apex. Ovary inferior, 1-celled or 3 half-celled. Ovules ∞ . Styles 3. Seeds albuminous. (p. 100.)

XLVI. Cucurbitaceæ. Herbs, either prostrate or climbing with tendrils. Leaves alternate, without stipules. Flowers 1-sexual, regular. Stamens 3-5. Ovary inferior, at first 1-celled, the (3) parietal placentas soon meeting in the axis and dividing the cavity into 3 or 6 cells, or remaining 1-celled with 1 placenta. Style entire or branched. Seeds without albumen. (p. 103.)

XLVII. Saxifragaceæ. Shrubs or herbs. Leaves various, with or without stipules. Flowers regular or nearly so. Stamens definite or rarely indefinite. Carpels of the gynœcium usually united into 1- or several-celled ovary, at least at the base, free or more or less adnate or inferior. Styles usually distinct or readily separable. Albumen usually copious. (p. 108.)

XLVIII. Hederaceæ. Trees shrubs

rarely herbs. Leaves usually alternate, with or without stipules. Calyx-teeth small or obsolete. Petals 5-∞, valvate in æstivation. Stamens definite or indefinite, inserted round an epigynous disk. Ovary inferior, 2-∞-celled; cells 1-ovulate, pendulous. Fruit drupaceous, often succulent. Seeds albuminous, with a minute embryo. (p. 111.)

XLIX. Cornaceæ. Trees shrubs or rarely herbs. Leaves or rarely alternate. Stipules 0. Petals valvate. Stamens as many as or twice as many as petals. Ovary inferior, 1- or 2-celled, with 1 pendulous ovule in each cell. Style simple. Seeds albuminous, the embryo nearly as long as the albumen. (p. 119.)

SUBCLASS II. **MONOPETALÆ.**

Petals united into a single lobed corolla, very rarely free.

L. Loranthaceæ. Parasitical shrubs or trees. Leaves opposite or alternate, without stipules. Petals free or united into a single lobed corolla. Stamens opposite the corolla-lobes or petals. Ovary inferior, 1-celled, with 1 erect ovule, not perceptible until the flowering is over. Seeds albuminous. (p. 119.)

LI. Rubiaceæ. Trees shrubs or herbs. Leaves opposite, with interpetiolar or sheathing stipules. Stamens as many as corolla-lobes, and alternate with them. Ovary inferior, 2- or more celled, very rarely reduced to 1 cell. Seeds albuminous. (p. 121.)

LII. Compositæ. Herbs shrubs or rarely trees. Leaves opposite or alternate, without stipules. Flowers or florets generally collected in heads, each head surrounded by a calyx-like involucre, the true calyx of each floret wanting or reduced to a pappus. Stamens as many as corolla-lobes and alternate with them. Ovary inferior, 1-celled, with 1 erect ovule. Seeds without albumen. (p. 139.)

LIII. Goodeniaceæ. Herbs or shrubs. Leaves alternate or radical. Flowers more or less irregular. Stamens 5. Ovary inferior, at least as to the corolla, 2-celled or rarely 1-celled. Style with a cup-shaped or peltate indusium under the stigma. Seeds albuminous. (p. 145.)

LIV. Ericaceæ. Shrubs. Leaves alternate. Flowers regular. Stamens usually free from the corolla, twice as many as its lobes. Anthers 2-celled, opening in terminal pores, rarely in longitudinal slits. Ovary inferior or superior, with as many, or rarely fewer, cells as corolla-lobes. Seeds albuminous. (p. 146.)

LV. Myrsinæ. Trees or shrubs. Leaves alternate, usually dotted. Flowers regular. Stamens as many as corolla-lobes and opposite to them. Ovary 1-celled, with peltate ovules attached to a

free central placenta. Fruit succulent or hard, usually indehiscent. Seeds rarely without albumen. (p. 147.)

LVI. Sapotaceæ. Trees or shrubs, the juice often milky. Leaves alternate. Flowers regular. Corolla-lobes as many, or twice as many as calyx-segments. Stamens as many as corolla-lobes, and opposite to them, or twice as many. Ovary 2- or more celled, with 1 ovule in each cell. Fruit succulent or hard, usually indehiscent. Seeds with or without albumen. (p. 150.)

LVII. Ebenaceæ. Trees or shrubs, not milky. Leaves alternate. Flowers regular, usually dicæcious. Corolla-lobes 3-5. Stamens indefinite (few or many). Ovary 3- or more celled, with 1 or 2 ovules in each cell. Fruit succulent, usually indehiscent. Seeds albuminous. (p. 151.)

LVIII. Styraceæ. Trees or shrubs. Leaves alternate. Flowers regular, hermaphrodite. Corolla-lobes as many or twice as many as calyx-lobes. Stamens usually more than twice as many, rarely twice as many as corolla-lobes, or fewer. Ovary, or at least the fruit, more or less inferior, 2-5-celled, with 2 or more ovules in each cell. Fruit usually succulent and indehiscent. Seeds albuminous. (p. 152.)

LIX. Jasmineæ. Trees or shrubs, often climbing. Leaves opposite or rarely alternate. Flowers regular. Corolla with 4, 5, or rarely more lobes, rarely 2, petaled or 0. Stamens 2, alternating with the carpels. Ovary 2-celled, with 1 or 2 ovules in each cell. Fruit succulent or capsular. Seeds with or without albumen. (p. 153.)

LX. Apocynæ. Trees or shrubs, often twining, rarely perennial herbs. Leaves opposite or rarely scattered. Flowers regular. Stamens 5, alternate with the corolla-lobes; anthers connivent around the stigma. Ovary of 2 distinct carpels, the styles connected upwards, or rarely the carpels united from the base. Fruit of 1 or 2 follicles, drupes, or berries. Seeds usually albuminous. (p. 155.)

LXI. Asclepiadæ. Twiners or rarely herbaceous perennials or shrubs. Leaves opposite. Flowers regular. Stamens 5, alternate with the corolla-lobes; anthers connate round the stigma, 2- or 4-celled; pollen consolidated in 1 or 2 masses in each cell. Ovary of 2 distinct carpels; the styles united upwards. Fruit follicular. Seeds with little albumen. (p. 161.)

LXII. Loganiaceæ. Trees shrubs or herbs. Leaves opposite, often connected by stipules or raised lines. Flowers regular. Stamens as many as corolla-lobes, and alternate with them. Anthers free. Ovary usually 2-celled. Style single. Fruit a capsule or berry. Seed albuminous. (p. 163.)

LXIII. Gentianeæ. Herbs, with a bitter

taste. Leaves opposite or alternate. Flowers regular or nearly so. Stamens as many as corolla-lobes, and alternate with them. Anthers free. Ovary 1-celled, with 2 or rarely more parietal placentas, rarely completely dividing it into 2 cells. Ovules ∞ and minute. Style single. Fruit a capsule, rarely indehiscent. Seeds albuminous. (p. 167.)

LXIV. Boraginæ. Herbs usually coarsely hirsute, or in drupaceous genera trees or shrubs. Leaves usually alternate. Flowers regular, in cymes or unilateral racemes. Stamens as many as corolla-lobes and alternate with them, or very rarely fewer. Ovary 2- or 4-celled with 1 ovule in each cell, or 2-celled with 2 parallel ovules in each cell. Style single, entire, or rarely forked. Fruit a drupe, or dry and separating into 2 or 4 nuts. Seeds with little or no albumen. (p. 168.)

LXV. Convolvulæ. Twiners, or rarely erect herbs shrubs or trees. Leaves alternate. Flowers regular, usually axillary. Corolla-limb folded in bud. Stamens 5, alternate with the corolla-lobes or angles. Ovary of 2 to 4 cells or carpels, with 1 or 2 erect ovules in each. Style single and entire, or 2-branched or 2 distinct styles. Fruit capsular or succulent and indehiscent. Seeds with little or no albumen. Cotyledons very much folded or inconspicuous. (p. 170.)

LXVI. Solanacæ. Herbs, shrubs or soft-wooded trees. Leaves alternate. Flowers regular or nearly so. Corolla-lobes folded or rarely imbricate in bud. Stamens as many as corolla-lobes, and alternate with them. Ovary 2-celled or spuriously 4-celled (rarely 3- or 4-celled), with several ovules in each cell. Style single. Fruit a berry or a capsule. Seeds albuminous, the embryo usually curved or annular. (p. 173.)

LXVII. Scrophularinæ. Herbs, or rarely shrubs or small trees. Leaves alternate or opposite. Flowers irregular, with the corolla-lobes bilabiate or imbricate in the bud, or rarely nearly regular, with the corolla-lobes folded. Perfect stamens, 4 in pairs or 2, the 5th rudimentary wanting or very rarely perfect. Ovary 2-celled, with several ovules in each cell. Fruit a capsule or very rarely a berry. Seeds albuminous. Embryo usually straight. (p. 180.)

LXVIII. Cyrtandree. Herbs or, when shrubby, often epiphytical or climbing, rarely erect shrubs. Leaves opposite. Flowers usually irregular. Perfect stamens 4, in pairs or rarely 2 only. Ovary 1-celled, with 2 parietal placentas and ∞ ovules. Fruit a berry or capsule. Seeds with or without albumen. (p. 181.)

LXIX. Acanthacæ. Herbs or shrubs, rarely twiners. Leaves opposite. Flowers more or less irregular. Perfect stamens 4 in pairs, or 2 only. Ovary 2-celled, with 2 or more superposed ovules

in each cell. Fruit a capsule opening elastically in 2 valves. Seeds without albumen, usually subtended by hooked or rarely cup-shaped or minute retinacula. (p. 183.)

LXX. Verbenacæ. Herbs, shrubs or trees. Leaves opposite, simple, rarely compound. Corolla regular or irregular. Stamens as many as or fewer than the lobes of the corolla. Ovary rarely lobed, 2- or 4-celled. Cells 1- or 2-ovuled. Seeds with or without albumen. (p. 186.)

LXXI. Labiatæ. Herbs or shrubs. Leaves opposite, simple. Corolla irregular or nearly regular. Stamens 2 or 4. Ovary 4-lobed to the base, 4-celled, cells 1-ovuled. Style between the lobes. Fruit of 4 small nuts. Seeds with or without albumen. (p. 191.)

LXXII. Plantaginæ. Herbs or rarely undershrubs. Flowers capitate or spiked, green or brownish. Corolla regular, scarious, 4-lobed. Stamens 4, filaments very long, flexuous. Ovary entire, 2-celled, ovules on the septum. Capsule circumsciss. Seeds peltate, albuminous. (p. 193.)

LXXIII. Plumbaginæ. Herbs or rarely undershrubs. Leaves simple. Flowers in heads spikes or panicles. Petals 5, often united at base. Stamens 5, distinct, or united at base. Ovary 1-celled, with 1 suspended ovule. Styles 5. Seed albuminous. (p. 194.)

SUBCLASS III. INCOMPLETÆ.

Perianth really or apparently simple or 0 (except in some Molluginacæ, Euphorbiacæ).

LXXIV. Nyctaginæ. Shrubs, trees and herbs. Perianth elongate, tubular. Stamens hypogynous. Style 1. Ovary 1-celled. Ovule 1, erect. Embryo folded. Albumen scanty. (p. 194.)

LXXV. Amaranthacæ. Herbs, rarely shrubs or trees. Perianth 5 leaflets, scarious. Stamens perigynous, monadelphous. Style usually simple. Ovary 1-celled. Ovules 1 or more, pendulous from basilar cords. Embryo annular in mealy albumen. (p. 196.)

LXXVI. Molluginacæ. Herbs or shrubs, leaves usually alternate. Calyx divided to the base. Petals 5, fewer or 0. Styles 1-5, often wanting. Ovary 1-celled, 1- ∞ -ovulate. Placentas basal or nearly so. Embryo curved in mealy albumen. (p. 200.)

LXXVII. Polygonacæ. Herbs. Stipules sheathing. Perianth 5- or 6-partite. Stamens 6-9, perigynous. Styles 2 or 3, very short. Ovary 1-celled. Ovule 1, erect. Embryo straight or curved in mealy albumen. (p. 200.)

LXXVIII. Lauracæ. Shrubs or trees, rarely herbs. Perianth of 4-8 segments. Stamens 12-15, perigynous, anthers opening by recurved

valves. Style 1. Ovule 1, pendulous. Embryo with thick cotyledons. Albumen 0. (p. 201.)

LXXIX. Hernandiaceæ. Trees, leaves exstipulate. Flower monœcious. Perianth in fl. ♂ 6-, in fl. ♀ 10-partite, segments in double series, and valvate in æstivation. Stamens 3, rarely 4, anthers opening longitudinally. Albumen 0. (p. 203.)

LXXX. Myristicaceæ. Trees, often yielding a red juice. Leaves alternate, without stipules. Flowers unisexual. Perianth 3-, very rarely 2- or 4-fid, valvate in æstivation, segments in single series. Stamens 3-∞, anthers opening longitudinally. Ovary 1-celled, 1-ovulate. Ovule erect. Albumen ruminant. (p. 204.)

LXXXI. Monimiaceæ. Shrubs or trees. Leaves opposite. Perianth 4-15-lobed. Stamens perigynous. Anthers by slits or recurved valves. Carpels ∞, 1-celled, 1-ovulate. Ovule pendulous. Embryo small in fleshy albumen. (p. 205.)

LXXXII. Thymelæaceæ. Shrubs or trees, with rough fibrous bark. Flowers usually hermaphrodite. Perianth tubular, with 4-5 imbricate lobes. Stamens 1-10, inserted on perianth. Style 1. Ovary 1-2-celled, cells 1-2-ovulate. Ovules pendulous. Seeds with or without albumen. (p. 206.)

LXXXIII. Santalaceæ. Herbs or shrubs, rarely trees. Leaves generally alternate. Stipules 0. Perianth 3-5-lobed, valvate. Stamens 3-6. Style simple or 3-fid. Ovary 1-celled. Ovules 2-5, pendulous from a central placenta. Fruit often inferior, 1-seeded. (p. 209.)

LXXXIV. Euphorbiaceæ. Herbs shrubs or trees. Leaves simple, rarely compound. Flowers unisexual. Ovary of 3, rarely 2 or more than 3 united carpels, with 1 or 2 pendulous ovules, and usually separating into cocci. Seeds albuminous. (p. 215.)

LXXXV. Urticaceæ. Herbs shrubs or trees. Flowers unisexual, fl. ♂ small, green, not in catkins. Stamens opposite the perianth-segments. Ovary free. Ovule 1 (or if 2, one always abortive). Styles 2 or rarely 1, unilateral. Seeds albuminous. (p. 234.)

LXXXVI. Ceratophylleæ. Submerged herbs with verticillate leaves. Flowers unisexual. Stamens 12-20. Ovary free, 1-celled. Ovule 1, pendulous. Style pervious. Stigma filiform, oblique. Albumen 0. (p. 258.)

LXXXVII. Chloranthaceæ. Herbs or shrubs. Leaves opposite. Flowers 1- or 2-sexual. Perianth 0. Stamens 1-3, epigynous. Ovary 1-celled. Ovule 1-pendulous. Albumen fleshy and oily. (p. 258.)

LXXXVIII. Piperaceæ. Herbs or shrubs.

Flowers bisexual, minute, closely packed in slender spikes. Stamens usually 2, hypogynous. Ovary 1-celled. Ovule 1, erect. Albumen mealy, aromatic. (p. 259.)

LXXXIX. Casuarineæ. Shrubs or trees, with jointed shoots, the internodes of which are striated. Leaves (except in 1 species) 0. Flowers unisexual. Stamen 1, anthers opening longitudinally. Ovary 1-celled, with 1 or 2 ascending ovules. Styles 2. Seed erect, without albumen. (p. 262.)

SUBDIVISION II. GYMNOSPERMÆ.

Ovules naked, not enclosed in an ovary.

XC. Coniferæ. Trees or shrubs. Stem repeatedly branched, continuous. Leaves simple. Anthers in the male, ovules in the female, inserted on scales which often form catkins or cones. (p. 263 et Suppl.)

XCI. Cycadææ. Shrubs or trees. Stem continuous, usually simple, rarely branched. Leaves pinnate. Scales of the cone antheriferous. (p. 268.)

CLASS II. MONOCOTYLEDONS.

Stem, when perennial, without pith, bark, or rings of wood, but consisting of a cellular axis with scattered longitudinal vascular bundles. Veins of the leaves usually parallel, not netted, or, if so, by parallel veins. Perianth, when present, usually 3- or 6-merous, the leaflets all petaloid, often absent, the flowers being contained in the axils of scales arranged in spikelets. Stamens usually 3 or 6. Embryo with 1 cotyledon, the plumule being developed in a cavity at its side, and the rootlets from its radical end, which does not elongate.

XCII. Palmeæ. Shrubs or trees, stem usually simple. Flowers unisexual, rarely hermaphrodite. Perianth of 6 coriaceous or fleshy leaflets. Stamens 6, rarely fewer or more. Ovary 3-celled or ovaries 3, cells 1-ovuled. Albumen even or ruminant. (p. 269.)

XCIII. Pandanææ. Trees shrubs or herbs. Flowers unisexual, in dense spikes or catkins. Perianth 0 or imperfect. Stamens ∞, anthers stalked. Ovaries 1-celled, usually numerous. Stigmas sessile or on slender style. (p. 280.)

XCIV. Aroideæ. Herbs or shrubs. Leaves sheathing at base, often net-veined. Flowers on a simple spadix, with a spathe. Perianth 0 or of small scales. Stamens definite or indefinite. Anthers sessile. (p. 283.)

XCV. Lemnaceæ. Water plants, with minute, scale-like fronds, from which the roots are

suspended. Flowers appearing by threes in a cleft of the frond, surrounded by a spathe, unisexual. Perianth 0. Stamen 1. Ovary 1-2-celled. Ovule 1, erect in each cell. Albumen 0. (p. 288, et Suppl.)

XCVI. Scitamineæ. Herbs, occasionally trees. Leaf-veins usually pinnate. Flowers irregular, with 1 to 5 perfect stamens, the remainder of the normal 6 being petal-like and barren or wanting. Ovary inferior. Seed albuminous. (p. 288.)

XCVII. Orchideæ. Herbs or undershrubs. Flowers hermaphrodite. Perianth of 6 leaflets in 2 whorls, very irregular. Anthers 1 or 2, sessile in a stigmatiferous column. Ovary 1-celled. Embryo homogeneous. (p. 293.)

XCVIII. Amaryllideæ. Herbs, generally bulbous, rarely fibrous-rooted, or with woody stem. Flowers hermaphrodite. Perianth regular, of 6 segments, usually petal-like. Stamens 6. Ovary inferior, 3-celled, 1-∞-ovuled. Seeds albuminous. (p. 305.)

XCIX. Dioscoreæ. Twining shrubs, with large tubers, either above or below the ground. Flowers unisexual. Ovary inferior, 3-celled, cells with 1-2 ovules. Seed albuminous. (p. 305.)

C. Smilaceæ. Twining plants, with tendrils and sometimes fleshy tubers. Leaves reticulated. Flowers bisexual or polygamous. Perianth regular, of 6 segments. Stamens usually 6, rarely 3 or ∞. Ovary superior, 3-celled, cells 1-∞-ovuled. Seed albuminous. (p. 309.)

CI. Liliaceæ. Herbs, with creeping bulbous or clustered root-stock, rarely shrubs or trees. Flowers usually hermaphrodite. Perianth regular, all petal-like. Stamens 6. Ovary superior, 3-celled, cells 1, several in each cell. Seed albuminous. (p. 310.)

CII. Commelynaceæ. Herbs, leaves usually sheathing at base. Perianth slightly irregular, the inner segments very delicate, petal-like, the outer more herbaceous. Stamens 6 or fewer. Ovary superior, 3- or 2-celled. Embryo on the edge of the albumen. (p. 313.)

CIII. Juncaceæ. Herbs. Flowers hermaphrodite. Perianth regular, of 6 dry brown lanceolate leaflets. Stamens 3 or 6. Ovary superior, 1- or 3-celled. (p. 314.)

CIV. Cyperaceæ. Herbs, with leaf-sheath entire. Perianth 0, or of bristles or minute scales. Stamens 1-12, anthers terminal, 2-celled. Ovary 1-celled, 1-ovuled. Pericarp coriaceous. Embryo at the base of the albumen. (p. 315.)

CV. Gramineæ. Herbs shrubs or tree-like shrubs. Culms fistular, jointed. Leaves sheathing, sheaths split to the base. Perianth 0 or of 2 minute scales. Stamens usually 3, rarely more or fewer. Anthers versatile. Ovary 1-celled, 1-

ovuled. Pericarp membranaceous, adhering firmly to the seed. Embryo at the side of the base of the albumen. (p. 320.)

CLASS III. ACOTYLEDONS.

Plants cellular or vascular, without true stamens, pistils, or ovules. Organs of fructification often minute, giving origin to microscopic spores, by which the species are propagated. Spores germinating by microscopic threads, or by a prothallium. Fecundation (where known) effectuated by spermatozoids (not by pollen grains).

SUBCLASS I. ACROGENS.

Plants usually furnished with distinct stem and leaves, the latter symmetrically arranged. Stems usually dichotomously branched, sometimes reduced to simple fronds or membranous green expansions, then furnished with a midrib. Fructification various.

CVI. Lycopodiaceæ. Plants never aquatic. Vernation somewhat circinate. Stem elongate, erect, creeping or pendulous. Leaves imbricate all round or 2- or 4-stichous, usually small, flat or subulate. Fructification of capsules, which are axillary in the upper leaves or in the scales of a cone, sessile, 1-3-celled, bursting by 2 or 3 valves, full of microscopic spores marked by 3 radiating lines. (p. 327.)

CVII. Filices. Plants rarely aquatic. Vernation usually circinate. Stem of cellular tissue traversed by spirally marked vessels, often collected into hard woody bundles. Fructification of very minute capsules full of microscopic spores, situated on the under surface of the frond, or on separate branches of the frond, rarely of larger capsules, confluent under the under-surface of the frond or collected spikes. (p. 331.)

Equisetaceæ. Plants rarely aquatic. Leaves reduced to a membranous sheath. Stem striated, articulated, fistular, chiefly consisting of cellular substance, but strengthened with tracts of hard woody tubes. Spiral vessels small, but abundant. Spore-cases borne on peltate scales, splitting on one side, without operculum, and with elaters to every spore. (This small order dropped out of its place in the making up of the sheets, and has been placed at the end, p. 423).

CVIII. Musci. Erect or creeping, small, usually terrestrial plants, with distinct stem and leaves, without spirally marked vessels. Leaves always small, usually with a midrib. Fructification of 2 kinds; 1, more or less obovoid or ovoid, brown, sessile or stalked, erect or drooping capsules, which open by a lid, or rarely 4 lateral slits or not at all, and contain minute spores; 2, minute cylindric

membranous sacs (antheridia), which are axillary or crowded at the tips of the branchlets, and contain spermatozoa. (p. 378).

CIX. Jungermannieæ. Plants all cellular, usually with the habit of *Musci*, but often forming flat continuous fronds with a stout midrib. Leaves without a midrib, usually distichous or recurved, entire, 2- or more lobed. Fructification of 2 kinds, as in *Musci*, but the capsules are split from the top to the base into 4 diverging valves, and the spores are mixed. (p. 404).

CX. Marchantieæ. Leafless, wholly cellular plants, consisting of broad, green, rather thick flat lobed fronds, with or without midrib, closely appressed to the ground, and emitting rootlets from the under surface; cuticle porous. Fructification of 2 kinds; 1, capsules, usually symmetrically disposed on the under side of a peltate peduncled receptacle, which rises from the edge of the frond (rarely solitary or sessile), and contains spores mixed with spiral filaments; 2, antheridia contained in sessile or peduncled, peltate or discoid receptacles. (p. 419).

SUBCLASS II. THALLOGENS.

Plants usually without a distinct leafy stem, formed of a flattened or cylindrical, dichotomously branched or variously formed frond or thallus, or composed of articulated threads or simple cells variously disposed; vascular or spiral tissue 0 or extremely rare. Fructification imbedded in the substance of the thallus, very various.

CXI. Lichenes. Perennial, coriaceous or rigid crustaceous plants, all terrestrial, consisting of a thallus which is erect or appressed to the ground, or to rocks or trees, often reduced to mere scales or a powdery crust; substance always very dense, cellular externally, filamentous internally. Fructification of 4 kinds; 1, septate spores contained in tubes (asci) which are usually collected into hard peltate disks or shields, formed of the upper surface of the thallus, but sometimes imbedded in cracks of the thallus; 2, spermatogones or small sacs containing spermatia (supposed to be a form of spermatozoa); 3, pycnides, obscure organs, giving origin to spore-like bodies at the tips; 4, gonidia or globose spore-like bodies, imbedded in the filamentous substance of the thallus, and sometimes breaking through the cortical substance and forming powdery masses called soredia and cyphellæ. (p. 419).

CXII. Fungi. Cellular, terrestrial, or epiphytic or parasitic plants, presenting an infinite variety of form, but never forming flat crusts or foliaceous expansions, as the *Lichenes* and *Algæ*; frequently existing on animal matter and on living or dead foliage, often ephemeral, variously coloured, rarely green. Substance consisting of a congeries of cells or cellular filaments, usually soft or succulent, never containing gonidia. Fructification of microscopic spores attached to the outer cellular surface or seated on the top of peculiar cells, or contained in asci, as in *Lichenes*. (p. 421).

BERTHOLD SEEMANN.

BERTHOLD SEEMANN was born on February 28th, 1825, at Hanover. He was educated at the Lyceum of his native town, the head master being Grotefend, one of the earliest decipherers of cuneiform writing. From the son of this gentleman young Seemann received his first lessons in Botany, which soon became his chief study. He early acquired some aptitude in writing, his first article having been written at the age of seventeen. In 1844, full of a desire to travel in foreign countries, he came to Kew with the object of fitting himself for the work of a botanical collector, and worked in the garden under the then curator, Mr. John Smith. Here he gained the good opinion of Sir W. J. Hooker, on whose recommendation he was in 1846 appointed naturalist to H.M.S. Herald, then employed on a surveying expedition in the Pacific. The post had become vacant by the untimely death of Mr. Thomas Edmonston. Leaving England in August, Seemann went by way of Madeira and the West Indies, and disembarking at Chagres, crossed the Isthmus of Panama, at that time a journey of some days. When he reached the city of Panama, in September, the 'Herald' had not returned from Vancouver's Island. Seemann profited by the delay to explore the Isthmus, and collected materials which enabled him to produce the most complete general description of that country ever published. He discovered not only a number of new plants and animals, but also some curious hieroglyphics in Veraguas. Seemann joined the 'Herald' on January 17th, 1847, and remained with her until the completion of her voyage round the world. He thus had the opportunity of exploring nearly the whole west coast of America, frequently making long journeys inland. In Peru and Ecuador he went from Payta through the Peruvian deserts, and across the Cordillera of the Andes to Loja, Cuenca, and Guayaquil. Subsequently, he traversed several of the western states of Mexico, starting from Mazatlan, crossing the Sierra Madre, and pushing on to Durango and the borders of Chihuahua. At that time, the Comanche and Alapache Indians were very troublesome, and Seemann narrowly escaped with his life. In 1848, the fate of Sir John Franklin began to excite apprehension in England, and the 'Herald' was directed to proceed to the Arctic regions, by way of Behring's Strait, to search for the missing voyagers. In the three voyages the 'Herald' made to these regions, a new island was discovered between Asia and America, and the vessel attained a higher latitude than any other had previously accomplished on that side of America. Seemann collected materials for

a Flora of the extreme north-west of Arctic America, and for the anthropology of the Esquimaux. In her various voyages, the 'Herald' visited repeatedly Kamtchatka and the Sandwich or Hawaiian Islands; and in 1850 she began her homeward course, touching and remaining for some time at Hongkong, Singapore, Cape of Good Hope, St. Helena, and Ascension, reaching England in June, 1851. Seemann published a popular account of the voyage, entitled a 'Narrative of the Voyage of H.M.S. Herald,' in 1853, and under the authority of the Admiralty he produced 'The Botany of the Herald,' containing Floras of Western Eskimo-land, North-western Mexico, the Isthmus of Panama, and Hongkong. This important work was published in 1852-57 in a thick quarto volume, with 100 plates by Fitch, the analyses for which were furnished by Dr. J. Hooker, whose assistance, as well as that of Sir W. J. Hooker, the author cordially acknowledges in the preface.

About this time the degree of Ph.D. was conferred on Seemann by the University of Göttingen, and the Imperial German "Academia Naturæ Curiosorum" made him a member under the name of "Bonpland." A few years later he was elected Adjunct or Vice-President for life.

In 1853 Seemann started, with his brother, W. E. G. Seemann, the botanical journal 'Bonplandia.' This was published in Hanover, and carried on for ten years, till the end of 1862.

In 1857 Seemann went to Canada as official representative of the Linnean Society at the meeting of the American Association for the Advancement of Science at Montreal.

In 1860 Seemann went to the Viti Islands to inquire into the natural productions and capabilities of these islands, under circumstances which are narrated in the introductory pages of this volume, and more at length in his popular narrative of the expedition published in 1862, under the title 'Viti; a Government Mission to the Vitian or Fijian Islands.' The most important scientific result of the expedition is the present work, the last part of which is now published after many unexpected delays. It contains the results not only of Seemann's own explorations, but those of all other expeditions to the South Seas, from Captain Cook's first voyage till the present time. It is the first time that the synonymy and characters of these have been properly and faithfully worked up, and this work, which must be the foundation of any future Flora of the Tropical Pacific Islands, will be a lasting monument to the eminent scientific attainments of its lamented author.

The 'Journal of Botany, British and Foreign,' was commenced in 1863, on the relinquishment of the 'Bonplandia,' of which it was in some sort a continuation.

After his return from Viti the force of circumstances took Seemann more and more away from botanical and scientific work. In 1864 he visited Venezuela; leaving Southampton on the 2nd of February, he reached Caracas towards the end of the same month, thence proceeded to Porto Cabello, Chichirividei and Tocuyo, and returned to Europe *viâ* Curaçao and St. Thomas.

Seemann was elected in 1865 Honorary Secretary to the International Botanical Congress, which was held next year in London under the presidency of A. De Candolle; but after devoting himself for some months to the duties of his office, he reluctantly left England to explore New Segovia and other parts of Nicaragua for the Central American Association. He was absent from England from March till August, 1866, when he returned with several new plants, which were considerably increased in number during his second visit in the following year. An account of this journey was published in 'Dottings on the Roadside in Panama, Nicaragua and Mosquito' (1869), some chapters of which were written by Captain Pim, his fellow traveller. One result of

these explorations was the purchase by some English capitalists of the Javali gold mine, in the district of Chontales, Nicaragua, and the company secured Seemann's services as managing director. This was most beneficial to the mine, but the result has been disastrous to science. His long and frequent absences from England and attention to business matters greatly interfered with Seemann's botanical work. Still his friends, and he himself, hoped that all this was but temporary, and that leisure and opportunity would again be found for scientific work.

Seemann started in the summer of 1871 for Nicaragua with some misgivings, having suffered severely from fever on his last previous visit. He, however, reached Javali at the end of July, after a rough journey through the swamps, in good health, but in the middle of September he was seized with fever. From this he never rallied; his death, which happened after three weeks' illness, on October 10th, was somewhat sudden, and under circumstances which pointed towards some cardiac complication. The next day his body was buried close by his house at the mine, in the little patch of industry and civilization his energy had called into existence in the primeval forest, and surrounded by the tropical vegetation he knew so well.

Besides the books already mentioned, Seemann was the author of many others. In 1858 he wrote the letterpress to the 'Paradisus Vindobonensis.' In 1852 he published an enumeration of the Acacias cultivated in Europe, with two plates. His 'Popular History of Palms' (1856) is well known, and has been translated into German by Dr. Bolle. His 'British Ferns at one View' (1860) has been a useful work to amateurs. Among his smaller botanical books may be mentioned 'Hanoverian Customs and Manners in their Relation to the Vegetable Kingdom' (1862); an English translation of Von Kittlitz's 'Twenty-Four Views of the Vegetation of the Coasts and Islands of the Pacific' (1861); the introduction to and numerous articles in Lindley and Moore's excellent 'Treasury of Botany' (1865); and the 'Popular Nomenclature of the American Flora' (1851). Of detached papers in science, the Royal Society's Catalogue (to 1863) enumerates fifty-eight under Seemann's name; the first there given is one on descriptive botany in the Regensburg 'Flora' for 1844.

But beyond his scientific writings, Dr. Seemann was a very prolific author of articles on subjects of general literature and politics. These are said to amount altogether to several thousands, in English, German, and several other languages, which he wrote well. He was also the author of several short dramas, two or three of which have some popularity in Hanover, and of some pieces of music, of which art he possessed a good knowledge. Seemann was a Fellow of the Linnean, Geographical, and other societies in England and abroad; he took particular interest in the Anthropological Society, of which he was a Vice-President. In botany the groups which more especially engaged his attention were the genera *Camellia* and *Thea* (Trans. Linn. Soc. vol. xxii.) and other *Ternströmiaceæ*, the *Crescentiaceæ* (Trans. Linn. Soc. vol. xxiii.); the *Hederaceæ* ('Journal of Botany,—reprinted as a separate work 1865); and the *Bignoniaceæ*. Regel ('Gartenflora,' iv. p. 183 and t. 126) dedicated to him a beautiful Gesneraceous plant from the Andes, now *Seemannia sylvatica*, Hanst.

Dr. Seemann married an English lady; but had the misfortune to lose his wife a few years ago, during one of his absences in Central America. He leaves an only daughter.



Macdonald, del. Fitch, lith.

Vincent Brooks, Imp.

Valley of Ono-Baleaga, Viti Levu.

THE FIJI ISLANDS

The parts explored by D^r. Seemann & M^r. Storck
are shaded thus
His route from Navua to Namosi



FLORA VITIENSIS.

SYNOPSIS.

ORDO I. RANUNCULACEÆ.

I. **Clematis**, Linn. Gen. n. 696; Benth. et Hook. f. Gen. p. 3. Sepala 4 (rarius 5–8), petaloidea, valvata. Petala 0 v. sepalis breviora et gradatim in stamina abeuntia. Carpella ∞ , uniovulata. Ovulum pendulum. Achenia capitata, sessilia v. vix stipitata, apice stylo persistente nudo v. barbato caudata.—Frutices suffrutices vel herbæ, caule erecto v. scandente; foliis oppositis, ternatim pinnatimve plurifoliolatis v. rarius simplicibus, petiolo sæpe volubili nec in cirrhum mutato; floribus axillaribus terminalibusve, solitariis v. paniculatis, ebracteolatis v. rarius 2-bracteolatis, sæpius, præsertim in speciebus hemisphærii australis tropicisve, polygamo-dioicis.

1. **C. Pickeringii**, A. Gray, Bot. Wilkes, p. 1; scandens; foliis ternatis, foliolis membranaceis ovatis v. subcordatis acuminatis integerrimis 5-nerviis laxè venosis glabris; floribus paniculatis dioicis, pedunculis 3–7-floris, sepalis (albis) lineari-oblongis obtusis sericeis, petalis nullis, antheris glanduloso-apiculatis, acheniis barbato-caudatis.—Ovalau (U. S. Expl. Exped.), Vanua Levu (Seemann! n. 1). Also collected in New Caledonia (M'Gillivray!).

Doubtless distinct from *Clematis stenosepala*, DC. (including *C. glycinoides*, DC.), of which Bentham thinks it may be a variety. The sepals are only half as long as those of *C. stenosepala*, thicker, and obtuse.

ORDO II. DILLENiaceÆ.

I. **Wormia**, Rottb. Nov. Act. Hafn. 1783; Benth. et Hook. f. Gen. p. 13. Sepala 5, patentia. Petala 5. Stamina sublibera. Antheræ erectæ, lineares, apice biporosæ. Carpellæ 5–12, vix cohærentia, ∞ -ovulata, maturitate membranacea v. coriacea, intus dehiscentia v. rarius indehiscentia. Semina arillata.—Arbores interdum excelsæ; foliis amplis parallele penniveniis, petiolis alatis, alis (stipulis?) deciduis; floribus speciosis in paniculas terminales sæpius paucifloras dispositis.

1. **W. biflora**, Seem.; foliis ovato-oblongis repando-serratis acutis obtusisve subcoriaceis confertim recte venosis, basi stipuliformi petiolum utrinque latissime marginante mox sursum dissiliente; pedunculis 2-floris, carpellis 12.—*Capellia biflora*, A. Gray, Bot. Wilkes, p. 15. t. 1. Nomen vernac. “Kukulava” v. “Kulava.”—Ovalau (U. S. Expl. Exped.), Viti Levu (Seemann! n. 2).

Leaves, especially in young plants, sometimes 1-1½ feet long, and 4-6 inches broad; flowers yellow; anthers biporose at apex, as in the rest of the genus.

2. **W. membranifolia**, Seem.; foliis oblongis obovatisve repando-serratis membranaceis recte venosis, costis subdistantibus; pedunculis 2-3-floris, floribus parvulis; carpellis 8-10.—*Capellia membranifolia*, A. Gray, Bot. Wilkes, p. 17. An var. præcedent.?—Ovalau (U. S. Expl. Exped.).

ORDO III. ANONACEÆ.

I. **Uvaria**, Linn. Gen. n. 692; Benth. et Hook. f. Gen. p. 23. Sepala 3, basi sæpe coalita, lata, valvata. Petala 6, rotundata, ovalia v. oblonga, biserialim imbricata, plano-convexa, basi interdum coalita. Stamina ∞, plano-compressa, connectivo ultra loculos subfoliato v. truncato-dilatato. Torus parum elevatus, truncatus, pubescens v. tomentosus. Carpella ∞, lineari-oblonga, intus sulcata, stylo continuo truncato, ovulis ∞ biserialibus. Baccæ formæ variæ, ∞-spermæ v. abortu 1-spermæ.—Frutices scandentes v. sarmentosi v. arbores, pube v. tomento stellato; inflorescentia plerumque oppositifolia rarius axillari; floribus hermaphroditis.

1. **U. (?) amygdalina**, A. Gray, Bot. Wilkes, p. 31; arborea, glabra; foliis oblongo-lanceolatis acuminatis basi sinu parvo subcordatis breviter petiolatis fere membranaceis supra nitidis reticulatis, venis omnibus tenuibus; pedunculis brevibus 1-floris, carpellis ovoideo-globosis obtuse apiculatis in gynophorum sessilibus oligospermis.—Ovalau (U. S. Expl. Exped.).

Flowers unknown, and hence the genus to which this species belongs somewhat doubtful.

II. **Polyalthia**, Blum. Fl. Jav. Anon. 70. (sect. i.) t. 33, 34; Benth. et Hook. f. Gen. p. 25. Sepala 3, valvata v. rarius leviter imbricata. Petala 6, biserialim valvata, mox aperta, plana, subæqualia, ovata v. angusta. Stamina ∞, cuneata, connectivo ultra loculos truncato-dilatato. Torus parum elevatus, apice planus v. leviter concavus. Carpella ∞, stylo oblongo, ovulis 1-2 erectis. Baccæ stipitatæ, globosæ v. oblongæ, 1-spermæ.—Arbores v. frutices; foliis oblique penninerviis; floribus solitariis v. fasciculatis, axillaribus v. oppositifoliis, parvis v. sæpius per anthesin auctis.

1. **P. Vitiensis**, (sp. nov.) Seem. in Bonplandia, vol. ix. p. 254 (Tab. III.); arbuscula; foliis ovato-oblongis acuminatis integerrimis brevissime petiolatis glabris; floribus axillaribus solitariis, pedunculis calycibusque pubescentibus, petalis ellipticis extus puberulis, stigmatibus pubescentibus; baccis oblongis v. ovato-oblongis obtusis.—Ovalau (Seemann! n. 4).

A small tree, with shining leaves and small white flowers. Leaves 6-8 inches long, 2-2½ inches broad. Peduncles longer than the petioles.

EXPLANATION OF PLATE III.—Fig. 1, an entire flower; 2, 3, and 4, stamens, in different positions; 5, flower, with the petals removed; 6, the same, with calyx and a few of the stamens removed; 7, a young carpel; 8, a head of berries; 9, an entire berry; 10, cross section of the same; 11, a seed; 12, longitudinal section of berry; 14, longitudinal section of seed; 13, albumen,—all, with the exception of Figs. 8 and 9, more or less magnified.

III. **Cananga**, Rumph. Amb. t. 65. (et 66?) non Aubl.; Hook. f. et Thoms. Fl. Ind. vol. i. p. 129; Benth. et Hook. f. Gen. p. 24. Sepala 3, valvata. Petala 6, biserialim valvata, mox aperta, subæqualia, elongata, plana. Stamina ∞, linearia, connectivo ultra loculos ovato-acuto. Torus convexiusculus, medio subconcavus. Carpella ∞, in stylum anguste oblongum stigmatibus capitato attenuata, ovulis ∞ biserialibus. Baccæ stipitatæ. Semina pulpa immersa.—Arbor excelsa; pedunculis ad axillas v. ad nodos defoliatos sæpius compluribus, umbellatim plurifloris; floribus magnis odoratis.

1. **C. odorata**, Hook. f. et Thoms. Fl. Ind. vol. i. p. 130; foliis ovato-oblongis longe attenuatis plerumque obliquis margine undulatis; pedunculis axillaribus 2-4-floris.—*Uvaria odorata*, Lam. Ill. t. 495. fig. 1; Roxb. Fl. Ind. vol. ii. p. 661; Blum. Bijdr. 14. Fl. Jav. Anon. 29. t. 9. 14 B.

Unona odorata, Dun. Anon. 108; DC. Syst. vol. i. p. 492; Prodr. vol. i. p. 90. *Uvaria Cananga*, Vahl. *U. farcta*, Wall. Cat. 6460. *U. axillaris*, Roxb. Fl. Ind. vol. ii. p. 667. *U. Gærtneri*, Dun. Anon. 89; DC. Syst. vol. i. p. 482; Prodr. vol. i. p. 88. *Unona leptopetala*, Dun. Anon. 114; DC. Syst. vol. i. p. 496; Prodr. vol. i. p. 91; Delessert, Icon. Select. t. 88. *U. velutina*, Blum. Fl. Jav. Anon. 31, non Dun. nec Roxb.; Gærtner. Fr. vol. ii. t. 114. f. 2. Nomen vernac. Vitiense, "Makosoi."—Common throughout the group (Seemann! n. 5).

This is a useful timber-tree, frequently planted in Fijian villages on account of its fragrant flowers, extensively used for scenting cocoa-nut oil, with which the natives oil their naked bodies. In the Samoan (Navigator) Islands the oil is applied to the hair (according to U. S. Expl. Exped.), as is the case in the Moluccan and Malayan islands (according to Blume). *Cananga odorata* is frequently cultivated as an ornamental tree in the tropics of the Old and New World. "It does not appear to be a native of Bengal or Madras," say the authors of the 'Flora Indica,' "though it is certainly indigenous to the eastward,"—Ava and Tenasserim. Blume found it in Java, Græffe in Uvea, and Cuming in the Philippine Islands.

IV. **Richella**, A. Gray, Bot. Wilkes, p. 28. t. 2.—Benth. et Hook. f. Gen. p. 26. Sepala 3, ærevissima, valvata, basi connata. Petala 6, biserialim valvata, exteriora patentia, interiora multo minora, circa genitalia conniventia. Stamina ∞ , linearia-cuneata, connectivo ultra loculos truncato-dilatato. Torus latus, apice concavus. Carpella ∞ , stylo longiusculo, ovulis prope basin 2 superpositis, matura indehiscencia exsucca breviter stipitata. Semina abortu solitaria, triquetra, angulis 2 in alam productis.—Arbor *Uvariæ* facie; floribus lateralibus pedicellatis.

1. **R. monosperma**, A. Gray, l. c. p. 28. t. 2.—Ovalau (U. S. Expl. Exped.).

Anona squamosa, Linn. Spec. 757, the "Soursop," has been introduced from South America by way of Tahiti; in 1860 it was only seen in a few isolated specimens on the estate of Captain Wilson and M. Jaubert at Somosomo, and in the garden of a French settler at Levuka, Ovalau. As one of the finest of the Custard-apples, it is a great acquisition to Viti as a dessert fruit. The leaves, it is well known, have a heavy disagreeable odour, and the seeds contain a highly acrid principle, fatal to insects, on account of which the natives of India use them powdered and mixed with the flower of the Gran (*Cicer arietinum*), for occasionally washing their hair.

ORDO IV. CRUCIFERÆ.

I. **Cardamine**, Linn. Gen. n. 812; Benth. et Hook. f. Gen. p. 70. Sepala basi æqualia. Petala unguiculata. Staminum longiorum filamenta recta. Siliqua elongata, linearis, compressa; valvis planis, subnerviis, elastice desilientibus; septo hyalino; stylo brevi v. elongato; stigmatibus simplicibus v. bilobis. Semina 1-seriata, immarginata, compressa.—Herbæ habitu variæ, sæpissime flaccidæ et glabræ; rhizomate nunc squamoso v. bulbifero; foliis simplicibus v. sæpius pinnatisectis, interdum oppositis v. ternatis verticillatis; floribus racemosis v. subcorymbosis ebracteatis erectis v. nutantibus, albis purpureis v. violaceis, nunquam (?) flavis; siliquis sæpe erectis gracilibus planis, valvis enerviis v. obscure 1-3-nerviis.

1. **C. sarmentosa**, Forst. Prodr. n. 529; caule subnudo basi flagellifero; foliis petiolatis glabris pinnatisectis, segmentis 5 ovatis inferne dentatis, infimis petiolulatis; floribus parvis (albis), pedicellis filiformibus demum patentibus; siliquis patentibus.—DC. Prodr. vol. i. p. 153.—Common throughout the group on roadsides and waste places (Seemann! n. 8; Sir E. Home!). Also found in Tongan (Barclay!), Samoan (U. S. Expl. Exped.), Society (Banks and Solander! Forster!) and Marquesas Islands (Barclay!), and in Peru, about Lima (U. S. Expl. Exped.).

In New Caledonia this species and *Lepidium piscidium* (which may be expected in Viti, though not yet collected) are eaten instead of Cress, and as antiscorbutics.

Sinapis nigra, Linn. Spec. 933, the Mustard-plant, was collected by me at Tavuki, island of Kadavu, where it had escaped from the gardens of the white settlers, and may in time become naturalized; but I noticed it only in this one spot.

ORDO V. CAPPARIDEÆ.

I. **Capparis**, Linn. Gen. n. 643; Benth. et Hook. f. Gen. p. 108. Sepala 4, rarissime 5, libera v. ima basi connata, rarius gamosepala et irregulariter rupta, intus nuda glandulosa v. ligula aucta, valvata v. imbricata v. 2 exteriora valvata. Petala 4, rarissime plura, imbricata. Torus brevis. Stamina sæpissime ∞ , toro inserta; filamentis filiformibus, liberis. Ovarium longe stipitatum, 1-4-loculare; placentis 2-6; ovulis ∞ ; stigmatibus sessilibus. Bacca stipitata, globosa v. cylindrica, sæpe elongata, rarissime dehiscentis. Semina ∞ , nidulantia; testa crustacea v. coriacea; embryo convolutus.—Arbores et frutices, sæpe scandentes, inermes spinosi v. aculeati, glabri lepidoti v. tomentosi; foliis simplicibus rarius nullis petiolatis membranaceis v. coriaceis; stipulis spinosis v. setosis; inflorescentia varia; floribus sæpius bracteatis et albis.

1. **C. Richii**, A. Gray, Bot. Wilkes, p. 69; scandens; stipulis spinosis brevibus uncinatis interdum nullis; foliis ovato-oblongis nunc lanceolatis seu lineari-lanceolatis subacuminatis basi obtusis, novellis cum ramulis calycibusque ferrugineo-puberulis, adultis glabris subcoriaceis; pedicellis 5 seriatim supra-axillaribus petiolum subæquantibus; floribus parvis, staminibus circiter 12.—Macuata coast of Vanua Levu, and Direction Island (U. S. Expl. Exped.).

ORDO VI. VIOLARIEÆ.

I. **Agatea**, A. Gray, Bot. Wilkes, p. 89. t. 7; Benth. et Hook. f. Gen. p. 118. Sepala subæqualia, decidua, basi haud producta. Petalum inferius ceteris paullo majus, basi gibboso-saccatum. Filamenta brevia, complanata, connata v. superius demum distinctum; connectivo apice in membranam producto. Stylus apice clavato-subcurvatus; stigmatibus antico. Capsula carnosula, 3-valvis. Semina compresso-alata, imbricata, pericarpio parallela; testa ad faciem internam crustacea nigra, ad faciem externam membranacea.—Frutices sarmentosi; foliis alternis integerrimis v. dentatis, racemis axillaribus v. terminalibus paniculatis; floribus parvis viridulis v. albidis, maculis purpureis.—*Agation*, Brongn. in Bull. Soc. Bot. Fr. vol. viii. p. 79.

I cannot make up my mind to change the oldest name of the genus on the plea that it is too much like *Agatheia*, though advocated by an eminent authority. A single letter has hitherto been thought quite sufficient to distinguish one generic name from another.

1. **A. violaris**, A. Gray, Bot. Wilkes, p. 89. t. 7; foliis oblongo-lanceolatis acutis integerrimis v. repando-subdentatis; paniculis axillaribus patentibus folia æquantibus v. brevioribus; corollæ labello spathulato-truncato.—*Agation violare*, Brongn. Bull. Soc. Fr. vol. viii. p. 80.

Var. a; foliis oblongo-lanceolatis integerrimis v. obsolete repandis paniculas subæquantibus.—Nalua Bay (U. S. Expl. Exped.).

Var. β; foliis majoribus ovato-oblongis nunc repando-subdentatis paniculas excedentibus.—Ovalau (U. S. Expl. Exped.); Somosomo, Taviuni (Seemann! n. 12); Moala (Milne!); Viti Levu (M'Gillivray!).

My specimens, which Asa Gray has referred to his *var. β*, have ripe fruit, a dehiscent 3-valved capsule, about 2 inches long. The flowers are whitish, blotched with purple.

II. **Alsodeia**, Thouars, Hist. Veg. Afr. 55. t. 17, 18; Benth. et Hook. f. Gen. p. 118. Flores 5-meri. Sepala subæqualia. Petala subæqualia, sessilia v. brevissime unguiculata. Filamenta libera v. plus minus connata, omnia dorso appendiculata v. nuda, connectiva in anulum approximata v. coherentia, ultra loculos producta. Placentæ 1- ∞ -ovulatae. Stylus rectus; stigmatibus terminalibus. Capsula elastice v. simpliciter 3-valvis. Semina pauca, subglobosa, glabra v. gossypina;

testa crustacea v. coriacea.—Frutices v. arbores; foliis alternis v. oppositis integerrimis v. serratis; floribus parvis solitariis v. sæpius racemosis v. paniculatis axillaribus v. terminalibus; filamentis nunc brevissimis nunc antheris longioribus.

1. **A.** (?) **Storckii**, (sp. nov.) Seem. in Journ. of Bot. British and Foreign, vol. ii. p. 75. (1864); glabra; ramulis geniculato-flexuosis; foliis brevissime petiolatis v. sessilibus ovatis v. ovato-oblongis acuminatis integerrimis, stipulis ovato-lanceolatis; floribus axillaribus solitariis (viridibus), calycis laciniis 5 oblongis obtusis, petalis . . . , staminibus . . . , capsula (flava) ovato-oblonga obtusa 3-valvi; seminibus numerosis subglobosis glabris grani Piperis magnitudine.—“Serirakavono” incolarum.—Port Kinnaird, Ovalau (Storck! n. 867).

This plant may possibly be the type of a new genus, but having only seen fruiting specimens, I have provisionally placed it in *Alsodeia*, though the numerous seeds are rather opposed to its admission. I do not find anything like it either in the Kew or British Museum Herbaria. Mr. Storck says ('Bonplandia,' x. p. 295), “the flowers are greenish and the fruit yellow.” The leaves, when in very young bud, are covered with silky, whitish hairs, but after expansion they are perfectly glabrous, the largest being 5 inches long and from 2–2½ inches broad. Capsule $\frac{3}{4}$ of an inch long, nodding.

ORDO VII. BIXINEÆ.

I. **Xylosma**, Forst. Prodr. 72; Benth. et Hook. f. Gen. p. 128. Flores dioici (v. polygami?). Sepala 4–5, squamæformia, sæpius ciliata, imbricata. Petala 0. Stamina ∞ , disco glanduloso sæpe cincta; antheræ versatiles, breves. Ovarium disco annulari impositum; placentæ parietales 2 v. rarius 3–6, 2–pauci-ovulatæ; stylus integer v. plus minus divisus, stigmatibus dilatatis, v. stigma rarius sessile peltato-lobatum. Bacca indehiscens, parva, 2–8-sperma. Semina ovoidea; testa lævis, crustacea; cotyledones latæ.—Arbores sæpe spinescentes; foliis dentatis v. rarius integerrimis; floribus ad axillas glomeratis v. rarius breviter racemosis.

1. **X. orbiculatum**, Forst. Prodr. n. 380; inerme, glabrum; foliis orbiculatis v. elliptico-rotundatis coriaceis integerrimis v. subcrenatis; sepalis 4, lobis obtusissimis, ovato-rotundatis, intus puberulis, extus hispidis, bacca (nigra) ovato-globosa.—*Myroxylon orbiculatum*, Forst. Char. Gen. p. 63. n. 2. *Xylosma integrifolium*, Clos. Ann. des Sc. Nat. 4 Ser. vol. viii. 236.—Island of Taviuni (Seemann! n. 10). Also collected at Savage Island (Forster!) and Tongan Islands (U. S. Expl. Exped.), Marquesas Islands (Lapère).

I hold *X. Laperei*, Clos. = *X. suaveolens*, Forst. (*Merretia axillaris*, Sol. in Parkins. Drawings of Tahit. Plant. t. 120, ined. *Rhamnoides axillaris*, Sol. Prim. Fl. Ins. Pacif. p. 377, ined.), Tahiti (Banks and Solander! W. Anderson! Forster! in Mus. Brit.), of which A. Gray has given a good illustration. But I find another new Polynesian species in Barclay's Sandwich Island collection.*

ORDO VIII. PITTOSPOREÆ.

I. **Pittosporum**, Banks in Gærtn. Fruct. vol. i. p. 286. t. 59; Benth. et Hook. f. Gen. p. 131. Sepala distincta v. basi connata. Petala basi v. ultra medium in tubum conniventia v. cohærentia v. rarius a basi patentia; filamenta subulata; antheræ erectæ, ovato-oblongæ, 2-rimosæ. Ovarium sessile v. breviter stipitatum, imperfecte v. subperfecte 2- rarius 3–5-loculare; stylus brevis. Capsula

* *Xylosma Hawaiense*, sp. nov. Seem.; inerme, glabrum, foliis petiolatis ovatis v. ovato-oblongis acuminatis minute glanduloso-dentatis coriaceis, racemis axillaribus 6-floris, bracteatis, pedicellis (6–8 lin. long.) infra medium 2-bracteolatis, sepalis 4 rotundatis v. oblongis obtusis v. subapiculatis glabris, margine ciliatis, petalis . . . , disco hypogyno glanduloso, staminibus . . . , bacca (immatura) ovata glabra stigmatibus sessili 4-lobo coronata.—Oahu, Sandwich Islands (Barclay! n. 1256).—“A shrub, 4 feet high, growing in ravines, and vernacularly termed ‘Rouk-kui’” (Barclay). Branches stout. Leaves very coriaceous, 3–4½ inches long, including petiole, and 2–2½ inches broad. Petals and stamens wanting in the specimen.

globosa ovata v. obovata, a latere sæpe compressa; valvæ coriaceæ v. sublignosæ, indivisæ, semisepta placentifera medio gerentes. Semina crassiuscula, exalata, in liquore viscoso sæpius nidulantia, lævia.—Frutices v. arbusculæ, sæpius sempervirentes, glabri v. rarius tomentosi, erecti, foliis integris v. sinuato-dentatis in speciebus nonnullis sæpe ad apices ramulorum subverticillatis; floribus nunc terminalibus confertim corymbosis subumbellatis v. paniculatis, nunc solitariis v. paucis, terminalibus axillaribus v. lateralibus.

1. **P. arborescens**, Rich in A. Gray, Bot. Wilkes, p. 223; glabrum; foliis chartaceis obovato-oblongis seu oblongis obtusis basi acutis longiuscule petiolatis margine subundulatis; pedunculis glomerato-multifloris; calyce 4-5-fido; petalis coalitis; capsula lævi subglobosa bacciformi bivalvi ∞ -sperma, valvis crassiusculis dorso sulcatis; seminibus lenticularibus pallide purpureis.—Viti, particular habitat not recorded (U. S. Expl. Exped.); also in the Tongan Islands (U. S. Expl. Exped.).

2. **P. Richii**, A. Gray, Bot. Wilkes, p. 224; glabrum; foliis lanceolato-oblongis utrinque acutis v. acutiusculis; pedunculis ferrugineo-hirtellis multifloris, floribus glomerato-cymosis; calyce obtuse 5-fido glabro; ovario tomentoso; capsula subglobosa læviuscula bivalvi, valvis coriaceo-lignosis dorso convexis; seminibus ovalibus atris.—Vanua Levu (U. S. Expl. Exped.), Ovalau (Seemann! n. 55).

3. **P. Brackenridgei**, A. Gray, Bot. Wilkes, p. 225. t. 17. fig. A; glabrum; foliis ovali-oblongis seu ellipticis obtusis basi acutis; pedunculis (fructiferis) binis ternisve terminalibus 1-floris petiolum haud superantibus; capsula subglobosa læviuscula bivalvi, valvis coriaceo-lignosis dorso convexis; seminibus subglobosis atris.—Macuata, north coast of Vanua Levu (U. S. Expl. Exped.), Viti Levu, Ovalau, and Moturiki (Seemann! n. 56), Nairai and Matutla (Milne!).

4. **P. tobiroides**, A. Gray, Bot. Wilkes, p. 226. t. 17. fig. B; glabrum; foliis elliptico-obovatis obtusissimis subretusis basi acutis; pedunculis (fructiferis) terminalibus solitariis 1-floris petiolum bis superantibus; capsula globoso-subtetragona lævi bivalvi, valvis crassissimis coriaceo-lignosis dorso convexis; seminibus subglobosis atris.—Somosomo, island of Taviuni (U. S. Expl. Exped.).

5. **P. Pickeringii**, A. Gray, Bot. Wilkes, p. 227; glabrum; foliis oblongis v. oblongo-lanceolatis utrinque acuminatis margine undulatis; pedunculis terminalibus in umbellam digestis gracilibus apice umbellatim plurifloris; calyce abbreviato 5-fido; petalis discretis; ovario ovoideo 5-loculari basi attenuato substipitato, loculis 6-ovulatis; stylo brevissimo; capsula ovato-globosa læviuscula, 2-valvi, valvis crassissimis coriaceo-lignosis dorso convexis, seminibus compressis atris.—Viti, precise habitat not recorded (U. S. Expl. Exped.), Taviuni (Seemann! n. 53), Kadavu (Seemann! n. 54), where it is called "Tadiri" by the natives.

6. **P. rhytidocarpum**, A. Gray, Bot. Wilkes, p. 228. t. 18; glabrum; foliis oblanceolatis seu obovato-oblongis breviter acuminatis basi attenuatis; floribus in umbellas sessiles terminales congestis; calyce abbreviato 5-sepalo; petalis coalitis; ovario tomentuloso haud stipitato; stylo longiusculo; capsula oblonga lignosa crassissima tuberculato-rugosissima bivalvi; seminibus compressis.—Ovalau, Macuata, and north coast of Viti Levu (U. S. Expl. Exped.), Namara, Viti Levu (Seemann! n. 52), Viti, exact habitat not recorded (Harvey!).

ORDO IX. PORTULACEÆ.

I. **Portulaca**, Linn. Gen. n. 603; Benth. et Hook. f. Gen. p. 156. Sepala 2, basi in tubum ovario adnatum coalita (v. toro concavo imposita?), superne libera, decidua. Petala 4-6, libera v. basi

leviter concava, ad sepalorum basin (tori marginem?) inserta. Stamina 8-∞, ad basin petalorum cum iis perigyna. Ovarium semi-inferum (toro semi-immersum?), ∞-ovulatum; stylus profunde 3-8-fidus. Capsula membranacea, semi-infera, parte libera circumscissim dehiscente. Semina a latere compressa, reniformia, nitida, sæpe granulata; embryo periphericus.—Herbæ diffusæ v. adscendentes, carnosæ; foliis alternis v. suboppositis, planis v. teretibus, ad axillas sæpe fasciculato-setosis, summis sæpe flores involucrantibus; stipulis scariosis v. ad setarum fasciculos reductis, in *P. oleracea* minutis; floribus terminalibus, sessilibus v. pedicellatis, flavis purpureis v. roseis.

1. *P. oleracea*, Linn. Spec. 638, excl. var. β ; Koch, Synops. Fl. Germ. Edit. iii. p. 217; caule ramisque prostratis; axillis geniculisque setosis, setis minutis strictis; foliis oblongo-cuneatis; floribus (flavis) solitariis geminis ternisve sessilibus, laciniis calycis obtuse carinatis, staminibus 10-12.—Schkuhr, Handb. t. 130. *P. oleracea a. sylvestris*, DC. Prodr. vol. iii. p. 353. Nomen vernac. Vitiense, "Taukuku ni vuaka."—Common on roadsides and in waste places throughout the Viti group (Seemann! n. 13). I have also seen specimens from the Sandwich Islands (Macrae!), Ceylon, the East Indies, Madeira, and Brazil.

A. Gray refers *P. lutea*, Sol., as a synonym to this species, but that is evidently a very different plant, of which no specimens exist; but at the British Museum there is a full description of it by Solander, and a highly-finished coloured drawing by Parkinson, both made on the spot. It is larger than any other species of the genus, and being thick and fleshy, as well as a seaside plant, has probably proved difficult to preserve. De Candolle calls it "*P. flava*, Forst. Plant. Escul. 72," but that is evidently a slip of the pen; it should be "*P. lutea*, Sol. in Forst. Plant. Esculent. p. 72." The name and authority are repeated in Forst. Prodr. n. 320.* It is not unlikely that a species from Oahu, alluded to by Chamisso (Linnæa, vol. vi. p. 556) as "*Portulaca altera erecta, fruticosa, foliis cuneato-obovatis submarginatis planis pollicaribus, axillis nudis, floribus flavis*," may prove identical with *P. lutea*.

Amongst the white settlers in Viti, *P. oleracea* is occasionally eaten as a potherb. I used it repeatedly during my stay at Somosomo.

2. *P. quadrifida*, Linn. Mant. 78; caule ramisque prostratis; axillis geniculisque pilosis, pilis longissimis crispis; foliis elliptico-oblongis carnosissimis planis; floribus (flavis) solitariis sessilibus, staminibus 8, rarissime pluris.—Jacq. Coll. vol. ii. p. 356. t. 17. fig. 2. *P. linifolia*, Forsk. Descrip. 92. *Illecebrum verticillatum*, Burm. Fl. Ind. p. 66. Nomen vernac. Vitiense, "Taukuku ni vuaka."—Common on roadsides and waste places throughout the group (Seemann! n. 14; Storck! n. 868); also gathered in the Tongan (Barclay!) and Samoan islands (U. S. Expl. Exped.). Diffused over the East Indies, Java, Ceylon, Egypt, and Arabia.

II. *Talinum*, Adans. ex Juss. Gen. 312; Benth. et Hook. f. Gen. p. 157. Sepala 2, herbacea, ovata, decidua v. rarius subpersistencia. Petala 5, hypogyna. Stamina indefinite 5-∞, ima basi

* "PORTULACA LUTEA, Sol. Fl. Ins. Pacif. Ined. p. 261, et in Parkins. Drawings of Tahitian Plants, t. 52 (ined.); 'Aturi' incolarum. Hab. in littoribus marinis Tahiti, Huahine, Raiatea, et Tahaa. *Caules* herbacei, pedales et bipedales, succulenti ramosissimi, diffusi, inferne purpurei et sæpe toti rubicundi. *Folia* alterna, petiolata, oblongo-ovata, subcuneiformia, obtusissima, integerrima, carnosissima, plana, marginibus plerumque purpurascens, vix unciam longa, terminalia quaterna [subtus subglauca]. Obs. *Folia* paria sæpe approximata, illa autem intervallis remota. *Petioli* breves, longitudine unius lineæ. *Flores* terminales in sinu foliorum quaternorum, sæpius bini, interdum solitarii sessiles. *Calyx* ante explicationem anceps, diphyllus; *foliola* e lata basi ovata, acuta, carinata, margine membranacea. *Petala* 5, lutea, ovato-oblonga, basi attenuata, obtusa profunde emarginata, calyce plus duplo longiora, longitudine unguis digiti intermedii, expansa corollam campanulatam formantia. *Filamenta* ∞, capillaria, longitudine calycis. *Antheræ* subrotundæ, parvæ. *Germen* subglobosum. *Stylus* filiformis, erectus, staminibus longior. *Stigmata* 4, 5 vel 6, filiformia, villosa (sæpius 5). *Capsula* globosa, circumscissa, unilocularis, ∞-sperma.—Affinis *P. oleraceæ*, Linn. Spec. Pl. 638, 1, qua differt flore magno luteo. In multis etiam convenit *P. quadrifida*, Linn. Mant. p. 73, præcipue primo intuitu, manifeste autem differt *geniculis* nudis, *flore* absque ullis pilis subjectis sed eorum loco *membranis* tribus vel quatuor ovalibus, filamentis viginti pluribus. *Capsula* globosa, ut *petala* 5 præter eam profunde emarginata. Obs. *Calycis* foliola pro basi agnoscunt Cyathum, qui persistens inferiorem partem capsulæ cingit ore integerrimo." ["Cocta ab incolis oleris loco comeditur, et apud Tahitenses nomine 'Aturi' distinguitur."—Forst. Plant. Escul. n. 43.]

petalis adhærentia. Ovarium liberum, ∞ -ovulatum; stylus apice 3-fidus v. 3-sulcus. Capsula globosa v. ovoidea, chartacea, 3-valvis. Semina subglobosa v. a latere compressa, subreniformia, testa nitida, funiculo in strophium expanso; embryo periphericus.—Herbæ interdum suffrutescens, carnosæ, glaberrimæ; foliis alternis v. oppositis, planis, stipulis nullis; floribus in cymas racemos v. paniculas terminales dispositis, rarius solitariis, axillaribus v. lateralibus; petalis ephemeris.

1. **T. patens**, Willd. Spec. vol. ii. p. 863. excl. var.; DC. Prodr. vol. iii. p. 357; caule suffruticoso erecto; foliis planis ovalibus mucronatis, infimis obovatis; panicula terminali, pedunculis alternis dichotomis ebracteatis.—*Portulaca paniculata*, Jacq. Amer. 148. *P. patens*, Jacq. Hort. Vindob. vol. ii. t. 151. *Rulingia patens*, Ehr. Beitr. vol. iii. p. 135. *Talinum paniculatum*, Gærtn. Fruct. vol. ii. p. 219. t. 128, non Mœnch.—Common on the seashore rocks of Levuka, Ovalau (Seemann! n. 15). Also gathered in the Society Islands (Barclay! and other collectors). Diffused over the West Indies, Brazil, British Guiana, Central America, and Mexico. Not being found in the older collections, it is probably a recent introduction into the South Sea Islands.

ORDO X. ELATINEÆ.

I. **Elatine**, Linn. Gen. n. 502; Benth. et Hook. f. Gen. p. 162. Flores 3–4-meri, rarius 2-meri, nec (unquam?) 5-meri. Sepala membranacea, obtusa, ecostata. Ovarium globosum. Capsula membranacea, septis post dehisceniam axi adnatis v. evanidis.—Herbæ parvæ, aquaticæ v. repentes, glaberrimæ; foliis oppositis v. verticillatis; floribus in axillis sæpe solitariis, minimis.

1. **E. ambigua**, Wight in Hook. Bot. Misc. vol. ii. p. 103. t. 5; foliis oppositis ovato-subspathulatis; floribus alternis oppositisque pedicellatis; sepalis petalis staminibusque 3.—In swamps, Somosomo, Island of Taviuni (Seemann! n. 183).

At once distinguished from *E. Americana*, Arn. (which has been found in New Zealand, and to which I referred it in my preliminary list) by its long pedicellate flowers.

ORDO XI. GUTTIFERÆ.

I. **Garcinia**, Linn. Gen. n. 594; Benth. et Hook. f. Gen. p. 174. Flores polygami. Sepala 4, decussata. Petala 4, imbricata (v. rarius valvata?). Fl. ♂: Stamina ∞ , libera v. in massam integram v. 4-lobam coalita v. circa styli rudimentum 4-adelpha; antheræ sessiles v. filamentis fultæ et erectæ, 2-loculares, rimis porisve dehiscentes, rarius 4-loculares v. peltatæ et rima circulari dehiscentes. Fl. ♀ v. ♂: Staminodia 8– ∞ , libera v. varie coalita. Ovarium 2–12-loculare; stigma late peltatum, integrum v. radiato-lobatum, læve v. supra tuberculatum v. torulosum; ovula in loculis solitaria, erecta v. lateraliter affixa. Bacca corticata. Semina pulpa arilliformi involuta.—Arbores, succo sæpius luteo; foliis coriaceis v. rarius submembranaceis; floribus nunc terminalibus, solitariis 3-nis v. rarius paniculatis, nunc axillaribus, 3-nis v. fasciculatis.—*Discostigma*, Hassk. Cat. Hort. Bog. 212.

1. **G. Vitiensis**, Seem.; foliis oblongis v. oblongo-lanceolatis utrinque acuminatis coriaceis subaveniis; floribus ♀ in axillis solitariis geminisve; pedicellis 2-bracteolatis; ovario 2-loculari, stigmate discoideo coronato.—*Discostigma Vitiense*, A. Gray, Bot. Wilkes, p. 216. t. 16. fig. A.—Ovalau, about 1500 feet above the sea (U. S. Expl. Exped.).

2. **G. sessilis**, Seem. Miss. to Viti, App. p. 433; foliis petiolatis obovatis v. ellipticis acuminatis v. acutis integerrimis crebre venosis submembranaceis; floribus axillaribus solitariis v. paniculatis; sepalis petalisque 4 subrotundatis obtusissimis imbricatis; staminibus ∞ 4-adelphis; ovario 5-locu-

lari; stigmatē 5-lobo; bacca abortu 2-3-loculari.—*Clusia sessilis*, Forst. Prodr. n. 391 (non Hook. et Arn.); Icon. Ined. t. 278.—Viti Levu (Seemann! n. 51). Also gathered in the Tongan Islands Capt. Cook's Third Voyage!), Amsterdam Island (Forster!), and New Caledonia (W. Anderson!).

A middle-sized tree, with almost membranaceous leaves and small pale-pinkish flowers, of which, according to a label attached to a specimen of Cook's third voyage, the Tongan Islanders made necklaces. There are from 28-35 veins on each side of the midrib of the larger leaves, fewer in the smaller. My specimens agree in every respect with Forster's authentic ones preserved at the British Museum.

3. **G.** (?) **pseudoguttifera**, (sp. nov.) Seem.; arborea, glabra, succo luteo; foliis oppositis petiolatis obovatis obtusis v. acutis integerrimis coriaceis, utrinque densissime crebre et parallele venosis, venis (50) simplicibus v. rarius furcatis; floribus fructibusque ignotis.—Kadavu, in mountainous woods (Seemann! n. 50).

A tree about 30-40 feet high, from which issues a thick yellow sap when cut. Petioles nearly an inch long. Blade of leaf 3-3½ inches long, 2-2½ inches broad, dark-green above, paler below, with a thick, prominent midrib, and about 50 veins on each side. Flowers and fruit unknown. At first sight this is not unlike *G. pedicellata*, Seem. (*Clusia pedicellata*, Forst.),* but the veins of the leaves are fewer in that species, and not so close together.

II. **Calophyllum**, Linn. Gen. n. 658; Benth. et Hook. f. Gen. p. 175. Flores polygami. Sepala cum petalis 4-12, 2-3-seriatim imbricata. Stamina ∞, libera v. vix basi connata; filamenta breviter filiformia; antheræ erectæ, ovatæ v. oblongæ, 2-loculares, longitudinaliter dehiscentes. Ovarium 1-loculare; stylus longiusculus, stigmatē peltato; ovulum 1, erectum. Drupa indehiscens, putamine crustaceo. Semen erectum, ovoideum v. globosum, testa nunc tenui nunc fungoso-incrasata.—Arbores; foliis coriaceis nitidis creberrime striato-penninerviis; paniculis axillaribus v. terminalibus, cymoso-trichotomis v. racemiformibus et minus stricte centrifugis.

The generic Polynesian name for *Calophyllum* is Tamanu, the Vitian form of which is Damanu, applied to two species.

1. **C. Burmanni**, Wight, Illustr. Ind. Bot. vol. i. p. 129 (excl. var. γ.); Planch. et Trien. in Ann. Sc. Nat. Ser. IV. vol. xv. p. 261; ramulis junioribus tenuiter ferrugineo-tomentellis adultis glabratis; foliis late ellipticis v. obovato-ellipticis apice rotundatis v. obtuse acuminatis v. emarginatis, racemis axillaribus 3-5-floris folio multo brevioribus; floribus pedicellatis; sepalis 4 orbiculato-v. oblongo-ovatis; petalis 0 (an semper?); fructu parvo globoso v. leviter ovoideo.

Var. *parvifolium*, Wight, Illustr. vol. i. p. 129; Icon. t. 107; omni parte minus; foliis sæpius elliptico-obovatis.—Nomen vernac. Vitiense, "Damanu."—Forests of Kadavu (Seemann! n. 49).

Though my specimens, being in fruit only, agree well, as far as they go, with the small-leaved variety of *C. Burmanni*, I have some hesitation about the identification, and I should have liked to compare them with those of the New Caledonian *C. montanum*. My Kadavu specimens have opposite leaves, which in size and shape closely resemble those of Wight's figure quoted above, and the fruit, supported on axillary peduncles, is nearly globose, and as large as a cherry. The tree yields a valuable, closely-grained timber.

2. **C. spectabile**, Willd. Mag. Berl. 1811, p. 80; Planch. et Trien. l. c. vol. xv. p. 266; Chois. in DC. Prodr. vol. i. p. 562, non Wight; gemmis pube ferruginea tomentoso-hirtellis; foliis amplis anguste v. late oblongis basi acutiusculis v. obtusis apice rotundatis v. breviter et obtuse acuminatis margine integro subrotundatis v. planis, adultis glaberrimis (raro subtus hirtellis), rigide membranaceis subtiliter parallele nervosis; pedunculis axillaribus brevibus mox 3-fidis v. 5-fidis;

* From the materials existing at the British Museum, I am able to determine this species to be a genuine *Garcinia*, viz. *G. pedicellata*, Seem. Mission to Viti, p. 433 (*Clusia pedicellata*, Forst. Prodr. n. 390; Icon. Ined. t. 277). Glabra; foliis oppositis obovatis obtusis v. acutis in petiolum attenuatis integerrimis coriaceis venosis; floribus axillaribus 3-nis; sepalis petalisque 4 subrotundatis obtusissimis imbricatis; staminibus flor. ♂ ∞ liberis; antheris 2-ocularibus; fl. ♀?—New Caledonia (Forster!).

pedicellis 3–5 umbellato-congestis gracilibus (rarius solitariis), alabastro obovoideo-globosis glabris; sepalis 4 obovato-orbiculatis concavis; petalis 0.—*Apoterium Soulatri*, Blum. Bijdr. vol. i. p. 218. *C. hirtellum*, Miq. Plant. Jungh. p. 291. Nomen vernac. Vitiense, “Damanu dilodilo.”—Viti Levu (Seemann! n. 47; U. S. Expl. Exped.). Also collected in Tahiti by Abbadie (n. 29), according to Planchon and Triana; Samoan and Tongan Islands (U. S. Expl. Exped.), and Mauritius, Bourbon, Java, and Penang.

I did not find this species in flower, but the United States Exploring Expedition did, and Professor Asa Gray has identified my specimens with those collected by the latter. The young leaves, when first unfolding, have a deep red tinge. The wood is highly esteemed by the natives for building purposes.

3. **C. Inophyllum**, Linn. Spec. 732; Planch. et Trian. l. c.; arboreum, glaberrimum; foliis petiolatis late oblongo-obovatis v. oblongis basi sæpius acutis apice rotundatis v. retusis; racemis axillaribus foliis brevioribus laxifloris; floribus pro genere amplis longe pedicellatis, alabastris subglobosis; sepalis 4 internis petaloideis; petalis 4 (v. rarius 6–8? fide Rumph. et Blum.) calyce longioribus; fructu globoso Pruni minoris mole, Rumph.—Parkins. Drawings of Tahit. Pl. (ined.) t. 55; Wight, Illustr. vol. i. t. 128; ibid. Icon. t. 77. *Bingator maritima*, Rumph. Amb. vol. ii. p. 211. t. 71; Ponna v. Ponna Maram, Rheed. Mal. vol. iv. p. 76. t. 38. *Balsamaria Inophyllum*, Lour. Cochin. 470. *Calophyllum Bingator*, Roxb. Fl. Ind. vol. ii. p. 607. *C. Blumei*, Wight, Illustr. p. 128. *C. ovalifolium*, Nor. Verh. Batav. Gen. vol. v. p. 74. Nomen vernac. Vitiense, “Dilo;” Tahiteense, “Tamanu.”—A common seaside tree in Viti (Seemann! n. 48; Storck! n. 873). Also collected in New Caledonia (Forster!), Society Islands (Banks and Solander! Forster!), and Hawaiian Islands (Macrae!). Diffused over the East Indies, Ceylon, Cochin China, Philippine Islands, etc.

The most valuable oil produced in Fiji is that extracted from the seeds of this tree, the Dilo of the natives, the Tamanu of Eastern Polynesia, and the Cashumpa of India. It is the bitter oil, or woondel, of Indian commerce. The natives use it for polishing arms and greasing their bodies, when cocoa-nut oil is not at hand. But the great reputation this oil enjoys throughout Polynesia and the East Indies rests upon its medicinal properties, as a liniment in rheumatism, pains in the joints, and bruises. Its efficacy in this respect can hardly be exaggerated, and recommends it to the attention of European practitioners. The oil is kept by the Fijians in gourd flasks, and, there being only a limited quantity made, I was charged about sixpence per pint for it, paid in calico and cutlery. The tree is one of the most common littoral plants in the group; its round fruits, mixed with the square-shaped ones of *Barringtonia speciosa*, the pine-cone-like ones of the Sago-palm (*Sagus Vitiensis*, Wendl.), and the flat seeds of the Walai (*Entada scandens*, Benth.), densely cover the sandy beaches. Dilo oil never congeals in the lowest temperature of the Fijis, as cocoa-nut oil often does during the cool season. It is of a greenish tinge, and a very little of it will impart its hue to a whole cask of cocoa-nut oil. Its commercial value is only partially known in the Fijis, and was found out accidentally. Amongst the contributions in cocoa-nut oil which the natives furnish towards the support of the Wesleyan missions, some Dilo oil had been poured, which, on arriving at Sydney, was rejected by the broker who purchased the other oil, on account of its greenish tinge and strange appearance. On being shown to others, a chemist, recognizing it as the bitter oil of India, purchased it at the rate of £60 per tun; and he must have made a good profit on it, as the article fetches as much as £90 per tun. The Dilo grows to the height of sixty feet, and the stem is from three to four feet in diameter, generally thickly crowded with epiphytal Orchids and Ferns. The dark foliage forms a magnificent crown, producing a dense shade; and when, during the flowering season, it is interspersed with numerous white flowers, the aspect of the whole tree is truly noble. “The leaves are torn in small pieces, soaked in water for a night, and then used for washing inflamed eyes.” (Storck.) The exudation from the stem is, according to G. Bennett, the Tacamahaca resin of commerce, used by Tahitians as a scent. Carpenters and cabinet-makers value the wood on account of its beautiful grain, hardness, and red tinge. Boats and canoes are built of it, and it is named with the Vesi (*Afzelia bijuga*, A. Gray) as the best timber produced in Fiji. In order to extract the oil, the round fruit is allowed to drop in its outer fleshy covering and rot on the ground. The remaining portion, consisting of a shell (*putamen*) somewhat of the consistency of that of a hen’s egg, and enclosing the kernel, is baked on hot stones, in the same way that Polynesian vegetables and meat are. The shell is then broken, and the kernel pounded between stones. If the quantity be small, the macerated mass is placed in the fibres of the Vau (*Hibiscus tiliaceus* and *tricuspis*), and forced by the hand to yield up its oily contents; if large, a rude level press is constructed by placing a boom horizontally between two cocoa-nut trees, and appending to this perpendicularly the fibres of the Vau. After the macerated kernels have been placed in the midst, a pole is made fast to the lower

end of the fibres, and two men taking hold of its end, twist the contrivance round and round till the oil, collecting into a wooden bowl placed underneath, has been extracted. Of course, the pressure thus brought to bear upon the pounded kernels is not sufficiently great to express the whole of the oil, and there is still much waste.

III. **Calysaccion**, Wight, Illustr. vol. i. p. 130; Ibid. Icon. t. 1999; Walp. Bot. Zeit. 1851, p. 368. Flores polygami v. calyx ante anthesin clausus, in sepala 2 valvatim fissus. Petala 4-6. Stamina ∞ , libera, filamenta filiformia; antheræ erectæ, oblongæ, 2-loculares, longitudinaliter dehiscentes. Ovarium 2-loculare, loculis 2-ovulatis; stylus brevis, stigmatate peltato margine crenulato. Drupa . . .—Arbores; foliis rigide coriaceis, crebre tenuiterque reticulato-penninervia; pedunculis axillaribus 1-floris fasciculatis; floribus albidis v. rubellis.

I agree with Mr. Miers in regarding the Eastern genus *Calysaccion* as distinct from the Western *Mammea*, the former having a 2-celled ovary with 2 ovules, the latter a 4-celled ovary with 1 ovule in each cell. I showed some years ago (Bonplandia, 1856, p. 298) that *C. Chinense*, Walp. Bot. Zeit. 1851, p. 368, is identical with *C. longifolium*, Wight.

1. **C. tinctorium**, (sp. nov.) Seem. (Tab. IX.); arborea, glabra, succo sanguineo; foliis obovatis v. ovatis obtusis v. acutis in petiolum attenuatis coriaceis, supra viridibus, subtus pallidioribus; floribus pedunculatis axillaribus aggregatis, basi bracteis minutis, polygamis (v. dioicis?); fl. ♂ alabastro globoso apiculato; calyce irregulariter rumpente; petalis (albidis) obovatis obtusis v. acutis concavis 6; antheris oblongis truncatis, longitudinaliter dehiscentibus, rudimento ovarii nullo; fl. ♀ ign.—*Garcinia Mangostana*, A. Gray, Bot. Wilkes, p. 217 non alior. Nomina vernac. Vitiens. "Vetao" v. "Uvitao."—Islands of Taviuni and Bau (Seemann! n. 46). Also found in the Magsi Islands (U. S. Expl. Exped.), and (according to Mr. W. T. Pritchard) in Samoa, where it is called "Fetao" by the natives.

A tall tree. Leaves in young plants (of which one is shown in the background of our Plate) 9-12 inches long and 5-6 inches broad; in the old plants generally from 4-5 inches long and 2½-3 inches broad, thick, coriaceous, pinnately veined, smooth, shining. Peduncles often $\frac{3}{4}$ of an inch long. Flowers minute, their buds before opening not much larger than good-sized Peas. There are only male flowers on my specimens, and it is probable that, as in *C. longifolium*, the plant is polygamo-dioicious, the male flowers being on one tree and the hermaphrodite on the other. In the East Indies the male tree of *C. longifolium* is termed "Woondy," the female (or rather hermaphrodite) "Poonag," whilst both go under the names of "Suringu" and "Gordeoody." The buds of this species yield a dye, probably yellow or orange, and are known under the name of Nag-kassar, or rather Nagesar; on account of their sweet scent, which resembles that of tea or violets, they might perhaps prove useful in perfumery. I did not observe any scent in collecting the Vitian species. The natives use the sap for dyeing their black hair red, or rather orange. Perhaps this property of the *C. tinctorium* may be turned to better use. The wood of the tree is close-grained and useful.

EXPLANATION OF PLATE IX.—Fig. 1, a bud of male flower; 2, the same, opening; 3, the same, quite open; 4, the same, cut vertically; 5, one of the stamens:—all magnified.

ORDO XII. TERNSTRŒMIACEÆ.

I. **Ternstroemia**, Linn. f. Suppl. 39; Benth. et Hook f. Gen. p. 182. Sepala 5, valde imbricata. Petala 5, imbricata, basi connata. Stamina ∞ , corollæ basi adnata; antheræ glabræ, basi-fixæ, loculis adnatis. Ovarium (nunc imperfecte?) 2-3-loculare; stylus simplex, nunc fere nullus, stigmatate late 2-3-lobo v. subintegro; ovula in loculis 2, rarius 3-6, ab apice loculi pendula. Fructus indehiscens. Semina majuscula, hippocrepice complicata; albumen carnosum, nunc parcum v. subnullum; embryo inflexus, cotyledonibus semiteretibus radícula brevioribus.—Arbores fruticesve sempervirentes; foliis coriaceis, integerrimis v. serrato-crenatis; pedunculis 1-floris recurvis, axillaribus v. lateralibus, solitariis v. subfasciculatis, sub flore 2-bracteolatis.

1. **T. Vitiensis**, (sp. nov.) Seem.; fruticosa, ramulis angulatis puberulis demum glabris; foliis petiolatis obovatis v. ellipticis obtusis v. retusis, in petiolum attenuatis serrato-crenatis, supra viridibus lucidis, subtus pallidioribus opacis; pedunculis axillaribus solitariis petiolo longioribus; sepalis interioribus majoribus subrotundatis mucronatis ciliatis; petalis . . . , fructu ovato glabro coriaceo stylo 3-fido coronato 3-loculari, loculis 2-spermis.—On the top of the mountains of Taviuni, near the lake (Seemann! n. 45).

Has somewhat the habit of some species of *Ilex*, and attains about 10–14 feet in height. Branches straight, rigid. Leaves alternate, coriaceous, feather-veined, $2\frac{1}{2}$ –3 inches long, and about one inch broad. Flowers pedicellate, with two minute bracts at the base. Corolla, stamens, and ovary unknown. Fruit (not quite ripe) about $\frac{3}{4}$ of an inch long, surrounded by five persistent sepals.

II. **Eurya**, Thunb. Fl. Jap. 11. t. 25; Benth. et Hook. f. Gen. p. 183. Flores dioici. Sepala 5, valde imbricata. Petala 5, imbricata, basi coalita. Stamina ∞ (15 v. infra), rarius 5, corollæ basi adnata; antheræ glabræ, basifixæ, loculis adnatis. Ovarium 3-(rarius 2–5-)loculare; styli 3 (rarius 2–5), fere a basi liberi v. fere ad apicem connati; ovula in medio loculo ∞ . Fructus baccatus. Semen albumen carnosum; embryo curvatus, cotyledonibus semiteretibus radícula brevioribus.—Frutices v. arbores; foliis sæpius serrato-crenatis et glabris; floribus parvis, sessilibus v. breviter pedunculatis, ad axillas fasciculatis v. rarius solitariis; bracteolis persistentibus.—*Geeria*, Blum. Bijdr. 124.

1. **E. angustifolia**, Blum. Bijdr. vol. ii. p. 119; ramulis teretibus apice sericeo-subvelutinis; foliis brevipetiolatis e basi angusta lanceolatis longe obtuse acuminatis serrulatis, supra glabris, subtus obsolete reticulatis et præsertim ad costam sericeo-puberulis ($1\frac{1}{2}$ – $3\frac{1}{2}$ poll. longis); floribus solitariis geminis v. confertis brevibus; sepalis subrotundis, exterioribus minoribus; stylis 3 v. 4, raro 5, ad medium connatis; bacca ovoideo-globosa glabra.—*Geeria angustifolia*, Blum. Bijdr. 126. *E. acuminata*, DC. Prodr. vol. i. p. 525? Ovalau (Seemann! n. 44). Also collected in East Java (Horsfield!).

2. **E. Vitiensis**, A. Gray, Bot. Wilkes, p. 210; glaberrima; foliis lanceolato-ellipticis oblongisve utrinque acuminatis serrulatis, supra nitidis; floribus plerisque geminis, masculis (v. 10-andris) fasciculatis; sepalis orbiculatis; stylis 3 v. 4 brevissimis fere discretis; bacca globosa.—On the mountains of Ovalau (U. S. Expl. Exped.), Kadavu (Seemann! n. 43). A tree 25–30 feet high.

III. **Saurauja**, Willd. in N. Schrift. Ges. Naturf. Freunde, vol. iii. p. 406. t. 4; Benth. et Hook. f. Gen. p. 184. Flores vulgo hermaphroditi. Sepala 5, valde imbricata. Petala 5, imbricata, basi connata v. rarius fere libera. Stamina ∞ , corollæ basi adhærentia; antheræ versatiles, loculis apice poro v. rima brevi dehiscentibus. Ovarium 3–5-loculare; styli 3–5, apice stigmatosi, a basi distincti v. plus minus coaliti; ovula in loculis ∞ , anatropa. Bacca 3–5-locularis, rarius siccior et subdehiscens. Semina pulpa immersa, parva; albumen sat copiosum; embryo axilis, rectus v. leviter incurvus, cotyledonibus brevibus.—Arbores fruticesve sæpissime strigoso-pilosæ v. squamatæ; foliis vulgo serratis, venis parallelis a costa divergentibus more Dilleniacearum; pedunculis axillaribus v. lateralibus, ∞ -floris, subpaniculatis v. rarius abbreviatis paucifloris; bracteolis vulgo parvis a calyce remotis.—*Draytonia*, A. Gray, Bot. Wilkes, p. 206. t. 15.

1. **S. rubicunda**, Seem.; arbuscula; foliis oblongis utrinque acutis serratis; pedunculis axillaribus subpaniculatis; pedicellis 2-bracteolatis; sepalis rotundato-ovatis concavis; petalis obovatis (pulchre roseis); antheris apice rima introrsa hiantibus; stylis (3–5) connatis, fructu baccato.—*Draytonia rubicunda*, A. Gray, Bot. Wilkes, p. 207. t. 15. Nomen vernac. “Kau alewa.”—Viti Levu, about Navua (Seemann! n. 42), Ovalau (Storck! n. 872; U. S. Expl. Exped.). Also collected in Viti by Sir E. Home.

ORDO XIII. MALVACEÆ.

I. **Sida**, Linn. Gen. n. 837; Benth. et Hook. f. Gen. 203. Bracteolæ 0 v. a calyce distantes. Calyx 5-dentatus v. 5-fidus. Columna staminea, apice in filamenta ∞ divisa. Ovaria 5- ∞ , 1-ovulata; styli rami totidem, filiformes v. subclavati, apice capitato- v. truncato-stigmatosi. Carpella matura ab axi secedentia, erostria v. apice in rostra v. aristas erecto-conniventes producta, indehiscentia v. apice 2-valvia, intus nuda. Semen pendulum v. horizontaliter affixum.—Herbæ frutesce indumento sæpius nullo v. tomentoso; floribus sessilibus v. pedunculatis, solitariis v. glomeratis, axillaribus v. in racemos spicas v. capitula terminalia dispositis, versicoloribus et interdum speciosis, sæpius tamen minoribus, flavis v. albidis.

* *Pedunculi inarticulati.*

1. **S. linifolia**, Cav. Diss. vol. i. p. 14. t. 2. fig. 1; DC. Prodr. vol. i. p. 459; erecta; foliis linearibus integerrimis, floris diametro multo longioribus; racemis terminalibus; pedunculis inarticulatis; floribus parvis, carpellis 5-8 submuticis.—Ovalau (U. S. Expl. Exped.).

2. **S. microphylla**, Cav. Diss. vol. i. p. 22. t. 12. fig. 2; DC. Prodr. vol. i. p. 461; erecta v. prostrata; ramis stellato-pubescentibus demum glabris; foliis ellipticis v. subrotundatis dentatis, supra pubescentibus, subtus albido-tomentosis; pedunculis axillaribus v. solitariis inarticulatis, folio brevioribus v. multo longioribus; carpellis 7 biaristatis.—*Sida rhombifolia*, Forst. Prodr. n. 256, non Linn. *S. salicifolia*, Forst. Herb.—Nukulau (Barclay!), and other parts of the group, in waste places (U. S. Expl. Exped.); also collected in Tongan Islands (Forster! Sir E. Home!), Isle of Pines (M'Gillivray!), Tana (Forster!), Amsterdam Island (Forster!).

Bentham referred Barclay's specimen to *S. microphylla*, Cav., and, I think, with justice. To this A. Gray objected, on account of the length of the peduncles. But the peduncles are sometimes shorter (as in Cavanilles' figure), and sometimes, or rather generally, longer than the leaf. I now speak of specimens gathered in the same spot. The typical *S. retusa*, to which A. Gray wished to refer his species, is a very distinct plant. The extreme forms of *S. microphylla* are extremely unlike each other. In unfavourable localities the plant is prostrate, and has minute, generally orbicular leaves; in more congenial situations it assumes an erect habit, and more elliptical and larger leaves, and then looks like some weak state of *S. rhombifolia*. Forster, when he first collected it, named it *Sida salicifolia*, remarking in his schedules that there were several varieties; but he ultimately referred it, in his 'Prodromus,' to *S. rhombifolia*. From the latter it is distinguished by its inarticulate peduncles. Guillemain (Zeph. Tait. p. 73) remarked that Forster's specimens had, at first sight, a look different from those of *S. rhombifolia*, in which he was correct, but after all he referred them to *S. rhombifolia*, in which he was wrong.†

** *Pedunculi distincte articulati.*

3. **S. rhombifolia**, Linn. Spec. 961; DC. Prodr. vol. i. p. 462; erecta; foliis oblongo-lanceo-

† The following is another Polynesian species:—*Sida biloba*, (sp. nov.) Herb. Hook.; foliis ovato- v. cordato-bilobis, lobis obtusis serratis, supra glabris, subtus cano-tomentosis, ramulis petiolis pedunculis calycibusque fulvido-tomentosis; stipulis subulatis persistentibus; pedunculis axillaribus inarticulatis 1-floris petiolo multo longioribus; calycis lobis acutis v. acuminatis; carpellis submuticis.—Isle of Pines (M'Gillivray!). A very distinct species. Leaves scarcely half an inch long, somewhat resembling those of *S. retusa*.

Sida periplocifolia, Hook. et Arn. Bot. Beech. p. 60 = *Abutilon periplocifolium*, Endl. Ann. Wien. Mus. 1836, p. 182, is a species of *Wissadula*, near *rostrata*, Hook. f.

Sida Indica, Forst. Prodr. n. 257, non alior., is *Abutilon auritum*, G. Don. I find at the British Museum another new Polynesian *Abutilon*, which I have named after its discoverer:—

Abutilon Menziesii, (sp. nov.) Seem.; fruticosum; caule ramis petiolis pedunculis calycibusque cano-tomentosis; foliis cordatis acuminatis grosse crenatis, supra viridibus pube stellato, subtus cano-tomentosis; pedunculis axillaribus solitariis petiolo brevioribus; calycis laciniis late ovatis acutis; carpellis 5 ovato-oblongis acuminatis hirsutis 3-spermis, seminibus hirsutis, placentis persistentibus.—Sandwich Islands (Menzies! in Herb. Mus. Brit.). There are two small specimens of this plant, which I do not find anywhere described: leaves 2-3 inches long, on petioles longer than the blade; stipules minute; flowers about 1 inch long, apparently purplish.

latis dentatis basi cuneatis, subtus candicantibus; pedunculis axillaribus distincte articulatis 1-floris folio brevioribus; carpellis 8–10 birostratis.—Cav. Diss. vol. i. t. 3. fig. 12.—Common on roadsides and in waste places all over the group (Seemann! n. 16; Milne! U. S. Expl. Exped.). Also collected in the Sandwich Islands (Barclay!), New Caledonia (Herb. Webb.), Eromanga (M'Gillivray!), Salomon group (Milne!), Tana (Capt. Cook!), and Samoan Islands (Sir E. Home!).

All the above-quoted specimens have carpels with two long awns, and have the true look of *S. rhombifolia*, as I have seen it in many parts of tropical America; and I am inclined to attach a greater value to the presence or absence of the awns than several other writers are prepared to do. An awnless species from Tahiti, gathered by Barclay, I am not able to refer to any of the forms of *S. rhombifolia*, though it is closely allied to this species, and I find it identical with a plant alluded to but left undetermined by Bentham (Hook. Journ. of Botany, vol. iv. (1842) p. 122).

II. **Urena**, Linn. Gen. n. 844; Benth. et Hook. f. Gen. p. 205. Bracteolæ in involuclum 5-fidum calycis tubo adnatum coalitæ. Calyx 5-fidus v. 5-dentatus. Columna staminea infra apicem truncatum v. 5-dentatum, filamenta brevia v. antheras sessiles exserens. Ovarii loculi 5, 1-ovulati; styli rami 10, apice capitellato-stigmatosi. Carpella matura ab axi brevi secedentia, indehiscentia, undique glochidiata nec aristata. Semina adscendentia.—Herbæ fruticesve rigidulæ; foliis sæpius angulatis v. lobatis; floribus parvis, sessilibus v. breviter pedunculatis, sæpius glomeratis, lutescentibus.

1. **U. lobata**, Linn. Spec. 974; DC. Prodr. vol. i. p. 441; foliis subrotundatis obtusissime v. acutiuscule 3–5-lobis v. ovato-rhombeis, subtus cano-tomentosis 3–9-nerviis 1–3-glandulosis; calycis lobis oblongo-lanceolatis v. linearibus; fructu longiuscule echinato.—Parkins. Drawings Tahit. Pl. Ined. t. 62. *U. monopetala*, Lour. Fl. Cochin. vol. ii. (ed. Willd.!) p. 508? *U. scabriuscula*, DC. Prodr. vol. i. p. 441; A. Gray, Bot. Wilkes, p. 169.—Common throughout the Viti group (Seemann! n. 17; Sir E. Home!). Also collected in the Society (Banks and Solander! Forster! Barclay!), Marquesas (Barclay!), Samoan, and Tongan Islands (U. S. Expl. Exped.), and Eromanga (M'Gillivray!); also in many parts of tropical Asia.

2. **U. morifolia**, DC. Prodr. vol. i. p. 442; foliis 5-lobis subtus pallide velutinis 1-glandulosis, superne subpuberulis, sinibus serratis valde dilatatis v. superioribus sæpe indivisis lineari-elongatis; fructu dense tomentoso setisque echinato.—Cultivated ground about Rewa, Viti Levu (U. S. Expl. Exped.). Also found in the Tongan Islands. (Fide De Candolle.)

III. **Hibiscus**, Linn. Gen. n. 864; Benth. et Hook. f. Gen. p. 207. Bracteolæ ∞ , rarius 3–5, sæpius angustæ, liberæ v. coalitæ. Calyx 5-fidus v. 5-dentatus. Columna staminea infra apicem truncatum v. 5-dentatum (rarius antheriferum) filamenta ∞ exserens. Ovarium 5-loculare, loculis 3– ∞ -ovulatis; styli rami 5, patentes v. rarius erecto-subconnati, superne sæpe incrassati, nunc brevissimi, apice in stigmata capitata v. spathulata dilatati. Capsula loculicide 5-valvis, endocarpio rarius membranaceo-solubili v. in dissepimenta spuria per dehiscentiam fissa producta. Semina reniformia, subglobosa (v. rarius obovoidea?), glabra tomentosa v. lanata.—Herbæ frutices v. arbores, nunc elatæ hispidae v. tomentosæ, nunc humiliores v. glabræ; foliis variis sæpe partitis; floribus coloribus variis, plerumque speciosis, petalis sæpe macula discolori notatis; bracteolis persistentibus v. caducis.

1. **H. (Ketmia) Rosa-sinensis**, Linn. Spec. 977; fruticosus, inermis; foliis ovatis longe acuminatis grosse crenatis 3–5-nerviis utrinque glabris; petiolis pedunculis bracteolis calycibusque puberulis; bracteolis 10 linearibus acutis, laciniis calycinis late ovatis acuminatis; petalis (purpureis) obovatis obtusis, extus puberulis.—Cav. Diss. vol. iii. t. 69. fig. 2; Rheed. Mal. vol. ii. t. 16; Parkins. Drawings Tahit. Plant. (ined.) t. 66. Nomina vernac. Vitien. "Senitoa" v. "Seniciobia."—Common all over the Viti group (Seemann! n. 22; M'Gillivray! U. S. Expl. Exped.). Also gathered in the Marquesas (Barclay!), Society (Banks and Solander!), and Tongan Islands (Sir E. Home!).

Var. *flore pleno*.—Common in all the islands just recorded.

The natives are very fond of this plant; they have it frequently in their gardens, and often decorate their persons with its flowers. In some parts of the tropics it is called "the Shoe-black plant," because its astringent petals are used for blacking shoes; the Chinese, it is well known, dye their eyebrows with them. If truly indigenous to the South Sea, *H. Rosa-sinensis* forms one of the few exceptions of double-flower-producing plants belonging to the Southern hemisphere, about which see the 'Journal of Botany' (1864), vol. ii. pp. 176, 318.

2. **H. (Ketmia) Storckii**, Seem. in Bonplandia, vol. ix. p. 254. sp. nov. (Tab. IV.); fruticosus, inermis; foliis ellipticis v. ovato-ellipticis acuminatis integerrimis v. versus apicem serratis 3-nerviis utrinque glabris; petiolis pedunculis bracteolis calycibusque puberulis; bracteolis 10 linearibus acutis, laciniis calycis ovato-triangularibus acutis; petalis obovatis (roseis) extus puberulis, ovario apice glanduloso-puberulo.—Nomen vernac. "Sequelu."—Somosomo, Island of Taviuni (Seemann! n. 23), growing as underwood like the allied *H. Genevii*, Bojer; rare.

This is closely allied to *H. Rosa-sinensis*, but I think sufficiently distinct to entitle it to the rank of species. Unfortunately my specimens are not so complete as could be wished, and so prevent a thorough comparison with its nearest ally. I have never seen it cultivated; it is a more straggling shrub than *H. Rosa-sinensis*. The leaves are always more elliptical and less deeply cut on the margin, the segments of the calyx are also somewhat differently shaped, and I have never observed a variety of *H. Rosa-sinensis* with such fine pink-coloured petals. I have named it in honour of my able assistant, Mr. J. Storck, who was with me when we first found it.

PLATE IV., Fig. 1, bracts and calyx; 2, ovary, with style cut off; 3 and 4, sections of ovary,—all slightly magnified.

3. **H. (Abelmoschus) diversifolius**, Jacq. Icon. var. vol. iii. t. 551; DC. Prodr. vol. i. p. 449; caule fruticoso petiolisque aculeatis; foliis 3-5-lobis obtusis dentatis, superioribus oblongo-lanceolatis indivisis; pedicellis brevibus inermibus pilosissimis; bracteolis 9, petalis flavis fundo atro-violaceo.—*H. ficulneus*, Cav. Diss. vol. iii. t. 51. fig. 2. Nomen vernac. "Kalauaisoni" v. "Kalakalauaisoni."—Very generally on the coast and in marshes (Seemann! n. 21; U. S. Expl. Exped.). Also found in Norfolk Island (Backhouse!), Isle of Pines (Milne!), Congo (Chr. Smith!), Madagascar (Thompson!), and the East Indies.

The native physicians use the juice of the leaves to procure abortion. The fibre of stem and branches is used to a limited extent for cordage.

4. **H. (Abelmoschus) esculentus**, Linn. Spec. 980; Cav. Diss. vol. iii. t. 61. fig. 2; fruticosus, inermis; foliis cordatis 5-lobis obtusiusculis dentatis; petiolis flore longioribus; bracteolis 10 deciduis; calycibus longitudinaliter rumpentibus; fructu pyramidato sulcato.—DC. Prodr. vol. i. p. 450. *Abelmoschus esculentus*, Wight et Arn. Fl. Ind. Or. p. 53. Nomina vernac. "Bele" v. "Vauvau ni Viti."—Cultivated throughout Viti (Seemann! n. 18).

The fruit of this plant is known in the tropics under the names of Ochro, Gombo, Gobbo, Bandikai, Naju, etc.; it is a favourite ingredient in soup, which it thickens by its mucilaginous quality. But the Vitians plant it solely for its leaves, which are used as a potherb. Plots of more or less extent are seen about every village. The plants, from being always deprived of their leaves, become 4-6 feet high.

5. **H. (Abelmoschus) Abelmoschus**, Linn. Spec. 980; fruticosus, inermis; caule hispido; foliis subpeltato-cordatis 7-angularibus acuminatis serratis; pedicellis petiolo longioribus; bracteis 8-9; capsula setosa; seminibus moschatis.—DC. Prodr. vol. i. p. 452; Cav. Diss. vol. iii. t. 62. fig. 2; Parkins. Drawings of Tahit. Pl. t. 64 (ined.). *H. pseudo-Abelmoschus*, Bl. Bijdr. p. 70. *Abelmoschus moschatus*, Mœnch. Meth. p. 616; Wight et Arn. Fl. Pen. Or. vol. i. p. 53. Nomina vernac. "Wakiwaki v. (teste Storck) Vakeke."—Grows on dry ground; rather common throughout the group (Seemann! n. 19; Storck! n. 869). Also collected in Aneitum (Milne!), in the Society (Banks and Solander!) and Tongan (Barclay!), Samoan (U. S. Expl. Exped.) and Philippine Islands (U. S. Expl. Exped.). Common in the East Indies and tropical America.

The juice of the leaves is used by the native physicians to procure abortion.

6. **H. (Paritium) tricuspis**, Cav. Diss. vol. iii. p. 152. t. 55. fig. 2; fruticosus, inermis; foliis incanis trilobis, lobis lanceolatis subdentatis; pedunculis axillaribus subbifloris, terminalibus subracemosis, bracteolis 9 basi coalitis; capsulæ loculis ∞ -spermis; seminibus glabris.—DC. Prodr. vol. i. p. 453; Parkins. Drawings of Tahit. Pl. Ined. t. 63.—*H. hastatus*, Linn. fil. Suppl. p. 310; Forst. Prodr. n. 265; Icon. (ined.) t. 194. Nomen vernac. Vitiense, “Vau dra;” Tahitense, test. Pritchard, “Purau-teruere.”—Very generally in the group, growing along with *H. tiliaceus* (Seemann! n. 26). Also collected in Tahiti (Banks and Solander! Forster!).

7. **H. (Paritium) tiliaceus**, Linn. Spec. 976; Cav. Diss. vol. iii. t. 55. fig. 1; fruticosus v. arborescens, inermis; foliis subrotundo-cordatis, acuminatis, crenatis subtus cano-pubescentibus in nervis 1–5 poris linearibus instructis; bracteolis 10 basi coalitis; capsulæ loculis ∞ -spermis, seminibus glabris.—DC. Prodr. vol. i. p. 454; Pariti, Rheed. Mal. vol. i. t. 30. Nomen vernac. Vitiense, “Vau dina;” Tahitiense, teste Solander, “Purau.”—Very common in the group, especially near the sea (Seemann! n. 24). Also collected in the Sandwich (Seemann! n. 1724; Nuttall! Barclay!), Society (Banks and Solander! Forster!), Tongan (Sir E. Home! Harvey!), and Samoan Islands (U. S. Expl. Exped.), and in the Isle of Pines (M’Gillivray! Milne!).

Var. *purpurascens*, Seem.; *Paritium purpurascens*, Seem. in Bonpl. vol. ix. p. 254; arborescens; ramulis foliisque purpurascensibus.—Nomen vernac. “Vau damadamu” (*i.e.* the red *Hibiscus*).—In company with the true *H. tiliaceus*, but generally growing more inland; it may possibly be a distinct species (Seemann! n. 24).

In most countries the fibre of this species is extensively used for cordage, but in Fiji the chief use made of it and that of the foregoing species (*H. tricuspis*) is for women’s “liku,” a dress consisting of a number of fringes attached to a waistband. The bark of these trees is stripped off, steeped in water, to render it soft and pliable, and to allow the fibres to separate. The fibres are either permitted to retain their original whiteness, or they are dyed yellow, red, or black. The yellow colour is imparted with turmeric, the black with mud and the leaves of the Tavola (*Terminalia Catappa*, Linn.), and the red with the bark of the Kura (*Morinda citrifolia*, Linn.) and that of the Tiri. The liku worn by the common women consists always of one row of fibres, all of the same colour; whilst those worn by ladies of rank are often composed of two or three rows or layers (flounces), every one of which exhibits a different colour. In Captain Cook’s time, the Tahitians used to suck the bark of this plant when the breadfruit season was unproductive, and the New Caledonians ate it, as they probably still do. Conf. Forst. Plant. Escul. n. 45.

IV. **Thespesia**, Corr. in Ann. Mus. Par. vol. ix. p. 290. t. 8. fig. 2; Benth. et Hook. f. Gen. p. 208. Bracteolæ 3–5, parvæ v. deciduæ. Calyx truncatus, minute v. setaceo-dentatus, rarius 5-fidus. Columna staminea infra apicem dentatum (nunc antheriferum) filamenta ∞ exserens. Ovarium 5-loculare, loculis pauciovulatis; stylus apice clavatus, 5-sulcus v. in ramos breves stigmatiferos erectos clavatos subdivisus. Capsula lignoso-coriacea, loculicide 5-valvis v. fere indehiscens. Semina obovoidea, glabra v. tomentosa; cotyledones quam maxime complicatæ, radiculam brevem subrectam fere includentes, sæpius nigro-punctatæ.—Arbores v. herbæ erectæ; foliis integerrimis v. angulato-lobatis; floribus sæpius flavis, speciosis; calycibus non conspicue punctatis, sed cotyledonibus insigniter nigro-punctatis in *T. populnea* et *T. Lampade*.

1. **T. populnea**, Corr. in Ann. Mus. Par. vol. ix. p. 290. t. 8. fig. 2; arborea; foliis subrotundo-cordatis acuminatis; capsula subglobosa, indehiscenti, v. in valvas tardius solubili; seminibus crassis lanatis.—DC. Prodr. vol. i. p. 457; Parkins. Drawings of Tahit. Pl. (ined.) t. 67. *Hibiscus populneus*, Linn. Spec. 976; Cav. Diss. vol. iii. t. 56. fig. 1. *H. bacciferus*, Forst. Prodr. n. 260. Nomen vernac. Vitiense, “Mulomulo;” Samoense et Tonguense, teste Pritchard, “Milo;” Tahit., teste Pritchard, “Miro” v. “Amae.”—Common on the seashore all over the group (Seemann! n. 27; U. S. Expl. Exped.). Also collected in Sandwich (Seemann! Macrae! Diell!), Marquesas (Barclay!), Society Islands (Banks and Solander!), and Easter Island (Forster!). Common on the coasts of tropical Australia and Asia.

The natives do not seem to make any use of the fibre of the Mulomulo, so frequently used in other countries for cordage, but bestow great praise on the tree on account of the almost indestructible nature of the wood whilst under water. When full grown, the Mulomulo is about fifty feet high, and the stem from one to two feet in diameter, bearing heart-shaped leaves and flowers somewhat resembling those of the Hollyhock (*Althæa rosea*), but changing their colour as the day advances, like some other Malvaceæ. Its thick foliage renders it suitable for avenues, and I have seen it planted for the sake of its shade both in Ceylon and the Hawaiian Islands. The centre of the old stems generally decays in the way our European Elms do, and the wood towards that part presents a deep claret colour. In Tahiti the tree was formerly regarded as sacred, and planted on the "Maraë;" the leaves were used in certain religious ceremonies.

V. **Gossypium**, Linn. Gen. n. 845; Benth. et Hook. f. Gen. p. 209. Bracteolæ 3, amplæ, cordatæ. Calyx truncatus v. breviter 5-fidus. Columna staminea infra apicem nudum v. rarius antheriferum filamenta ∞ exserens. Ovarium 5-loculare, loculis ∞ -ôvulatis; stylus apice clavatus, 5-sulcatus et 5-stigmatosus. Capsula loculicide dehiscens. Semina subglobosa v. angulata, dense lanata v. rarius fere glabra; albumen tenue, membraniforme v. 0; cotyledones valde plicatæ, auriculis baseos radiculam rectam involventibus.—Herbæ elatæ v. frutices subarborei; foliis 3–9-lobis; floribus majusculis, albis flavis v. purpureis; bracteolis sæpius nigro-punctatis, incisus dentatis v. integerimis; cotyledonibus sæpius nigro-punctatis.

Cotton was one of the subjects to which attention was principally directed by my instructions from the Colonial Office; and I have endeavoured to collect every information which might prove useful in forming a correct estimate of the Fijis as a cotton-growing country. If I understand the nature and requirements of cotton aright, the Fijis seem as if made for it. In the whole group there is scarcely a rod of ground that might not be cultivated, or has not at one time or other produced a crop of some kind, the soil being of an average amount of fertility, and in some parts rich in the extreme. Cotton requires a gently undulated surface, slopes of hills rather than flat land. The whole country, the deltas of the great rivers excepted, is a succession of hills and dales, covered on the weather-side with a luxuriant herbage or dense forest; on the lee-side with grass and isolated screw-pines, more immediately available for planting. Cotton wants sea-air. What country would answer this requirement better than a group of more than two hundred islands surrounded by the ocean as a convenient highway to even small boats and canoes, since the unchecked force of the winds and waves is broken by the natural breakwater presented by the coral-reefs which nearly encircle the whole? Cotton requires, further, to be fanned by gentle breezes when growing, and a comparatively low temperature; there is scarcely ever a calm—either the north-east or the south-east trade-wind blowing over the islands keeps up a constant current, and the thermometer for months vacillates between 62° and 80° Fahrenheit, and never rises to the height attained in some parts of tropical Asia, Africa, or America. In fine, every condition required to favour the growth of this important product seems to be provided, and it is hardly possible to add anything more in order to impress those best qualified to judge, with a better idea of Fiji as a first-rate cotton-growing country.

Cotton is not indigenous in any part of the group. Independent of its introduction being alluded to in various works as having taken place in the early part of this century, there is no proper vernacular name for it. In all such cases, the Fijian language borrows that of some indigenous plant which resembles the introduced one as closely as possible: thus the Cassava-root received the name of "Yabia ni papalagi" (*i. e.* foreign Arrowroot), the Bird's-eye Pepper that of "Boro ni papalagi" (*i. e.* foreign Nightshade), and the Pine-apple that of "Balawa ni papalagi" (*i. e.* foreign Screw-pine). By the same rule, cotton became known as "Vauvau ni papalagi" (*i. e.* foreign Vauvau), from its close resemblance to the Bele, or Vauvau (*Hibiscus* [*Abelmoschus*] *esculentus*, Linn.), a cultivated species, the leaves of which are eaten as a potherb. It is true that when foreigners speak about "Vauvau" the natives of the coast know cotton is meant; but in districts where cotton has not yet penetrated, as for instance at Namosi, Viti Levu, one is sure to get the edible *Hibiscus*, if Vauvau, without adding "ni papalagi" (foreign), be asked for.

Yet, although cotton is an introduced plant, and although until lately no attention whatever was paid to its cultivation, it has spread over all the littoral parts of Fiji, and become in some localities perfectly naturalized. The different kinds which have come under my observation are shrubby, and produce flower and fruit throughout the whole year, though the greater number of pods arrive at maturity during the dry season, from June to September. There is scarcely any difference in the look of these species which a person not botanically trained could readily detect. Left to themselves, and never subjected to the pruning-knife, they become as high as a tall man can reach, and each shrub spreads over a surface of about fourteen feet square. I have had no opportunity of counting the number of pods produced throughout the year by a single specimen, but that found in July was on the average seven hundred per plant. Twenty pods

of cleaned cotton weighed 1 oz.; thus each plant would yield 2 lb. 3 oz. Allowing fourteen feet square for each plant, an acre would hold 222 plants, yielding, at the rate of 2 lb. 3 oz. per individual plant, 485 lb. 10 oz. Even fixing the price of sorts, worth more than 1s. at Manchester, as low as 6d. per pound on the spot, an acre would realize £12. 2s. 9 $\frac{3}{4}$ d. When it is borne in mind that Fijian cotton brings forth ripe fruit without intermission throughout the year, but that this calculation is based *solely* upon the number of pods *found at one time only*, and that the pods were gathered from plants upon which *no attention whatever had been bestowed*, the result will be still more striking; double, even treble the above quantity may safely be calculated upon as their annual crop. When it is further remembered that Fijian cotton is not an annual, as it is in the United States, and all other countries, where killed by frost or too low a temperature, and that the *plants will continue to yield for several years* without requiring any other attention than keeping them free from weedy creepers and pruning them periodically, the encouragement held out to cultivators will be pronounced very great.

Until the excellence of Fijian cotton had been acknowledged at Manchester, and the mercantile value of the different sorts been ascertained to be in 1859, 7d. to 7 $\frac{1}{2}$ d., 8d., 9d., 11d., and even 12d. to 12 $\frac{1}{2}$ d. per pound respectively, no attempt had been made to cultivate the plant. It was almost entirely left to itself, and perhaps only here and there disseminated by the natives, in order to furnish materials for wicks. But when in November, 1859, Mr. Pritchard returned from England to Fiji, with the valuation printed in the Manchester 'Cotton Supply Reporter' for March, 1859, he induced the most influential chiefs to give orders for planting it; and the Wesleyan missionaries, without any exception, zealously aided in these endeavours by recommending the cultivation, both personally and through the agency of their native teachers. Thus, cotton has been thickly spread over all the Christianized districts, and imparts to them a characteristic feature, occasionally very striking in places having a mixed religious population. In Navua, for instance, that part of the town inhabited by Christians is full of cotton, whilst that inhabited by the heathens is destitute of it.

To guard against misconceptions, it must be stated that cotton has as yet been cultivated by the natives in their peculiar style. Those who would look in the islands for broad square acres covered with any given produce will be disappointed. The Fijian cultivator has such an abundance of good land at his command, and holds such stringent notions about the fallows to be observed, that he selects patches here and there only, which after an annual or biennial occupation, are deserted for others cleared for the purpose. When cotton was recommended to him, he followed his old cherished system, and the isolated patches now beheld are the result. These patches are of various sizes, but I have not seen any containing more than fifty plants. In Namara, and other districts subject to Bau, isolated specimens, often as many as twenty, are met with on the margins of every taro, banana, and yam plantation. On the island occupied by Bau, the Fijian capital, Mr. Storck, my assistant, counted four hundred shrubs, growing in the streets and squares. The number of plants thus dispersed all over Fiji must be considerable, though nobody could venture to give any approximate estimate of them; and their aggregate produce, if carefully collected, would doubtless amount to a quantity scarcely expected from such sources. Mr. Pritchard, in order to open the trade, pledged himself, before leaving England, to his Manchester friends, to forward 1000 lb. of cleaned cotton within twelve months' time, and he experienced no difficulty in obtaining from Kadavu, Nadroga, and Bau an amount exceeding that promised before the time fixed for its dispatch,—the first ever sent home. A demand having been established, there was a marked increase in the crops, as soon as the numerous young plants added to the old stock at Mr. Pritchard's instigation began to produce their harvest.

On leaving England in February, 1860, the Manchester Cotton Supply Association, through their able secretary, Mr. Haywood, furnished me with a large quantity of New Orleans and Sea Island cotton-seeds, together with printed instructions for their cultivation. Distributing a fair share of the seeds and papers amongst white settlers, who, I felt persuaded, would make use of them, I myself was enabled to establish a small experimental cotton-plantation on the Somosomo estate of Captain Wilson, and M. Joubert, of Sydney, in the island of Taviuni. None of the seeds of the Sea Island sort possessed any germinating power; but those of the New Orleans cotton were very good, and readily grew. Sown on the 9th of June, they began to yield ripe pods within three months, and I was thus enabled to take home a crop from the very seed I brought out, though my absence from England only amounted to thirteen months altogether. This may truly be termed growing cotton by steam. When I paid a second visit to Somosomo, on the 18th of October, my plants were from four to seven feet high, full of ripe pods and flowers, which in the morning were of a pale yellow, but towards evening turned pink. Koytoo, a Rotuma native, whom I had desired to look after the plantation, said that the field only required weeding once; after that the cotton-plants grew so rapidly that they kept down the weeds, and he had no further trouble.

Simultaneously, Dr. Brower, United States Vice-Consul, had succeeded in raising New Orleans cotton on his estate, in the island of Wakaya, twelve pods of which weighed an ounce; whilst the seeds distributed by me amongst various people had evidently not fallen on barren soil. Of course, my plantation could only be a small one, but nevertheless it proved so far beneficial that it convinced those white settlers who had lately repaired to the group what quick returns cotton would yield, and some of them resolutely set about establishing plantations. Shortly after my departure some of them had as many as fifteen acres planted. Mr. Storck, my assistant, who went from Sydney with me to the Fijis, made up his mind to remain behind

when I came away, in order to devote his attention to cotton-growing. He commenced a plantation at Nukumoto, on the island of Viti Levu; and as the experiment proved remunerative, he brought more land under cultivation.

The fact that cotton will grow, and grow well, being established, the success of this and similar attempts will chiefly depend upon the supply of manual labour. Those best acquainted with the condition of the group, and the character of its people, confidently look forward to a steady supply of it. In Rewa, Ovalau, and other districts longest frequented by whites, the natives go round asking for employment. This is quite an innovation, and shows that the Fijian is becoming gradually accustomed to labour for fixed wages; when the chiefs shall have either voluntarily relinquished or been compelled to give up their claim to all the property accumulated by the lower classes, a favourable result will be the immediate consequence, and a fresh impulse be imparted to all branches of industry. Let the common people once be assured that nobody can legally take their fair earnings away from them, and that the little comforts with which they have managed to surround themselves may be openly displayed without the danger of being coveted by the chiefs and their favourites, and they will doubtless be eager to engage in any work that does not require great mechanical skill or violent exertion, and at the same time will yield them reasonable returns.

It is well known, both from public journals and the 'Correspondence relating to the Fiji Islands,' presented by command of her Majesty to both Houses of Parliament, May, 1862, that from samples submitted by Mr. Pritchard, the Executive Committee of the Manchester Cotton Supply Association resolved, "That these samples are of qualities most desirable for British manufacture; that such a range of excellent cotton is scarcely now received from any cotton-growing country; and that the supply obtained from the United States does not realize nearly so high an average value as this Fijian cotton." It must be borne in mind, that these and similar opinions were arrived at in 1859, before my visit to the islands and the publication of the favourable report I made, and before the outbreak of the American rebellion. Doubtless the same Committee would now be prepared to pronounce a still higher opinion, if that were possible. The Fijian samples sent to the Great Exhibition of 1862 would furnish capital material for renewed examination, and amongst them would be found some of Sea Island cotton, the sort which, having the largest staple and fetching the highest price, has been hitherto exclusively grown in perfection on the coast of South Carolina, Georgia, and a small part of Florida. Fiji has now supplied every sort of cotton, from the cheapest to the very best, and capitalists would do well in directing their attention to it.

From these considerations I turn to those of a more strictly botanical nature. The genus *Gossypium* is in great want of a thorough revision. At present, great doubt prevails as to the number of species composing it. Bentham and Hooker (Gen. Plant. p. 209) express their belief that only three species exist, including even the Australian *Sturtia*, whilst Todaro, of Palermo, ('Osservazioni su alcune specie di Cotone') enumerates thirty-four. I believe that if all the characters are carefully noted, a monographer will have no difficulty in defining a considerable number of well-marked species. The native country of many species remains also to be traced. Cotton was undoubtedly indigenous both to the Eastern and Western hemispheres. It was met with by Columbus and the Spanish conquistadores. Captain Cook, as proved by the species now made known, found it wild in the Sandwich and Society Islands. The Vitian species are probably all introduced, and they are easily distinguished from each other by the following absolute characters:—

Seeds closely adhering to each other	<i>G. Peruvianum</i> (Kidney Cotton).
Seeds entirely disconnected.	
After the removal of the wool naked	<i>G. Barbadense</i> .
After the removal of the wool "mossy."	
" Moss " greenish	<i>G. arboreum</i> .
" Moss " tawny	<i>G. tomentosum</i> .

1. **G. Peruvianum**, Cav. Diss. vol. vi. p. 313. t. 168; foliis 3-5-lobis inferioribus indivisis subtus 3-glandulosis; bracteis laciniatis basi glandula nigra depressa notatis; floribus flavis ad unguis purpureis; seminibus adhærentibus glabris, lana longa candida.—*G. Brasiliense*, Macf. Fl. Jam. vol. i. p. 72. "Kidney, Peruvian or Brazilian Cotton," of the English colonies and markets. Nomen vernac. Vitiense, "Vauvau ni papalagi."—Introduced into the Viti Islands (Seemann! n. 29).

2. **G. Barbadense**, Linn. Spec. 975; foliis superioribus 3-lobis, inferioribus 5-lobis, subtus triglandulosis; bracteis laciniatis; seminibus liberis glabris, lana longa candida. Nomen vernac. Vitiense, "Vauvau ni Viti."—Introduced into Viti (Seemann! n. 30).

3. **G. arboreum**, Linn. Spec. 975; foliis 5-lobo-palmatis, lobis lanceolatis obtusis setula brevi mucronatis subtus 1-glandulosis; bracteis subintegris; petalis flavis unguibus purpureo-maculatis v.

demum sanguineis; seminibus liberis viridi-velutinis, lana longa candida.—*G. herbaceum*, Linn. Spec. 975. Nomen vernac. "Vauvau ni papalagi."—Introduced into Viti (Seemann! n. 31).

There is a variety of this species with long, and one with short staple, also the "New Orleans Cotton" (*G. sanguineum*, Hassk.), the flowers of which are at first yellow, and afterwards more or less intensely pink or blood-red.

4. *G. tomentosum*, Nutt. mss.; fruticosum; ramulis foliis bracteisque cano-tomentosis foliis 3-5-lobis, lobis ovatis acuminatis v. acutis integerrimis obscure v. distincte punctatis; stipulis cordatis v. ovatis acuminatis; pedunculis 1-2-floris; bracteis ovato-oblongis, basi cordatis, apice laciniatis, laciniis ovato-lanceolatis integerrimis; calyce subtruncato distincte nigro-punctato; petalis (flavis) obovatis, extus in parte exteriori tomentosus, in parte inclusa latiore tenuiore glabris; capsulis 3-valvis, valvis apiculatis; seminibus liberis dense croceo-velutinis, lana ($\frac{3}{4}$ unc. long.) crocea.—*G. religiosum*, Roxb. Fl. Ind. vol. iii. p. 185, non Linn. *G. parvifolium*, Nutt. Herb.—Viti Levu, on the Rakiraki coast (Smythe!), Kadavu (Pritchard! Seemann! n. 28). Also collected in Oahu, Atoi, Hawai (Diell! Nuttall!), Maui, Sandwich Islands (D. Nelson! Menzies!).

This is the plant which A. Gray (Bot. Wilkes, p. 179) calls *G. religiosum*, but it is not that of Cavanilles, which is more glabrous, has a deeper-cleft calyx, white flowers, and the seeds quite glabrous, after the removal of the wool.* The Sandwich Islands plant is apparently identical with that described by Roxburgh l. c. under the name *G. religiosum*, which, he says, has "seeds free, clothed with firmly-adhering, short, tawny down, and long wool of the same colour." There is a specimen of "Yellow Cotton" from Joy-negau (Trove!) at the British Museum, which has very small leaves,—the smallest I have seen in this genus,—agreeing as far as it goes with the above species; and there is a starved specimen of *G. tomentosum* from Hawai (Diell!) which has the leaves almost as small, and which Nuttall had provisionally named *G. parvifolium*. But generally the leaves and flowers of *G. tomentosum* are those of the size usual in this genus.†

* For the sake of comparison, I subjoin Solander's description of the true *G. religiosum* in his Prim. Fl. Ins. Pacif. p. 274 (ined.), made from fresh plants, and accompanied by specimens preserved at the British Museum:—

"*Gossypium religiosum*, Linn. Syst. Nat. 462: 5. 'Wavai' insularibus oceani Pacifici. Habitat in Tahiti, Huahine, Raiatea, et Tahaa. Frutex orgyalis, erectus, diffusus, ramosissimus, undique adpersus punctis nigris glandulosis. Rami divaricatissimi, teretes, virides. Folia alterna, petiolata, patentia, plana, magnitudine palmæ, glabra, lata, basi cordata, inferiora quinqueloba, suprema minora triloba. Sinubus obtusissimis, rotundatis. Lobis integerrimis, acuminatis. Petioli teretes, longitudine foliorum. Stipulæ ovato-lanceolatæ, acuminatæ, parvæ, caducæ. Glandulæ: Puncta parva, nigra, convexa, numerosissima in ramis, ramulis, petiolis, pedunculis, foliorum nervis, stipulis, calycibus exterioribus; in calyce interiore, germine, capsula paginisque foliorum glandulæ vix profuberantes vel potius puncta impressa nigricantia: in caulibus glandulæ fere oblitteratæ. Præter has glandulas, unica oblonga majuscula, subtus in costa intermedia foliorum, a basi remota. Pedunculi oppositifolii, solitarii, uniflori, petiolis crassiores illisque duplo vel triplo brevioribus. Calyx exterior 3-phyllus, magnus, sesquiuncialis et biuncialis, persistens, angulos 3 acutos formans. Foliola lata, subovalia, basi profunde cordata, medio sinus basi germinis adnata, pallide virentia, nervosa, rugulosa, extus laciniata. Laciniæ lanceolato-lineares, acuminatæ, porrectæ, longæ; lateralibus brevioribus. Calyx interior albidus, monophyllus, urceolatus, exteriori duplo brevior, 5-fidus. Laciniæ subulatæ, acuminatæ, longitudine tubi. Petala 5, cuneiformia, extrorsum latissima, oblique truncata, sæpe inæqualiter retusa, altero latere altiora et productiora, basi parum coalita, calyce parum longiora, oblique se invicem latere incumbentia, unde corolla patenti campanulata, primum alba, dein incarnata, tandem rubicunda. Ungues tamen semper ex albido flavescentes sunt. Filamenta (generis) corollæ basi affixa, petiolis duplo breviora. Germen superum, ovatum, glabrum. Stylus filiformis, staminibus longior (corolla tamen paulo brevior) superne 4-gonus. Stigma 4-fidum: laciniis arcte cohærentibus, rectis. Capsula ovato-subglobosa, obtusissime 4-gona, 4-ocularis, 4-valvis. Semina ovata, acuta [libera, glabra, B. S.], lana involuta, plerumque 4 in singulo loculamento." [I should add that there are no specimens of *G. religiosum* preserved in Linnæus's own herbarium.—B. S.]

† The following is an additional and very distinct Polynesian species:—

Gossypium drynarioides, Seem. (sp. nov.); fruticosa, glabra; foliis 5-7-lobis; lobis triangularibus acutis, supra viridibus, subtus pallidioribus nigro-punctatis; pedunculis 1-floris; bracteis 3 amplis coriaceis cordato-ovatis obtuse sinuato-crenatis 10-12-nerviis; calyce 5-fido; petalis obovato-oblongis, extus pubescentibus.—Sandwich Islands (Nelson! in Herb. Mus. Brit.). The large coriaceous bracts look exactly like the base of the fronds of *Drynaria*; they are more coriaceous than in any other species, and give so strange an aspect to this plant that I have hesitated about the genus. As far as the specimens go,—they

ORDO XIV. STERCULIACEÆ.

I. **Sterculia**, Linn. Gen. n. 1086; Benth. et Hook. f. Gen. p. 217. Flores unisexuales v. polygami. Calyx 5-fidus v. 5-partitus, rarius 4-merus, sæpius coloratus. Petala 0. Columna staminea apice antheras 15 v. rarius 10 inordinate congestas ferens. Ovarii carpella 5, subdistincta, 2-∞-ovulata; stylus apice peltato- v. lobato-stigmatosus. Carpella matura distincta, stellato-potentia, nunc lignoso-coriacea intus rima tardius dehiscentia, nunc tenuiora folliculatim dehiscentia v. jam ante maturationem aperta. Semina in carpellis 1-∞, nuda v. rarius alata; albumen bipartibile cotyledonibus adhærens, sæpe cotyledones crassas simulans; cotyledones planæ v. parum undulatæ, tenues; radícula hilo contraria v. proxima v. intermedia.—Arbores; foliis indivisis, lobatis v. digitatis; inflorescentiis paniculatis v. rarius racemosis, sæpius axillaribus; floribus terminalibus vulgo fœmineis præcocioribus.

1. **S. (Firmiana) diversifolia**, Seem.; foliis cordatis integris v. apice 3-(quandoque 5-?)lobis, lobis acuminatis; floribus ignotis; carpellis apertis oblongo-lanceolatis utrinque obtusis breviter stipitatis.—*Firmiana diversifolia*, A. Gray, Bot. Wilkes, p. 185. t. 13.—Ovalau [and ? Vanua Levu] (U. S. Expl. Exped.).

I have not seen specimens of this plant. Of the two Polynesian *Sterculias* enumerated by Forster, one is a new species.*

2. **S. Vitiensis**, (sp. nov.) Seem.; foliis digitatim 7-foliolatis, foliolis petiolatis elliptico-lanceolatis acuminatis vix quadruplo longioribus quam latis, supra glabris, subtus stellato-puberulis; fl. ignotis; carpellis ovatis v. obovatis apiculatis lignosis, extus dense tomentosus, 14-spermis; seminibus elliptico-cylindræis nudis (nigris) nitidis.—*S. fœtida*, Forst. Prodr. n. 359? non Linn.—Viti Levu (Storck!).

Closely allied to *S. fœtida*, Linn., from which it differs in the leaves being stellate-pubescent below, and the carpels being densely covered with a short, light-brown tomentum. It may be identical with the Tana plant which Forster named *S. fœtida*, but there are no specimens or drawings of it at the British Museum. Petioles 12-16 inches long. Leaflets 10-12 inches long, and 3-3½ inches broad, quite entire, having from 18-24 veins on each side of the midrib, arranged at unequal distances. Largest fruit 7 inches long, the smallest about the size of those of *S. fœtida*, Linn.

II. **Heritiera**, Dryand. in Ait. Kew. ed. i. vol. iii. p. 546; Benth. et Hook. f. p. 219. Flores unisexuales. Calyx 5-dentatus v. 5-fidus. Petala 0. Columna staminea tenuis, sub apice antheras 5 annulatim adnatas ferens, loculis parallelis. Ovarii carpella 5, subdistincta, 1-ovulata; stylus brevis, stigmatibus 5 crassiusculis. Carpella matura lignea, indehiscentia, dorso carinato-subulata. Semen exalbuminosum; cotyledones crassissimæ; radícula hilo proxima.—Arbores; foliis indivisis, coriaceis, subtus lepidotis, penninerviis; floribus parvulis in paniculas axillares dispositis.—*Balanopteris*, Gærtner. Fruct. vol. ii. p. 94. t. 98, 99.

1. **H. littoralis**, Dryand. in Ait. Kew. l. c.; foliis elliptico-oblongis ovalisve obtusiusculis.—Brown, in Bennett, Plant. Jav. p. 237. *H. Fomes*, Buch. in Sym. Ava, Willd. Sp. vol. iv. p. 972;

have unfortunately no fruit,—they prove it to be a genuine *Gossypium*. Leaf-blade 3 inches long. Peduncles (4-5 inches long) longer than the petioles. Bracts 1½-2 inches long, and 1-1½ inch broad. Petals 4-5 inches long.

* *Sterculia Forsteri*, (sp. nov.) Seem.; *S. Balanghas*, Forst. Plant. Escul. n. 22; Prodr. n. 358, non Linn.; arborea, ramulis crassis glabris; foliis confertis ovatis ovalibus v. obovatis breviter acuminatis integerrimis parallele venosis glabris; petiolis stellato-puberulis, demum glabris; paniculis stellato-tomentosis; bracteolis lineari-subulatis, alabastris ovatis acutis; sepalis liberis (?); cæt. ign. Tana (Forster! in Mus. Brit.).—Petiole 1-1½ inch long. Blade of leaf 3-4 inches long, 2-2½ inches broad, with 9-10 parallel veins on each side of the midrib. Sepals ovate-acute, very short and apparently free, but the buds are too young to make out this and several other points satisfactorily.

DC. Prodr. vol. i. p. 484. *H. minor*, Lam. Dict. vol. iii. p. 229; DC. Prodr. vol. i. p. 484. *Balanopteris Tothila* et *B. minor*, Gært. Fruct. vol. ii. t. 98, 99. Nomen vernac. Vitiense, "Kena ivi na alewa Kalou."—Common on the seaside throughout the group (Seemann! n. 33; Barclay!; U. S. Expl. Exped.), Tongan Islands (Nelson!; U. S. Expl. Exped.).

A good portrait of the lower part of this singular tree is given in my translation of Kitlitz's 'Twenty-four Views of the Coasts and Islands of the Pacific,' Plate V. Fig. 13 *k*. Amongst English gardeners and colonists it is known as the "Looking-glass plant," from the lepidote lower surface of the leaves having somewhat the appearance of the back of a looking-glass.

III. **Kleinhovia**, Linn. Gen. n. 1024; Benth. et Hook. f. Gen. p. 219. Bracteolæ parvæ v. a calyce remotæ. Sepala 5, demum libera, decidua. Petala inæqualia, superiora longius unguiculata et basi complicata. Columna staminea elongata, gynophoro adnata, apice campanulato-5-fida, laciniis 3-antheriferis cum dentibus anantheris alternantibus; antheræ breviter stipitatae, loculis divaricatis distinctis. Ovarium intra columnæ stamineæ apicem dilatatum insertum, 5-lobum, 5-loculare, loculis sub-4-ovulatis; stylus tenuis, demum divisus. Capsula membranaceo-inflata, turbinato-5-loba, loculicide 5-valvis. Semina abortu solitaria, globosa, nuda, tuberculata, exalbuminosa; cotyledones spiraliter convolutæ, radícula hilo proxima.—Arbor; foliis integerrimis, 3–7-nerviis; floribus roseis, in paniculam amplam terminalem dispositis.

1. **K. hospita**, Linn. Spec. 1365; Rumph. Amb. vol. iii. t. 113; Cav. Diss. vol. v. p. 188. t. 146. Nomen vernac. Vitiense, "Mamakara."—Vanua Levu (Seemann! n. 35; U. S. Expl. Exped.), Ovalau (U. S. Expl. Exped.). Also collected in the Society Islands (U. S. Expl. Exped.).

A truly indigenous tree, yielding useful timber, generally growing gregariously, and presenting a beautiful aspect when in flower.

IV. **Melochia**, Linn. Gen. n. 829; Benth. et Hook. f. Gen. p. 223. Calyx 5-fidus v. 5-dentatus, campanulatus v. inflatus. Petala 5, spathulata v. oblonga, marcescentia. Stamina 5, petalis opposita, basi v. ultra medium connata, staminodiis 0 v. rarius minutis dentiformibus; antherarum loculi paralleli. Ovarium sessile v. breviter stipitatum, 5-loculare, loculis 2-ovulatis; styli 5, liberi v. basi coaliti, superne stigmatosi, et sæpius incrassati. Capsula loculicide 5-valvis, loculis 1-spermis, nonnullis nunc abortivis. Semina adscendentia, obovoidea, plus minus albuminosa; embryo rectus, cotyledonibus planis, radícula hilo proxima.—Herbæ frutesce v. rarius arbores, pube stellata pilis simplicibus nonnunquam intermixta; foliis serratis, anguste ovatis v. late cordatis; floribus sæpius parvis, nunc ut in *Waltheria* glomeratis axillaribus v. in thyrsum spiciformem dispositis, nunc laxius cymosis v. paniculatis, axillaribus v. terminalibus.

1. **M. (Visenia) Vitiensis**, A. Gray, Bot. Wilkes, p. 193; foliis cordatis ovatis oblongisve glabris serratis; cymis paniculisque tomentoso-puberulis; petalis albidis; capsulæ tomentoso-sericeæ coccis mucronatis; seminibus apice late alatis.—Taviuni, Ovalau, Vanua Levu, and Oneata (Seemann! n. 37; U. S. Expl. Exped.), Friendly Islands (Barclay!).

Var. β . foliis subcoriaceis haud cordatis superioribus basi acutis.—Macuata coast (U. S. Expl. Exped.).

A shrub or small tree, with whitish, not yellow flowers, as stated by the United States Exploring Expedition.

V. **Waltheria**, Linn. Gen. n. 827; Benth. et Hook. f. p. 224. Calyx 5-fidus. Petala 5, spathulata, marcescentia. Stamina 5, basi connata, petalis opposita, staminodiis 0; antherarum loculi paralleli. Ovarium sessile, 1-carpicum, 1-loculare, 2-ovulatum; stylus excentricus, superne clavatus v. fimbriatus. Capsula dorso 2-valvis, 1-sperma. Semen adscendens, albuminosum; embryo rectus, cotyledonibus planis, radícula hilo proxima.—Herbæ suffrutices v. rarius arbores, pube stellata cum

simplici mixta; foliis serratis; stipulis angustis; floribus sæpius parvulis, ad axillas glomeratis v. cymosis v. in capitula racemos paniculasve terminales dispositis.—*Lophanthus*, Forst. Char. Gen. t. 14.

1. **W. Americana**, Linn. Spec. 941, excl. ex Smith. syn. Breyn.; foliis ovatis plicatis acute inæqualiter dentatis utrinque tomentosus, capitulis pedunculatis v. sessilibus.—*W. Indica*, Jacq. Icon. Rar. vol. i. t. 130; DC. Prodr. vol. i. p. 492.—Vanua Levu and Oneata (U. S. Expl. Exped.), Kadavu (Seemann! n. 36). Also collected in New Caledonia (Anderson! Sir E. Home!), Eromanga (M'Gillivray!), Samoan Islands (U. S. Expl. Exped.), and Sandwich Islands (Barclay! Macrae! Nuttall! Seemann!); and in North Australia and Queensland.

Having been found during Cook's Voyages in New Caledonia and Society Islands, this plant must be considered truly indigenous to the South Sea Islands.

VI. **Commersonia**, Forst. Char. Gen. 43. t. 22; Benth. et Hook. f. Gen. p. 226. Calyx 5-fidus. Petala 5, e basi lata concava, superne ligulata. Staminum urceoli lobi anantheriferi (staminodia), petalis alterni, 3-nati v. 3-fidi, elongati; antheræ 5, breviter stipitatae, cum lobis sterilibus alternantibus et petalis oppositæ, loculis divaricatis. Ovarium sessile, 5-loculare, loculis 2-6-ovulatis; styli plus minus coaliti v. distincti. Capsula setis flaccidis echinata, loculicide 5-valvis. Semina 2-3-na, adscendentia, strophiole parvo, albuminosa; cotyledones foliaceæ, planæ; radícula hilo proxima.—Arbores fruticesve; foliis dentatis v. incisis, sæpe obliquis; floribus parvis, in cymas axillares v. oppositifolias raro terminales dispositis.

1. **C. platyphylla**, Andr. Bot. Rep. n. 603 et t. 519, sub *C. echinata*; caule frutescente; foliis ovato-acuminatis superne hispidulis v. demum glabratis, subtus albido-tomentosis distincte venosis; cymis compositis plurifloris; capsulæ setis villosissimis.—A. Gray, Bot. Wilkes, p. 188. *C. Javensis*, Don, Gen. Syst. vol. i. p. 523; Hassk. Pl. Jav. Rar. p. 312. *C. echinata*, Blum. Bijdr. p. 86.—Common throughout Viti (Seemann! n. 34; U. S. Expl. Exped.). Also collected in the Samoan (Sir E. Home!) and Society Islands (U. S. Expl. Exped.).

VII. **Pimia**, (gen. nov.) Seem. in Bonplandia, 1862, p. 366. Calyx 5-fidus, laciniis obovatis obtusis. Petala 5, minuta, squamæformia, cordata. Stamina antherifera 5, libera, laciniis calycis alterna. Antheræ 2-rimosæ, petalis oppositæ. Staminodia nulla. Ovarium 5-loculare, loculis 1-ovulatis. Capsula setis flaccidis echinata, 5-locularis. Semina solitaria, adscendentia.—Arbor 40-50-pedalis; ramulis foliis cymisque ferrugineo-stellato-tomentosis, demum glabratis; foliis alternis petiolatis ovato-oblongis v. obovatis obtusis integerrimis coriaceis, penninerviis, supra demum glabratis, subtus densissime ferrugineo-tomentosis; cymis paucifloris; floribus parvis.

This new genus I have dedicated to my esteemed friend Captain Bedford Pim, R.N., who was my travelling companion during Admiral Kellett's voyage round the world and in three cruises to the Arctic regions. The materials, as far as they go, would seem to indicate a close affinity to *Lasiopetalum* and *Commersonia*, differing from the former in its echinate fruit, from the latter in its want of staminodia, and differently-shaped petals. In habit *Pimia* somewhat resembles *Pomaderris*; and before the few flowers which have served to draw up the above character were found on the British Museum specimen, I took it to be a *Rhamnea*. My specimens are too imperfect to determine either the arrangement, number, or nature of the long spines of the capsule. Some of them are broken, but there appear to be six long ones, which do not seem to differ essentially from the short ones. All are densely covered with stellate hairs.

1. **P. rhamnoides**, Seem. in Bonplandia, 1862, p. 366 (Tab. V.).—*Rhamnea*, Seem. in Bonpl. vol. ix. (1861) p. 255.—Northern Coast of Vanua Levu (Seemann! n. 83); very rare, growing on the margin of forests.

EXPLANATION OF PLATE V.—Fig. 1, fragment of a cyme; 2 and 3, different views of a flower, the fruit far advanced towards maturity; 4, a petal and stamens; 5, longitudinal section of capsule; 6, cross-section of the same; 7, one of the setæ of the capsule; 8, the articulated hair covering the branches:—all, with the exception of fig. 1, magnified.

ORDO XV. TILIACEÆ.

I. **Grewia**, Linn. Gen. n. 1026; Benth. et Hook. f. Gen. p. 233. Sepala 5, distincta. Petala 5, basi intus foveolata v. glandulifera, calyce sæpius breviora, circa tori basin inserta, rarissime 0. Stamina ∞ , toro turbinato sæpe glanduloso inserta, libera. Ovarium 2-4-loculare, loculis 2- ∞ -ovulatis; stylus subulatus, stigmatate brevissime 2-4-lobo. Drupa 1-4-pyrena, integra v. 2-4-loba, pyrenis 1-spermis v. 2- ∞ -spermis et inter semina spurie septatis. Semina adscendentia v. horizontalia; albumen copiosum carnosum v. rarius parcum v. subnullum; cotyledones planæ foliaceæ v. carnosæ.—Arbores fruticesve, pube sæpius stellata; foliis integerrimis v. serratis, 3-7-nerviis; floribus flavis v. rarius purpureis, mediocribus v. majusculis, cymulis nunc axillaribus paucifloris, nunc in paniculas terminales dispositis.—*Mallococca*, Forst. Char. Gen. 77. t. 39.

1. **G. Mallococca**, Linn. fl. Suppl. p. 409; ramulis villosis; foliis ovato-oblongis v. oblongo-lanceolatis acuminatis serratis basi subcordatis, supra subscabris v. glabriusculis; pedunculis axillaribus geminis 3-floris; pedicellis pedunculo æquilongis; petalis ovato-lanceolatis v. acutis; nectario linea villosa cincto.—A. Gray, Bot. Wilkes, p. 197; Forst. Prodr. n. 327; Cav. Diss. Ic. t. 309; Guill. Zeph. Tait. p. 70, cum descr. Forst. *G. tiliæfolia*, A. Rich. Sert. Astrolab. Introd. p. 9, non Vahl. *G. Richardiana*, Walp. Rep. vol. i. p. 363. *G. amicorum*, Steudl. Nom. *G. orientalis*, Sol. Prim. Fl. Pacif. p. 308, et in Parkins. Drawings of Tahit. Plant. t. 84 (ined.). *Mallococca crenata*, Forst. Gen. p. 78. t. 39. Nomen vernac. Vitiense, "Siti."—Vanua Levu (U. S. Expl. Exped.). Also collected in the Tongan (Forster! Barclay! U. S. Expl. Exped.) and Society Islands (Forster!); in the latter group called "Matia-tia" and "Haupa."

2. **G. persicæfolia**, A. Gray, Bot. Wilkes, p. 198; glabra; foliis oblongo-lanceolatis acuminatis subserratis basi obtusa tantum 3-nerviis laxè venosis membranaceis; pedunculis axillaribus solitariis petiolo sublongioribus 2-3-floris; pedicellis pedunculo æquilongis; petalis minimis (?) toro apice villosa barbato; drupa hirsutula v. glabriuscula.—Ovalau (U. S. Expl. Exped.; Seemann! n. 39).

3. **G. prunifolia**, A. Gray, Bot. Wilkes, p. 199; glabra; foliis ovato-oblongis seu oblongo-lanceolatis acuminatis serrulatis basi rotundatis 3-nerviis supra nitidis; pedunculis axillaribus 1-3-floris; petalis ovalibus obtusis, nectario linea pubescente cincto; toro apice pubescente; stigmatate crasso peltato; drupa hirsutula.—Nomen vernac. "Siti."—Ovalau (U. S. Expl. Exped.), Macuata coast of Vanua Levu (Seemann! n. 40; U. S. Expl. Exped.).

II. **Triumfetta**, Linn. Gen. n. 600; Benth. et Hook. f. Gen. p. 234. Sepala 5, distincta, apice sæpe fornicata v. mucronata. Petala 5, basi glanduloso-incrassata v. foveolata, circa basin tori inserta, rarius 0. Stamina ∞ v. rarius sepalis duplo plura, supra torum elevatum extus 5-glandulosum inserta, libera. Ovarium 2-5-loculare, loculis 2-ovulatis; stylus filiformis, stigmatate 2-5-dentato. Capsula (parva) subglobosa, echinata v. setosa, indehiscens v. in coccos secedens. Semina in loculis seu coccis solitaria v. si gemina septis spuriis separata, pendula, albuminosa; embryo rectus, cotyledonibus planis foliaceis.—Herbæ suffrutices v. frutices, pube stellata; foliis serratis, integris v. 3-5-lobis; floribus flavis, axillaribus v. oppositifoliis, paucis v. dense fasciculato-cymulosis.

1. **T. procumbens**, Forst. Prodr. n. 204; Icon. (ined.) t. 147; caule suffruticoso prostrato, ramis erecto-ascendentibus tomentoso-lanatis; foliis subrotundato-cordatis subtrilobis obtuse serratis tomentoso-villosis; pedunculis axillaribus solitariis 3-fidis; sepalis linearibus; petalis 5 oblongis obtusis, basi attenuatis; staminibus ∞ ; capsula echinata, loculis 3-4, 2-ovulatis.—Guill. Zeph. Tait. p. 71; A. Gray, Bot. Wilkes, p. 197.—*T. Fabreana*, Gaud. Bot. Freyc. p. 478. t. 102. *T. crassifolia*, Sol. Prim. Fl. Pacif. p. 250, et in Parkins. Drawings of Tahit. Plant. t. 51 (ined.)—Common

on the seaside all over the group (Seemann! n. 38). Also collected in Society (Forster!) and Samoan Islands (U. S. Expl. Exped.), Uvea or Wallis Island (Sir E. Home! Græffe! n. 36), Aneitum (M'Gillivray!), and Queensland (R. Brown!).

III. **Græffea**, Seem. Journ. of Bot. 1864, p. 71 (gen. nov. *Tiliacearum*). Bracteolæ 3, integræ. Sepala 5, valvata. Petala 5, imbricata, basi nuda. Stamina ∞ , libera, toro conico pluriseriatim inserta; antheræ oblongæ, 2-loculares, versatiles, longitudinaliter dehiscentes. Ovarium 2-loculare, loculis ∞ -ovulatis; stylus brevis, stigmatibus obscure 5-lobis. Fructus 2-locularis, nudus.—Arbor glabra; foliis alternis petiolatis ovato-oblongis acuminatis serratis basi cordatis 3-5-nerviis; stipulis obovatis obtusis amplis connatis persistentibus; pedunculis axillaribus dichotomis, ramis 3-floris; pedicellis basi 2- apice 3-bracteolatis; floribus albidis.

This new genus, which must rank near *Trichospermum*, I have great pleasure in dedicating to Dr. Græffe, a Swiss naturalist, who, in visiting the Viti Islands, was the fortunate discoverer of it.

1. **G. calyculata**, (sp. nov.) Seem. Journ. of Bot. 1864, p. 71 (Tab. VI.).—Viti Levu (Dr. Græffe! in Herb. Melbourn.).

The single specimen has very young flowers and no ripe fruit. Petioles 1-1½ inch long. Blade of leaf 5-8 inches long, and 3-5 inches broad. Stipules nearly an inch long, connate, and imparting a characteristic look to the plant. Bracts surrounding the calyx oval, free, glabrous. Calyx, outside pubescent, inside glabrous. Sepals obovate-acute. Petals obovate-acute, incurved at the apex, glabrous. Stamens numerous, in several rows inserted on the torus, glabrous. Ovary covered with short stiff hairs, and rising from the centre of an almost conical torus. Ovary compressed, as in *Trichospermum*. Fruit unknown, but, judging from the very young ovary, not covered with spines.

EXPLANATION OF PLATE VI.—Fig. 1, entire flower, with the three bracts; 2, the same, without the bracts; 3, the same, opening; 4, the same, quite open; 5, petal; 6 and 7, stamens; 8, torus and ovary:—*all magnified*.

IV. **Trichospermum**, Blum. Bijdr. 56; Benth. et Hook. f. Gen. p. 236. Bracteolæ 3. Sepala 5, crassa. Petala 5, basi nuda. Stamina ∞ , libera, disco crenato inserta; antheræ oblongæ, versatiles. Ovarium 2-loculare, loculis ∞ -ovulatis; stylus subnullus, stigmatibus sessilibus retusis. Capsula 2-locularis, dissepimento contrarie compressa, dura, apice in alam brevem crasso-coriaceam expansa, loculicide semi-2-valvis, ∞ -sperma. Semina lenticulari-globosa, testa crustacea, membrana externa ad margines seminis longe crinita; albumen carnosum; cotyledones orbiculatæ, planæ.—Arbores; foliis integerrimis; cymulis axillaribus; floribus parvis.—*Diclidocarpus*, A. Gray, Bot. Wilkes, p. 200. t. 14.

1. **T. Richii**, Seem. in Bonplandia, vol. ix. (1861) p. 254; arbor humilis; foliis ovalibus integerrimis, basi rotundatis v. subcordatis, utrinque minute stellato-pubescentibus; stipulis oblongis acutis caducis.—*Diclidocarpus Richii*, A. Gray, Bot. Wilkes, p. 200. Nomen vernac. "Maku."—Common throughout the group (Seemann! n. 41; Storck! n. 870; Sir E. Home! U. S. Expl. Exped.).

V. **Elæocarpus**, Linn. Gen. n. 663; Benth. et Hook. f. p. 239. Sepala 4-5, valvata v. rarius subimbricata. Petala totidem, laciniata lobata v. rarius integra, circa basin tori incrassati extus glandulosi inserta, induplicato-valvata, singula stamina exteriora involventia. Stamina ∞ , rarius 8-12, supra torum intra glandulas inserta; antheræ lineares, apice valva transversa (rimis brevibus loculorum confluentibus) dehiscentes. Ovarium 2-5-loculare, loculis 2- ∞ -ovulatis; stylus subulatus, integer. Drupa 1-pyrena, pyrena sæpius ossea tuberculata 3-5-loculari v. abortu 1-loculari, loculis 1-sperma. Semina pendula (v. rarius erecta?), testa crustacea v. ossea; albumen carnosum; cotyledones latæ, planæ v. undulatæ.—Arbores; foliis alternis v. rarius oppositis, integerrimis v. serratis, in paucis speciebus subtus sparse nigro-punctatis; floribus axillaribus, racemosis, interdum polygamis; petalis glabris v. sericeis drupis oblongis v. globosis.

1. **E. (Monocera) Storckii**, (sp. nov.) Seem. in Bonplandia, 1860, p. 295 (Tab. VII.); arboreus, glaber; ramulis crassis; foliis longe petiolatis obovato-oblongis integerrimis v. obscure denticulatis basi acutis; racemis numerosis 3-7-floris; floribus magnis speciosis coloratis; sepalis ovato-oblongis acutis (coccineis) valvatis; petalis obovatis subintegris, apice crenato-lobatis (basi flavis apice kermesinis); staminibus circiter 100; filamentis basi pilosis, valvula exteriori antherarum longe subulata, toro 5-lobo, lobis 2-fidis, ovario 2-loculari, loculis 8-ovulatis; drupa ovata acuminata, pyrena ossea. Nomen vernac. "Gaigai," teste Storck.—Port Kinnaird, Ovalau, in forests (Storck! n. 871), Viti Levu (Græffe! n. 49).

A tall forest tree, of great beauty, which I have named after its discoverer, Mr. Jacob Storck, from whose specimens, and a water-colour drawing by the late Miss Mary Pritchard, our Plate has been made. It is one of the few *Elæocarpi* having coloured flowers, and its nearest ally seems to be *E. speciosus*, Brongn. et Gris. Bull. Soc. Bot. Fr. vol. viii. p. 201, from New Caledonia, but in that species the leaves are beneath clothed with a silky-white tomentum, the petals are more deeply cut, the stamens are only 75 in number, and the anthers pilose. According to Mr. Storck, this tree exudes a gum-resin.

EXPLANATION OF PLATE VII.—Fig. 1, a flower, with petals and stamens removed; 2, a petal; 3, stamens; 4, a cross-section of ovary; 5, a cross-section of the ripe fruit (from a sketch furnished by Mr. Storck); 6, section of young fruit:—figs. 1, 2, 3, and 4, slightly magnified.

2. **E. (Monocera) Græffei**, (sp. nov.) Seem. in Journ. of Bot. 1864, p. 76 (Tab. VIII.); ramulis petiolis pedunculis pedicellis calycibusque rufo-tomentellis; foliis obovatis v. oblongis acuminatis basi obtusis dentatis coriaceis utrinque glabris subtus pallidioribus; racemis ex axilla foliorum delapsorum nascentibus 8-14-floris; floribus parvis nutantibus; sepalis ovato-lanceolatis acutis æstivatione valvatis extus 1- intus 3-nerviis; petalis fimbriatis (albidis) glabris intus versus basin pilosis; staminibus numerosis glabris; antheris longe aristatis, ovario villosa 2-loculari; drupa . . .—Viti Levu (Græffe! n. 59).

The leaves, including the petiole, are from 5-6 inches long, and from 2-3 inches broad, less coriaceous than those of *E. Storckii*. Racemes longer than the petiole, but shorter than the blade of the leaf. Flower-buds ovate, acute. It is one of the small-flowering species, named in honour of its discoverer, Dr. Græffe, and in look extremely like *E. leptostachys*, Wall. List, n. 2692, from Penang; but the leaves of *E. leptostachys* (in a dried state) are not pale-green, but brown or ferruginous on the under side, the flower-buds are ovate, obtuse, and the anthers are blunt, resembling those of *E. bifidus*, Hook. and Arn. I take *E. leptostachys* to be identical with *E. ovalifolius*, Wall. List, n. 2665, from Sylhet, and, according to the original specimens at the British Museum, with *Craspedum tectorum* of Loureiro, from Cochin China, of which *E. tectorius*, Poir., and *Dicera Craspedum*, Gmel., are synonyms.* Endlicher regarded *E. bifidus*, Hook. and Arn., as the type of a new genus (*Beythea*), the anther-cells of which are identical with those of Brongniart's section *Dicera*. If it should be kept up, either as a separate genus or a subgenus, its name will have to be suppressed in favour of *Craspedum*, the oldest of the two.

EXPLANATION OF PLATE VIII.—Fig. 1, entire flower; 2, the same, with the sepals removed; 3, a petal; 4 and 5, stamens; 6, ovary and style; 7, cross-section of ovary:—all magnified.

3. **E. (Monocera) Milnei**, (sp. nov.) Seem.; arboreus; ramulis crassis, junioribus ferrugineo-tomentosis; foliis obovatis obtusis v. acutis in petiolum attenuatis integerrimis v. minute denticulatis, parallele venosis, glabris; racemis 15-20-floris, ferrugineo-puberulis; sepalis ovato-lanceolatis acutis valvatis; petalis laciniatis glabris intus versus basin pilosis; staminibus circiter 20; filamentis puberulis, valvula postica antherarum subulata anticam longe superante; toro ferrugineo-tomentoso; ovario 2-loculari; stylo villosiusculo, drupa . . .—Viti Levu (Milne! in Herb. Hook.).

Attains 30-40 feet in height, according to Mr. Milne. Leaves very large, the largest, including the petiole, 1 foot long, 5 inches broad, having from 10-13 veins on each side of the midrib, coriaceous. It seems to be near *E. laurifolius*, A. Gray, of which I have not seen specimens.

4. **E. (Monocera) laurifolius**, A. Gray, Bot. Wilkes, p. 203; glabra; foliis coriaceis oblongis

* The synonymy of *Elæocarpus tectorius*, Poir., is as follows:—*E. leptostachys*, Wall.! *E. ovalifolius*, Wall.! *Dicera Craspedum*, Gmel.! *Craspedum tectorium*, Lour.!—Cochin China (Loureiro! in Mus. Brit.), Sylhet (Wallich! n. 2265), Penang (Wallich! n. 2672).

subserratis utrinque acutis v. subacuminatis supra nitidis; racemis axillaribus brevibus paucifloris; floribus diclinis, masculis perianthio 5-mero; petalis laciniatis; staminibus 20 v. pluribus; antheris vix apiculatis v. mucronatis.—Viti Islands, locality not recorded (U. S. Expl. Exped.).

5. **E. cassinoides**, A. Gray, Bot. Wilkes, p. 204; glaber; foliis coriaceo-chartaceis obovatis denticulatis leviter penninerviis; racemis axillaribus plurifloris; drupa pyriformi.—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.). Also collected in the Tongan Islands (U. S. Expl. Exped.).

6. **E. pyriformis**, A. Gray, Bot. Wilkes, p. 205; subglaber; foliis membranaceis ellipticis utrinque obtusissimis serrulatis perspicue penninerviis; racemis axillaribus; drupa pyriformi.—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.).

Professor A. Gray kindly sent me a fragment of the latter plant, for comparison with my new species, but it agreed with none of them. All the *Elaeocarpi* are evidently very local and rare in the group. The flowers of *E. cassinoides* and *pyriformis* are as yet unknown.

ORDO XVI. MALPIGHIACEÆ.

I. **Hiptage**, Gært. Fruct. vol. ii. p. 69. t. 116; Benth. et Hook. f. Gen. p. 258. Calyx 5-partitus. Glandula 1, magna, partim pedicello adnata. Petala unguiculata, inæqualia, sericea. Stamina 10, declinata, omnia fertilia, unico ceteris multo majore; filamenta ima basi connata. Ovarium 3-lobum, dorso 3-4-appendiculatum; stylus 1 (rarius 2), filiformis, primum circinatus, stigmate capitellato serius truncato, ceteri rudimentarii. Samaræ 1-3, 3-alatæ. Semen subglobosum; cotyledones inæquales, crassæ, curvæ.—Frutices scandentes; foliis oppositis, coriaceis, integerrimis, petiolatis, eglandulosis, stipulis 0; racemis terminalibus et axillaribus, interdum compositis; pedunculis erectis, basi bracteatis, cum pedicellis 2-bracteolatis articulatis; floribus albis v. roseis, odoratis, petalo quinto discolore.—*Gærtnera*, Schreb. Gen. vol. i. p. 290; Molina, Cav. Diss. 435. t. 263.

1. **H. myrtifolia**, A. Gray, Bot. Wilkes, p. 267. t. 21; foliis lanceolato-ellipticis oblongisve nitidis; racemis paucifloris; petalis roseis; staminibus anticis majoribus subæquilongis arcuatis; alis samaræ obovatis brevibus, crista dorsali quoque in alam producta.—Ovalau and Vanua Levu (U. S. Expl. Exped.), Viti Levu (Græffe! n. 18).

A. Gray enumerates two varieties, viz. *a*, foliis 1-2 poll. longis crassiusculis rigidis haud perspicue venosis (represented by figs. A, B of his Plate), and *β*, foliis 3-4 poll. longis tenuioribus magis venosis (fig. C of his Plate). I did not find the plant, and know it only from Dr. Græffe's specimens.

2. **H. Javanica**, Blum. Bijdr. 224?; foliis ovali-oblongis acuminatis, basi rotundatis aut acutis biglandulosis glabris; racemis axillaribus simplicibus; calyce 1-glanduloso.—Taviuni and Narai (U. S. Expl. Exped.).

I have not seen specimens answering to this description, and A. Gray has some doubt about the identity of the Fijian species with the Javanese. Some of the leaves are very obtuse. The crest is extended into a wing fully half as large as the lateral wings, and similar in shape. The petals are fimbriate.

Only four representatives of the Natural Order *Malpighiaceæ* have hitherto been found in Polynesia, viz. the two just enumerated, the well-known *Tristellaria Australasica*, A. Rich. Voy. Astrolabe, Bot. vol. ii. t. 15, collected by Barclay (n. 3348) in New Ireland, and *Ryssopterys Timorensis*, A. Juss., found by M'Gillivray in New Caledonia.

ORDO XVII. GERANIACEÆ.

I. **Oxalis**, Linn. Gen. n. 582; Benth. et Hook. f. Gen. p. 276. Flores regulares. Sepala 5, imbricata. Petala 5, hypogyna, contorta. Glandulæ disci 0. Stamina 10, libera v. basi coalita, omnia antherifera. Ovarium 5-lobum, 5-loculare, suberostre; styli 5, distincti, stigmatibus terminalibus capitatis 2-fidis v. laciniatis; ovula in loculis 1-∞. Capsula loculicide dehiscens, valvis mediante septo ad axin persistentibus. Seminum tegumentum exterius carnosum, elastice desiliens, arilliforme, testa crustacea; albumen carnosum; embryo rectus.—Herbæ nunc acaules rhizomate bulboso v. carnosum, nunc caulescentes v. rarius suffrutices; foliis radicalibus v. caulinis, alternis stipulatis, digitatim v. pinnatim 3-∞-foliolatis, foliolis integerrimis v. marginato-bilobis, rarius 1-foliolatis v. phyllodineis; pedunculis axillaribus v. radicalibus, 1-floris v. sæpius cymoso- v. umbellatim ∞-floris; floribus luteis roseis v. albis, nunc dimorphis, aliis perfectis, aliis minimis apetalis.

1. **O. corniculata**, Linn. Spec. 632; Koch, Synop. Fl. Germ. p. 144; radice ramoso-fibrosa, stolonibus nullis, caulibus diffusis pubescentibus basi radicanibus; foliis trifoliolatis, foliolis obcordatis; stipulis oblongis petiolo adnatis; pedunculis 3-5-floris folio brevioribus; petalis flavis; pedicellis fructiferis refractis.—*O. reptans*, Soland. in Forst. Prodr. n. 519; Sol. Fl. Ins. Pacif. Ined. p. 258. Nomen vernac. "Totowiwi."—Common on roadsides, waste places, etc., all over the group (Seemann! n. 59). Also collected in the Society (Banks and Solander!), Sandwich (Barclay! n. 1308), and Samoan Islands (U. S. Expl. Exped.), and New Caledonia (M'Gillivray!).

ORDO XVIII. RUTACEÆ.

I. **Evodia**, Forst. Char. Gen. t. 7; Benth. et Hook. f. Gen. p. 296. Flores abortu unisexuales. Sepala 4-5, imbricata. Petala 4-5, sessilia, erecta v. patentia, valvata v. leviter imbricata. Discus urceolaris, 4-5-sinuatus. Stamina 4-5, basi disci inserta, filamentis subulatis; antheræ oblongæ. Ovarium (in fl. ♂ carpella 4, sterilia) profunde 4-lobum, 4-loculare; stylus basilaris, stigmatibus 4-lobo; ovula in loculis 2, collateralia v. superposita. Cocci 4, coriacei, 2-valves, 1-spermi, endocarpio soluto chartaceo elastice 2-lobo. Semina oblonga, testa ossea v. crustacea splendente rarius epidermide carnosum induta, umbilico lineari, albumine carnosum; embryo rectus, cotyledonibus ovatis.—Arbores v. frutices inermes; foliis oppositis simplicibus v. 1-3-foliolatis v. imparipinnatis, foliolis pellucide punctatis integerrimis; cymis axillaribus, pedunculatis, sæpissime paniculatim ramosis; floribus inter minores.

1. **E. drupacea**, Labill. Austr. Caled. p. 73. t. 74; A. Gray, Bot. Wilkes, p. 332; fruticosa, glabra; foliis 3-foliolatis v. simplicibus, foliolis obovato-oblongis obtusis v. acutis; corymbis axillaribus dichotomis; floribus 4-meris; ovario albido-tomentoso.—Macuata coast of Vanua Levu (U. S. Expl. Exped.; Seemann! n. 90).

Fig. 2 of Labillardière's Plate is incorrect, representing as it does a 4-toothed calyx, instead of a 4-sepaled one.

2. **E. hortensis**, Forst. Char. Gen. p. 14. t. 7; Icon. Ined. t. 26; fruticosa, glabra v. apicibus vix puberula; foliis 3-foliolatis v. simplicibus, foliolis sessilibus elliptico-oblongis obtuse acuminatis, basi longe angustatis v. lanceolato-linearibus margine subsinuosis, apice obtusis; cymis v. racemis paniculatis v. simplicibus; floribus 4-meris; ovario glabro.—*Fagara Evodia*, Linn. f. Suppl. p. 125; G. Forst. Prodr. n. 54. *Zanthoxylum varians*, Benth. in Hook. Lond. Journ. vol. ii. p. 215. *Evodia longifolia*, A. Rich. Bot. Voy. Astrol. vol. ii. p. 61. t. 22. Nomina vernacul. Vitiensia,

“Uci” et “Sacasaca.”—Very generally diffused in the group, and frequently planted (Seemann! n. 91 et 92; Barclay! Sir E. Home! U. S. Expl. Exped.). Also collected in the Samoan (U. S. Expl. Exped.) and Tongan Islands (D. Nelson! Forster!), Amsterdam Island (Herb. Mus. Brit.), Uvea or Wallis Isl. (Sir E. Home! Græffe!), Tana (W. Anderson! Forster!), and New Guinea (A. Richard).

Forster's authentic specimens include the narrow-leaved form which A. Richard has distinguished as a separate species (*E. longifolia*); and I follow him, because both the narrow and broad-leaved forms often occur on the same shrub, and the flowers are arranged either in simple racemes or in cymes more or less compound.

The plant is highly esteemed by the natives on account of its flowers, and is used for scenting the cocoa-nut oil which they apply to their naked bodies. The scent, like that of many *Rutaceæ*, is overpowering, and appreciated only by those Europeans who can enjoy patchouli, musks, and odours of a similar sickly category.

3. **E. Roxburghiana**, Benth. et Hook. f. Gen. p. 296; arborea; foliis 3-foliolatis ovatis acuminatis in petiolum attenuatis, utrinque glabris, subtus pallidioribus; cymis axillaribus paniculatis; pedunculis pedicellis calycibusque cano-tomentosis; floribus 4-meris; ovario lanato.—*Zanthoxylum Roxburghianum*, Cham. Linnæa, vol. v. p. 58. *Fagara triphylla*, Roxb. Fl. Ind. vol. i. p. 436, exclus. syn. utroque apud DC. Prodr. vol. i. p. 724, sub *Evodia triphylla* citato. *Philagonia sambucina*, Blum. Bijdr. 250? Nomen vernac. Vitiense, “Drau tolu.”—Taviuni, Ovalau, and Viti Levu (Seemann! n. 102 et 103), Yanuca (Storck! n. 879).

I have never seen the Fijian plant with imparipinnate leaves, and hence hesitate about uniting with it Blume's *Philagonia sambucina*.

II. **Acronychia**, Forst. Char. Gen. p. 53. t. 27, exclud. syn. *Vahlîi*; Benth. et Hook. f. Gen. p. 302. Flores polygami. Calyx brevis, 4-lobus, imbricatus, interdum post anthesin auctus. Petala 4, calyce multo longiora, patentia v. revoluta, valvata. Torus crassus, 8-gonus, tomentosus. Stamina 8, sub toro inserta, alterna breviora, filamentis subulatis. Ovarium tori apici excavato insidens, tomentosum, 4-loculare; stylus terminalis, brevis v. elongatus, stigmatibus 4-sulcatis; ovula in loculis 2, superposita. Fructus 4-locularis, loculis 1-spermis, v. drupaceus putamine coriaceo v. osseo, v. capsularis et loculicide 4-valvis. Semina sæpe a funiculo elongato ex loculo dependentia, testa atra, albumine sat copioso; embryo rectus, cotyledonibus planis oblongis.—Arbores v. arbusculæ; foliis oppositis v. alternis, 1- rarissime 3-foliolatis, foliolis amplis integerrimis pellucido-punctatis; corymbis pedunculatis axillaribus et terminalibus; floribus flavidis, mediocribus v. majusculis.—*Jambolifera*, Linn. Gen. n. 479. *Cyminosma*, Gærtn. Fruct. vol. i. p. 280. t. 58.

1. **A. petiolaris**, A. Gray, Bot. Wilkes, p. 335. t. 33; glabra; foliis longe petiolatis simplicibus chartaceis oblongis utrinque acutis; pedunculis brevissimis paucifloris; fructu ovoideo apiculato suberoso-lignescente tomentuloso demum 4-valvi (?) basi calyce petalisque persistentibus extus cinereis stipato.—Macuata coast of Vanua Levu (U. S. Expl. Exped.). Allied to *A. laevis* and *Endlicheri*.

III. **Micromelum**, Blum. Bijdr. vol. i. p. 137; Benth. et Hook. f. Gen. p. 303. Calyx cupularis integer v. 3-5-dentatus v. -lobatus. Petala 5, libera, crassiuscula, valvata v. subimbricata. Stamina 10, libera, alterna breviora, filamentis lineari-subulatis. Torus stipitiformis, brevis, inconspicuus. Ovarium toro insidens, sæpius 5-(rarissime 2-6-)loculare; stylus basi constrictus, deciduus, stigmatibus capitatis v. obtusis; ovula in loculis 2, superposita. Bacca exsucca, sæpissime 1-2-sperma, septis spiraliter tortis. Seminum testa membranacea; cotyledones foliaceæ, contortuplicatæ; radice longiuscula, conspicua.—Arbores inermes; foliis imparipinnatis, foliolis alternis obliquis integerrimis v. serrulatis; paniculis terminalibus, corymbosis, multifloris; baccis parvis.

1. **M. minutum**, Seem. Mission to Viti, p. 434; foliolis 10-12 oblique ovatis acuminatis minute crenulatis membranaceis, adultis glabris, junioribus inflorescentiaque tomentellis; floribus

parvis, calyce lobato-dentato; ovario 5-4-3-2-loculari, stigmatē stylo paulo latiore capitato; bacca oblonga obtusissima.—*M. pubescens* var. *glabrescens*, Oliver, in Journ. Linn. Soc. vol. v. Suppl. p. 40. *M. glabrescens*, Benth. Lond. Journ. Bot. vol. ii. p. 212. *Limonia minuta*, Forst. Prodr. n. 190; Icon. Ined. t. 135. *Glycosmis subvelutina*, F. Muell. Frag. Phyt. Austr. vol. i. p. 25. Nomen vernac. Vitiense, "Qiqila," teste Williams.—Taviuni and other parts of the group (Seemann! n. 57; U. S. Expl. Exped.; Milne!). Also gathered in the Tongan Islands (Forster! Harvey! Barclay!), New Caledonia (M'Gillivray! Anderson!), Amsterdam Island (Forster!), tropical Australia (Bidwill! Cunningham!).

I think Oliver goes rather too far in uniting this, the true *Limonia minuta*, Forst., and several allied plants under *M. pubescens*. The leaves, almost membranaceous, distinguish it from *M. coriaceum*, Seem.*

L. lucida, Forst. Prodr. n. 191, is identical with *Murraya exotica*, Linn., as already suggested by Oliver. The discrepancy between Forster's description (*foliis simplicibus*) and the plant is explained by a close inspection of Forster's original specimen, the uppermost leaves of which are simple or rather 1-foliolate, as they occasionally are in this species; and all the other leaflets having fallen off, make the petioles look like branches to which alternate leaves are attached. It was collected by Forster in Mallicollo, and in Aneitum and Eromanga by M'Gillivray.

IV. **Citrus**, Linn. Gen. n. 1218; Benth. et Hook. f. Gen. p. 305. Calyx cupularis v. urceolatus, 3-5-fidus. Petala 4-8, lineari-oblonga, crassa, imbricata. Stamina 20-60, filamentis basi compressis varie connatis v. polyadelphis; antheræ oblongæ. Discus magnus, cupularis v. annularis. Ovarium ∞-loculare; stylus teres, deciduus, stigmatē capitato lobato; ovula in loculis 4-8, 2-seriata. Bacca globosa v. oblonga, corticata, carnosā, ∞-locularis, septis membranaceis, loculis cellulis transversis succosis repletis oligospermis. Semina horizontalia v. pendula, interdum 2-embrya v. polyembrya, testa coriacea v. submembranacea; cotyledones carnosæ, plano-convexæ, sæpe inæquales; radícula parva, supera.—Arbores et frutices sæpissime spinosi; foliis 1-foliolatis, petiolo sæpe elato, integerrimis v. crenulatis, coriaceis, persistentibus; floribus albis, suaveolentibus, axillaribus, solitariis fasciculatis v. breviter paniculatis; baccis magnis.—*Sarcodactylis*, Gært. Fruct. vol. iii. t. 185.

The Fijian generic name for Citrus is "Moli."

1. **C. Limonum**, Risso, Ann. Mus. vol. xx. p. 201; petiolis subalatis, foliolis oblongis acutis dentatis; floribus 35-andris sæpe agynis; fructuum oblongorum cortice tenuissimo; pulpa acidissima.—Nomen vernac. Vitiense, "Moli Kara;" "Lime" of the white settlers.—Cultivated and naturalized in many parts of the group.

This is the Lime, rather than the Lemon; it has a thin, smooth rind, and was introduced in 1823 by Mr. Vanderford, from Tahiti. Juice employed by the white settlers for making lemonade, punch, etc., as in other countries; the natives do not seem to make any use whatever of it.

2. **C. Aurantium**, Risso, Ann. Mus. vol. xx. p. 181. t. 1. f. 1 et 2; petiolis subnudis, foliolis ovato-oblongis acutisque; floribus 20-andris; fructuum globosorum cortice tenui, pulpa dulci.—Nomen vernac. Vitiense, "Moli ni Tahiti;" "Orange" of the white settlers.—Very generally cultivated in the islands.

Introduced with the foregoing species from Tahiti (hence the native name "Tahitian Orange") by Mr. Vanderford in 1823. It is not the common round ordinary-sized orange, and must not be confounded with the *C. Aurantium Otaitense*, Risso, Orang. t. 27. It succeeds well in the islands, and cargoes have occasionally been shipped to New Zealand.

3. **C. vulgaris**, Risso, Ann. Mus. vol. xx. p. 190; petiolis alatis, foliolis ellipticis acutis crenu-

* *Micromelum coriaceum*, (sp. nov.) Seem.; ramis petiolisque glabris, verrucoso-punctatis; foliis alternis imparipinnatis glaberrimis, foliolis 5-9 petiolulatis oblique ovatis acuminatis, basi acutis, minute crenulatis, coriaceis pellucido-punctatis, supra atro-viridibus, subtus pallidioribus; cymis paniculatis terminalibus; pedunculis pedicellis calycibusque minute tomentellis; calyce 5-lobulato; petalis puberulis; ovario g'abro; stigmatē stylo paulo latiore capitato.—Isle of Pines, off New Caledonia (W. Anderson! Capt. Cook!). Leaflets 2-2½ inches long, 1-1½ inch broad. Petiole, petiolule, and veins of leaves tinged with red.

latis; floribus 20-andris, fructuum globosorum cortice tenui scabroso, pulpa acri amara.—*C. Toroso*, Pickering's Notes? Nomen vernac. Vitiense, "Moli Kurukuru;" "Bitter or Seville Orange" of the white settlers.—Common throughout the lower districts of the group, to all appearance indigenous (Seemann! n. 58).

The natives do not employ the fruit of this tree, but the leaves, after being macerated, are used for washing the hair, to clean it and destroy the vermin. I expect the *Citrus* found by Forster in Tana, and referred by him to *C. Aurantium*, was *C. vulgaris*.

4. **C. Decumana**, Linn. Spec. 1100; petiolis alatis, foliolis obtusis emarginatis; floribus 16–24-andris; fructuum subglobosorum v. oblongorum cortice crasso; pulpa acidula.—*Pampelmoes*, Rumph. Amb. vol. ii. t. 24. f. 2. Nomen vernac. Vitiense, "Moli kana;" "Shaddock" of white settlers.—Very common throughout the group, apparently indigenous.

The Moli kana (or edible Moli) is extremely common, and thickly lines the banks of rivers, where it attains 30–40 feet in height, as, for instance, that of Namosi, Viti Levu, where, during my stay in August, 1860, the stillness of night was frequently broken by the heavy splash of the falling fruits. There is a variety with white, another with pinkish flesh, both of which are much esteemed by the natives as an article of food. The thorns are used by the lower classes for tatooing the women. Forster met with this species in the Tongan Islands, and, like *C. vulgaris*, it is probably indigenous to this part of Polynesia.

ORDO XIX. SIMARUBEÆ.

1. **Brucea**, Mill. Fasc. t. 25; Benth. et Hook. f. Gen. p. 311. Flores polygami. Calyx parvus, 4-partitus, imbricatus. Petala 4, minuta, linearia, imbricata, apice inflexa. Discus 4-lobus. Stamina 4, in fl. ♀ effœta, sub disco inserta, filamentis nudis, connectivo inconspicuo. Ovarium alte 4-lobum v. carpella 4 disco depresso insidentia, libera; styli liberi v. basi tantum connati, stigmatibus simplicibus patentibus; ovula in loculis solitaria, prope apicem loculi pendula. Drupæ 4, ovoideæ, vix carnosæ, putamine crustaceo rugoso. Semen loculo conforme, testa membranacea, albumine sat copioso; embryo rectus, radícula supera.—Arbores amaræ; foliis alternis, exstipulatis, imparipinnatis; foliolis basi obliquis, integerrimis, grosse serratis v. sinuato-lobatis; spicis axillaribus, elongatis; floribus minutis, in cymas parvas secus pedunculum dispositis, breviter pedicellatis, pedicellis basi bracteolatis.

1. **B.** (?) **quercifolia**, (sp. nov.) Seem.; ramulis foliisque hirsuto-pubescentibus demum glabris, ramulis teretibus; foliis alternis exstipulatis imparipinnatis 17–19-foliolatis; foliolis petiolulatis lanceolato-oblongis sinuato-lobatis; lobis obtusissimis; cæt. ign.—Viti Levu, on the Namosi river (Seemann! n. 105).

This tree is slightly bitter, and in habit approaches nearest to *Brucea Sumatrana*, but the leaflets are more deeply divided than any of that widely-diffused species. The hair is of a brownish-yellow tinge, and in the full-grown leaflets more crowded on the midrib and lateral veins than any other part of the leaves. Leaves $1\frac{1}{2}$ feet long; leaflets about 3 inches long, 9 lines broad.*

* *Picrasma Denhamii*, (sp. nov.) Seem. mss. in Herb. Mus. Brit.; arbuscula; foliis trifoliolatis (v. imparipinnatis?), foliolis petiolulatis ovatis utrinque acuminatis glabris; floribus subracemosim paniculatis petiolo communi vix longioribus; pedunculis pedicellis calycibus bracteis bracteolisque puberulis; floribus 4-meris hermaphroditis (v. polygamis?); petalis oblongis obtusis 1-nerviis pellucido-punctatis; filamentis glabris.—In woods, Aneitum, New Hebrides; collected, in Captain Denham's Expedition, by Mr. M'Gillivray!—Petioles $2\frac{1}{2}$ –3 inches long, the petiolule of the central leaflet twice the length of that of the lateral ones. Blade of central leaflet (the largest) $4\frac{1}{2}$ –5 inches long, 2 – $2\frac{1}{2}$ inches broad. Flowers small, white. Bentham and Hooker f., Genera Plant. p. 311, distinguish *Picrasma* from *Picræna* by its hairy filaments; but that distinction breaks down in the present species, which agrees in every other important generic character with *P. Javanica*, so well described and figured in Bennett's Plant. Jav. p. 197. t. 41. Miquel (Fl. N. Ind.) unites the two genera.

II. **Amaroria**, A. Gray, Bot. Wilkes, p. 356. t. 40; Benth. et Hook. f. Gen. p. 314. Flores monoici v. dioici. Fl. ♂: Sepala 6, an semper? Petala 0. Discus carnosus, profunde 5-fidus, lobis 2-fidis. Stamina numero sepalis æqualia, iisdem opposita; antheræ sessiles. Fl. ♀: Sepala 4–5, parva, persistentia. Petala 4–5, linearia, carinata, reflexo-patentia. Stamina rudimentaria, petalis duplo plura, minima, sub disco incrassato 8–10-crenato inserta. Ovarium simplex, ovoideum, 1-loculare, 1-ovulatum, vertice stigmatē sessili maximo depresso reniformi crasso obtectum; ovulum sub apice loculi appensum, subanotropum. Drupa sicca, nuciformis, ovoidea, subcompressa, epicarpio tenui, putamine osseo. Semen loculum implens, amphitropum, exalbuminosum; cotyledones ovales, planæ; radícula brevissima, supera.—Arbor parva, amarissima; foliis alternis, longe petiolatis, 1-foliolatis, foliolis elongato-oblongis, integerrimis; paniculis racemosis axillaribus; floribus parvis.

1. **A. soulameoides**, A. Gray, Bot. Wilkes, p. 356. t. 40.—Macuata coast of Vanua Levu (U. S. Expl. Exped.), Viti Levu (Storck! n. 880).

Storck's specimens are in fruit only, showing the persistent female flowers, which are 5-merous. I should call the leaves 1-foliolate rather than simple, there being a distinct articulation.

The allied *Soulamea amara*, Lam. Dict. vol. i. p. 449; Endl. Ann. Wien. Mus. 1836, t. 16 (*Cardophora Hindsii*, Benth. in Hook. Lond. Journ. vol. ii. p. 216), has not been collected in the Viti group, as stated in Bentham and Hooker's Genera; Barclay (n. 3542) found it in New Ireland, as correctly stated by Bentham in the Journal quoted.

Suriana maritima, Linn. Spec. 284, has not yet been found in Viti, but it may be expected to occur, having been gathered in the Tongan (Harvey!) and Society Islands (Lay and Collie!); also in several small islands off New Caledonia (Forster! W. Anderson! Milne!), in the Dangerous Archipelago (Barclay!), and at Point Look-Out, East Australia (J. Banks!).

ORDO XX. OCHNACEÆ.

I. **Brackenridgea**, A. Gray, Bot. Wilkes, p. 361. t. 42; Benth. et Hook. f. Gen. p. 318. Sepala 5, persistentia, imbricata. Petala 5, calycem æquantia, decidua, imbricata. Torus crassus, conicus, elevatus. Stamina 10, margini disci inserta, filamentis brevibus; antheræ longitudinaliter dehiscentes. Ovarium profunde 5-partitum, 5-loculare; stylus basilaris, columnaris, 5-sulcatus, stigmatē capitellato 5-lobo; ovula in loculis solitaria, circa processum (funiculum?) subbasilarem curva, hippocrepica. Drupæ 5, carnosæ, toro ampliato sessiles, intus ope processus basilaris spurie 4-loculares, endocarpio coriaceo. Semen annulare, testa membranacea; embryo annularis, cotyledonibus linearibus.—Frutices ramosi; foliis alternis petiolatis integerrimis, nervis tenuibus obliquis exterioribus margini subparallelis; stipulis laceris; pedunculis fasciculatis 1-floris, axillaribus et terminalibus; floribus mediocribus.

1. **B. nitida**, A. Gray, l. c. p. 362. t. 42; glaberrima; foliis oblongis lanceolatisve nitidis.—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.), Macuata coast of the same island (Seemann! n. 93).

ORDO XXI. BURSERACEÆ.

I. **Canarium**, Linn. Mant. 127; Benth. et Hook. f. Gen. p. 324. Flores hermaphroditi v. polygami. Calyx urceolatus v. cupularis, 3-fidus (rarius 2- v. 5-fidus), valvatus, persistens. Petala 3–4, rarius 5, crassiuscula, calyce longiora, valvata v. leviter imbricata. Discus annularis, crassiusculus, integer v. lobatus. Stamina 8–10, margini exteriori v. basi disci inserta, brevía, erecta v. incurva, filamentis liberis v. basi inter se et cum disco adhærentibus. Ovarium ovoideum, 3-(rarius

2-4-)loculare, stigmatē sessili capitato 3-4-lobo; ovula in loculis 2. Drupa ovoidea v. ellipsoidea, sæpe 3-gona, carne parca, putamine osseo abortu 1-loculari 1-spermo. Semen loculo conforme, testa membranacea; cotyledones (interdum fissæ) contortuplicatæ; radícula brevis, recta, supera.—Arbores elatæ, balsamifluæ; foliis amplis alternis exstipulatis v. pinnulis inferioribus sessilibus stipulæformibus, imparipinnatis, rarissime 1-3-foliolatis, foliolis oppositis valde coriaceis integerrimis v. crenulatis; paniculis axillaribus ramosis, ramulis robustis; floribus parvis v. mediocribus.

1. **C. Vitiense**, A. Gray, Bot. Wilkes, p. 373; glaberrimum; stipulis subulatis parvis caducis; foliolis 5-7 oblongo-ellipticis utrinque obtusis nunc subacuminatis nitidis; paniculis parvifloris; pedicellis (semipollicaribus et ultra) clavatis; calycis lobis triangularibus acutis; drupa ellipsoidea rostrata, vertice pilosa.—Mountains of the Macuata coast of Vanua Levu (U. S. Expl. Exped.), Ovalau (Seemann! n. 97).

Var. β .† foliolis 5-9 sæpius apice v. utrinque plus minus acuminatis. A. Gray, l. c.—Macuata coast of Vanua Levu (U. S. Expl. Exped.).

Harvey collected an allied species (*C. Harveyi*, Seem.; glaberrimum; foliolis 6-7 ovato-oblongis acuminatis nitidis; paniculis paucifloris; laciniis calycis obtusis; drupa ovoidea, glabra) in the Tongan Islands.

ORDO XXII. MELIACEÆ.

I. **Vavæa**, Benth. in Hook. Lond. Journ. vol. ii. p. 212; Benth. et Hook. f. Gen. p. 331. Calyx 4-7-fidus, persistens, leviter imbricatus. Petala 4-7, oblongo-ligulata, patentia, contorta. Tubus stamineus in lacinias 8-30 lineares villosobarbatas fissus, basi cum disco carnosus confluens; antheræ muticæ, exsertæ. Discus cylindricus. Ovarium ovoideum v. globosum, hirsutum, 3-4-loculare, in stylum gracile attenuatum, stigmatē capitato 3-4-lobulato; ovula in loculis 2, collateralia. Bacca globosa, indehiscens, 3-4-locularis, loculis 1-2-spermis. Semina ovalia, adscendentia, exarillata, testa lævi, hilo lineari; cotyledones plano-convexæ, cordatæ; radícula gracilis, retracta.—Arbores; foliis simplicibus alternis petiolatis; floribus parvis corymbosis, corymbis longe pedunculatis, pedicellis basi bracteolatis; bacca globosa.

I have not seen Fijian specimens of the species upon which this genus was founded (*V. amicorum*, Benth.), and I believe that it is confined to the Tongan or Friendly Islands, where it was first collected by Forster, though not named by him, and subsequently by Barclay and other collectors. Two additional new species occur in the Vitian Islands, and it is very probable that they were known to A. Gray, whose analysis of *Vavæa amicorum* must be referred to my *V. Harveyi*; whilst the flowering branch he figures on Plate 16 of Wilkes's Botany, agrees with Forster's Tongan specimens. Barclay's specimens of *V. amicorum*, from the same locality, have smaller leaves, though they do not differ in any other respect.

1. **V. Harveyi**, (sp. nov.) Seem.; foliis obovatis acuminatis in petiolum angustatis integerrimis, supra demum glabris, subtus villosis; laciniis calycis ovato-triangularibus acutis pubescentibus; petalis ovato-oblongis acuminatis v. acutis villosiusculis; filamentis (12-14) versum apicem attenuatis, extus glabris, intus villosis; ovario villoso.—Viti (probably Vanua Levu), Harvey! in Herb. Hook.

Leaves 5-8 inches long, 4 inches broad. A much more robust-looking plant than either *V. amicorum* or *Vitiensis*.

2. **V. Vitiensis**, (sp. nov.) Seem.; ramis glabris; foliis obovatis acutis v. obtuse acuminatis, in petiolum attenuatis, utrinque glabris, subtus subglaucis; pedunculis pedicellisque glabris, bracteis lineari-lanceolatis, laciniis calycis ovato-triangularibus acutis mox glabris; petalis oblongo-ligulatis obtusis extus intusque sericeo-puberulis; filamentis utrinque villosis; ovario villoso.—Macuata coast of Vanua Levu (Seemann! n. 63).

This is a middle-sized tree, with smaller and more membranaceous leaves than *V. Harveyi*. Petiole

1-1½ inch long. Blade 3-4 inches long, 1½-2 inches broad, with from 5-6 veins on each side of the midrib. Flowers white. Most of my specimens are in bud only.

In *V. amicorum* the leaves are more or less clad with hair, but they never retain it on the under side, as is the case in *V. Harveyi*, nor are they ever as glabrous and almost pruinose as those of *V. Vitiensis*; the calyx is villose, and the petals obtuse. I have no doubt that when we get more complete materials, these three species will be found to be quite sound.

II. **Melia**, Linn. Gen. n. 576; Benth. et Hook. f. Gen. p. 332. Calyx 5-6-partitus, imbricatus. Petala 5-6, libera, lineari-spathulata, patentia, contorta. Tubus stamineus subcylindricus, ore dilatato 10-12-fido, lobis 2-3-fidis; antheræ 10-12, inclusæ, erectæ, vix apiculatæ. Discus annularis. Ovarium subglobosum, 3-6-loculare; stylus gracilis, stigmatate capitato 3-6-lobo, deciduo; ovula in loculis 2, superposita. Drupa subcarnosa, putamine osseo 1-5-loculari, loculis 1-spermis. Semina pendula, testa crustacea, albumine carnosio parco v. 0; cotyledones foliaceæ; radícula teres.—Arbores, ramulis cicatricosis; foliis alternis, pinnatis v. 2-3-pinnatis, novellis et inflorescentia sæpe stellato-tomentosis, foliolis petiolulatis dentatis v. serratis; paniculis axillaribus amplis ramosissimis, ∞-floris; floribus mediocribus, albis v. purpureis.—*Azadirachta*, A. Juss. Mel. 68.

1. **M.** (?) **elegans**, (sp. nov.) Seem.; arborea; ramulis angulatis verrucosis; foliis alternis 2-pinnatis villosis demum (petiolis petiolulis venisque foliolorum exceptis) glabratis, foliolis petiolulatis ovato-lanceolatis acuminatis duplicato-serratis coriaceis, supra lucidis viridibus, subtus opacis pallidioribus; cæt. ign.—Macuata coast of Vanua Levu (Seemann! n. 64).

A tree 24 feet high, having somewhat the habit of *M. Azedarach*, and not referable to any other genus with which I am acquainted. It is a much more elegant and robust species than that just mentioned. Leaves, when young, villous, afterwards more or less glabrous, from 1-1½ foot long, the pinnæ with 10-12 leaflets; leaflets 1½ inch long, 4-5 lines broad. The general petiole and rachis with 3 deep furrows, one above, and two below. When collecting my specimens, the tree was just beginning to make new leaf, and had no flowers.

III. **Dysoxylum**, Blum. Bijdr. 172; Benth. et Hook. f. Gen. p. 332. Flores hermaphroditi. Calyx brevis, 4-5-fidus -dentatus v. -partitus, imbricatus. Petala 4-5, lineari-oblonga, patentia, basi interdum cum tubo stamineo agglutinata, valvata. Tubus stamineus cylindricus, ore 8-10-dentato; antheræ 8-10, inclusæ. Discus tubulosus, ore crenulato v. integerrimo glabro v. ciliato, ovarium sæpissime vaginans et superans. Ovarium ovoideum v. oblongum, 3-5-loculare; stylus gracilis, stigmatate capitato discoideo; ovula in loculis 2, superposita v. collateralia, rarius solitaria. Capsula crasse coriacea, globosa v. pyriformis, 1-5-locularis, loculicide 2-5-valvis, valvis medio septiferis loculis 1-2-spermis. Semina arillata v. exarillata, oblonga, hilo lato ventrali, testa castanea coriacea; cotyledones maximæ, superpositæ v. collaterales, plumula centrali v. laterali.—Arbores glabræ, sæpe fœtidæ, odore nunc alliaceo; foliis amplis, abrupte v. imparipinnatis, foliolis petiolulatis basi obliquis; paniculis axillaribus, laxis; floribus mediocribus, bracteatis v. ebracteatis, alabastris sæpe elongatis.—*Hartighsea*, A. Juss. Mem. Mel. 75, t. 4. *Didymochiton*, Blum. Bijdr. 177.

1. **D.** (**Hartighsea**) **alliaceum**, Seem.; glabratum; foliis imparipinnatis, foliolis 7-19 petiolatis sæpe alternis oblongis v. lanceolato-oblongis subacuminatis basi rotundato-inæquilateris; paniculis compositis thyrsoides racemifloris; floribus sæpe 4-meris; columna staminea et disco glabro tubulari minutissime crenulatis; ovario 3-4-loculari, villoso.—*Didymochiton Richii*, A. Gray, Bot. Wilkes, p. 240. t. 20. *Trichilia alliacea*, Forst. Prodr. n. 189, et Icon. ined. t. 133. *Hartighsea Forsteri*, A. Juss. Mem. Mel. 265.—Bua Bay, (Vanua Levu), Taviuni and Nukulau (U. S. Expl. Exped.). Previously collected in the Tongan Islands (Forster! Barclay!).

Judging from the materials existing at the British Museum, Forster's *Trichilia alliacea* does not differ from A. Gray's *Didymochiton Richii*.

2. **D. (Hartighsea) bijugum**, Seem.; glabrum; foliis paripinnatis 2- v. rarissime 3-4-jugis, foliolis vix petiolulatis semper oppositis, elliptico-oblongis v. ovatis, luteo-viridibus, marginibus stramineis, tenuissime undulatis; paniculis folio brevioribus; floribus 5-meris, columna staminea et disco glabro cyathiformi minutissime crenulatis; ovario 3-loculari, glabro.—*Trichilia bijuga*, Labill. Austr. Caled. p. 54. t. 54. *Hartighsea Billardieri*, A. Juss. Mem. Mus. Par. vol. xix. p. 228.—Banks of the Namosi River, Viti Levu (Seemann! n. 104). Also collected in New Caledonia (Labillardière, Viellard! n. 267).

My specimens, referred to *Zanthoxylum* in my provisional list, are rather indifferent; but, as far as they go, they agree with specimens from New Caledonia.

IV. **Aglaiia**, Lour. Fl. Cochin. 173; Benth. et Hook. f. Gen. p. 334; Benth. Fl. Austr. vol. i. p. 382. Flores polygamo-dioici. Calyx 5-dentatus v. 5-partitus, imbricatus. Petala 5, libera v. basi connata, conniventia, imbricata. Tubus stamineus urceolatus, apice 5-dentatus v. integerrimus; antheræ 5, inclusæ v. semiexsertæ, erectæ, cordatæ, acutæ. Discus inconspicuus. Ovarium ovatum, 1-2-loculare; stylus crassus, brevissimus, stigmatate disciformi v. clavato simplici v. 2-lobo stylo vix latiore; ovula 1-2, ab axi loculi pendula. Bacca corticata, exsucca, 1-2-sperma. Semina exarillata, in pulpa nidulantia.—Arbores v. frutices glaberrimæ v. lepidotæ v. stellatim pubescentes; foliis alternis 3-foliolatis v. imparipinnatis, foliolis alternis v. oppositis, basi sæpe obliquis, interdum pellucido-punctatis; paniculis axillaribus multifloris; floribus parvis v. minimis.—*Milnea*, Roxb. Fl. Ind. vol. i. p. 637. *Nemedra*, Juss. Mem. Mel. 71. t. 3.

1. **A. multijuga**, (sp. nov.) Seem.; foliis amplis glabris 15-17-foliolatis, foliolis subfalcato-oblongis obtusis v. obtuse acuminatis in petiolum attenuatis; paniculis amplis (3-4 ped. long.); floribus glomeratis sessilibus; petalis rotundatis ciliatis imbricatis.—Nomen vernac. "Danidani loa," teste Storck.—Island of Wakaia (Storck! n. 874).

Entire leaf 3-4 feet long; leaflets 8-9 inches long, 2-2½ inches broad, quite glabrous, without any pellucid dots, not shining, of a pale-green colour, and with from 12-15 veins on each side of the midrib. The flowers of Storck's specimens are in bud only. Fruit unknown.

2. **A. edulis**, A. Gray, Bot. Wilkes, p. 237; foliis paniculisque ferrugineo-tomentosis, demum glabratis, foliolis 7-13 petiolulatis oblongo-ellipticis v. ovatis, apice acuminatis v. obtusis, basi attenuatis v. rotundatis; floribus pedicellatis; bacca ferrugineo-tomentosa.—*Milnea edulis*, Roxb. Fl. Ind. vol. i. p. 637, et ed. Wall. vol. ii. p. 430. Nomen vernac. Vitiense, "Danidani loa."—Common throughout the lower parts of all the Viti Islands (U. S. Expl. Exped.; Seemann! n. 59 et 60). Also found in the East Indies.

3. **A. basiphylla**, A. Gray, Bot. Wilkes, p. 237; ramulis junioribus petiolis costisque subtus pube rufa furfuraceo-hirsutis; foliolis 5-7 elongato-oblongis membranaceis petiolulatis, infimis minoribus sæpissime imæ basi petioli adproximatis; floribus axillaribus glomeratis subsessilibus; bacca (immatura) cylindræa v. clavata ferrugineo-tomentosa.—Ovalau (U. S. Expl. Exped.).

V. **Carapa**, Aubl. Pl. Gui. Suppl. 33. t. 387; Benth. et Hook. f. Gen. p. 338. Calyx brevis, 4-5-fidus v. -partitus, imbricatus. Petala 4-5, libera, reflexa, contorta. Tubus stamineus urceolatus, 8-10-dentatus v. -fidus, laciniis integris v. 2-partitis; antheræ dentibus alternæ, inclusæ. Discus crassus, hemisphæricus. Ovarium in disco sessile, 4-5-costatum v. -sulcatum, 4-5-loculare; stylus brevis, stigmatate disciformi; ovula in loculis 2-6, 2-seriatim superposita. Capsula sphærica v. ovoidea, carnosa v. lignosa, 1-5-locularis, septis tenuissimis nunc evanidis, loculis 2-5-spermis. Semina magna, crassa, circa axeos centralis reliquias in globum compacta, pyramidato-angulata, dorso convexa, umbilico ventrali, testa spongiosa; cotyledones superpositæ, sæpe conferruminatæ; radícula dorsalis.—Arbores plerumque littorales, glaberrimæ; foliis impari- v. abrupte pinnatis, foliolis paucis

v. numerosis; paniculis axillaribus, multifloris v. paucifloris; floribus inconspicuis.—*Xylocarpus*, Kœn. ex A. Juss. Mem. Mel. 91. t. 9.

1. **C. Moluccensis**, Lam. Blum. Bijdr. p. 179; foliolis 2-jugis ovato-acuminatis v. subrotundatis.—*Xylocarpus granatum*, Kœn. ap. Roxb. Fl. Ind. vol. ii. p. 240. *Granatum littoreum*, Rumph. Amb. vol. iii. p. 92. t. 61. Nomen vernac. Vitiense, “Dabi.”—Common on the beaches throughout the group (Seemann! n. 61; U. S. Expl. Exped.).

The leaves of my specimens agree with the lower rather than with the upper branch of Rumphius's Plate.

2. **C. obovata**, Blum. Bijdr. p. 179; foliolis 1–2-jugis obovatis v. oblongis apice obtusissimis v. retusis.—*Xylocarpus obovatus*, A. Juss. Mem. Mel. p. 344.—Nomen vernac. Vitiense, “Dabi.”—Common in mangrove swamps throughout the group (Seemann! n. 62; U. S. Expl. Exped.). Also found at Endeavour River, Australia (Sir J. Banks!) and Java (Horsfield!).

I am not quite prepared to unite these two species. What I take to be *C. Moluccensis* always grows on dry sandy beaches, and has a very different aspect to *C. obovata*, which is invariably found in mangrove swamps. Not all *Carapas* are littoral trees. I lately found, in the mountain forests of the Tocuyo district, Venezuela, far away from the sea, a tall species of this genus.

ORDO XXIII. CHAILLETIACEÆ.

I. **Chailletia**, DC. in Ann. Mus. 17. 153 cum icon.; Benth. et Hook. f. Gen. p. 341. Flores interdum polygami v. dioici. Calyx 5-partitus, laciniis inæqualibus v. subæqualibus. Petala 5, libera, late unguiculata, apice longe inflexo 2-partito v. 2-fido, æstivatione sæpe aperta. Stamina 5, æqualia, filamentis gracilibus v. crassiusculis; antheræ late oblongæ, connectivo plus minus incrassato. Glandulæ hypogynæ 5, petalis oppositæ, distinctæ v. in discum sinuatum connatæ. Ovarium liberum, subglobosum, 2–3-loculare; styli 1–3, liberi v. connati, breves v. elongati et graciles, apice stigmatosi. Drupa coriacea, exsucca, putamine 1–2-loculari crustaceo v. osseo.—Arbusculæ et frutices, erectæ v. scandentes, glabræ v. pubescentes; foliis alternis, breviter petiolatis, coriaceis venosis integerrimis; stipulis 2, caducis; cymis v. corymbis axillaribus, sæpe multifloris, pubescentibus v. tomentosis, pedunculo brevi v. elongato libero v. cum petiolo connato et quasi foliifero; floribus parvis, sæpe albis, sepalis intus glabris.

1. **C. Vitiensis**, (sp. nov.) Seem. Mission to Viti, p. 434; arborea; ramulis petiolis pedunculis calycibusque ferrugineo-tomentosis; foliis oblongis v. ovatis acuminatis basi obliquis, supra glabris lucidis, subtus ad costas venasque tomentosis, mox glabratis; cymis axillaribus; floribus dioicis, masculis: calycis laciniis oblongis acutis; petalis ovatis apice inflexis, 2-fidis, extus pilosis; fœmineis ignotis.—Ovalau (Storeck! n. 876), Gau, in woods (Milne!).

ORDO XXIV. OLACINEÆ.

I. **Ximania**, Linn. Gen. n. 477; Benth. et Hook. f. Gen. p. 346. Calyx parvus, 4–5-dentatus v. lobatus, fructifer immutatus. Petala 4–5, hypogyna, valvata, angusta, intus barbata. Stamina petalis duplo plura, filamentis filiformibus; antheræ lineares, erectæ, integræ, rimis oppositis dehiscentes. Ovarium basi v. altius 3-loculare; stylus integer, stigmatibus subcapitato; ovula 3, linearia, a placenta centrali superne libera v. uno latere parieti affixa, intra loculos pendula. Drupa ovoidea v. globosa, carne pulposa, putamine crustaceo v. sublignoso. Semen spurie erectum; embryo intra apicem albuminis carnosissimi minimus.—Frutices v. arbores glabræ v. tomentosæ, ramulis abortienti-

spinescentibus sæpe armatæ; foliis alternis integerrimis subcoriaceis, sæpe fasciculatis; floribus albidis, in cymas breves axillares dispositis v. rarius solitariis.—*Heymassoli*, Aubl. Guian. 324. t. 125.

1. **X. elliptica**, Forst. Prodr. n. 162, et Icon. (ined.) t. 113; fruticosa, inermis; foliis ellipticis v. oblongis; pedunculis multifloris; drupis (aurantiacis) globosis.—Labill. Sert. Austr. Caled. t. 37.—*X. exarmata*, F. Muell. in Trans. Phil. Inst. Vict. vol. iii. p. 22. Nomina vernac. Vitiensia, “Somisomi, Sosomi, Tomitomi, et Tunitumi.”—Common on the seaside (Seemann! n. 88; Barclay! n. 3462). Also collected in New Caledonia (Forster! Anderson!), Java (Horsfield!), N. Australia, Abyssinia (Hochstetter!), and Rio de Janeiro (Miers!).

Bentham may possibly be correct in uniting this species with the thorny *X. Americana*, Linn., but all the Polynesian specimens I and others have seen are unarmed, and they are thus described and figured by Forster and Labillardière. In collecting my specimens I did not notice the fragrance so powerful in *X. Americana*, which I gathered on the Isthmus of Panama.

X. elliptica, termed “Somisomi,” “Sosomi,” “Tomitomi,” or “Tunitumi” in the different dialects of Viti, is a seaside shrub, about 12 feet high, with perfectly spherical fruits, which emit, especially whilst green, a most powerful smell of essential oil of almonds, and, when ripe, they are orange-coloured, and have a tart, though not a disagreeable flavour. The natives show a partiality for it in common with the wild pigeons, which flock to it in numbers. The wood of the shrub is very hard, and used for making those peculiar pillows (Kali) of the country which the Fijians doubtless invented to prevent the derangement of their enormously large heads of hair, curled and dressed as they are with infinite care.

ORDO XXV. ICACINEÆ.

I. **Stemonurus**, Blum. Bijdr. 648. Flores hermaphroditi v. polygami. Calyx cupulatus, minute 4-5-dentatus v. 5-lobus. Petala 4-5, disco hypogyno brevissimo inserta, valvata. Stamina 5, hypogyna, petalis alterna iisque basi cohærentia, filamentis apice pilosis; antheræ ab apice filamenti introrsum pendulæ. Ovarium 1-loculare; stigma subsessile, late discoideum v. minutum; ovula 2, pendula. Drupa oblonga, putamine crustaceo. Semen pendulum; embryo intra apicem albuminis carnosus indivisi parvus.—Arbores glabræ v. pubescentes; foliis integerrimis, subcoriaceis; floribus capitato-cymosis; cymis axillaribus supra-axillaribus lateralibusve.—*Lasianthera*, P. de Beauv. Fl. Ow. et Ben. vol. i. p. 85. t. 51. *Gomphandra*, Wall. in Lindl. Nat. Syst. ed. vol. ii. p. 439; Miers, Contrib. t. 13 ad 15. *Medusanthera*, Seem. Journ. of Bot. 1864, p. 74.

1. **S. Vitiensis**, (sp. nov.) Seem. (Tab. XII.); subglabra; ramis pendulis; foliis petiolatis ovato-oblongis longe acuminatis; cymis axillaribus 2-3-choromis, bracteolis minutis; floribus hermaphroditis; calyce cupuliformi, 5-dentato, ciliolato; petalis obovatis (albis) incurvis; filamentis compressis, apice ad latus interius in ramos 8 longissimos clavatos dilatatis; ovario ovato-conico; cæt. ign.—*Medusanthera Vitiensis*, Seem. Journ. of Bot. 1864. p. 74. Nomen vernac. Vitiense, “Duvu,” fide Storck.—Bureta, Island of Ovalau (Storck! n. 877).

A middle-sized tree, with terete, pendulous branches. Leaves 3 inches long, 1 inch broad; petiole $\frac{1}{4}$ of an inch long. Peduncles longer than the petiole. Pedicels with minute hair. Flowers small. Filaments compressed, widening towards the top; branches (or hair) twice as long as the anthers. Petals glabrous, almost cucullate at the apex, and without apparent veins.

EXPLANATION OF PLATE XII.—Fig. 1, an entire flower; 2, the same opened; 3, stamen; 4, ovary:—*all magnified.*

ORDO XXVI. ILICINEÆ.

I. **Plex**, Linn. Gen. n. 172; Benth. et Hook. f. Gen. p. 356. Flores sæpius hermaphroditi. Calyx parvus, persistens, 4-5-fidus. Corolla rotata, 4- rarius 5-6-partita, laciniis obtusis. Stamina

lobis corollæ isomera, tubo brevi ejus læviter adhærentia; antheræ oblongæ. Ovarium sessile, subglobosum, 4–6- rarius 7–8-loculare; stylus 0 v. brevis, crassus, stigmatibus tot quot ovarii loculi distinctis v. confluentibus; ovula in loculis 1–2, collateralia. Drupa globosa, 4–8-pyrena, pyrenis osseis v. crustaceis.—Arbores v. frutices; foliis alternis, sæpe nitidis, integerrimis v. rarius dentatis v. spinosis; pedunculis axillaribus, paucifloris v. sæpius ramosis; floribus albis.—*Prinos*, Linn. Gen. n. 441.

1. **I. Vitiensis**, A. Gray, Bot. Wilkes, p. 295. t. 25; foliis ovalibus subacuminatis integerrimis tenuiter coriaceis; floribus abortu dioicis in cymulas breviter pedunculatas dispositis, masculis 4–6-meris, fœmineis sæpissime 8-meris; pyrenis 8 dorso profunde sulcatis.—Bua Bay, Vanua Levu (U. S. Expl. Exped.), Taviuni (Seemann! n. 87). Also collected in Viti by Harvey.

ORDO XXVII. CELASTRINEÆ.

I. **Celastrus**, Linn. Gen. n. 270; Benth. et Hook. f. Gen. p. 364. Flores interdum unisexuales. Calyx basi urceolatus, 5-fidus. Petala 5, sub disco inserta, apice patentia. Stamina 5, disci sinibus inserta, filamentis subulatis; antheræ oblongæ. Discus cupularis v. concavus, 5-lobus. Ovarium disco impositum (nec immersum), 2–4-lobum, 2–4-loculare (interdum imperfecte); stylus brevis crassus v. subelongatus, stigmatibus 3–4-lobo; ovula e basi loculi 2, collateralia, erecta, funiculo basi cupulæformi. Capsula teres globosa v. oblonga, coriacea, 2–4-locularis, loculicide dehiscens, loculis 1–2-spermis, valvis 3–4 medio septiferis. Semina erecta, arillo carnosio apice pervio inclusa, testa membranacea, albumine copioso carnosio; embryo orthotropus, cotyledonibus foliaceis, radícula infera.—Frutices sæpissime scandentes, inermes; foliis alternis submembranaceis petiolatis, integerrimis v. serratis; stipulis inconspicuis; racemis v. paniculis axillaribus et terminalibus; floribus interminores, pedicellis bracteatis.

1. **C. Richii**, A. Gray, Bot. Wilkes, p. 289; inermis, glaberrimus; foliis oblongis utrinque subacutis crenulatis supra lucidis brevissime petiolatis; racemo terminali paucifloro.—Vanua Levu (U. S. Expl. Exped.).

Allied to *C. paniculatus* of the East Indies, according to A. Gray; it has not been seen by me.

II. **Gymnosporia**, Wight et Arn. Prodr. vol. i. p. 159; Benth. et Hook. f. Gen. p. 365. Calyx 4–5-fidus v. 4–5-partitus. Petala 4–5, sessilia, patentia. Stamina 4–5, sub disco inserta, filamentis subulatis; antheræ late didymæ. Discus late explanatus, 4–5-lobus v. 4–5-sinuatus. Ovarium sæpissime basi lata cum ovario confluens, 3-gonum v. pyramidatum, 2–3-loculare; stylus brevis, stigmatibus 3; ovula in basi loculi 2, erecta, funiculis basi nudis. Capsula obovata v. rarius globosa, 3-gona, 2–3-locularis, 1–4-sperma. Semina arillo completo v. imperfecto interdum 0, e septo loculi erecta, testa coriacea, albumine carnosio; cotyledones foliaceæ.—Arbusculæ et frutices rigidi, sæpius spinosi; foliis alternis v. fasciculatis, sæpissime obovatis, coriaceis, integerrimis v. serratis, exstipulatis; cymis axillaribus, solitariis v. fasciculatis, interdum gracile pedunculatis; floribus parvis, viridibus v. flavescentibus.—*Catha*, Endl. Gen. n. 1086.

1. **G. Vitiensis**, Seem.; inermis; foliis ovalibus v. obovatis crenulatis basi in petiolum brevem attenuatis; cymis brevibus multifloris; calycis lobis fimbriato-ciliatis; petalis denticulatis; capillis inter stamina nullis; capsula subglobosa; seminibus ovalibus, basi arillo carunculæformi glabro stipatis.—*Catha Vitiensis*, A. Gray, Bot. Wilkes, p. 287. t. 23. *Celastrus crenatus*, Hook. et Arn. Beech. p. 61, non Forst.—Ovalau (U. S. Expl. Exped.), and other parts of the group; common

(Seemann! n. 86; Milne!). Also collected in the Society (Lay and Collie!) and Tongan Islands (D. Nelson! Sir E. Home! Barclay! Harvey!).*

ORDO XXVIII. RHAMNEÆ.

I. **Ventilago**, Gærtn. Fruct. vol. i. p. 223. t. 49; Benth. et Hook f. Gen. p. 375. Calyx 5-fidus, tubo obconico, lobis patentibus acutis intus carinatis. Petala 5, deltoidea obcordata v. 2-loba, cucullata, deflexa. Stamina 5, basi petalis adnata, iis paulo longiora, filamentis filiformi-subulatis, connectivo sæpissime excurrente. Discus 5-gonus, nudus v. pubescens, margine plano libero. Ovarium disco immersum, subglobosum, 2-loculare; stylus brevissimus, compressus, stigmatibus 2 brevibus. Nux subglobosa, basi v. supra medium tubo calycis inclusa, superne in alam linearem coriaceam expansa, 1-ocularis, 1-sperma. Semen subglobosum, testa membranacea, albumine 0; cotyledones crassæ, carnosæ; radícula brevissima, infera.—Frutices scandentes, glabri v. pubescentes, ramis teretibus; foliis subdistiche alternis, petiolatis, ovatis v. oblongis, acutis, basi obliquis; stipulis minutissimis, caducis; paniculis terminalibus et axillaribus, solitariis v. ternis; floribus parvis, in ramulos fasciculatis, minutissime bracteolatis.

1. **V. (?) Vitiensis**, A. Gray, Bot. Wilkes, p. 274; glaberrima; foliis ovato- v. lanceolato-oblongis, obtuse v. longiuscule acuminatis nitidis venulis tenuibus transversis eximie reticulatis; floribus longiuscule pedicellatis; fruct. ign.—Nomen vernac. Vitiense, "Vere," teste Williams.—Macuata coast of Vanua Levu (U. S. Expl. Exped.), Bua Bay (Williams!).

II. **Smythea**, (gen. nov.) Seem. in Bonplandia, 1861, p. 255; Benth. et Hook. f. Gen. p. 375. Calyx tubo obconico, lobis 5 patentibus. Petala 5, cucullata, late emarginata v. 2-loba. Stamina 5, petalis non oclusa, filamentis incurvis; antheræ muticæ, didymæ, rimis non confluentibus. Discus 5-gonus, planiusculus. Ovarium semi-inferum, 2-loculare; styli 2, recurvi. Capsula ovato-lanceolata, compressa, exalata, crasse crustacea, ima basi calycis tubo suffulta, secus lineam mediam dehiscent, 2-valvis, 1-ocularis, 1-sperma. Semen magnum, compressum, exalbuminosum.—Frutex subscandens, habitu foliisque *Ventilaginis*, ramulis teretibus flexuosis, ultimis floribusque puberulis; foliis ovatis v. ovato-oblongis acuminatis dentatis; floribus fasciculatis pedicellatis, fasciculis axillaribus v. secus ramulos terminales laxè paniculatis; capsulis uncialibus puberulis.

Closely allied to *Ventilago*, from which it differs by its dehiscent capsule, and named in honour of Colonel Smythe, R.A. At present we know only one species, *S. Pacifica*, but it is possible that *Ventilago (?) Vitiensis*, of which the fruit is unknown, may prove to be a second species.

1. **S. Pacifica**, (sp. nov.) Seem. in Bonpl. vol. ix. p. 255, et vol. x. p. 69. t. 9 (Tab. XI.).—On the sea-beach growing with *Colubrina Asiatica*, Vanua Levu (Seemann! n. 79), Ovalau (Milne!).

EXPLANATION OF PLATE XI.—Fig. 1, an entire flower; 2, a petal; 3, ovary and style; 4, the same, cut vertically; 5, cross-section of ovary; 6, an ovule; 7, capsule; 8, the same, open; 9, a seed:—*all magnified*.

III. **Rhamnus**, Linn. Gen. n. 265 (excl. *Zizypho* et *Paliuro*); Benth. et Hook. f. Gen. p. 377. Flores hermaphroditi v. polygamo-dioici. Calyx 4–5-fidus, tubo urceolato, lobis 3-angulari-ovatis, erectis v. patentibus, intus carinatis. Petala 4–5 v. 0, margini disci longe supra ovarium inserta, cucullata v. plana. Stamina 4–5, filamentis brevissimis. Discus tubum calycis vestiens, margine

* *Celastrus crenatus*, Forst. Prodr. n. 113, et Icon. (ined.) t. 63 et 64; Guill. Zeph. Tait. p. 69. *Catha crenata*, A. Gray, Bot. Wilkes, p. 288, must rank as *Gymnosporia crenata*, Seemann. Forster and Barclay collected it in the Marquesas; but it has not been found in the Society Islands. A third Polynesian species of *Gymnosporia* was found in and off New Caledonia (Vieillard! n. 223; Milne! M'Gillivray!).

tenui. Ovarium liberum, ovoideum, basi calycis reconditum, 3-4-loculare, in stylum brevem elongatum 3-4-fidum attenuatum, stigmatibus obtusis papillois. Drupa baccata, oblonga v. sphaerica, basi tubo calycis parvo cincta, 2-4-pyrena, pyrenis osseis v. cartilagineis intus obscure dehiscentibus v. indehiscentibus. Semina obovata, testa membranacea v. crustacea laevi v. dorso sulcata, raphe dorsali ventrali v. laterali, albumine carnosio; cotyledones planæ v. margine recurvæ, radícula brevis.—Frutices v. arbores, foliis alternis (rarius suboppositis), petiolatis, deciduis v. sempervirentibus, penninerviis, integerrimis v. dentatis; stipulis parvis, deciduis; floribus axillaribus, racemosis v. cymosis; cymis fasciculatis.

1. **R. (?) Vitiensis**, Benth. Fl. Austr. vol. i. p. 413; fruticosus, subglaber; foliis ovatis v. ovali-oblongis, breviter acuminatis, integerrimis v. serrato-crenatis, utrinque viridibus, membranaceis; floribus axillaribus fasciculatis; calycis tubo late hemisphaerico, lobis triangularibus; petalis involutis stamina includentibus; disco concavo, cupuliformi, margine libero; ovario sessili, 2-loculari, in stylum attenuato; drupa (immatura) obovato-oblonga.—*Colubrina Vitiensis*, Seem. Mission to Viti, p. 434.—Sea-beach on the southern side of Vanua Levu (Seemann! n. 85). Also collected in Queensland, at Cape York (M'Gillivray!).

Until good ripe fruit shall have been collected, the genus of this plant must remain doubtful.

IV. **Colubrina**, L. C. Rich. ex Brongn. in Ann. Sc. Nat. vol. x. p. 368. t. 15. fig. 3; Benth. et Hook. f. Gen. p. 379. Calyx 5-fidus, tubo hemisphaerico, lobis patentibus 3-angulari-ovatis accretis. Petala 5, infra discum inserta, unguiculata, cucullata. Stamina 5, petalis inclusa, filamentis filiformibus. Discus crassus, tubum calycis implens, annularis, 5-gonus v. 5-10-lobus. Ovarium disco immersum et cum eo confluentem, subglobosum, 3-loculare, in stylum 3-fidum v. 3-partitum attenuatum, stigmatibus obtusis papillois. Drupa subglobosa, obscure 3-loba, infra medium tubo calycis cincta, 3-cocca, sæpe demum capsularis et loculicide dehiscens, epicarpio sicco tenui v. subcarnoso, coccis membranaceis crustaceis v. cartilagineis intus longitudinaliter dehiscentibus v. demum 2-valvibus. Semina late obovoidea, compressa, 3-gona, testa laevi nitida coriacea, albumine tenui carnosio; cotyledones orbiculares, planæ v. incurvæ, tenues v. crassiusculæ; radícula brevis.—Frutices erecti v. sarmentosi, glabri v. pubescentes; foliis alternis, petiolatis, oblongis cordatis v. lanceolatis, penninerviis v. basi 3-nerviis, integerrimis v. serratis; stipulis parvis, deciduis; floribus axillaribus, cymosis v. fasciculatis, flavis v. virescentibus; drupis sæpe atris, pisiformibus.

1. **C. Asiatica**, A. Brongn. Monogr. Rham. 62; glabra, inermis; foliis ovatis v. late cordatis acuminatis, crenato-serratis, 3-nerviis et penninerviis, lucidis; cymis breviter pedunculatis plerumque petiolo brevioribus.—*Ceanothus Asiaticus*, Linn. Sp. 284; Cav. Icon. vol. v. t. 440. fig. 1. *Ceanothus capsularis*, Forst. Prodr. n. 112. *Rhamnus laevigatus*, Sol. Prim. Fl. Pac. p. 236, et in Parkins. Drawings of Tahit. Plants, t. 31 (ined.). Nomen vernac. Vitiense, "Vuso levu;" Tahitense, "Tutu."—Common on the seaside throughout Viti (Seemann! n. 80). Also collected in the Marquesas (Barclay!), Sandwich (Nuttall!), and Society Islands (Banks! Barclay!), and in Eromanga (M'Gillivray!) and Queensland (M'Gillivray!).

I was told that the natives use the leaves of this shrub for washing their hair, to clean it and destroy the vermin; hence, probably, the native name "Vuso" (foam, froth, soap) and "Levu" (great, much).

V. **Alphitonia**, Reiss. in Endl. Gen. n. 1098; Benth. et Hook. f. Gen. p. 381. Flores hermaphroditi. Calyx 5-fidus, tubus late obconicus, lobis 3-angulari-ovatis acutis patentibus intus carinatis. Petala sub disco inserta, subelongata, involuta. Stamina 5, filamentis filiformibus, petalis involuta. Discus crassus, pilosus, tubum calycis implens, 5-gonus. Ovarium disco immersum et cum eo confluentem, 2-3-lobum, 2-3-loculare, in stylum 2-3-fidum attenuatum, stigmatibus obtusis.

Drupa globosa v. late ovoidea, infra medium calycis tubo annulata, atra, 2-3-pyrena, epicarpio suberoso sicco pulvere atro rubro farcto, pyrenis lignosis v. crasse crustaceis intus longitudinaliter dehiscentibus. Semina late oblonga, compressa, plano-convexa, arillo membranaceo laxo fragili apice pervio induta, testa cornea coriacea v. ossea nitida, albumine cartilagineo v. carnosio; cotyledones orbiculatæ, crassiusculæ, planæ; radícula brevis.—Arbor interdum procera; ramulis ferrugineo-tomentosis; foliis alternis, petiolatis, ovato- v. oblongo-lanceolatis, integerrimis, parallele penninerviis, venulis crebris striolatis, subtus incanis, superne sicco atris; stipulis parvis, deciduis; cymis axillaribus et terminalibus; floribus albidis; drupis majusculis.

1. **A. excelsa**, Reiss. in Endl. Gen. n. 1098.—*A. zizyphoides*, A. Gray, Bot. Wilkes, p. 278. t. 22. *A. franguloides*, A. Gray, l. c. p. 280. t. 22. *Colubrina excelsa*, Fenzl in Huegel, Enum. 20. *Zizyphus pomaderroides*, Fenzl in Huegel, Enum. 20. *Rhamnus zizyphoides*, Sol. in Forst. Prodr. n. 510 (absque char.); Spreng. Syst. vol. i. p. 768; DC. Prodr. vol. ii. p. 27. *Ceanothus dealbatus*, Dryand. mss. in Herb. Mus. Brit. *Zizyphoides argentea*, Sol. Prim. Fl. Pacif. p. 378, et in Parkins. Drawings of Tahit. Plant. t. 121 (ined.). Nomen vernac. Vitiense, "Doi;" Tahitense, "Toi."—Common throughout Viti (Seemann! n. 81; U. S. Expl. Exped.). Also collected in the Society, Tongan, and Samoan Islands, in New Caledonia (Sir E. Home!), the East coast of New Holland (Sir J. Banks!), and Borneo.

A very common and variable species, often attaining a considerable height, and yielding useful timber. In Viti it is known by the name of "Doi" (= "Toi" of Tahiti), and flowers about May, and hence that month, or the time thereabouts, is termed the "Vula i doi," or "Doi-moon."

VI. **Gouania**, Linn. Gen. n. 1157; Benth. et Hook. f. Gen. p. 385. Flores polygami. Calyx tubo brevi obconico cum ovario adhærente, lobis 5. Petala 5, infra marginem disci inserta, cucullata. Stamina 5, petalis oclusa; antheræ longitudinaliter dehiscentes. Discus glaber v. pilosus, epigynus et calycis tubum implens, 5-gonus, v. in cornua 5 productus. Ovarium disco immersum, 3-loculare; stylus 3-partitus v. 3-fidus, stigmatibus minutis. Fructus coriaceus, inferus, calyce persistente coronatus, 3-alatus, alis rotundatis amplis, intus 3-coccus, coccis sublignosis indehiscentibus ab axi 6-partito solutus. Semina plano-convexa, obovata, testa cornea nitida, albumine parco; cotyledones rotundatæ, planiusculæ; radícula brevissima.—Frutices sæpe alte scandentes, cirrhiferi, glabri v. tomentosi, ramulis tenuibus elongatis; foliis alternis, petiolatis, integerrimis v. dentatis, penninerviis v. 3-plinerviis; stipulis oblongis, deciduis; floribus parvis, in spicas racemosve terminales et axillares dispositis, rhachibus in cirrhum sæpe mutatis.—*Retinaria*, Gært. Fruct. vol. ii. p. 187. t. 120. f. 4.

1. **G. Richii**, A. Gray, Bot. Wilkes, p. 282; ramulis puberulis glabratis; foliis glabris subcordato-oblongis acuminatis subdenticulatis; racemis elongatis; coccis orbiculatis utrinque emarginatis leviter alatis extus disco pilosulis.—Vanua Levu (U. S. Expl. Exped.), Taviuni (Seemann! n. 82).

My specimens are in fruit only, as were those collected by the United States Exploring Expedition. Until the flowers shall be known, it is best retained as a distinct species; but it looks to me very much like a variety of *G. microcarpa*, DC.

2. **G. denticulata**, Smith in Rees Encycl. 16. n. 4; DC. Prodr. vol. ii. p. 39; foliis ovatis integris apice acuminatis, in acumine tenuiter dentatis, subtus ovatis hirsutis; racemis axillaribus, cirrhis terminalibus.—Ovalau (U. S. Expl. Exped.).

Only an imperfect flowering specimen of this was collected by the United States Exploring Expedition.

On the mountains of Namosi, Viti Levu, I collected the foliage of a large tree (n. 84), which I have provisionally referred to *Rhamneæ*, because the habit is somewhat like that of the Order. I have not been able to find anything like it either at Kew or the British Museum.

ORDO XXIX. AMPELIDEÆ.

I. **Vitis**, Linn. Gen. n. 284; Benth. et Hook. f. Gen. p. 387. Calyx brevis, integer v. 4-5-dentatus v. -lobatus. Petala 4-5, libera v. apice calyptratim cohærentia. Discus varius v. obsoletus. Stamina 4-5, infra marginem disci inserta; antheræ liberæ. Ovarium ovoideum v. subquadratum, 2-loculare (interdum imperfecte), rarissime 3-4-loculare; stylus 0 v. brevis, conicus v. subulatus; ovula in loculis 2. Bacca ovoidea v. globosa, 1-2-locularis, loculis 1-2-spermis.—Frutices cirrhosi, sarmentosi, sæpe scandentes; foliis simplicibus v. compositis rarissime 2-pinnatis, foliolis integerrimis serratis v. dentatis, nunc pellucido-punctatis; pedunculis oppositifoliis v. rarissime axillaribus, sæpissime versus apices ramulorum sitis; floribus parvis, umbellatis cymosis paniculatis racemosis v. spicatis, ebracteatis, non raro polygamis.—*Cissus*, Linn. Gen. n. 147.

1. **V. saponaria**, Seem. in Bonplandia, 1859, p. 254; Mission to Viti, p. 434; A. Gray in Proceed. of Amer. Acad. vol. v. p. 316; Benth. Fl. Austr. vol. i. p. 448; ramulis foliisque junioribus hirsuto-tomentosis; foliis 3-foliolatis, foliolis late ovatis acuminatis integerrimis v. crenatis membranaceis, penninerviis v. distincte 5-nerviis; cymis laxis divaricatis multifloris, longe pedunculatis; floribus subglobosis; petalis 4; stylo conico; bacca depresso-globosa.—*Cissus geniculata*, A. Gray, Bot. Wilkes, p. 272, non Blum. Nomen vernac. Vitiense, "Wa Roturotu."—Moturiki (Seemann! n. 76), Bua, Vanua Levu (U. S. Expl. Exped.). Also collected in Queensland (R. Brown! M'Gilivray!).

A. Gray (Proceed. Amer. Acad.) identified my specimens with those collected in Viti by the United States Exploring Expedition, and with a mark of doubt referred by him to *Cissus geniculata*, Blum. The natives use this creeper for washing their hair to destroy the vermin. The stem, especially the thicker part, is cut in pieces from a foot to eighteen inches long, cooked on hot stones, and when thus rendered quite soft, it produces in water a rich lather almost equal to that of soap.

2. **V. Vitiensis**, Seem. Mission to Viti, p. 434; glabra; foliis 3-foliolatis, foliolis petiolulatis subcarnosis ovatis seu ovalibus acuminatis dentato-serratis; cymis brevissime pedunculatis; bacca obovoidea.—*Cissus Vitiensis*, A. Gray, Bot. Wilkes, p. 272.—Nomen vernac., teste T. Williams, "Wa Godro."—Bua Bay, Vanua Levu (U. S. Expl. Exped.; Williams!).

The flowers of this species are still unknown.

3. **V. acuminata**, Seem. in Bonplandia, 1859, p. 255; glabella; foliis pedato-5-foliolatis nunc 3-foliolatis; foliolis membranaceis ovatis seu ovali-oblongis basi acutis apice eximie acuminatis inæqualiter serratis; pedunculis gracilibus laxifloris; bacca ign.—*Cissus acuminata*, A. Gray, Bot. Wilkes, p. 273.—Ovalau (U. S. Expl. Exped.; Seemann! n. 77).

II. **Leea**, Linn. Mant. 124; Benth. et Hook. f. Gen. p. 388. Calyx 5-dentatus. Petala 5, basi inter se et cum tubo stamineo connata, revoluta. Tubus stamineus conicus urceolatus v. subglobosus, subinteger v. 5-lobus v. 5-partitus, fauce nuda v. membrana annulari semiclausa, filamentis inter lobos tubi insertis introflexis; antheræ v. liberæ exsertæ v. tubo inclusæ. Ovarium disco insertum, 3-6-loculare; stylus brevis, stigmatè incrassato; ovula in loculis solitaria. Bacca 3-6-locularis. Semina erecta, testa dura, tegmine inter plicas v. rugas albuminis cartilaginei immerso; embryo parvus, rectus v. lente curvus, cotyledonibus ovatis v. subfoliaceis, radícula conica.—Arbores parvæ v. frutices, ramulis sæpius striatis v. sulcatis rarissime aculeatis; foliis alternis pinnatis v. 2-3-pinnatis, foliolis integerrimis v. serratis, petiolis basi dilatatis vaginantibus stipulæformibus; pedunculis oppositifoliis, nunquam cirrhiferis, cymoso-decompositis; floribus parvis v. majusculis, rubris flavis v. viridibus.—*Aquilicia*, Linn. Mant. 211. *Ottilia*, Gærtn. Fruct. vol. i. p. 275. t. 57.

1. **L. sambucina**, Willd. Spec. Plant. vol. i. p. 1177; fruticosa, glabra; ramulis junioribus

sæpe sulcatis; foliis 2-3-pinnatis, foliolis ovatis, oblongo-ellipticis v. lanceolatis acuminatis, irregulariter crenatis; cymis amplis divaricatis, 3-chotomis, breviter pedunculatis; floribus breviter pedicellatis; ovario 5-loculari; baccis parvis, depresso-globosis.—Benth. Fl. Austr. vol. i. p. 451. *L. staphylea*, Roxb. W. et Arn. Prodr. p. 132; Wight, Ill. t. 58, et Icon. t. 78. *L. Manillensis*, Walp. Rel. Meyen. p. 314.—Ovalau and Vanua Levu, common (Seemann! n. 78).

Vitis vinifera, Linn., the Grape-vine, had just been introduced into Viti at the time of my visit. I saw it at Levuka, Ovalau, in the garden of the late Mr. Binner, where it was growing well, but it had at that time not produced any fruit. It is one of the popular botanical errors that the Grape-vine will not yield fruit in the lower coast region of the tropics. In 1864 I saw it at La Guaira, Venezuela, one of the hottest parts of the world, where it was growing well and producing abundant fruit.

ORDO XXX. SAPINDACEÆ.

I. **Cardiospermum**, Linn. Gen. n. 498; Benth. et Hook. f. Gen. p. 393. Flores irregulares, polygamo-dioici. Sepala 4, concava, late imbricata, 2 exteriora parva. Petala 4, per paria disposita, 2 majora squama magna, 2 minora squamula cristata aucta. Discus unilateralis, undulatus, in glandulas 2 petalis oppositas tumens. Stamina 8, excentrica, filamentis inæqualibus liberis v. basi connatis. Ovarium sessile v. toro stipitatum, 3-loculare; stylus brevis, 3-fidus; ovula in loculis solitaria, a medio axi adscendentia. Capsula 3-gona, lobis globosis v. inflatis membranaceis venosis loculicide dehiscentibus. Semina globosa, sæpe basi arillata, testa crustacea; cotyledones magnæ, transverse conduplicatæ.—Herbæ frutescentes, ramosissimæ, scandentes, ramis tenuibus sulcatis; foliis alternis, exstipulatis, biternatis v. decompositis, foliolis grosse crenatis v. serratis sæpe pellucido-punctatis v. lineatis; racemis v. corymbis axillaribus; pedunculo communi 2-cirrhoso; floribus albis v. flavidis, pedicellis articulatis.

1. **C. Halicacabum**, Linn. Spec. 925; caule petiolis foliisque glabris v. pubescentibus; foliis plerumque biternatim sectis, segmentis ovatis v. ovato-lanceolatis, serrato-incisis v. lobatis; pedunculis 2-3-cirrhosis; capsula pubescente apice compressa.—Benth. Fl. Austr. vol. i. p. 453; A. Gray, Gen. Ill. t. 181; Wight, Icon. t. 508.—*C. microcarpum*, H. B. K. Nov. Gen. Amer. vol. v. p. 104. Nomen vernac. Vitiense, "Wa Niu."—Common near the sea-beach, amongst Cocoa-nut Palms, whence probably the vernacular name "Wa Niu," or the cocoa-nut climber (Seemann! n. 65; Barclay! M'Gillivray!). Also collected in Tahiti (Banks and Solander! Forster!), Sandwich Islands (Barclay!), Aneitum (M'Gillivray!), Isle of Pines (M'Gillivray!), Eromanga (M'Gillivray!).

II. **Cupania**, Linn. Gen. n. 279; Benth. et Hook. f. Gen. p. 399. Flores regulares, polygamo-dioici. Sepala 4-5 (rarius 3-6), orbiculata, concava, late 2-seriatim imbricata. Petala 4-5 v. 0, nuda v. villosa v. 1-2-squamata, squamis membranaceis v. coriaceis glabris v. varie tectis, nunc petalis latioribus. Discus æqualis, sæpissime annularis v. tumidus, crenatus, glaber v. tomentosus. Stamina 8, rarius 5-6-10-12, disco intus inserta, centrica, filamentis sæpius brevibus glabris v. villosis; antheræ sæpius inclusæ, oblongæ. Ovarium ovoideum, obovatum v. obcordatum, 2-3- rarius 4-loculare; stylus brevis v. elongatus, interdum 2-3-fidus, stigmati simplici v. lobato; ovula in loculis solitaria, axi juxta basin affixa. Capsula obovata obcordata v. ovoidea, rarissime globosa, coriacea, subcarnosa, crustacea v. ossea, 2-4-loba, 2-4-locularis, 2-4-valvis, interdum secus axin 3-partibilis, lobis connatis v. fere liberis et divaricatis. Semina subglobosa v. oblonga, arillo plus minus tecta, rarius exarillata, testa coriacea v. crustacea; embryo crassus, curvus, cotyledonibus plano-convexis, radícula infera.—Arbores v. frutices erecti, glabri, pubescentes v. tomentosi; foliis alternis, exstipulatis, impari- v. abrupte pinnatis, foliolis alternis oppositisque sæpius integerrimis;

floribus paniculatis v. racemosis sæpius viridibus albis v. rufescentibus; capsulæ loculis intus glabris v. hispidis v. tomentosus.—*Dimereza*, Labill. Sert. Austr. Caled. t. 51.

1. **C. rhoifolia**, A. Gray, Bot. Wilkes, p. 254; foliis 8-12-foliolatis glabris, foliolis oblongo-lanceolatis subacuminatis basi sæpius acutis subtus glaucescentibus; paniculis puberulis laxifloris; petalis orbiculatis exunguiculatis intus squamula bipartita villosa-barbata auctis; filamentis inferne pilosis; capsula profunde triloba.—Nomina vernac. Vitiensia, "Wive" et "Baka ni vudi."—Ovalau (U. S. Expl. Exped.; Seemann! n. 73); Kadavu (Seemann! n. 69), and Viti Levu (Seemann! n. 74).

A tree for which the natives of Kadavu gave me the name of "Wive," and those of Viti Levu, that of "Baka ni vudi,"—the latter would signify "the Banana-fig."

2. **C. leptobotrys**, A. Gray, Bot. Wilkes, p. 255; glabella; foliolis 14-20 longiuscule petiolatis lanceolato-oblongis acuminatis basi rotundatis glabris concoloribus; paniculis gracillimis racemifloris ramosis folio æquilongis cum petiolis junioribus tomentosulis; floribus polygamo-monoicis; calyce 5-partito persistente, petalis squamæformibus multoties majoribus; antheris 10 subsessilibus; capsula obcordato-triloba stipitata.—Ovalau (U. S. Expl. Exped.).

3. **C. (?) Brackenridgei**, A. Gray, Bot. Wilkes, p. 255; glabella; foliis 6-8-foliolatis; foliolis oblongis v. sublanceolatis subacuminatis basi attenuatis crebre penninerviis subtus badiis; paniculis compositis folio brevioribus; floribus ign.; capsula compressa obovato-cuneata truncata 2-loculari.—Ovalau (U. S. Expl. Exped.).

The flowers being unknown, this species may possibly be a *Ratonia*.*

III. **Ratonia**, D.C. Prodr. vol. i. p. 618; Benth. et Hook. f. Gen. p. 399. Flores polygamodioici, regulares. Calyx parvus, cupularis, breviter 4-5-lobus, lobis leviter imbricatis v. subvalvatis v. apertis. Petala 0 v. 4-5, intus squamigera, sæpissime brevia, obovato-spathulata, villosa. Discus completus, annularis v. tumidus. Stamina 7-10, disco intus inserta, centrica, filamentis filiformibus sæpissime villosis; antheræ breviter oblongæ, longe exsertæ. Ovarium substipitatum, 2-3-gonum, 1-3-loculare; stylus terminalis, stigmatibus 2-3-dentato; ovula in loculis solitaria, medio axi inserta. Capsula coriacea, 1-3-loba, sessilis v. stipitata, lobis globosis compressis oblongis v. cymbiformibus 2-valvibus. Semina arillata, testa crustacea; cotyledones crassæ, sæpe curvæ.—Arbores sæpe elatæ; foliis alternis, exstipulatis, abrupte pinnatis, foliolis alternis v. sæpe oppositis integerrimis v. rarius serratis; racemis paniculatis, sæpe elongatis, gracilibus, multifloris.—*Cupania* sp. auct.

* At the British Museum there are three other Polynesian species of *Cupania*, viz.:—

1. *Cupania glauca*, Camb. in Mem. Mus. vol. xviii. p. 28. *Dimereza glauca*, Labill. Austr. Cal. t. 51. *Diplopetalon glaucum*, Spreng. Cur. Post. 150.—New Caledonia (W. Anderson! in Mus. Brit.). To this will probably have to be united *C. semiglaucæ*, F. Muell. in Benth. Fl. Austr. vol. i. p. 457; *Arytera semiglaucæ*, F. Muell. in Trans. Vict. Inst. vol. iii. p. 25, from the east coast of Australia.

2. *Cupania juglandifolia*, (sp. nov.) Seem.; petiolis basi dilatatis; foliis 4-7-jugis cum impari; foliolis brevis ($\frac{1}{2}$ unc. long.) petiolulatis, oblongis acuminatis v. acutis basi obtusis margine subdenticulatis, submembranaceis; floribus in capitula multiflora aggregatis, capitulis racemoso-paniculatis, basi bracteatis; pedicellis articulatis, laciniis calycis petalisque imbricatis staminibusque 5.—New Caledonia (Forster! in Mus. Brit.). The largest leaf $2\frac{1}{2}$ feet long; leaflets 6-7 inches long, 2-2 $\frac{1}{2}$ inches broad. Flowers in very young bud only.

3. *Cupania Macgillivrayi*, (sp. nov.) Seem. in Herb. Mus. Brit.; arborea; ramulis foliisque fulvo-velutinis demum glabratis; foliis alternis 2-3-jugis cum impari; foliolis breviter petiolulatis obovato-oblongis v. oblongis obtusis, basi angustatis, margine integerrimis revolutis; racemis axillaribus folio brevioribus, floribus masculis basi bracteatis fasciculatis; sepalis 5-6 imbricatis, exterioribus ovato-lanceolatis, interioribus ovato-oblongis obtusis; petalis nullis; ovario rudimentario 3-lobo, disco villosa; fl. fœmineis ign.—Isle of Pines, off New Caledonia, near the Peak (M'Gillivray! in Mus. Brit.). A very singular small-leaved species, which however may possibly prove to be a *Dodonæa*, when the fruit shall become known.

1. **R. falcata**, Seem.; foliis 4-5-foliolatis glabris, foliolis lanceolatis basi rotundatis sensim acuminatis falcatis; racemis spiciformibus densifloris pubescentibus; petalis calycem parvum adæquantibus hastato-trilobis intus inappendiculatis, lobis lateralibus incurvis margine villosobarbatis; staminibus glabris, antheris purpureis; capsula obovoidea subtrigona glabra haud stipitata 3-loculari, intus villosopurpurascens; seminibus obovato-oblongis nitidis atris.—*Cupania falcata*, A. Gray, Bot. Wilkes, p. 252. *C. (?) Vitiensis* (Seem. in Bonplandia, 1861, p. 254), Ovalau.—(U. S. Expl. Exped.; Seemann! n. 68.), Taviuni (U. S. Expl. Exped.), Kadavu (Seemann! n. 70).

A tree 40 feet high, varying considerably in the size of the leaflets. Wood rather tough.

2. **R. Storckii**, (sp. nov.) Seem.; foliolis 16-18 longe petiolulatis ovato-oblongis acuminatis integerrimis glabris concoloribus subtus venis prominulis; racemis axillaribus paucifloris folio multo brevioribus, pedunculis petiolis calycibusque ferrugineo-tomentosis, calycis lobis 5 triangulari-ovatis; petalis ignotis; capsula obovato-trigona apiculata, calyce persistente cincta.—*Cupania apetala*, Seem. in Bonplandia, 1861, p. 254; non Labill.—Ovalau (Seemann! n. 67).

This differs from *R. apetala*, Seem. (*Cupania apetala*, Labill.), in its tomentose fruit, calyx, and inflorescence. Leaves 1-2 feet long; leaflets 3-4 inches long (including petiolule).*

IV. **Sapindus**, Linn. Gen. n. 449; Benth. et Hook. f. Gen. p. 404. Flores polygami, regulares. Sepala 4-5, 2-seriata, late imbricata. Petala 4-5, nuda v. intus squamis 1 v. 2 glabris villosisve supra unguem aucta. Discus completus, annularis v. elevatus. Stamina 8-10 (rarius 4-7 v. plura), centrica, filamentis liberis sæpissime pilosis; antheræ versatiles. Ovarium integrum v. 2-4-lobum, 2-4-loculare; stylus terminalis, stigmatibus 2-4-lobis; ovula in loculis solitaria, basi anguli interioris adscendentia. Fructus carnosus v. coriaceus, 1-2-(rarius 3-4-)coccus, coccis oblongis globosisve indehiscentibus. Semina sæpissime globosa, exarillata, testa crustacea v. membranacea; embryo rectus, curvus, cotyledonibus crassis, radícula brevi.—Arbores et frutices, interdum scandentes; foliis alternis, exstipulatis, simplicibus 1-foliolatis v. abrupte pinnatis, foliolis integerrimis rarissime serratis; racemis v. paniculis terminalibus v. axillaribus; fructibus siccis v. baccatis.

1. **S. Vitiensis**, A. Gray, Bot. Wilkes, p. 251; arborca; foliis glabris, rhachi aptera; foliolis 3-4-jugis summisve 2-jugis ovato-oblongis paullo obliquis subacuminatis breviter petiolulatis; paniculis terminalibus amplis decompositis; sepalis inæqualibus; petalis ovatis cucullatis unguiculatis haud appendiculatis inferne ciliatis; filamentis 7-8 inferne villosis; fructu coriaceo 1-2-cocco, coccis subglobosis lucidis glabris.—Ovalau and Viti Levu (U. S. Expl. Exped.), Macuata coast of Vanua Levu (Seemann! n. 66).

A tree 30-40 feet high. My specimens being in fruit remove A. Gray's doubt respecting the genus of this species.†

* There are two other Polynesian species of *Ratonia* at the British Museum, viz.:—

1. *R. stipitata*, Benth. Fl. Austr. vol. i. p. 461 (*Cupania stipitata*, F. Muell. Fragm. vol. ii. pp. 75 et 175). This species from the east coast of Australia I take to be identical with *Guaiacum dubium*, Forst. Prodr. n. 168; *Cupania lentiscifolia*, Pers. Ench. vol. i. p. 413; *Guioa lentiscifolia*, Cav. Icon. vol. iv. p. 49. t. 373, and *Aporetica pinnata*, Hook. et Arn. Bot. Beech. p. 61, non DC.—Tongan (Forster!), Samoan (U. S. Expl. Exped.) and Society Islands (Lay and Collie!).

2. *R. Homei* (sp. nov.), Seem. in Herb. Mus. Brit.; robusta; ramis crassis angulatis junioribus ferrugineo-tomentosis; foliis alternis 5-9-foliolatis, foliolis breviter petiolulatis ovato-oblongis acuminatis falcatis basi valde obliquis, integerrimis, coriaceis, utrinque glabris, supra lucidis; floribus racemoso-paniculatis; paniculis axillaribus et terminalibus, pedunculis pedicellis calycibusque ferrugineo-tomentosis; calyce 6-dentato; corolla nulla; staminibus 9 glabris, ovario villosissimo 3-loculari; disco villosissimo; cæt. ign.—New Caledonia (Sir E. Home! in Mus. Brit.). A very robust, apparently arboreous species, of which the largest leaves are more than a foot long. Leaflets often 6 inches long, 2-2½ inches broad.

† *Sapindus Saponaria*, Linn. I have examined Forster's original specimen of this plant from Easter Island, preserved at the British Museum, as there was some doubt expressed about its belonging to this species, and as far as it goes I find it absolutely identical with the American specimens.

V. **Pometia**, Forst. Char. Gen. t. 55; Benth. et Hook. f. Gen. p. 407. Flores regulares, polygamo-dioici. Calyx parvus, cupularis, 4-5-fidus, dentibus erectis valvatis. Petala 4-5, esquamata. Discus completus. Stamina 4-8, centrica, filamentis elongatis exsertis; antheræ parvæ. Ovarium profunde 2-3-lobum, 2-3-loculare; stylus sæpissime elongatus, tortus, stigmatibus obtusis; ovula in loculis solitaria, e basi axis adscendentia. Fructus corticatus v. drupaceus, 1-2-coccus, coccis globosis ovoideis indehiscentibus. Semina arillo mucoso inclusa; embryo conduplicatus.—Arbores excelsæ, glabræ v. tomentosæ; foliis alternis, sessilibus, pinnatis, elongatis, foliolis alternis subsessilibus oblique oblongis basi cordatis serratis, infimis minoribus orbiculatis stipulæformibus nervis validis; racemis simplicibus v. paniculatis, gracilibus, elongatis; floribus parvis, fasciculatis, pedicellatis.—*Irina*, Bl. Bijdr. 230. *Eccremanthus*, Thw. in Hook. Journ. vol. vii. p. 272. t. 9.

1. **P. pinnata**, Forst. Char. Gen. p. 110. t. 55; Forst. Icon. Ined. t. 279 (Tab. X.); foliis 5-7-jugis puberulis demum glabris, foliolis ovato-oblongis acuminatis basi cordatis, summis paniculatis, pedunculis pedicellis calycibusque hirsuto-pubescentibus, laciniis calycis 5 ovatis acutis, petalis 5 suborbiculatis breviter unguiculatis glabris, staminibus 5, filamentis basi pilosis, antheris glabris; ovario hispido, 2-loculari; stylo versus basin piloso; drupa pomiformi, eduli, 1-sperma.—*Aporetica pinnata*, DC. Prodr. vol. i. p. 610, non Hook. et Arn. *Nephelium pinnatum*, Camb. in Mem. Mus. vol. xviii. p. 30. Nomen vernac. Vitiense, "Dawa."—Very common throughout the group, both wild and cultivated (Seemann! n. 71; Storck! n. 875). Also collected in Tana (Forster!), Tongan Islands (Forster!), and noticed by G. Bennett in Rotuma.*

The Dawa is very plentiful in Viti, frequently forming entire forests, and there appear to be several varieties. It is sixty feet high, and shares with most Fijian fruit-trees the property of yielding a useful timber. The leaves are pinnate, the leaflets serrate, and when first opening, display a brilliant red tinge, which at a distance looks as if the tree were in bloom. The flowers, arranged in terminal panicles, are whitish and of diminutive size. The fruit, ripening in January and February, has rather a glutinous honey-like taste, and attains about the size of a pomegranate. The Fijians deem the Dawa peculiar to their islands. It certainly does not occur to the eastward in a wild state, as the Tonguese are said to have obtained it from Fiji; but it seems to be quite common in all the groups lying westwards, the New Hebrides, New Caledonia, and others. A native of Were assured me it was plentiful in his island, and Dr. Bennett, of Sydney, found it cultivated under the name of "Thav," at Rotuma, a little island to the north of Fiji, as recorded in his 'Gatherings of a Naturalist.' I succeeded in carrying living plants to the botanic garden at Sydney, where they were left in charge of Mr. Moore, and whence they may perhaps find their way to Queensland, and prove acceptable additions to the fruits of that new colony.

EXPLANATION OF PLATE X.—Fig. 1, one of the large leaflets; 2, an entire flower; 3, the same laid open; 4, section of ovary; 5, the ripe fruit; 6, the seed surrounded by the arillus. Figures 2, 3, and 4 magnified; figs. 1, 5, and 6 natural size. Figs. 5 and 6 from a water-colour drawing made by the late Miss Mary Pritchard.

VI. **Dodonæa**, Linn. Gen. 855; Benth. et Hook. f. Gen. p. 410. Flores unisexuales v. polygamo-dioici. Sepala 2-5, imbricata v. valvata. Petala 0. Discus in fl. ♂ obsoletus, in ♀ parvus. Stamina 5-8, centrica, filamentis brevissimis; antheræ lineari-oblongæ, obtuse 4-gonæ. Ovarium sessile, 3-6-gonum, 3-6-loculare; stylus 3-6-gonus, apice 3-6-fidus; ovula in loculis 2, collateralia v. superposita, adscendentia v. superiore pendulo. Capsula membranacea v. coriacea, 2-6-gona, loculis 1-2-spermis, angulis obtusis acutis v. alatis, septicide 2-6-valvis, valvis dorso alatis sæpissime a columna septifera persistente media seminifera solutis. Semina lenticularia v. subglobosa, compressa, exalbuminosa, exarillata, hilo interdum excavato, funiculo incrassato, testa crustacea v. coriacea; embryo spiraliter convolutus.—Arbores v. frutices, sæpe viscosæ; foliis alternis, exstipulatis,

* Forster's second species of *Pometia* is a species of *Schmidelia*, viz. *S. ternata*, Camb. in Mem. Mus. vol. xviii. p. 24 (*Aporetica ternata*, Forst. Char. Gen. t. 66. *Pometia ternata*, Forst. Prodr. n. 393 et Icon. Ined. t. 280. *Ornitrophe panigera*, Labill. Austr. Cal. t. 52). New Caledonia (Forster! Anderson!), Wallis Island (Sir E. Home!).

simplicibus v. abrupte pinnatis; floribus axillaribus v. terminalibus, solitariis racemosis corymbosis v. paniculatis, inconspicuis.—*Empleurosma*, Bartl. in Lehm. Plant. Preiss. vol. ii. p. 228.

D. eriocarpa, Smith, of which there is a specimen collected by Menzies in the British Museum, and *D. viscosa*, Linn. (of which *D. spathulata*, Smith, is a mere mountain form), are the only two representatives of *Dodonaea* in the Pacific, the occurrence of *D. triquetra*, Andr., being doubtful. What A. Gray and I took for the latter species is one of the innumerable forms of *D. viscosa*, as justly remarked by Bentham (Fl. Austr. vol. i. p. 475).

1. **D. viscosa**, Linn. Mant. 238; Benth. Fl. Austr. vol. i. p. 475; fruticosa, glabra, viscosa, ramulis teretibus, junioribus sæpe compressis v. subtriquetris; foliis simplicibus oblongo-lanceolatis, anguste lanceolatis, oblongo-cuneatis v. lineari-cuneatis, apice obtusis, acutis v. acuminatis, basi in petiolum attenuatis, integerrimis v. obscure sinuatis, v. apice subtridentatis; racemis simplicibus v. paniculatis, axillaribus v. terminalibus; sepalis ovatis; stylo elongato; capsulæ alis rotundatis v. basi attenuatis.—Parkins. Drawings of Tahit. Pl. t. 42 (ined.). Nomen vernac. Vitiense, "Wase," teste Williams.—Very common on the leeward side of the large islands, and in the eastern parts of the group (Seemann! n. 72; U. S. Expl. Exped.). Also collected in the Sandwich (Nuttall! Menzies! Macrae!) and Society Islands (Barclay! Banks and Solander! Forster!), and New Caledonia (Captain Cook! M'Gillivray!). Common in New Zealand, Australia, and America.

ORDO XXXI. ANACARDIACEÆ.

I. **Rhus**, Linn. Gen. n. 369; Benth. et Hook. f. Gen. p. 418. Flores polygami. Calyx parvus, 4-6-partitus, persistens, laciniis imbricatis æqualibus. Petala 4-6, æqualia, patentissima, imbricata. Discus annularis. Stamina 4, 5, 6, v. 10, basi disci inserta, libera, filamentis subulatis; antheræ in fl. ♀ effoetæ. Ovarium sessile, ovatum v. globosum; styli 3, liberi v. connati, breves v. elongati, stigmatibus simplicibus v. capitatis; ovulum e funiculo basilari suspensum. Drupa parva, exsucca, compressa, putamine coriaceo v. osseo. Semen inversum, testa membranacea; cotyledones planiusculæ; radícula uncinata, brevis.—Arbores v. frutices, sæpe vernicifluæ v. succo caustico scattentes; foliis alternis simplicibus, 1-3-foliolatis v. imparipinnatis, foliolis integerrimis v. serratis; paniculis axillaribus v. terminalibus, bracteatis; floribus parvis.

The only other known Polynesian species of *Rhus*, besides the two enumerated below, is *R. Sandwichensis*, A. Gray, Bot. Wilkes, p. 309, of which there are fine specimens, collected in Hawaii by Macrae, at the British Museum, and which I hold to be identical with *R. semialata*, Murr. (*R. Javanica*, Linn.) and *R. Chinensis*, Mill. The doubtful *Rhus atra*, Forst., has been named *Semecarpus atrum*, Vieill.

1. **R. simarubæfolia**, A. Gray, Bot. Wilkes, p. 367. t. 44; glabra; foliis pinnatis, rachi superne marginata; foliolis subsessilibus 7-9 oblongis obtusis basi inæquilateris integerrimis supra nitidis subtus pallidis; paniculis axillaribus laxifloris folio paulo brevioribus; calyce 5-lobo; petalis 5 ovali-obovatis (albis); staminibus 5; drupis glabris lucidis (nigris).—Macuata coast of Vanua Levu (U. S. Expl. Exped.; Seemann! n. 95).

A small tree, with fine bright-green foliage and white flowers. It is closely allied to *R. rhodanthema*, F. Muell., from which, however, it may at once be distinguished by its white flowers.

2. **R. Taitensis**, Guill. Zephyrites Taitensis, p. 67; foliis pinnatis, rachi teretiuscula immarginata puberula, foliolis petiolulatis lanceolato-ovato-oblongis acuminatis apice obtusiusculis integerrimis, superne lucidis, subtus nervo excepto puberulo glabris; paniculis axillaribus laxifloris folio multo brevioribus; calyce 5-lobo; petalis 5 oblongis obtusis (albis); staminibus 10; drupis lævibus lucidis (nigris).—*R. rigida*, Sol. Prim. Fl. Ins. Pacif. p. 244 (ined.). Nomen vernac. Tahitense, teste Solander, "Waiwai."—Viti Levu (Seemann! n. 96). Also found in the Society, Samoan, and Tongan Islands.

II. **Buchanania**, Roxb. Pl. Corom. vol. iii. p. 79. t. 282; Benth. et Hook. f. Gen. p. 421.

Flores hermaphroditi. Calyx brevis, obtuse 3-5-dentatus, persistens, imbricatus. Petala 5, oblonga, recurva, imbricata. Discus orbicularis, 5-crenatus. Stamina 10, basi disci inserta, libera. Ovarii carpella 5-6, libera, disco apice concavo inserta, unicum fertile, reliqua ad stylos simplices reducta; stylus brevis, stigmatibus truncato; ovulum a funiculo basilari suspensum. Drupa parva, parce carnososa, putamine crustaceo v. osseo compresso 2-valvi. Semen gibbum, hinc auctum, hinc crassum; cotyledones crassæ; radícula supera.—Arbores; foliis alternis, petiolatis simplicibus coriaceis integerrimis; paniculis terminalibus et axillaribus, confertis, ramosis; floribus parvis, albis; fructibus rubris.—*Coniogeton*, Blume, Bijdr. 1156. *Cambessedia*, Kunth in Ann. Sc. Nat. vol. ii. p. 366.

1. **B. florida**, Schauer, in Reliq. Meyenianæ, p. 481; A. Gray, Bot. Wilkes, p. 366. t. 44; glabra; foliis obovato-oblongis obtusis retusisve in petiolum attenuatis; paniculis ramosis laxifloris glabellis; pistillis in disco cupulari multidentato semi-immersis; drupis suborbicularibus compressis.—Vanua Levu (U. S. Expl. Exped.), Ovalau and Wakaya (Storck! n. 882). Also found in the Philippine Islands.

“A hard timber tree, from which the natives about Ovalau make their canoe paddles.” (Storck.)

III. **Oncocarpus**, A. Gray, Bot. Wilkes, p. 364. t. 43; Benth. et Hook. f. Gen. p. 424. Flores dioici v. monoici? Calyx parvus, cupularis, 5-dentatus. Petala 5, oblonga, patentia, valvata. Discus in fl. ♂ hemisphæricus, centralis. Stamina 5, basi disci inserta. Fl. ♀ ignoti. Drupa compressa et depressa, deformis, basi calycis lati brevis carnosus (hypocarpio) insidens, endocarpio osseo rugoso tuberculato intus lobato, 1-ocularis. Semen loculo conforme, testa tenui; embryo transversus, cotyledonibus irregulariter lobatis carnosus pro parte connatis, radícula brevissima centrifuga.—Arbor glaberrima; foliis alternis, simplicibus, petiolatis, coriaceis, integerrimis, obtusis; paniculis terminalibus, compositis; floribus parvis, bracteatis.

The female flowers of this plant are still unknown, the specimens collected by me and afterwards by Mr. Storck being, strangely enough, exactly in the same state as those obtained by the United States Exploring Expedition. It is from want of the female flowers that I am unable to establish the identity of *Oncocarpus Vitiensis* with *Rhus atra* of Forst. Prodr. n. 142, with any degree of satisfaction. Vieillard (Ann. Sc. Nat. Ser. 4. tom. xvi. p. 71) has referred Forster's *Rhus atra*, from New Caledonia, to *Semecarpus*. He describes the plant as dioicous, and the male flowers as subimbricate, and as valvate in æstivation, whatever that may mean; and the female flowers are said by him to be the same. In Forster's original specimens there are only hermaphrodite flowers, and these are distinctly quincuncial in æstivation, making *Rhus atra* a true *Semecarpus*.* The principal difference between *Semecarpus* and *Oncocarpus*, as far as at present known, is, that the former has an imbricate, the latter a valvate æstivation; the habit of both genera being identical. But it is quite possible that the male flowers of *Oncocarpus* have a valvate, and the hermaphrodite a quincuncial æstivation; and if that should be the case the two genera would probably have to be united. But until the female or hermaphrodite flowers of the Vitian *Oncocarpus* are known we cannot venture upon that, or even identify *Rhus atra* with *Oncocarpus Vitiensis*, though both are extremely alike in foliage and habit.

1. **O. Vitiensis**, A. Gray, Bot. Wilkes, p. 365. t. 43.—Nomen vernac. Vitiense, “Kau karo.”—Southern coast of Viti Levu (U. S. Expl. Exped.; Seemann! n. 94), Ovalau (Storck! n. 881), Bua Bay, Vanua Levu (U. S. Expl. Exped.).

Amongst the trees most dreaded by the natives on account of their noxious qualities, the Kau Karo, literally itch-wood, occupies a prominent place. It seems to act somewhat like *Rhus venenata* or *Seme-*

* There is an apparently undescribed species of *Semecarpus* at the British Museum, which in the shape of the leaf and male inflorescence somewhat resembles *Oncocarpus Vitiensis*, though in other respects it is near *S. Anacardium*, from which it differs in having the leaves attenuated at the base, etc. *Semecarpus insularum*, Seem. mss. in Herb. Mus. Brit.; foliis oblongis v. obovato-oblongis, obtusis v. acutis, in petiolum attenuatis, integerrimis marginatis, glabris, supra atro-viridibus, subtus albidis; paniculis masculis terminalibus folia æquantibus v. superantibus; floribus sessilibus hirtellis; petalis æstivatione valvatis.—Possession Island, south of New Guinea (Wiles and Smith! in Herb. Mus. Brit.). Leaves 4-6 inches long, 2½-3 inches broad; petioles ¼-¾ of an inch long.

carpus Anacardium. Mr. Pritchard and myself first heard of its existence during our visit to the southern shores of Viti Levu, in July, 1860, and on the banks of a river were fortunate enough to obtain specimens of the tree, proving it to be the *Oncocarpus Vitiensis*, A. Gray. The tree, when fully developed, is about sixty feet high, bearing large oblong leaves and a very curious corky fruit, somewhat resembling the seed of the walnut. On handling the specimens a drop of the juice fell on the hand of one of our party, and instantly produced a pain equal to that caused by contact with a red-hot poker. Mr. E. A. Egerström, a Swedish gentleman, residing on the island of Naigani, had been still more unfortunate in his accidental contact with the Kau Karo; and on visiting his hospitable roof on the 2nd July, 1860, he was just recovering from the effects of the accident. Having desired a native carpenter to procure him a spar suitable for a flag-staff, one was brought of Kau Karo, about forty-two feet long, and twenty-two inches in girth at the foot, having a white wood and a green bark, not unlike that of the Vau dina (*Hibiscus tiliaceus*, Linn.), and light-coloured when peeled off. Ignorant of the poisonous properties of the tree, Mr. Egerström himself peeled off the bark, and found the sap beneath it very plentiful. "In the evening,"—I quote Mr. Egerström's own words, in a letter to the British Consul,—“I was troubled with considerable itching about my legs, and every part of my body which had come in contact with the spar, especially about the abdomen and lower parts, having sat across the tree when barking it. All the parts affected became red and inflamed, breaking out in innumerable pustules, which emitted a yellowish matter with a nauseous smell. The itching was exceedingly painful and irritating, and my arms having been bare when operating upon the tree, also became inflamed and broke out as already described. The neighbouring natives, who came to watch my proceedings, now warned me, too late, not to touch the tree, as it was a poisonous one, and advised my keeping quiet and not to touch or scratch the parts inflamed. This advice, however, I could not follow, the irritation for several days being excessive. I employed no remedy, but bathed daily, as usual, in fresh water, although advised to the contrary; and did not get rid of the injurious effects of the itch-wood for nearly two months.”

Mr. Storck states (*Bonplandia*, vol. x. p. 296), that in climbing up this tree, after the natives refused to do so, his dress became stained black. As an allied plant, the *Semecarpus Anacardium*, produces the marking-ink of commerce, it is not improbable that the nut of this tree may be similarly employed.

The properties which Vieillard ascribes to the New Caledonian Nolé (*Semecarpus atra*, Vieill., *Rhus atra*, Forst.) are so very much like those just described, that the identity of the two plants receives additional support from them. He says: “The milky juice of this tree, and the gum-resin which comes from it, are a poison well known to the natives, and unfortunately too frequently employed by them. The same milk mixed with water yields a fine black dye. People, whether natives or foreigners, who touch the Nolé frequently suffer from cutaneous eruptions, difficult to heal. Experience has taught us that the most effectual remedy is that of the New Caledonians, which consists in reducing charcoal to powder, and applying a sufficiently thick coating to the affected parts. On the twelfth or fifteenth day the scab falls off, and the skin, perfectly healed, presents no trace of a scar. The wood of the Nolé is soft and easy to work, and, notwithstanding the inconvenience experienced in felling it, is much sought after for canoes. It is in the dry trunk of this tree the New Caledonians find the larva of the *Malleon costatus*, Montrou, of which they are very fond. The fruit is erect, fleshy, as large as a plum, lengthened transversely into a woody kidney-shaped nut. The fleshy disk, which is of a beautiful red when ripe, is much esteemed by the natives, who use it extensively; bruised in water, it makes a fermentable liquor, which somewhat resembles cider. The nut, like that of the Acajou, contains a caustic, very inflammable oil; the kernel, when boiled, is edible.”

IV. **Spondias**, Linn. Gen. n. 377; Benth. et Hook. f. Gen. p. 426. Flores polygami. Calyx parvus, deciduus, 4–5-fidus, lobis leviter imbricatis (valvatis fide Blumei). Petala 4–5, patentia, sub-valvata. Discus cupularis, latiusculus, crenatus. Stamina 8–10, sub disco inserta. Ovarium sessile, liberum, 4–5-loculare; styli 4–5, superne conniventes; ovula in loculis solitaria, pendula. Drupa carnosa, putamine osseo apicem versus foraminato crasso 1–5-loculari, loculis erectis v. divergentibus. Semina pendula, testa membranacea; embryo rectus, cotyledonibus elongatis plano-convexis, radícula brevi supera.—Arbores foliis valde versus apices ramulorum confertis, alternis, imparipinnatis, foliolis oppositis sæpius longe acuminatis; paniculis terminalibus, patentibus, multifloris; floribus parvis, breviter pedicellatis; fructibus sæpe pomiformibus.—*Cytheræa*, Wight et Arn. Prod. 173. *Evia*, Comm. ex Juss. Gen. 373.

1. **S. dulcis**, Forst. Plant. Escul. p. 32; Prodr. n. 198; petiolis teretibus, foliolis 11–13 ovali-oblongis acuminatis serratis; drupæ loculis divergentibus, radícula centrifuga.—Forst. Icon. (ined.) t. 144; Parkins. Drawings of Tahit. Plants (ined.), t. 49.—*Evia dulcis*, Comm. ex Juss.; Blum. Mus.

Bot. Lugd. Bat. p. 233. *Chrysomelon pomiferum*, Forst. mss. in Herb. Par. *Spondias Cytherea*, Sonn. Voy. vol. ii. p. 222. t. 123; Gært. Fruct. t. 103. *Poupartia dulcis*, Blume, Bijdr. p. 1161.—Nomen vernac. Vitiense, “Wi;” Tahitense, “Vi.”—Common throughout Viti (Seemann! n. 98). Also collected in the Society Islands (Banks and Solander! Barclay!) and in the Tongan group (Forster! U. S. Expl. Exped.).

The most prominent place among the native fruit-trees undoubtedly belongs to the Wi, which appears to be self-sown, and is met with in abundance about towns and villages. It is often sixty feet high; the bark is smooth and whitish, the leaves pinnate, glabrous, and of a dark green, forming a fine contrast with the yellow oval-shaped fruits with which the tree is heavily laden. The fruit has a fine apple-like smell, and a most agreeable acid flavour, rendering it highly suitable for pies; indeed, the Wi is the only Fijian fruit which recommends itself for that purpose. At Rewa I weighed and measured several highly-developed drupes, and found the largest to be exactly one foot in circumference, and one pound two ounces in weight. The natives are as fond of Wis as the white settlers, and quite content to make their dinner of Taro and Wis.

V. **Dracontomelon**, Blume, Mus. Bot. vol. i. p. 231. t. 42; Benth. et Hook. f. Gen. p. 427. Flores hermaphroditi. Calyx 5-partitus, lobis conniventibus imbricatis. Petala 5, subrecta, apice recurva, subvalvata. Discus acetabuliformis, crenulatus. Stamina 10, basi disci inserta. Ovarium sessile, 5-loculare; styli 5, crassi, erecti (ovaria simulantes), apice connati, stigmatibus terminalibus obtusis; ovula in loculis pendula. Drupa globosa, carnosae, supra medium styliorum basibus tuberculata, putamine osseo depresso subangulato margine foraminulato 2-5-loculari, loculis divergentibus. Semina 3-gono-compressa, pendula, testa membranacea; cotyledones plano-convexae; radícula brevis, supera, centrifuga.—Arbores, foliis alternis imparipinnatis; paniculis axillaribus et subterminalibus, amplis; floribus subfasciculatis, pallidis.

1. **D. sylvestre**, Blume, Mus. Bot. Lugd. Bat. n. 507; foliolis 15-19 oppositis alternisve ellipticis v. oblongis acuminatis basi subinaequali rotundatis glabris, ad venarum axillas subtus villosis.—*Pomum Draconum sylvestre*, Rumph. Amb. vol. i. t. 59. Nomen vernac. Vitiense, “Tarawau.”—Common throughout the Viti group (Seemann! n. 99). Also widely diffused through the East Indian Archipelago.

There are numerous fruits in Viti eaten and even esteemed by the natives, but most insipid to a European palate. Foremost amongst them stands the Tarawau, the produce of a tree (*Dracontomelon sylvestre*, Blume) connected with native superstitions. The tree is not worshipped; but it is held to be the business of the dead to plant it, and it is believed to grow not only in this world, but also in Naicobocobo, the Fijian nether-world, or perhaps, more correctly, the general starting-place for it. Hence arose the expression, “Sa la'ki tei tarawau ki Naicobocobo,” literally, “He has gone to plant Tarawaus at Naicobocobo;” i.e. he is dead. It is difficult to guess why these trees should have been deemed worthy of such distinction; they grow to the height of sixty feet, have flattish branches, pinnated leaves, insignificant whitish flowers, and a tough insipid fruit, only palatable to the natives; moreover, they are regarded as the emblem of the truth-speaking man, not having, as so many others, a number of false or sterile flowers. The hermaphrodite nature of the flowers, which is one of the features by which this genus differs from *Spondias*, has therefore not escaped the notice of the natives.

2. **D. (?) pilosum**, (sp. nov.) Seem.; arboreum; ramulis angulatis foliisque junioribus hirsutopilosis; foliis alternis 5-jugis cum impari, foliolis brevipetiolulatis ovato-oblongis acuminatis basi obliquis integerrimis penninerviis submembranaceis; cæt. ign.—Nomen vernac. “Tarawau ki kaka.”—Viti Levu (Seemann! n. 100).

This may possibly be identical with a *Dracontomelon* collected by Cuming in the Philippine Islands (his n. 1700, if no confusion of labels has taken place); but the scraps of a young plant collected by me are too imperfect to enable me to identify the two. Leaves of my specimens 1¼ foot long; leaflets 5-6 inches long, 2-2½ inches broad; rachis with two deep furrows. According to the natives, the fruit is the favourite food of a small kind of parrot, the Kakà.

I have besides seen the foliage of an Anacardiaceous tree, collected in Viti by Williams, and resembling

in leaf *Semecarpus Gardneri*, Thw. The natives term it "Malawaci," and "the juice has the effect of fire when applied to the skin." The leaves are long, acuminate, dark on the upper, and pale-green on the under surface, and more than a foot long. The nearest *Vitian* plant with which I can compare it is *Oncocarpus Vitiensis*.

ORDO XXXII. CONNARACEÆ.

I. **Rourea**, Aubl. Plant. Gui. vol. i. p. 467. t. 187; Benth. et Hook. f. Gen. p. 432. Calyx 5-partitus, laciniis post anthesin accrescentibus induratis capsulæ basin arcte amplectentibus imbricatis. Petala 5, calyce longiora, sæpissime lineari-oblonga. Stamina 10, 5 alterna longiora filamentis filiformibus basi in annulum confluentibus; antheræ didymæ. Carpella 5, 4 sæpius imperfecta styliformia, fertile in stylum rectum subulatum attenuatum, stigmatibus capitellato. Capsula sessilis, curva, basi calyce induta, 1-sperma, chartacea. Semen erectum, arillo incompleto antice fisso semini æquilongum v. multo brevior, testa lævi nitida, albumine 0.—Frutices et arbusculæ, interdum scandentes; foliis alternis, sempervirentibus, coriaceis, imparipinnatis, foliolis sæpe parvis ∞ -jugis coriaceis; paniculis axillaribus ∞ -floris, erectis v. pendulis; floribus parvis, pedicellis sæpe gracilibus; capsulis inter minores.—*Robergia*, Schreb. Gen. 309. *Cunicidia*, Vell. Fl. Flum. vol. iv. t. 129.

1. **R. heterophylla**, Planch. in Linnæa, vol. xxiii. p. 419; Walp. Ann. vol. ii. p. 297; glaberrima; foliolis 1-3 petiolulatis, ovatis v. ovato-ellipticis, $1\frac{1}{2}$ - $2\frac{1}{2}$ poll. long., obtuse et longiuscule acuminatis, basi obtusis integerrimis, rigide chartaceis nitidis, reticulo nervorum et venarum utrinque prominente; racemis (compositis) axillaribus fasciculatis, folio brevioribus; pedicellis 3-4 lin. longis, supra basin articulatis; bracteolis minutis laciniisque calycinis ovatis, apice barbularis; capsulis oblongis glabris.—A. Gray, Bot. Wilkes, p. 375.—Vanua Levu (U. S. Expl. Exped.). Also found in the Philippine Islands (Cuming!).

II. **Connarus**, Linn. Gen. n. 830; Benth. et Hook. f. Gen. p. 432. Calyx 5-partitus, laciniis (post anthesin non auctis) deciduis v. persistentibus et stipitem capsulæ amplectentibus imbricatis. Petala 5, calycem superantia, interdum leviter cohærentia. Stamina 10, alterna breviora interdum ananthera, filamentis filiformibus basi monadelphis; antheræ didymæ. Discus 0 v. tenuis, annularis, filamentorum basin extus cingens. Carpella 5, 4 sæpius minima v. deficientia, fertile in stylum subulatum attenuatum, stigmatibus capitellato. Capsula oblique oblonga, obtusa, inflata, stipitata, crasse coriacea, sutura ventrali dehiscens, 1-sperma. Semen erectum, arillatum, arillo lobato incompleto hilo lato adnato, testa nitida, albumine 0; cotyledones amygdalinæ.—Arbores et frutices, sæpe subscandentes; foliis alternis, sempervirentibus, coriaceis, nitidis, imparipinnatis, rarius 3-foliolatis, foliolis paucijugis; paniculis (rarissime racemis) axillaribus, ramosis, sæpe ∞ -floris strictis; floribus parvis; capsulis majusculis.—*Omphalobium*, Gært. Fruct. vol. i. p. 217. t. 46.

1. **C. Pickeringii**, A. Gray, Bot. Wilkes, p. 375. t. 45; ramulis foliisque junioribus pube ferruginea decidua tomentosis; foliolis 5-7 (rarius 3) lanceolato-oblongis nunc ovato-oblongis subacuminatis basi obtusis v. rotundatis, adultis glaberrimis, venis utrinque 5-6 subtus prominentibus, reti tenui transverso; paniculis folio multo brevioribus calycibusque rufo-tomentosis; pedicellis brevissimis; petalis extus tomentosis glanduloso-punctatis calyce triplo longioribus; capsulis obovatis turgidis tomento deteribili primum vestitis, stipite petalis longiore.—Nomen vernac. "Wa Vatu," teste Williams.—Ovalau, Viti Levu, and Vanua Levu (U. S. Expl. Exped. !; Seemann! n. 101; Milne!).

ORDO XXXIII. LEGUMINOSÆ.

SUBORDO I. PAPILIONACEÆ.—Flores 5-meri. Corolla irregularis papilionacea v. rarissime subregularis, petalis imbricatis, superiore (vexillo) exteriore. Stamina 10, v. rarius 9 v. 5.

I. **Crotalaria**, Linn. Gen. n. 862; Endl. Gen. n. 6472; Benth. Fl. Austr. vol. ii. p. 178. Calyx 5-lobus, subbilabiatus, labio superiore 2- inferiore 3-fido. Vexillum orbiculatum v. ovatum, basi callosum v. squamulosum, carina falcato-acuminata v. rarius obtusa. Stamina 10, monadelphia, vagina superne fissa. Ovarium sessile v. stipitatum, 2-∞-ovulatum. Stylus lateraliter barbato-pubescentis; stigma terminale. Legumen turgidum v. inflatum, 2-∞-spermum. Semina reniformia, compressa, estrophiolata, funiculo tenui.—Herbæ v. frutices; foliis simplicibus v. palmatis 3-5-7-foliolatis, foliolis sæpe pellucido-punctatis; stipulis bracteisque nunc minimis v. deficientibus, nunc maximis, interdum adnato-decurrentibus; floribus racemosis, flavis v. cæruleis.

1. **C. quinquefolia**, Linn. Spec. 1006; annua, erecta, glabra v. sericeo-pubescentis; caule fistuloso; foliis longe petiolatis, petiolis 5-7 subsessilibus, lanceolatis v. linearibus, obtusis; racemis terminalibus v. oppositifoliis; calycis lobis latis acuminatis, tubo sublongioribus; petalis flavis, vexillo lato obtusissimo; leguminibus glabris breviter stipitatis.—Rheede, Mal. vol. ix. t. 28; Benth. l. c. p. 184.—On cultivated and waste ground (Williams!; U. S. Expl. Exped.). Also collected in Tana (Barclay! n. 5495), Queensland, the East Indies, and the Archipelago.

According to Pickering, the native name of this herb is "Boa," or "Emboa," as he spells it.*

II. **Indigofera**, Linn. Gen. n. 989; Benth. Fl. Austr. vol. ii. p. 194. Calyx parvus, urceolato-campanulatus, 5-dentatus v. -fidus, laciniis subæqualibus. Vexillum ovatum v. orbiculatum, reflexum, alæ carinam basi utrinque calcaratam v. gibbam æquantes. Stamina 10, filamentis vexillari libero diadelphia; antheræ mucronatæ, conformes. Ovarium sessile v. subsessile, ∞- v. rarissime 1-2-ovulatum. Legumen oblongum, lineare v. rarius orbiculatum, teretiusculum v. rarius compressum, rectum v. falcatum, 2-valve, ∞- v. 1-2-spermum, inter semina isthmis membranaceis solubilibus distinctum. Semina globosa v. cubica, estrophiolata.—Frutices fruticuli v. herbæ, sæpissime pilis utrinque cuspidatis, medio affixis muniti; foliis imparipinnatis ∞- rarius 1-jugis, interdum foliolorum lateralium abortu 1-foliolatis, quandoque nullis, stipulis minutis setaceis, stipellis quandoque nullis; floribus axillaribus spicatis v. racemosis, roseis purpureis v. interdum albis, vexillo extus plerumque sericeo-pubescente.—*Sphæridiophorum*, Desv. in Journ. Bot. vol. iii. p. 125. t. 6. f. 35.

1. **I. Anil**, Linn. Mant. 272; caule suffruticoso erecto; foliis pinnatis 3-7-jugis, foliolis ovalibus subtus vix pubescentibus; racemis axillaribus folio brevioribus; leguminibus compressis non torulosis deflexis arcuatis, sutura utraque calloso-prominula, ∞-spermis.—In waste places; common along the coast of the different islands (Seemann! n. 106). Also collected in the Society and Sandwich Islands by various expeditions. Not being contained in the older collections, it is probably a recent introduction to Polynesia.

III. **Tephrosia**, Pers. Ench. vol. ii. p. 328; Endl. Gen. n. 6539; Benth. Fl. Austr. vol. ii. p. 202. Calyx subcampanulatus, 5-fidus, laciniis 2 superioribus profundius fissis, antica productiore. Vexillum suborbiculatum, plerumque reflexo-patentissimum, carinam et alas carinæ adherentes vix superans. Stamina 10, v. filamentis vexillari libero diadelphia; antheræ conformes. Ovarium sessile, ∞- v. rarius 1-2-ovulatum. Stylus filiformis; stigma terminale, plerumque

* *Lotus australis*, Andr. Bot. Rep. t. 624 (*L. lævigatus*, Benth.; *albidus*, Lodd.), was found in the Isle of Pines (M'Gillivray!).

subpenicillatum. Legumen lineare v. rarius ovatum, compressum, 2-valve. Semina compressa v. angulata, sæpe strophiola minuta donata.—Arbores, frutices, suffrutices v. herbæ; plerumque pube sericea; foliis imparipinnatis ∞ - v. raro 1-jugis, racemis terminalibus, oppositifoliis et axillaribus; floribus fasciculato-congestis, rarius pedicellis axillaribus solitariis, 1-2-floris; floribus albis carneis v. violaceis, ebracteatis.

1. **T. piscatoria**, Pers. Ench. vol. ii. p. 329; suffruticosa, glabra pubescens v. villosa; foliolis 7-11 oblongo-cuneatis v. linearibus obtusis v. acutis, supra glabris, subtus villosis v. sericeis; racemis terminalibus v. oppositifoliis, inferioribus sæpe brevioribus, superioribus 6 unc. longis; calycis minute pubescentis lobis subulatis; stylo valde compresso, legumine glabro v. pubescente, plus minusve falcato ∞ -spermo.—*T. purpurea*, Pers. Ench. vol. ii. p. 329. *T. toxicaria*, Gaud. in Freyc. p. 93, *T. Baueri*, Benth. in A. Gray, Bot. Wilkes, p. 408. *Galega littoralis*, Forst. Prodr. n. 277, et Icon. (ined.) t. 200. *G. piscatoria*, Sol. Prim. Fl. Ins. Pacif. p. 229, et in Parkins. Drawings of Tahit. Plants, t. 76 (ined.). Nomen vernac. Tahitiense, "Hora."—Common on the seaside throughout Viti (Seemann! n. 107). The plant has also been collected in the Society (Banks and Solander! Barclay!), Sandwich (Barclay! Macrae! Nuttall!), Samoan (U. S. Expl. Exped.), and Tongan Islands (Forster! Sir E. Home! Barclay!), as well as in Uvea or Wallis Island, and in tropical America and New Holland.

Used in many tropical countries, including Tahiti and other Polynesian islands, for stupefying fish for the purpose of catching them, but I did not observe this to be the case in Viti, though, like *Derris uliginosa*, it may possibly be thus employed.

As the flowers of this plant are often almost white, it seems desirable to adopt the name *T. piscatoria* instead of *purpurea*, as the general name for a species including so many varieties.*

IV. **Ormocarpum**, Beauv. Flor. Owar. vol. i. p. 95. t. 58; Endl. Gen. n. 6593; Benth. Fl. Austr. vol. ii. p. 225. Calyx bracteolis 2 persistentibus, 5-fidus, subbilabiatus, laciniis omnibus acutis. Vexillum orbiculatum, carinæ obtusæ petala dorso leviter cohærentia. Stamina 10, monadelphæ; antheræ conformes. Ovarium sessile, ∞ -ovulatum. Stylus filiformis; stigma obtusum. Legumen lineare, compressum, 2- ∞ -articulatum, articulis oblongis v. elongatis, utrinque angustatis longitudinaliter striatis, plerumque 1-spermis, distincte secedentibus. Semina compressa.—Frutices; foliis 1-foliolatis v. imparipinnatis, foliolis glabris acuminatis v. retusis; racemis axillaribus brevibus paucifloris, floribus flavis albidis v. purpureo striatis.

1. **O. sennoides**, DC. Prodr. vol. ii. p. 315; Benth. Fl. Austr. vol. ii. p. 226; foliis imparipinnatis 6-7-jugis, foliolis obovatis retusis mucronatis; leguminis articulis striatis aculeato-verrucosis.—*Hedysarum sennoides*, Willd. Spec. vol. iii. p. 1207. *Æschynomene coluteoides*, A. Rich. Sert. Astrol. 87, t. 32.—On the leeward coasts of Viti (U. S. Expl. Exped.). Also collected in Queensland (Banks and Solander!).

V. **Desmodium**, DC. Mem. vol. vi.; Endl. Gen. n. 6615; Benth. Fl. Austr. vol. ii. p. 229. Calycis tubo lævi, lobis 2 superioribus plus minusve coalitis. Vexillum oblongum v. orbiculatum, basi attenuatum; alæ oblongæ, carinæ obtusæ plerumque medio adhærentes. Stamina 10, filamentum vexillari libero diadelphæ, rarius monadelphæ; antheræ conformes. Ovarium sessile v. stipitatum, 2- ∞ -ovulatum. Stylus subulatus, incurvus. Legumen ∞ -articulatum, articulis secedentibus compressis 1-spermis indehiscentibus v. vix apertis. Semina compresso-reniformia.—Herbæ frutices v. arbusculæ; foliis 3- v. 1-foliolatis stipellatis; stipulis sæpe scariosis, striatis membranaceis;

* *Sesbania coccinea*, Poir. (*Æschynomene coccinea*, Linn. fil., Forst. Icon. (ined.) t. 198, 199; *Æ. speciosa*, Sol. Prim. Fl. Ins. Pac. p. 291, et in Parkins. Drawings of Tahit. Pl. (ined.) t. 75), may be expected to occur in Viti, it having been found in Tahiti (Banks and Solander! Forster!) and in the Botanists' Island, off New Caledonia (Forster!).

floribus in racemos v. paniculas terminales rarius in umbellas v. cymas axillares dispositis, purpureis cæruleis roseis v. albis.—*Nicolsonia*, DC. Prodr. vol. ii. p. 325. *Dicerma*, DC. Prodr. vol. ii. p. 339. *Dendrolobium*, Wight et Arn. Prodr. p. 225.

Besides the two *Desmadia* enumerated below, there are in Polynesia four other species, viz. *D. Sandwichense*, E. Meyer, from the Hawaiian Islands (Barclay! Seemann!); *D. varians*, Endl. (*Hedysarum varians*, Labill. Sert. A. Caled. t. 71), from New Caledonia; *D. Scorpiurus*, Desv., from Tahiti; and *D. Andersoni* (sp. nov.), Seem. in Herb. Mus. Brit.; fruticosum; ramulis novellis puberulis; foliis 3-foliolatis, foliolis petiolulatis ovatis v. ellipticis acuminatis basi acutis integerrimis coriaceis glabris; stipulis triangularibus striatis mox deciduis; stipellis nullis (v. caducis?); floribus ignotis; staminibus 10, diadelphis, glabris; leguminis longe stipitati articulis 4–6 ellipticis compressis reticulato-venosis puberulis.—New Caledonia (W. Anderson! in Herb. Mus. Brit.). The specimen, collected in Captain Cook's second Voyage, has no flowers, but I found a few old stamens; and in Mr. Bentham's opinion it belongs to a genuine and new species of *Desmodium*.

1. **D. umbellatum**, DC. Prodr. vol. ii. p. 325; fruticosum; ramulis foliisque junioribus sericeo-pubescentibus; foliolis 3 ovatis v. ovali-oblongis obtusis v. rarius subacutis, supra glabris v. subglabris, subtus pubescentibus v. sericeo-pubescentibus, venis primariis prominulis; stipulis deciduis; umbellis axillaribus; floribus albidis; bracteis deciduis, bracteolis persistentibus; calyce sericeo, lobis acutis, vexillo rotundato; leguminis articulis 3–4 subcarnosis indehiscentibus.—*D. australis*, DC. Prodr. vol. ii. p. 326. *Hedysarum umbellatum*, Linn. Spec. 1053; Forst. Prodr. n. 274. *H. australe*, Willd. Spec. vol. iii. p. 1185. *Ormocarpum oblongum*, Desv. in Ann. Soc. Linn. 1825, p. 307.—Common on the seabeach (Seemann! n. 109; Barclay!). Also collected in the Tongau (U. S. Expl. Exped.) and Samoan Islands (Sir E. Home!), Eromanga (M'Gillivray!), Tana (Forster!), and New Caledonia (Anderson! Forster!). Diffused over tropical New Holland and the East Indies.

2. **D. polycarpum**, DC. Prodr. vol. ii. p. 334; herbaceum v. suffruticosum, pubescens, pilis adpressis v. patentibus; foliolis 3 ovatis v. ellipticis, terminali majore; stipulis striatis acuminatis; racemis terminalibus, densis, simplicibus v. subpaniculatis, bracteis late lanceolatis imbricatis mox deciduis; floribus purpureis, leguminis hirsuti v. glabri articulis 4–6 compressis sæpe dehiscentibus.—Benth. Fl. Austr. vol. ii. p. 235; Wight et Arn. Prodr. p. 227; Wight, Icon. t. 400. *D. heterocarpum*, DC. Prodr. vol. ii. p. 337. *D. capitatum*, DC. l. c. p. 336. *D. angulatum*, DC. l. c. p. 335. *D. tenue*, Grah. in Wall. Cat. n. 5730. *D. serpens*, Wall. Cat. n. 5733. *D. purpureum*, Hook. et Arn. Bot. Beech. p. 62. *D. siliquosum*, DC. Prodr. vol. ii. p. 336. *D. Hippocrepis*, DC. l. c. p. 338? *D. acrocarpum*, Hance, in Hook. Lond. Journ. of Bot. vol. vii. p. 414. *Hedysarum heterocarpum*, Linn. Spec. p. 1054. *H. polycarpum*, Lam. Ill. t. 628. *H. capitatum*, Burm. Ind. p. 167. t. 54. f. 1. *H. conicum*, Poir. Enc. Méth. vol. vi. p. 419. *H. siliquosum*, Burm. Ind. p. 169. t. 55. f. 2. *H. purpureum*, Roxb. Fl. Ind. vol. iii. p. 358. *H. tuberosum*, Labill. Sert. Austr. Caled. t. 72. *Hippocrepis barbata*, Lour. Fl. Cochin. ed. Willd. p. 553.—Common in cultivated and waste places all over the Viti group (Seemann! n. 111; U. S. Expl. Exped.). Also collected in the Marquesas (Barclay!) and Society Islands (Banks and Solander! Forster! Barclay!). Diffused over tropical Australia, the East Indies, and the Indian Archipelago.

VI. **Uraria**, Desv. in Journ. Bot. vol. iii. p. 122. t. 5. f. 19; Endl. Gen. n. 6610; Benth. Fl. Austr. vol. ii. p. 236. Calyx profunde bilabiatus, labio superiore 2-fido, inferiore 3-partito, fructifer haud mutatus. Vexillum obovatum v. orbiculatum; alæ oblongæ, transversim rugosæ, carina obtusa. Stamina 10, filamentis vexillari libero diadelphe; antheræ conformes. Ovarium sessile v. subsessile, 2–∞-ovulatum. Stylus adscendens, sursum incrassatus; stigma terminale, capitatum. Legumen subsessile, articulis 2–6 ovatis plicato-refractis, intra calycem nidulantibus, 1-spermis. Semina compresso-reniformia.—Herbæ v. suffrutices; foliis pinnatim 3–7-foliolatis, rarius 1-foliolatis, foliolis prominule reticulatis stipellatis; stipulis liberis acuminatis striatis; racemis terminalibus latis v. subspicatis; floribus purpureis v. flavis resupinatis; bracteis latis acuminatis; bracteolis nullis.

1. **U. lagopoides**, DC. Prodr. vol. ii. p. 324; caule fruticuloso, procumbente v. adscendente, pubescente v. villosa; foliolis solitariis v. 3 ovatis obtusis, terminali orbiculari-reniformi v. cordato-ovato majori, subscabris v. subvelutino-pubescentibus; racemis subspicatis oblongis obtusis hirsutis subsessilibus; bracteis deciduis; leguminis articulis 2 glabris v. pubescentibus.—Benth. Fl. Austr. vol. ii. p. 237; Wight, Icon. t. 289.—*U. cercifolia*, Desv. l. c. f. 19. *Desmodium lagopodioides*, Endl. in Ann. Wien. Mus. vol. i. p. 185. *Hedysarum lagopoides*, Forst. Prodr. n. 276. Nomen vernac. Vitiense, "Lakanikasa," teste Williams.—On cultivated and waste ground, Vanua Levu (Seemann! n. 108; U. S. Expl. Exped.). Also gathered in Uvea or Wallis Island (Sir E. Home!), New Caledonia (Anderson!), Samoan Islands (U. S. Expl. Exped.), and in Queensland (R. Brown!).

VII. **Glycine**, Linn. Endl. Gen. n. 6650; Benth. Fl. Austr. vol. ii. p. 242. Calyx subbilabatus, labio superiore 2-fido, inferiore 3-partito. Vexillum suborbiculatum, marginibus alas amplectens; alæ vexillum subæquantes, carinæ breviori rectæ adhærentes. Stamina 10, monadelphæ, v. filamenta vexillari demum libero; antheræ conformes. Ovarium subsessile, ∞ -ovulatum. Stylus brevis, incurvus; stigma subcapitatum. Legumen lineare v. falcatum, 2-valve, ∞ -spermum, isthmis cellulosis inter semina interceptum. Semina subovata, estrophiolata.—Herbæ v. suffrutices volubiles, magis minusve pilosi; foliis pinnatim trifoliolatis, foliolis stipellatis; stipellis setaceis; stipulis parvis lanceolatis; racemis axillaribus interruptis; pedicellis subfasciculatis.

1. **G. tabacina**, Benth. Fl. Austr. vol. ii. p. 244; pubescens v. villosa; foliolis 3, terminali longe distante, orbiculato-obovatis oblongis ovato-lanceolatis v. linearibus; stipulis minutis; floribus axillaribus solitariis v. racemosis; calycis lobis subulato-acuminatis; legumine recto glabro v. villosa; seminibus lævibus v. tuberculatis.—*Kennedyia tabacina*, Labill. Sert. Austr. Cal. 70. t. 70. *Leptolobium tabacinum*, Benth. in Ann. Wien. Mus. vol. ii. p. 125. *L. elongatum*, Benth. l. c. *Desmodium Novo-Hollandicum*, F. Muell. in Linn. vol. xxv. p. 394.—Island of Nukubati, off the Macuata coast (Seemann! n. 123). Also collected in New Caledonia and Australia.

VIII. **Dioclea**, H. B. K. Nov. Gen. et Sp. vol. vi. p. 437; Endl. Gen. n. 6662. Calyx campanulatus, 4-fidus, laciniis æstivatione imbricatis, superiore latiore, integra v. emarginata, infima angustiore, intus adpresse sericeus v. rufo-villosus. Vexillum alis longius, orbiculatum, medio nudum v. breviter bicallosum, margine utrinque membrana inflexa appendiculatum; alæ obovatæ v. oblongæ, liberæ, intus auriculis subadhærentibus; carina alis brevior v. subæqualis, incurva, obtusa v. rostrata, petalis secus longitudinem subplicatis, dorso connatis. Discus breviter vaginifer v. subnudus. Stamina 10, medio monadelphæ, filamenta vexillari ima basi libero; antheræ conformes. Ovarium subsessile, ∞ -ovulatum. Stylus incurvus, glaber, versus apicem sæpe incrassatus, truncatus; stigma terminale. Legumen oblongum, plano-compressum, crassiusculum, coriaceum, sutura vexillari incrassata, sæpius anguste bialata. Semina transversa, compressa, umbilico lineari, strophio tenui, demum libera.—Frutices volubiles; foliis pinnatim 3-foliolatis, foliolis oppositis cum impari distante, stipellis minutis setaceis, stipulis variis; racemis axillaribus elongatis; floribus in fasciculos v. spiculas secus pedunculum crassum dispositis, spicularum sive fasciculorum rhachi brevi incrassata persistente; bracteis cito deciduis; pedicellis brevibus, bracteolis calyci adpressis, ovatis v. orbiculatis, deciduis v. subpersistentibus, floribus cæruleis violaceis v. subalbis; legumine sæpissime demum tomentoso v. villosa.—*Hymenospron*, Spreng. Gen. Pl. n. 2880.

1. **D. violacea**, Mart. in Herb. Benth. in Ann. Wien. Mus. vol. ii. p. 133; ramis piloso-hispidis; foliolis lato-ovatis brevissime acuminatis, basi subcordatis, junioribus utrinque pilosis demum glabratis; floribus subsessilibus densis; calycibus glabriusculis; carina obtusa rostrata alis submidio brevioribus.—*Dolichos altissimus*, Velloz. Fl. Flum. vol. vii. t. 134. *Mucuna altissima*, Boj. mss.

nec DC.—Viti (Williams!). Also collected in the Society (Capt. Cook!) and Sandwich Islands (Macrae! U. S. Expl. Exped.), as well as in Brazil.

Mr. Williams's specimen is merely a fragment, but, as far as it goes, agrees well with the Tahitian and Sandwich Islands specimens. The plant, having now been ascertained to grow in three widely separated groups of islands, must be regarded as truly indigenous to Polynesia.

IX. **Canavalia**, DC. Leg. Mem. vol. ix.; Endl. Gen. n. 6663; Benth. Fl. Austr. vol. ii. p. 255. Calyx tubulosus, 2-labiatus, labio superiore maximo, truncato v. emarginato-2-fido, lobis lato-rotundatis, inferiore parvo, integro v. 2-fido. Vexillum amplum, suborbiculatum, emarginatum v. 2-fidum, basi angustatum, complicatum, intus 2-callosum, margine membrana inflexa utrinque appendiculatum v. nudum, ungue brevi; alæ oblongo-lineares, falcatae, basi late auriculatae, a carina subliberae, auriculis inter se cohærentibus; carina alis æquilonga v. longior, vexillo brevior, basi ovata v. ovato-oblonga, incurva, apice obtusa v. acuminato-rostrata, rostro infero v. spiraliter torto, petalis dorso connatis brevissime unguiculatis. Discus vaginifer. Stamina monadelphia, v. rarius filamento vexillari ima basi et supra medium libero subdiadelpho; antheræ uniformes. Ovarium substipitatum, lineare, ∞-ovulatum. Stylus incurvus, glaber, apice subdilato-truncatus, stigmatè terminali. Legumen oblongum v. lineare, compressum, subfalcatum, coriaceum, sutura vexillari subincrassata, valvis utrinque prope suturam nervo longitudinali auctis, sutura carinali nuda, isthmis cellulosis inter semina transversim ∞-loculare. Semina ovata v. subrotundata, compressa, umbilico lineari estrophiolato.—Herbæ volubiles; foliis pinnatim 3-foliolatis, foliolis oppositis cum impari distante; stipellis minutis, setaceis v. nullis; stipulis parvis, orbiculatis v. verruciformibus; racemis axillaribus elongatis spicæformibus; rhachi alternatim ramosa; floribus ad quemvis nodum solitariis v. geminis aut ternis fasciculatis subsessilibus pendulis; bracteis orbiculatis, calyci adpressis, caducis; calycibus sæpe nigro-maculatis; corollis roseis albis v. purpurascensibus.

1. **C. obtusifolia**, DC. Prodr. vol. ii. p. 404; glabra v. ramulis junioribus sericeo-pubescentibus; caule prostrato v. scandente, rarius volubili; foliolis late obovatis v. orbiculatis obtusissimis v. retusis, subacuminatis; floribus roseis v. albidis; calycis labio superiore 2-fido, inferiore 3-fido; vexillo orbiculari; carina valde curvata, obtusa; legumine lato nervis longitudinalibus angustis; seminibus 2–8, umbilico oblongo v. lineari.—Benth. Fl. Austr. vol. ii. p. 256.—*Dolichos obtusifolius*, Lam. Dict. vol. ii. p. 295. *D. rotundifolius*, Vahl, Symb. vol. ii. p. 81. *Glycine rosea*, Forst. Prodr. n. 271, et in Parkins. Drawings of Tahit. Pl. (ined.) t. 74. *Rhynchosia rosea*, DC. Prodr. vol. ii. p. 387.—Common all over Viti (Seemann! n. 122). Also collected in Society Islands (Banks and Solander!), Isle of Pines (M'Gillivray!), Tongan Islands (Barclay!), and in Eastern Australia, South America, Africa, and tropical Asia.

2. **C. sericea**, A. Gray, Bot. Wilkes, p. 440; sericeo-tomentosa; foliolis obovato-rotundatis obtusis v. abrupte acuminatis, basi acutis v. rotundatis, supra demum glabris subtus eximie sericeis; racemis plurifloris folia subæquantibus; floribus roseis; calycis glabriusculi labio superiore emarginato 2-lobo, inferiore 3-fido; legumine tomentoso triplo quadruplove longiore quam lato; seminibus 3–4.—*Glycine speciosa*, Sol. Prim. Fl. Ins. Pacif. p. 288, et in Parkins. Drawings of Tahit. Pl. t. 73 (ined.).—Viti Levu, at Rewa, Ovalau, and Direction Island (U. S. Expl. Exped.). Also collected in the Society Islands (Banks and Solander!).

I subjoin the manuscript description which Solander has given of his plant in the place above quoted, as it completes our knowledge of this little-known plant, and was made from fresh specimens, viz. :—

“*Caules* herbacei, longissimi, volubiles, teretes, striati, villis brevissimis cinerascens. *Folia* alterna, petiolata, ternata; *foliola* ovata, vel potius late elliptico-ovalia, acuta, integerrima, supra glabra, subtus villis tenuibus albidis mollia, enervia, venosa, plerumque quadriuncialia, subæqualia, lateralia extus paulo latiora. *Petioli* subteretes, superne canali angusto exarati, striati, villis brevibus tecti, spithamæi, extra petiolellos laterales producti, ut foliolum terminale spatio sesquiunciali a reliquis elevatum. *Petiolelli*

æquales, 3 vel 4 lineas longi, villosi. *Stipulellæ* ad basin petiolellorum subulato-filiformes, pilosi; folioli terminalis trilineares, lateralium breviores. *Pedunculi* axillares, solitarii, teretes, villis inerascentes, longi, pedales et ultra, superne e callis alternis multiflori, sæpe inter callos superiores flexuosi. *Calli* subglobosi, magnitudine seminis cannabini, glabri, distantes, inferiores valde remoti, singulus gerens flosculos plerumque binos interdum tres raro quatuor, pendulos magnos (sesquiunciales) e purpureo roseos, breviter pedicellatos, unde modus florendi inter racemum et spicam. *Pedicelli* villosi, inferiores lineares, superiores sensim breviores. *Bracteæ* duæ oppositæ, ad basin calycis subrotundæ, caducissimæ. *Calyx* laxè urceolatus, parum compressus, magnus $\frac{3}{4}$ uncias longus, villosiusculus, bilabiatus. *Labium superius* magnum, bilobum; *lobis* latissimis, obtusissimis, sinu angusto disjunctis. *Labium inferius* duplo brevius, trifidum; *laciniis* e lata basi lanceolatis, acutis; lateralibus sublunatis seu apice sursum flexis; intermedia recta. *Corolla* papilionacea, pallide e purpurascenti rosea. *Vexillum* obcordatum, reflexum, alis paulo brevius; *ungue* superne dilatato; *alæ* oblongæ, obtusæ, angustæ, apice parum adscendentes; *unquibus* denticulato-sursum flexo-acutis. *Carina* longitudine alarum, illis latior, antice adscendens, obtusa, apice et basi bifida. *Filamenta* decem, coalita in cylindrum integrum pro germine increcente superne rumpentem, superne libera. *Antheræ* ovatæ, incumbentes. *Germen* lineare, pubescens. *Stylus* filiformis, villis longiusculis præditus. *Stigma* simplex. *Legumina* nobis non visa, ideoque differentia nostra specifica illis notis melius tradenda, distincta tamen species et potius *Glycinis* quam *Dolichos*, etsi stylus pubescens, calyce autem ex vexillo callis destituto ab his differt."

3. **C. turgida**, Grah. in Wall. Cat. n. 5534; glaber; foliolis ovato-rhomboideis acutis v. ovali-oblongis retusis; leguminibus turgidis latitudine triplo longioribus; seminibus 4-5.—Viti Islands (U. S. Expl. Exped.). Also collected in the Samoan, Tongan, Society, and Magsi Islands.

The above description is taken from an authentic though imperfect specimen without flowers, preserved at the British Museum.

A fourth species of this genus, *C. galeata*, Gaud. (*C. Gaudichaudii*, Endl., *C. pubescens*, Hook. et Arn., *Dolichos galeatus*, Gaud.), is indigenous to the Hawaiian Islands.

X. **Mucuna**, Adans. Fam. vol. ii. p. 325; Endl. Gen. n. 6665; Benth. Fl. Austr. vol. ii. p. 254. Calyx campanulatus, 2-labiatus, labio superiore lato, integro v. emarginato, inferioris 3-fidi lobo medio longiore. Vexillum cordatum, ecallosum, alis et carinæ brevibus incumbens; alæ oblongo-lineares, conniventes, basi auriculis inter se cohærentibus, carina e basi recta apice subfalcata, in rostrum acutum desinens. Stamina 10, alterna longiora, filamentis vexillari libero 2-adelpha; antheræ alternæ oblongæ, alternæ ovatæ. Ovarium sessile, ∞ -ovulatum. Stylus longus, tenuis, inferne pilosus, apice glaber; stigma minutum. Legumen indehiscens v. tandem 2-valve, lineare, oblongum v. ovatum, 1- ∞ -spermum, inter semina torosum, extus sæpissime pilis prurientibus hirtum, intus isthmis cellulosis inter semina transversim ∞ -loculare. Semina rotunda, umbilico lineari zonata.—Suffrutices v. frutices, longe scandentes; foliis pinnatim 3-foliolatis, foliolis stipellatis; racemis axillaribus elongatis (usque ad 30 ped. long.) v. brevibus, umbelliformibus, fructiferis sæpe pendulis, leguminum pilis sæpe fragillimis cutem penetrantibus.—*Citta*, Lour. Fl. Cochinch. 557.

At the British Museum there are no specimens or drawings of the Tongan plant referred by Forster, with a mark of doubt, to *Dolichos pruriens*, Linn.; and it is impossible to guess what species he alluded to. Besides the two *Mucunas* enumerated below, only one has hitherto been collected in Polynesia, viz. *M. urens*, DC., in the Sandwich Islands.

1. **M. (Zoophthalmum) platyphylla**, A. Gray, Bot. Wilkes, p. 443; fulvo-pubescens; foliolis magnis rotundis apiculatis subtus reticulatis supra mox glabris; floribus cymosis viridulis; leguminibus ovalibus plano-compressis transverse lamellosis, junioribus hispidissimis.—Ovalau and Viti Levu, at Rewa (U. S. Expl. Exped.) and Taviuni (Seemann! n. 120). Also collected in Tahiti (Banks and Solander!).

This, rather than *M. urens*, must be the species which Pickering found in the forests of Tahiti, as alluded to by A. Gray.

2. **M. (Stizolobium) gigantea**, DC. Prodr. vol. ii. p. 405; glabra v. subpilosa; foliolis ovatis v. ovato-lanceolatis acuminatis, lateralibus obliquis; floribus corymbosis viridulis; leguminibus crassis

compressis, lamellis destitutis, junioribus hispidissimis.—Hook. Bot. Misc. vol. iii. t. Suppl. 14. Rheed. Mal. vol. viii. t. 36. *Carpopogon giganteum*, Roxb. Cat. Calc. 54. *Dolichos giganteus*, Willd. Spec. vol. iii. p. 1041. *Citta nigricans*, Lour. Fl. Coch. 557; Rumb. Amb. vol. v. t. 6.—In woods, Taviuni (Seemann! n. 119), Ovalau, and Vanua Levu (U. S. Expl. Exped.). Also collected in the Sandwich Islands (Barclay! n. 1320), in Tana (Barclay! n. 3486), and on the east coast of Australia.

XI. **Erythrina**, Linn. Gen. n. 855; Endl. Gen. n. 6667; Benth. Fl. Austr. vol. ii. p. 252. Calyx campanulatus v. tubulosus, oblique truncatus aut bilabiatus, hinc fissus. Vexillum obovato-oblongum, ecallosum, incumbens, alas et carinam 2-petalam longissime superans. Stamina 10, recta, nunc 2-adelpha, nunc filamentum vexillari reliquis adhærente, aut interdum abortivo, magis minusve 1-adelpha; antheræ conformes. Ovarium stipitatum, ∞ -ovulatum. Stylus glaber, rectus, apice breviter incurvus, subtus stigmatosus. Legumen stipitatum, lineari-falcatum, acuminatum, indehiscens, inter semina compressum, torulosum. Semina ovalia v. oblonga, distantia, umbilico laterali oblongo, estrophiolata.—Arbusculæ v. frutices, rarius truncato subterraneo ramis annuis subherbaceæ; caule foliisque interdum aculeatis; foliis pinnatim 3-foliolatis, foliolo terminali a reliquis remoto, stipellarum loco sæpe glandulis stipitatis; stipulis parvis a petiolo distinctis; racemis elongatis; pedicellis sæpe 3-natis approximatis; floribus sæpe rubicundo-coccineis, rarius albis, speciosis; bracteis minutis v. nullis; seminibus sæpissime rubro et nigro variegatis, nitidis.

Erythrina is represented in Polynesia by three species, the two enumerated below, and *E. monosperma*, Gaud., a native of the Sandwich Islands.

1. **E. ovalifolia**, Roxb. Fl. Ind. vol. iii. p. 254; Wight, Icon. t. 247; arborea; ramis petiolisque aculeatis; foliolis ovalibus, subtus albidis; stipellarum loco glandulis stipellatis; racemis terminalibus horizontalibus; vexillo obcordato; corolla obscure rubra.—Nomen vernac. "Drala Kaka."—Island of Viwa (Seemann! n. 124). Also found in Manila and the East Indies.

Much rarer than the following species, though not confined to the small islet on which I collected my specimens.

2. **E. Indica**, Lam. Dict. vol. ii. p. 391; var. *a.* arborea, glabra; ramis aculeatis; petiolis inermibus; foliolis late ovatis integerrimis, terminali rhomboideo, lateralibus obliquis; floribus racemosis coccineis v. albis; vexillo ovato stipitato.—Wight, Icon. t. 58. Benth. Fl. Austr. vol. ii. p. 253. DC. Prodr. vol. ii. p. 412.—*E. Corallodendron*, Forst. Prodr. n. 268, non Linn.; Parkins. Drawings of Tahit. Pl. (ined.) t. 70. *E. Corallodendron*, var. *β.* Linn. Spec. 992. Nomen vernac. "Drala" v. "Drala dina."—Common throughout the group, and often planted (Seemann! n. 125). Also collected in the Society (Banks and Solander!) and Tongan Islands (U. S. Expl. Exped.), the east coast of New Holland, the East Indies, and the Archipelago.

Var. *β.*; floribus albis.—Much rarer than var. *a.*

The flowering of the Drala, which takes place about the end of July or the beginning of August, is the general signal for planting the yams, and one of the natural phenomena upon which the Fijian calendar is based. For this reason this tree is found near almost every village, either wild or planted. The wood is soft and useless; the seeds are used by children for toys, or by the heathen priests to cover the so-called oracle-boxes.

XII. **Strongylodon**, Vogel in Linnæa, vol. x. p. 585; Endl. Gen. n. 6668; A. Gray, Bot. Wilkes, p. 445. Calyx campanulatus, truncatus seu 4-5-dentatus, dentibus obtusis v. obsolete. Vexillum ovato-oblongum, acutum, demum recurvo-patentissimum, basi breviter unguiculatum et membranula inflexa appendiculatum, intus 2-callosum. Alæ subfalcatae, vexillo et carina multo minores. Carina gamopetala, falcata, rostrata, vexillo æquilongâ. Stamina 10, 2-adelpha; antheræ fere uniformes. Ovarium stipitatum 1-pauciovulatum; stylus capillaris, longissimus, stigmatibus subcapitato penicillato terminatus. Legumen oblongum, turgidum, 1-2-spermum. Semina suborbicu-

lata, compressa.—Frutices v. suffrutices, caulibus gracilibus volubilibus, inermes, glaberrimæ; foliis pinnatim 3-foliolatis stipellatis; racemis elongatis ∞ -floris; pedicellis gracilibus ad nodos fasciculatis; floribus rubris.

1. **S. lucidum**, Seem.; foliolis ovatis membranaceis; racemis folio duplo longioribus; pedicellis flore æquilongis; calyce basi bibracteolato manifeste 4–5-dentato, dentibus obtusissimis, carina falcato-incurva; legumine inflato 1–2-spermo, seminibus nigris.—*Glycine lucida*, Forst. Prodr. n. 272, et Icon. (ined.) t. 197. *Rhynchosia lucida*, DC. Prodr. vol. ii. p. 387. *Strongylodon ruber*, Vogel in Linn. vol. x. p. 585; A. Gray, Bot. Wilkes, p. 446. t. 48. *Mucuna altissima*, Hook. et Arn. Bot. Beech. p. 81, non alior. *Harpotropis speciosus*, Nutt. in Herb. Hook.—In woods, Ovalau (U. S. Expl. Exped.), Taviuni (Seemann! n. 113). Also collected in Tahiti (Banks and Solander! Forster!) and the Hawaiian Islands (Macrae! Barclay! Nuttall!)

XIII. **Phaseolus**, Linn. Gen. n. 886; Endl. Gen. n. 6674; Benth. Fl. Austr. vol. ii. p. 256. Calyx campanulatus v. subtubulosus, apice 4-fidus v. lacinia suprema 2-fida 5-fidus. Vexillum orbiculatum, recurvo-patens v. subtortum, basi angustatum, margine utroque subauriculatum, membrana inflexa auctum, medio nudum, v. longitudinaliter 2-callosum, callis sæpe confluentibus, alæ obovatae v. oblongæ, supra unguem carinæ adhærentes, apice supra eandem conniventes, carina vexillum æquans v. superans, obovata, apice acuminato-rostrata, rostro spiraliter torto. Stamina 10, filamentis vexillari libero, supra basin geniculato et sæpe appendiculato 2-adelpha. Discus vaginifer. Ovarium sessile, ∞ -ovulatum. Stylus cum carina tortus, basi subulatus, supra medium cartilagineus, subdilatatus, infra stigma subtus barbatus; stigma crassiusculum, basi ciliatum, plus minus obliquum. Legumen lineare v. falcatum, plus minus compressum v. teretiusculum. Seminum umbilicus parvus, oblongus, nudus v. strophiole tenui membranacea auctus.—Frutices v. herbæ volubiles, prostratae v. suberectæ; foliis pinnatim 3-foliolatis, rarius 1-foliolatis, stipellis oblongis ovatis v. subulatis; stipulis plerumque persistentibus, lineato-plurinerviis, sæpe basi breviter infra insertionem productis; pedunculis axillaribus, supra medium floriferis; floribus in fasciculos paucifloros dispositis, fasciculorum rhachi persistente, nodiformi; bracteis stipulis conformibus, sæpissime ante anthesin deciduis; bracteolis oblongis, ovatis v. orbiculatis, lineatis, sæpe caducis; calycibus intus glabris; corollis glabris, albis flavescentibus rubris v. purpureis.

1. **P. Truxillensis**, H. B. K. Nov. Gen. Am. vol. vi. p. 451; volubilis, glaber v. plus minus pilosus, pilis caulinis reflexis, foliorum adpressis v. sericeis, foliolis late ovatis obtusis v. breviter acuminatis, terminali subrhomboideo, lateralibus valde obliquis; stipellis minutis oblongis; stipulis parvis infra insertionem non productis; pedunculis plerumque elongatis paucifloris; pedicellis brevissimis; bracteolis calyce brevioribus, deciduis; floribus majusculis purpurascensibus albo-roseis v. flavo-violaceis; calycis lobis superioribus brevibus, latis, obtusis, inferiore acuto; legumine compresso, recto v. falcato.—Benth. Fl. Austr. vol. ii. p. 257. *P. amœnus*, Sol. in Forst. Prodr. n. 533, et in Parkins. Drawings of Tahit. Pl. (ined.) t. 7; Sol. Prim. Fl. Ins. Ocean. Pacif. p. 285 (ined.). *P. rostratus*, Wall. Plant. Asiat. Rar. vol. i. p. 50. t. 63; Wight, Icon. t. 34.—Common throughout Viti (Seemann! n. 116; Barclay! U. S. Expl. Exped.). Also found in Tahiti (Banks and Solander! Forster!), in the Sandwich (Menzies! Nuttall! Macrae!) and Samoan Islands (U. S. Expl. Exped.), on the east coast of Australia, South America, and nearly all tropical countries.

2. **P. Mungo**, Linn. Mant. 101; Benth. Fl. Austr. vol. ii. p. 257; plus minus hirsutus, pilis caulinis reflexis, foliorum adpressis; caule elongato volubili v. erecto; foliolis ovatis, acutis v. acuminatis, integerrimis v. minute 3-lobis, lateralibus valde obliquis; stipulis majusculis, oblongis, infra insertionem productis; floribus parvulis, pallide flavis, racemosis v. in fasciculos 2–3 aggregatis; bracteolis parvis, valde deciduis; calycis lobis 2 superioribus brevissimis, latis, inferiore acuto; carina sinistrorsum cornuta; legumine cylindrico, hirsuto v. rarius subglabro.—*P. Roxburghii*,

Wight et Arn. Prodr. 246. *P. trinervius*, Heyne; Wight et Arn. l. c. p. 245. *P. radiatus*, Roxb.—Viti Islands (U. S. Expl. Exped.). Also collected in the Samoan (U. S. Expl. Exped.) and Tongan Islands (Barclay! n. 5395).

Barclay also collected in the Sandwich Islands the widely-diffused *Phaseolus lunatus*, Linn.

XIV. **Vigna**, Savi, Diss. 1824, p. 16; Endl. Gen. n. 6675; Benth. Fl. Austr. vol. ii. p. 258. Calyx campanulatus, apice 4-fidus, lobo supremo obtuso integro v. 2-fido, infimo sæpe paullo longiore. Vexillum latum, reflexum, basi callo semilunari v. falcato et appendicibus 2, deorsum subgibbosis; alæ subrhomboideæ, hinc hamatæ, carina haud torta, angulo rectiusculo inflexa, subrostrata. Stamina 10, filamento vexillari libero, basi geniculato haud appendiculato 2-adelpha. Discus vaginifer. Ovarium substipitatum, ∞ -ovulatum. Stylus canaliculatus; stigma infra apicem laterale, oblongum, ciliato-barbatum. Legumen teres v. compressiusculum, rectum v. subfalcatum, subtorulosum, isthmis cellulosis inter semina transversim ∞ -loculare. Semina oblongo-reniformia, estrophiolata.—Herbæ suffruticosæ, volubiles; foliis pinnatim 3-foliolatis; floribus racemosis, plurimis v. paucis in apice pedunculi crassi sessilibus; calycibus deciduis 2-bracteolatis.

1. **V. lutea**, A. Gray, Bot. Wilkes, p. 452; Benth. Fl. Austr. vol. ii. p. 259; subrobusta, prostrata scandens v. volubilis, subglabra v. ramis junioribus canescentibus v. sericeis; pilis medio affixis; foliolis orbicularibus obovatis v. ovato-rhomboideis, sæpe obtusissimis; stipulis brevibus, latis, stipellis obtusis; floribus flavis, in apice pedunculi fasciculatim aggregatis; calycis labio supero brevi lato; carina lata, valde incurva, subacuta; stigmatibus oblongo; legumine glabro, recto v. curvato.—*D. luteus*, Swartz, Fl. Ind. Occ. vol. iii. p. 1246. *V. retusa*, Walp. Rep. vol. i. p. 778. *V. anomala*, Walp. Rep. vol. i. p. 779 (*Scythalis*, Vogel). *Dolichos luteolus*, Forst. Prodr. n. 269, et Icon. (ined.) t. 196 (non alior.). *Dolichos luteus*, Sol. Fl. Ins. Pacif. p. 287, et in Parkins. Drawings of Tahit. Pl. t. 72 (ined.).—A common seaside weed, growing with *Canavalia obtusifolia* and *Ipomœa Pes-capræ* (Seemann! n. 121). Also collected in the Society (Banks and Solander!) and Sandwich Islands, the east coast of New Holland, tropical Asia, Southern Africa, and the West Indies.

Additional Polynesian species of *Vigna*, as yet not met with in Viti, are: *V. Oahuensis*, Vogel (*V. villosa*, Hook. et Arn., non Savi), and *V. Sandwichensis*, A. Gray, both from the Hawaiian Islands.

XV. **Lablab**, Adans. Fam. vol. ii. p. 325; Endl. Gen. n. 6677. Calyx campanulato-tubulosus, 4-fidus, lacinia suprema lata, obtusa, 3 inferioribus acutis. Vexillum patens, basi canaliculatum, callis 4, 2 superioribus prominentibus; alæ liberæ, carina falcata, ad angulum rectum incurva, haud torta. Stamina 10, filamento vexillari inter petali callos recepto, a reliquis libero, 2-adelpha. Discus vaginifer. Ovarium stipitatum, ∞ -ovulatum. Stylus compressus, parte superiore subtus barbatus; stigma terminale, truncatum, glabrum. Legumen compressum, planum, acinaciforme, juxta utramque suturam tuberculato-muricatum, sub-4-spermum, isthmis cellulosis inter semina interceptum. Semina ovata, subcompressa, callo fungoso, semicirculari marginata.—Herbæ volubiles; foliis pinnatim 3-foliolatis; foliolis stipellatis, integris; stipulis patentibus; racemis pedunculatis, basi 1-phyllis; pedicellis semiverticillatis; calycibus 2-bracteolatis; seminibus nigris v. fuscis, callo albo.

1. **L. vulgaris**, Savi, Diss. 1821, p. 19. f. 8 *a, b, c*; DC. Prodr. vol. ii. p. 401; leguminibus oblongo-ventricosus acinaciformibus, pericarpio facile detractili; seminibus ovatis subcompressis, glandula basilari hemisphaerica sulcata.—*Dolichos Lablab*, Linn. Spec. p. 1019; Lam. Dict. vol. ii. p. 293. *L. niger*, Mœnch, Meth. 153.

Var. *albiflorus*, DC. l. c.; caule pallido; floribus albis; seminibus pallide ferrugineis.—*Dolichos Bengalensis*, Jacq. Hort. Vindob. vol. ii. t. 124. Nomen vernac. Vitiense, "Dralawa."—In Taviuni and other parts of Viti, on the beach (Seemann! n. 118; U. S. Expl. Exped.). Also collected in Tahiti (Capt. Cook!).

During my stay in Taviuni we used the beans of this plant as a vegetable, but the natives did not

seem aware that they were edible. It is difficult to say whether the plant has been introduced; the fact that it has in Viti a native name, and was gathered in Tahiti in Cook's voyages, are arguments in favour of its being a native. At all events, if introduced, it is now perfectly naturalized in Viti.

XVI. **Pachyrrhizus**, Rich. mss. ex DC. Prodr. vol. ii. p. 402; Endl. Gen. n. 6679. Calyx urceolatus, 4-lobus, lobo superiore lato emarginato. Vexillum suborbiculatum, patens, cecallosum, basi 2-plicatum, plicis alarum unguis involvens; alæ semilunatæ, appendice filiformi, carina incurva, haud torta. Stamina 10, filamento vexillari libero 2-adelpha, alterna breviora, vagina basi tumida, hians. Discus annularis, crenatus. Ovarium ∞ -ovulatum. Styli pars superior glabra, spiraliter torta; stigma magnum. Legumen lineare, compressum, rectum, ∞ -spermum, isthmis inter semina interceptum. Semina orbicularia, compressa, umbilico angustato.—Herbæ, radice tuberosa eduli; caule volubili, suffrutescente; foliis pinnatim 3-foliolatis; foliolis stipellatis; racemis axillaribus, interdum elongatis; floribus supra rhaches partiales nodiformes fasciculatis, violacco-cæruleis; calycibus basi decidua 2-bracteolatis.—*Cacara*, Thouars in Dict. Sc. Nat. vol. v. p. 35.

1. **P. trilobus**, DC. Prodr. vol. ii. p. 402; caulibus suffruticosis hirsutis, foliolis 3-lobatis pubescentibus; floribus purpureis in medio vexilli flavo maculatis.—*P. mollis*, Hassk. Flora, vol. xxv.; Beibl. vol. ii. p. 74? Nomen vernac. Vitiense, "Yaka" v. "Wa Yaka."—Rather common on the coast of the larger islands (Seemann! n. 114). Also gathered in Aneitum (M^cGillivray!) and in New Caledonia (Charles Moore!).

Amongst the esculent roots growing wild, and eagerly sought for just before the regular crops come in, or in times of scarcity caused by intertribal wars during the planting season, or by unfavourable weather, may be named the Yaka or Wa yaka, a Papilionaceous creeper, with trifoliated leaves and whitish flowers tinged with purple. In September and October its tubers send forth new shoots, which grow with rapidity and yield a tough fibre, invaluable for fishing-nets, the floats of which are the square fruits of the *Vutu rakaraka* (*Barringtonia speciosa*, Linn.). The plant delights in open exposed places and a rich vegetable soil, where the roots, which generally assume a horizontal direction, often attain from six to eight feet in length and the thickness of a man's thigh. When cooked, they have a dirty-white colour, and a slightly starchy but otherwise insipid flavour, much inferior, I thought, to that of wild yams. However, Mr. Charles Moore, of Sydney, ate them in New Caledonia, and is inclined to pronounce more favourably upon their taste. Living plants were brought by him to the Sydney botanic garden, where they are now growing with native vigour in the open air. The Yaka also plays a part in certain native ceremonies.

XVII. **Abrus**, Linn. Gen. n. 1286; Endl. Gen. n. 6698; Benth. Fl. Austr. vol. ii. p. 270. Calyx campanulatus, truncatus v. breve et lato dentatus. Vexillum ovatum. Stamina 9, 1-adelpha, basi vexilli ungui adhærentia. Ovarium sessile, ∞ -ovulatum. Stylus brevis; stigma capitatum. Legumen oblongum v. lineare, compressum, 4-6-spermum, isthmis inter semina transversim ∞ -loculatum. Semina subglobosa, estrophiolata.—Frutices scandentes v. diffusi; foliis abrupte pinnatis ∞ -jugis; floribus racemosis; pedicellis e nodis tuberculiformibus erumpentibus; bracteis minutis v. nullis; bracteolis nullis.

1. **A. precatorius**, Linn. Syst. 533; glaber v. subpubescens, foliolis 7-10-jugis oblongo-ellipticis v. rarius obovatis; floribus roseis v. rarius albidis v. purpureis; legumine sessili, glabro v. lepidoto; seminibus rubris nigro plus minus maculatis, interdum sanguineis albis rufis atris.—Rumph. Amb. vol. v. t. 32; Rheed. Mal. vol. viii. t. 39; Lam. Ill. t. 608. f. 1. *A. pauciflorus*, Desv. in Ann. Sc. Nat. vol. ix. p. 418. *A. squamulosus*, E. Meyer, Comm. Plant. Afr. Austr. p. 126. *Glycine Abrus*, Linn. Spec. 1025. Nomen vernac. Vitiense, "Lere damu" v. "Diridamu."—Common in the woods all over Viti (Seemann! n. 110! Barclay!). Also collected in Uvea or Wallis Island (Sir E. Home!), and in Tahiti (Banks and Solander!), the Samoan and Tongan Islands, the east coast of Australia, India and the Archipelago and South America.

The greyish bony involucre of the Sila, or Job's tears (*Coix Lacryma*, Linn.), a grass growing in swamps and having the aspect of Indian-corn, as well as the seeds of the Diridamu, Quiridamu, or Leredamu (*Abrus precatorius*, Linn.), which have a bright red colour and a black spot, are affixed with breadfruit gum to the

outside of certain oracle boxes. These boxes, of which Wilkes has given fair illustrations in his 'Narrative of the U. S. Exploring Expedition,' have a more or less pyramidal shape, and are kept in the temples, as the supposed abode of the spirit consulted through the priests. Toys, consisting of cocoa-nut shells, and covered with these materials, are occasionally seen in the hands of native children, and they have rather a pretty effect.

XVIII. **Pterocarpus**, Linn. Gen. 854; Endl. Gen. n. 6705. Calyx turbinato-subincurvus, 2-labiatis breviter 5-dentatus. Vexillum orbiculare, basi angustatum, alas obovatas obliquas superans, carina obovato-oblonga, petalis liberis, stipite incurvo, lamina alis subsimili minore. Stamina 10, varie connexa, antheris ovatis. Ovarium stipitatum, pauciovulatum. Stylus vix incurvus, glaber, stigmatē tenui terminali. Legumen suborbiculare, compressum, coriaceum, sublignosum, indehiscens, ala membranaceo-coriacea undique cinctum, axi valde incurvo mucrone styli basim indicante laterali, 1-spermum, v. transversim in loculos 2-3 monospermos divisum. Semina oblonga v. subreniformia, compressa, radícula brevi, parum incurva.—Arbores v. frutices; foliis imparipinnatis; stipulis deciduis; foliolis alternis; inflorescentia paniculatim ramosa, axillari v. terminali; bracteis bracteolisque deciduis sæpius minutis.

1. **P. Indicus**, Willd. Spec. vol. iii. p. 904; arboreus; foliolis 5-9 alternis ovatis acutis glabris; racemis axillaribus simplicibus ramosisque; staminibus inæqualiter diadelphis (nempe 1 et 9); leguminibus suborbiculatis acutis mucronatis 2-3-spermis.—Rumph. Amb. vol. ii. t. 70; Roxb. Cat. p. 53. *P. Draco*, Lam. Ill. t. 602. f. 2. Nomen vernac. Vitiense, "Cibicibi."—Vanua Levu (Seemann! n. 129). Common in the East Indies and the Archipelago.

This tree, of which I collected merely the foliage, yields a hard, durable timber, which has fine red stripes. It is the Lingo or Lingo-achera tree of the Indian Archipelago, and also produces a kind of dragon's-blood. The juice expressed from the fresh leaves is used by the Malays for a certain skin disease (Lappar Garam), and the young leaves are applied by them to ulcers. The tree is often planted in the East Indies on account of its fine foliage and flowers.

XIX. **Dalbergia**, Linn. fil. Suppl. 52. excl. sp.; Endl. Gen. n. 6717; Benth. Fl. Austr. vol. ii. p. 270. Calyx campanulatus, 5-fidus, lobis brevibus, inferioribus longioribus. Vexillum obovatum v. orbiculatum. Carina obtusa. Stamina 8-10, monadelphia, vagina postice fissa, v. æqualiter 2-adelphia, antheris didymis minutis erectis, apice dehiscentibus. Ovarium stipitatum, lineare, compressum, 1-4-ovulatum. Stylus brevis, incurvus; stigma terminale. Legumen stipitatum, membranaceum, compresso-planiusculum, reticulato-venosum, oblongum lineare v. rarius falcatum, valvis inter semina concretis, indehiscens, 1-4-spermum. Semina distantia, compressa, reniformia, embryonis radícula inflexa.—Arbores v. frutices, sæpe scandentes; foliis pinnatis exstipellatis; foliolis plerumque alternis; floribus racemosis cymosis v. irregulariter paniculatis; pedicellis articulatis; bracteis bracteolisque minutis.

1. **D. monosperma**, Dalzel in Kew Misc. vol. ii. p. 36; fruticosa, volubilis; stipulis linearibus ferrugineo-tomentosis; foliolis 5 alternis obovatis v. cuneato-ovalibus apice mucronulatis supra glaberrimis subtus glaucescentibus minute puberulis, petiolis pedunculisque pubescentibus; racemis axillaribus solitariis v. geminis simplicibus paucifloris, folio multo brevioribus; calycis glabri laciniis rotundatis parvis; corolla (alba) calyce subduplo longiore; staminibus 10 in vaginam supra fissam coalitis; antheris transverse dehiscentibus; ovario glabro 1-ovulato; legumine pollicari obscure reticulato lunulato 1-spermo, semine compresso reniformi.—*D. torta*, Grah. in Wall. Cat. n. 5879; Benth. in Plant. Jungh. p. 256.—Common on the seaside all over Viti (Seemann! n. 128; U. S. Expl. Exped.). Widely diffused over the East Indies, Penang, Singapore, and China.

XX. **Derris**, Lour. Fl. Cochinch. p. 525; Endl. Gen. n. 6732; Benth. Fl. Austr. vol. ii. p. 272. Calyx truncatus v. brevi et lato dentatus. Vexillum obovatum v. orbiculatum, carina subincurva.

Stamina 10, filamento vexillari libero 2-adelpha; antheræ conformes. Ovarium sessile v. substipitatum, ∞ -ovulatum. Stylus incurvus; stigma terminale, minutum. Legumen compressum, oblongum, v. lineare, rectum v. subincurvum, membranaceum v. coriaceum; sutura seminifera indehiscens, anguste alata. Semina solitaria v. 2-3, compressa, orbicularia v. reniformia.—Arbores v. frutices scandentes; foliis imparipinnatis, foliolis oppositis; stipellis stipulisque minutis v. nullis; racemis axillaribus v. lateralibus, albis flavidis v. violaceis; bracteis bracteolisque minutis deciduis.—*Brachypterum*, Wight et Arn.; Endl. Gen. n. 6712.

1. **D. uliginosa**, Benth. in Plant. Jungh. vol. i. p. 252; Fl. Austr. vol. ii. p. 272; scandens; glabra; foliolis 5-7, ovatis v. ovato-oblongis breviter et obtuse acuminatis, subcoriaceis lucidis; racemis axillaribus lateralibus v. terminalibus; floribus breve pedicellatis, vexillo late ovato alis et carinæ subæquali; ovulis 4-6; legumine suborbiculari valde compresso utrinque obtuso valde obliquo; seminibus 1-2.—*Pongamia uliginosa*, DC. Prodr. vol. ii. p. 416. *P. religiosa*, Wight in Hook. Bot. Misc. vol. iii. p. 301, et in Suppl. t. 41, sub nom. *P. triphylla*. *Mimosa* e N. Caledonia, Forst. Prodr. et in Sched. Herbarii Mus. Brit. Nomen vernac. Vitiense, "Duva."—A common seaside climber, growing with *Hibiscus tiliaceus* and *Ximenia elliptica* (Seemann! n. 127; Storck! n. 883; U. S. Expl. Exped.). Also collected in the Tongan Islands (U. S. Expl. Exped.), New Caledonia (Forster!), Eromanga (M'Gillivray!), the east coast of New Holland, East Indies, Indian Archipelago, China, and south-east Africa.

Grows plentiful on the sea-beach, and by its long running root-stock helps to keep the same together. The flowers appear from every part of the plant, and occasionally, as specially noticed by Mr. Storck ('Bonplandia,' vol. x. p. 296), from the roots. The leaves are pounded and thrown in the water by the natives for the purpose of first stupefying and then catching fish, the process being the same as I saw it practised by the American Indians in the Isthmus of Panama, and elsewhere.

XXI. **Pongamia**, Vent. Malm. t. 28; Endl. Gen. p. 6713; Benth. Fl. Austr. vol. ii. p. 273. Calyx cyathiformis, oblique truncatus, obsolete 5-dentatus. Vexillum orbiculare, reflexum; alæ obtusæ, carinam subincurvam obtusam æquantes. Stamina 10, filamento vexillari libero 2-adelpha; antheræ conformes. Ovarium subsessile, 2-ovulatum. Stylus incurvus; stigma minutum, terminale. Legumen coriaceum, compressum, oblique ovato-oblongum v. subfalcatum, 1-spermum, indehiscens, apterum, valvulis intus concavis. Semina reniformia.—Arbor; foliis imparipinnatis estipellatis; racemis axillaribus; bracteis deciduis, bracteolis minutis v. nullis.

1. **P. glabra**, Vent. Malm. t. 28; Benth. l. c. p. 273; inflorescentia excepta glabra; foliolis 5-7 ovatis breve et obtuse acuminatis; racemis laxis; floribus plerumque geminis; legumine sessili v. subsessili.—Nomen vernac. "Vesi ni wai" v. "Vesivesi."—Common on the seacoast all over Viti (Seemann! n. 126; Storck! n. 884; Sir E. Home! Græffe! n. 29; U. S. Expl. Exped.). Also collected in Eromanga (M'Gillivray!). Common on the east and north coast of New Holland, Southern India, and the Archipelago.

The wood is used by the natives; and from a certain resemblance to that of the Vesi (*Azelia bijuga*, A. Gray), and because it always grows near the seabeach, it has received the name of "Vesi ni wai," i. e. Water Vesi.

XXII. **Sophora**, Linn. Gen. n. 308; Endl. Gen. n. 6738; Benth. Fl. Austr. vol. ii. p. 274. Calyx late campanulatus, oblique truncatus, obsolete v. breviter 5-dentatus. Vexillum obovatum v. rotundatum, erectum v. reflexum, in unguem angustatum; alæ oblongæ, erectæ, liberæ; carina obtusa, petalis dorso se invicem involventibus subconnatis. Stamina 10; filamentis liberis v. interdum basi cohærentibus; antheræ conformes. Ovarium breviter stipitatum, ∞ -ovulatum. Stylus incurvus; stigma terminale, minutum. Legumen moniliforme, carnosum, coriaceum v. lignosum, indehiscens v. demum 2-valve. Semina globosa, oblonga v. compressa, estrophiolata; cotyledones

carnosæ; radícula incurva v. rectiuscula.—Arbores frutices v. suffrutices; foliis imparipinnatis estipellatis v. stipellis minutis adnatis; racemis v. paniculis terminalibus; floribus albis flavis v. rarius violaceis; bracteis minutis deciduis; bracteolis plerumque nullis.—*Edwardsia*, Salisb. in Linn. Trans. vol. ix. p. 299. t. 26.

Sophora, as now circumscribed by Bentham, includes *Edwardsia*, and is represented in tropical Polynesia by *S. chrysophylla*, Seem. = *Edwardsia chrysophylla*, Salisb., from the Sandwich Islands (Menziés! Macrae!), *S. tetraptera*, Linn. = *E. microphylla*, Salisb., the villose small-leaved form, from Easter Island (Captain Cook! in Mus. Brit.), and *S. tomentosa*, Linn., a widely-diffused seaside shrub.

1. **S. tomentosa**, Linn. Spec. 533; fruticosa v. arbuscula, incano-tomentosa; foliolis 11–17 late ovatis v. orbiculatis, obtusissimis v. retusis subcarnosis, quandoque subsericeis, rarius glabris; racemis terminalibus, laxis; calyce truncato subdentato; corolla pallide flava; legumine indchiscente distincte moniliformi 5–10-spermo.—Benth. Fl. Austr. vol. ii. p. 274; Griseb. Fl. West Ind. p. 203. *S. occidentalis*, Linn. Spec. 533. *S. Navarensis*, Jacq. Amer. 118. t. 173. f. 1. flos. *Astragalus lanuginosus*, Desc. Fl. vol. vii. t. 375. Nomen vernac. Vitiense, “Kau ni alewa” (Women’s tree).—Common on the seabeach all over the group (Seemann! n. 130; Storck! n. 886). Also collected in Tahiti (Forster! Barclay!), Uvea or Wallis Island (Græffe! n. 38), Botanists’ Island, off New Caledonia (Forster!), and Tongan Islands (U. S. Expl. Exped.). Diffused over the east coast of New Holland, the West Indies, South America, tropical Africa, and the East Indies.

SUBORDO II. CÆSALPINIÆ.—Flores plerumque 5-meri. Corolla irregularis v. subirregularis, petalis imbricatis, superiore interiore. Stamina 10 v. pauciora, omnia libera.

XXIII. **Cæsalpinia**, Plum. Gen. t. 9; Endl. Gen. n. 6765. Calyx tubo urceolato, limbi 5-partiti laciniis subæqualibus v. antica majore concava. Petala 5, æqualia v. subinæqualia. Stamina 10, libera; antheræ conformes. Ovarium sessile v. stipitatum, 2-ovulatum. Stylus subulatus; stigma minutum. Legumen ovatum, oblongum v. lineari-falcatum, compressum, inerme v. echinatum, coriaceum, 2–1-spermum, 2-valve. Semina ovoidea, globosa v. compressa, exalbuminosa.—Arbores v. frutices scandentes, ut plurimum aculeatæ; foliis 2-pinnatis stipulatis v. exstipulatis; floribus racemosis v. paniculatis, flavis.—*Guilandina*, Juss. Gen. 350.; Endl. Gen. n. 6763.

Bentham finds it impossible to retain the genus *Guilandina* as distinct from *Cæsalpinia*, and the two are therefore united. Besides the two species enumerated below, there is in tropical Polynesia the widely-diffused *C. Nuga*, Ait., which M’Gillivray collected in Eromanga, and Lesson in Vanikoro.

1. **C. Bonducella**, Flem. Asiat. Research. vol. xi. p. 159; scandens, aculeata villosa v. pubescens; foliolis oblongis v. obovato-oblongis; stipulis foliaceis deciduis; leguminibus echinatis; seminibus griseis.—*Guilandina Bonducella*, Linn. Spec. 545. *G. Bonduc*. var. *minor*, DC. Prodr. vol. ii. p. 480; Rumph. Amb. t. 49. f. 1; Lam. Ill. t. 336. *G. gemina*, Lour. Fl. Coch. vol. i. p. 345. Nomen vernac. Vitiense, “Soni.”—Common on the seaside (Seemann! n. 132). Collected by Forster, probably in New Caledonia (not New Zealand, as (by a misprint?) is stated in his ‘Prodromus’). Also found in the Sandwich (Menziés! Macrae! Nuttall!), Marquesas (Barclay!), and Society Islands (Barclay! n. 3284).

The characters which Bentham (Fl. Austr. vol. ii. p. 277) assigns to *Guilandina Bonducella* and *Bonduc* hold good as far as I have been able to judge from the specimens examined. There are at the British Museum fruit specimens of both the grey-seeded (*G. Bonducella*) and yellow-seeded species (*G. Bonduc*). There is also an authentic specimen of *G. gemina*, Lour., which I have referred to *C. Bonducella*. I do not find specimens of Loureiro’s *Guilandina Bonduc*, which, if his description of the fruit can be trusted, would seem to be no *Cæsalpinia* at all, having 6–7 oblong-ovate seeds, whilst *Cæsalpinia* has not more than 2.

2. **C. Bonduc**, Benth.; scandens, aculeata, pubescens v. subglabra; foliolis ovatis v. ovato-acuminatis; stipulis nullis; leguminibus echinatis; seminibus flavis.—*Guilandina Bonduc*, Linn. Spec. 545. *G. Bonduc*, var. *major*, DC. Prodr. vol. ii. p. 480; Rumph. Amb. t. 48. Nomen vernac. Vitiense, “Soni.”—Seabeach of Vanua Levu (Williams!).

The specimen is in leaf only, and hence somewhat doubtful.

XXIV. **Cassia**, Linn. Gen. n. 514; Endl. Gen. n. 6781; Benth. Fl. Austr. vol. ii. p. 279. Sepala 5, subinæqualia, exteriore minore, vix ima basi coalita, valde imbricata. Petala 5, plus minus inæqualia. Stamina 10, inæqualia v. rarius æqualia, 3 postica sæpe sterilia, interdum 5 alterna deficientia; filamenta filiformia v. subulata, libera; antheræ 2-loculares, apice rima brevi v. poro duplici dehiscentes, basi simul apertæ. Ovarium sessile v. sæpissime stipitatum, ∞ -ovulatum. Stylus filiformis; stigma simplex v. minute ciliatum, interdum incrassato-tumidum. Legumen teres v. compresso-planum, lignosum, coriaceum v. membranaceum, indehiscens v. 2-valve, 1-loculare v. septis transversis ∞ -locellatum, interdum pulpa fartum, ∞ -spermum. Semina septis parallele v. contrarie compressa, albuminosa. Embryo rectus.—Arbores frutices suffrutices v. herbæ inermes; foliis alternis, simpliciter et abrupte pinnatis, foliolis 1- ∞ -jugis integerrimis; stipulis petiolaribus geminis; petiolis sæpissime glandulosis; floribus ut plurimum flavis, racemosis v. solitariis.

1. **C. (Chamæfistula) lævigata**, Willd. Enum. vol. i. p. 441; Benth. Fl. Austr. vol. ii. p. 282; fruticosa, erecta, glabra; foliolis 3-4-, rarius 2-jugis ovatis v. lanceolatis plerumque acuminatis, glandula oblonga acutiuscula inter omnia paria; racemis axillaribus pedunculatis brevibus v. subcorymbosis, superioribus subpaniculatis; sepalis inæqualibus; petalis latis obtusissimis; staminibus fertilibus 4 subsessilibus; leguminibus membranaceis v. subcoriaceis, cylindraccis v. plus minus inflatis, 2-valvibus, seminibus ∞ , septis parallelis v. contrarie dispositis.—Nomen vernac. Vitiense, "Winivnikau."—Near the village of Vuniwaivutuki, interior of Viti Levu (Seemann! n. 136). Also found in Eastern Australia and in America.

2. **C. (Chamæfistula) Sophora**, Linn. Spec. 542; fruticosa v. suffruticosa, erecta glabra v. subglabra; foliolis 4-10-jugis lanceolatis, plerumque acutis, glandula ad basin petioli oblonga v. ovata acuta; racemis axillaribus v. terminalibus, paucifloris, sæpe subpaniculatis; petalis latis obtusis; staminibus fertilibus 2; leguminibus demum teretibus v. turgidis, 2-valvibus; seminibus plerumque septis parallelis.—In waste places of Viti (Williams!). Also collected in New Caledonia (M'Gillivray!), Tongan Islands (Forster!), Uvea or Wallis Island (Sir E. Home!), and on the east coast of New Holland.

Authors have confounded this species with *C. occidentalis* and *C. purpurea*, two species belonging to a very different section of the genus. As *C. Gaudichaudii* of the Sandwich Islands, it is truly indigenous to Polynesia, whatever may be the claims of the other species to be recognized as endemic.

3. **C. (Prososperma) obtusifolia**, Linn. Spec. 539, excl. syn. Rumph.; annua v. suffruticosa, erecta, glabrescens; foliolis 2-3-jugis obovatis basi cuneatis, subtus pubescentibus, glandula oblongo-cylindracea acuta inter infima; stipulis lineari-setaceis, deciduis; pedunculis paucifloris; leguminibus longis gracilibus recurvis compresso-tetragonis chartaceis glabris lævibus.—Nomen vernac. Vitiense, "Kau moce."—Common in cultivated and waste places, in the small islands and coasts of the larger islands of Viti (Seemann! n. 135).

4. **C. (Chamæsenna) glauca**, Lam. Diet. vol. i. p. 647; fruticosa v. arborescens; foliolis 4-6-jugis ovali-oblongis v. ovalibus obtuse acuminatis, subtus glaucis, puberulis v. subglabris, glandula ovata sessili inter 3-4 paria inferiora; stipulis lineari-subulatis falcatis; racemis axillaribus subcorymbosis; pedicellis bracteatis; leguminibus membranaceis oblongo-linearibus erectis glabris; seminibus oblongis.—*C. Surattensis*, Burm. Ind. 97. *C. sulfurea*, DC. Prodr. vol. ii. p. 495. *C. arborescens*, Vahl, Symb. vol. iii. p. 56, non Mill.—Ovalau and Oneata (U. S. Expl. Exped.). Widely diffused in both the East and West Indies.

5. **C. (Chamæsenna) occidentalis**, Linn. Spec. 539; annua v. suffruticosa, pubescens v. puberula; foliolis 4-12-jugis ovato-lanceolatis v. lanceolatis acuminatis, glandula crassa ad basin petioli; stipulis lineari-setaceis deciduis; pedunculis brevibus paucifloris; pedicellis bracteatis; leguminibus

oblongo-linearibus marginatis compressis, demum biconvexo-subcylindraccis.—Griseb. Fl. West Ind. p. 209. Nomen vernac. Vitiense, “Kau moce.”—Common in waste and cultivated places throughout the group (Seemann! n. 234). Widely diffused throughout the tropics of both hemispheres.

Is said to be a comparatively recent introduction to the Viti islands, and to have been disseminated by the natives on account of the leaves “going to sleep” when night approached; hence the vernacular name “Kau moce,” the sleeping shrub, given to this species and *C. obtusifolia*, perhaps also to *C. Sophora*. The leaves of *C. occidentalis* are employed in many tropical countries as a purgative.

XXV. **Storckiella**, Seem. in Bonplandia, vol. ix. p. 255, et vol. x. p. 363. t. 6. Sepala 5 v. abortu 3–4, subæqualia, libera, decidua, valde imbricata. Petala 5, abortu 3 v. 4, obovato-oblonga, obtusa, subæqualia. Stamina 10, v. per excessum 12, æqualia, omnia fertilia; filamenta filiformia, libera; antheræ 2-loculares, apice poro duplici dehiscentes. Ovarium sessile, 4–6-ovulatum. Stylus brevis; stigma terminale, simplex. Legumen compresso-planum, oblongum v. subcultriforme, dorso late alatum, coriaceum, 2-valve, 1-loculare, 2–4-spermum. Semina septis parallele compressa, rotundata, albuminosa.—Arbores excelsæ, glabræ; foliis alternis stipulatis imparipinnatis; floribus paniculatis flavis.

This new genus I have named in honour of Mr. Jacob Storek, who during my explorations of the Viti Islands was my able assistant, and who, up to the date of publication of this work, has continued to forward additions to my Flora. The species (*Vitiensis*) upon which the genus was founded was originally discovered by Mr. Milne, attached to Captain, now Admiral Denham's expedition. But his specimens were so imperfect that they were left undetermined in the Kew Herbarium until I brought additional materials, including ripe fruit, which I collected during the very last hours of my stay in Fiji. A second species has since come to light. It was discovered in New Caledonia, distributed as *Cassia Pancheri*, Vieill. Plant. Util. Nov. Cal. n. 402, and has been named *S. Pancheri*, Benth.; its leaflets are obtuse.

1. **S. Vitiensis**, Seem. in Bonpl. l. c. t. 6 (Tab. XIII.); foliolis petiolulatis subalternis (usque ad 13) ovato-oblongis acuminatis integerrimis; stipulis petiolaribus; floribus terminalibus paniculatis aurcis.—Nomen vernac. Vitiense, “Marasa.”—Viti Levu (Milne!), Ovalau, at Port Kinnaird (Seemann! n. 133).

A forest tree, 60–80 feet high, known by the name of Marasa, and esteemed on account of its durable timber. The largest trees I saw had a trunk nine feet in circumference, and a slender growth. The bark is smooth. The imparipinnate leaves and the leaflets are alternate and glabrous, as are, with the exception of the ovary, all the other parts of the tree. The leaflets are petiolulate, oval-oblong, acuminate or nearly elliptical, quite entire, evergreen, on the upper surface dark-green, and on the under, much paler. The flowers are arranged in terminal panicles, and of a dark golden-yellow; they are so numerous that they make the tree a conspicuous object of the virgin forest. The calyx is composed of 5 green oval-oblong and deciduous sepals, but I have also observed their number reduced to 4, and even 3. The petals are generally 5, but sometimes 3 or 4 in number, oblong-obovate. The stamens are 10, or sometimes 12, of rather a darker colour than the petals, and they are all fertile, bearing anthers, each cell of which opens with a pore. The ovary is covered with a few hairs, and bears from 4–6 ovules. The pod is long, pedunculated, compressed, leathery, oblong or sometimes cultriform, 2-valved, having a broad wing on the upper side. The seeds are from 2–4 in number, orbicular, compressed, and brown.

EXPLANATION OF PLATE XIII.—Fig. 1, a flower-bud; 2, flower, open, with the sepals removed; 3, a transverse section of the flower, showing the arrangement of the different organs; 4, a stamen; 5, ovary; 6, the same, cut open; 7, ripe fruit; 8, the same, one of the valves removed:—Figs. 1–6 *slightly magnified*.

XXVI. **Afzelia**, Smith in Linn. Trans. vol. iv. p. 221; Endl. Gen. n. 6796. Calyx basi minute 2-bracteolatus, velutinus, tubo turbinato, limbi 4-partiti laciniis concavis obtusis, postica latiore. Petala 3, posticum calycis laciniæ posticæ oppositum, maximum longe unguiculatum, limbo transversim oblongo emarginato, longitudinaliter plicato; 2 lateralia minutissima, lanceolata. Stamina 9–10, quorum 7 v. 8 fertilia, 2 sterilia capillaria, fertilius filamenta longissime filiformia libera, antheræ cordatæ, 2-loculares, longitudinaliter dehiscentes. Ovarium stipitatum, ventricosum, velutinum, ∞-loculare. Stylus longus, arcuatus; stigma obtusum. Legumen ovato-oblongum, com-

pressum, indehiscens, ∞ -spermum, isthmis inter semina transversim ∞ -loculare. Semina ovata, compressiuscula, umbilico basilari arillo carnosio cupulæformi cincto. Embryonis exalbuminosi cotyledones carnosæ, radícula retracta.—Arbores; foliis abrupte pinnatis; foliolis 1–5-jugis coriaceis ovato-ellipticis, glabris; stipulis deciduis; floribus paniculato-racemosis v. corymbosis.

1. **A. bijuga**, A. Gray, Bot. Wilkes, p. 467. t. 51; glabra; foliolis 2-jugis (summisve raro 1-jugis) ovatis nitidis; paniculis corymbosis; bracteis bracteolisque parvis caducis; vexillo brevissime unguiculato, alis aut parvulis aut nullis; staminibus fertilibus 3, sterilibus 7, anantheris minimis; ovario sessili; leguminibus oblongis planis 1–5-spermis demum 2-valvibus; seminibus compressis hilo nudis.—*Macrobium bijugum*, Colebr. in Linn. Trans. vol. v. p. 12. *Outea bijuga*, DC. Prodr. vol. ii. p. 511. *Intsia* (?) *Amboinensis*, DC. Prodr. vol. ii. p. 509. *Metrosideros Amboinensis*, Rumph. Amb. vol. iii. p. 21. t. 10? *Jonesia triandra*, Roxb. Fl. Ind. vol. ii. p. 220. Nomen vernac. Vitiense, “Vesi.”—Common in the forests all over Viti (Seemann! n. 137; U. S. Expl. Exped.). Also found in the East Indies.

The Vesi is one of the sacred trees of Viti, and Europeans have occasionally come in unpleasant contact with the Fijians, when unknowingly they had cut it down for timber. In look the tree somewhat resembles our Beech (*Fagus sylvatica*, Linn.), having the smooth, greyish bark, the colour, and somewhat the shape and lustre of that familiar forest tree. The wood is the best in the islands, and seems almost indestructible; it is used for canoes, pillows, kava bowls, clubs, and a variety of other articles.

XXVII. **Bauhinia**, Plum. Gen. t. 13; Endl. Gen. n. 6790; Benth. Fl. Austr. vol. ii. p. 294. Calyx tubo cylindræo, limbi 5-partiti decidui laciniis longissimis liberis valvatis v. induplicatis. Petala 5, summo tubo inserta, plerumque unguiculata, paullo inæqualia. Stamina 10, libera, omnia fertilia v. alterna aut interdum plura sterilia v. ananthera; filamenta filiformia; antheræ incurvantes, longitudinaliter dehiscentes. Ovarium stipitatum, ∞ -ovulatum. Stylus plerumque filiformis; stigma capitatum, latum v. obliquum, terminale. Legumen lineare v. oblongum, compressum, 2-valve. Semina compressa, albuminosa. Radícula brevis, recta.—Arbores v. frutices scandentes; foliis plus minus profunde bilobis (bifoliolatis v. unifoliolatis); racemis terminalibus v. lateralibus; corollis albis luteo-rubentibus v. purpureis.

1. **B. tomentosa**, Linn. Spec. 536; inermis; foliis basi ovatis subrotundisve, subtus petiolis ramulis stipulis pedunculis bracteis calycibusque subvillosis; foliolis ovalibus obtusis 3–4-nerviis, ultra medium concretis; pedunculis 1–3-floris; calyce spathaceo; petalis obovatis subobtusis; staminibus 10 fertilibus inæqualibus; ovario stipitato.—Wight et Arn. Prodr. p. 295.—Viti, locality not mentioned (Williams!). Common in the East Indies.

The specimens are in leaf only, hence the determination is somewhat doubtful; but as far as they go they agree well with *B. tomentosa*.

XXVIII. **Inocarpus**, Forst. Char. Gen. p. 65. t. 33; Benth. in Journ. Linn. Soc. vol. vi. p. 149. Calyx tubuloso-campanulatus, 2- rarius 3-lobus, lobis rotundatis. Petala 5, basi in tubum coalita, supra calycem libera, linearia, subæqualia, imbricata, summo intimo, apice corrugato-involuta. Stamina 10, filamentis in tubum corollæ adnatum alte coalitis, alterna longiora; antheræ consimiles, breves, didymæ. Ovarium sessile. Stylus brevissimus, stigmatibus oblique dilatato-concavo. Ovula 2–3, rarissime solitaria, amphitropa, subascendentia, funiculo brevissimo suturæ appensa. Legumen breviter stipitatum, obovato-incurvum, subdrupaceum, sarcocarpio tenui, endocarpio crasso fibroso, 1-spermum. Semen late ovatum, funiculo brevissimo turbinato-incrassato affixum. Testa rigide membranacea, reticulato-venosa. Albumen nullum. Cotyledones crasso-carnosæ, radícula brevissima supera leviter incurva. “Plumula squamulis minimis imbricatis obtecta.”—Arbor excelsa, glabra; foliis simplicibus brevissime petiolatis ovali-oblongis penninerviis coriaceis;

stipulis parvis; spicis axillaribus laxis; floribus albis, ad axillas bractearum parvarum sessilibus v. subsessilibus, odoratis, bracteolis minutis inconspicuis.—*Renia*, Noronha, in Vorhandl. Batav. Genootsch. vol. v. p. 64.

Inocarpus is a genus the position of which in the natural system has been involved in great doubt. Jussieu referred it to the neighbourhood of *Sapotaceæ*, Sprengel to *Laurineæ*, and Guillemain to *Apocynæ*; whilst Endlicher, combining it with *Hernandia*, formed it into a separate group, which he placed at the end of *Thymeleæ*. More recently, Bentham (Journ. of Linn. Society, vol. vi. p. 146) has expressed an opinion, which seems also to have been that of Solander (Prim. Fl. Ins. Pacif. p. 255, ined.), who regarded it as allied to *Cynometra* ("Fructificatio in multis convenit *Cynometris*, præcipue si suspicari liceat *Garcinium* laciniis corollæ pro petalis distinctis descripsisse. Fructus ne quidem *Cynometræ* nomen Leguminis mereatur. Habitus autem diversa indicant genera, in *Cynometris* peculiaris foliis 2-natis."). In the artificial system it was always placed in *Decandria*, and near *Sophora*. What has puzzled botanists most is the cohering of the petals and the drupaceous fruit. Bentham justly remarks that the former character is found in *Trifolium*, and the latter, amongst others, in *Dipteryx*. But I must frankly own that I am not quite converted to the view of regarding *Inocarpus* as a Leguminosa, when it has neither a papilionaceous corolla nor a genuine legume. My own investigations led me to look upon it as an anomalous *Chrysobalanea*. It has the habit, the simple coriaceous leaves, the inflorescence, the drupe, etc., peculiar to that Order. But the style is not basal, and the ovules not quite erect.

1. **I. edulis**, Forst. Char. Gen. p. 65. t. 33; Prodr. p. 34; Plant. Escul. p. 50; Icon. (ined.) t. 143; Gærtn. Fruct. vol. iii. t. 199 et 200. f. 1; Roxb. Pl. Coromand. vol. iii. t. 263.—*Amotum fagiferum*, Sol. Prim. Fl. Ins. Pacif. p. 255, et in Parkins. Drawings of Tahit. Plants, t. 47 (ined.). Nomen vernac. Vitiense, "Ivi."—Common throughout Viti (Seemann! n. 371; Sir E. Home! Barclay! n. 3453). Also collected in the Marquesas (Barclay!) and Society Islands (Banks and Solander! Forster!), Uvea or Wallis Island (Græffe! n. 34), Eromanga (M'Gillivray!), and Java (Horsfield!).

The Ivi, or Tahitian Chestnut, as it has been called by voyagers (*Inocarpus edulis*, Forst.), is one of the commonest trees in Viti, and when fully grown has a most venerable aspect. I still see in my mind's eye a fine group on the banks of a rivulet between Wairiki and Somosomo, producing a dense shade. Sixty, often eighty feet high, the Ivi bears a thick crown of oblong leathery leaves, small white flowers emitting a delicious perfume and kidney-shaped fruits, which contain a kernel resembling chestnuts in taste. The kernel is either baked or boiled, and eaten without further preparation, or grated on the mushroom coral (*Fungia*), and made into puddings or bread (madrai). The stem is most singular. When young, it is fluted like a Grecian column; when old, it has regular buttresses of projecting wood. Ferns, orchids, and Hoyas frequently take up their abode on the soft spongy bark. The roots of old trees appear above the ground somewhat like those of the Bald Cypress of North America (*Taxodium distichum*, Rich.). Thousands of seedlings are continually springing up around the old plants, and nothing, save the dense shade of their parents, and the close proximity in which they grow to each other, exercises a check upon their engrossing all the adjacent ground.

The tree is termed "If" in New Guinea, and "Hi" in the Society Islands; "Nias" in Mallicollo, and "Emmer" in Tana. The Tahitians apply the names "Rata" and "Mape" to the fruit, which signifies also the kidney of an animal. Ellis (Polynesian Researches, vol. i. p. 374) furnishes the following popular account of it:—

"In certain seasons of the year, if the breadfruit be scarce, the natives supply the deficiency thus occasioned with the mape or rata, a native chestnut. Like other chestnut-trees, this is of stately growth and splendid foliage. It is occasionally seen in the high grounds, but flourishes only in the rich bottoms of the valleys, and seldom appears in greater perfection than on the margin of a stream. From the top of a mountain I have often been able to mark the course of a river by the winding and almost unbroken line of chestnuts, that have towered in majesty above the trees of humbler growth. . . . The trunk, which is the most singular, usually rises ten or twelve feet without a branch, after which the arms are large and spreading. During the first seven or eight years of its growth the stem is tolerably round, but after that period, as it enlarges, instead of continuing cylindrical, it assumes a different shape altogether. In four or five places round the trunk small projections appear, extending in nearly straight lines from the root to the branches. The centre of the tree seems to remain stationary; while these projections increasing, at length seem like so many planks, covered with bark and fixed round the tree, or like a number of natural buttresses for its support. The centre of the tree often continues many years with perhaps not more than two or three inches of wood round the pith, while the buttresses, though only about two inches thick, extend two, three, and four feet, being widest at the bottom. I have observed buttresses not more than two inches in thickness projecting four feet from the tree, and forming between each buttress natural

recesses, in which I have often taken shelter from the rain. When the tree becomes old its form is still more picturesque, as a number of knots and contortions are formed on the buttress, which render the outlines more broken and fantastic. The wood has a fine straight grain, but being remarkably perishable, is seldom used, except for firewood. Occasionally, however, they cut off one of the buttresses, and thus obtain a good natural plank, with which they make the long paddles for their canoes, or axe-handles. The leaf is large and beautiful, six or eight inches in length, oblong in shape, of a dark green colour, and, though an evergreen, exceedingly light and delicate in its structure. The tree bears a small white flower, esteemed by the natives on account of its fragrance. The fruit, which [is pale-yellow or greenish-yellow when ripe] hangs singly or in small clusters from the slender twigs, is flat, and somewhat kidney-shaped. The same term is also used by the natives for this fruit and the kidney of an animal. The kernel is in a hard, tough, fibrous shell, covered with a thin, compact, fibrous husk. It is not eaten in a raw state; but though rather hard when fully ripe, it is, when roasted in a green state, soft and pleasant to the taste."

The bark is astringent; but whether the tree yields a resinous glutinous juice, into which the Papuans steep the tips of their arrows, giving them a black colour, is doubtful; as the *Gajanium* of Rumphius, Amb. vol. i. p. 170. t. 65, may possibly be a different plant.

XXIX. Cynometra, Linn. Gen. n. 519; Endl. Gen. n. 6784; Benth. Fl. Austr. vol. ii. p. 296. Calyx ebracteatus, tubo brevi, limbi 4-partiti decidui laciniis reflexis, apice penicillatis, postica brevior 2-nervi, æstivatione valvatis. Petala 5, omnia subæqualia, oblongo-lanceolata, summo intimo. Stamina 10 v. plura; filamenta filiformia, libera; antheræ parvæ. Ovarium subsessile, 2-ovulatum. Stylus subulatus; stigma terminale. Legumen oblique et late semiorbiculatum, crassum, carnosum, turgidum, 2-valve, 1-spermum. Semina crassa; radícula brevis, recta.—Arbores v. frutices; foliis abrupte pinnatis, 1-2- rarius ∞ -jugis; floribus axillaribus v. lateralibus, rubris v. albis, fasciculatis v. racemosis.—*Cynomorium*, Rumph. Amb. vol. i. p. 163.

1. **C. grandiflora**, A. Gray, Bot. Wilkes, p. 470. t. 52; glaberrima; foliolis 2-jugis ovalibus oblongisve inæquilateris sæpissime emarginatis coriaceis; racemis corymbosis confertifloris; staminibus 21-32; ovario lævi; stylo brevior.—Ovalau and Vanua Levu (Seemann! n. 138; U. S. Expl. Exped.).

There are several forms of this tree, varying principally in the breadth of the leaflets. The flowers are white. The wood is close-grained, and used as timber.

2. **C. falcata**, A. Gray, Bot. Wilkes, p. 472; foliolis 1-jugis glaberrimis ovato-lanceolatis obliquis falcatis coriaceis; floribus sine pedunculo fasciculatis 10-andris, ovario lunato pubescente; stylo recurvo longiore.—On the Ba coast of Viti Levu (U. S. Expl. Exped.).

SUBORDO III. MIMOSEÆ.—Flores 5-, 4- v. rarius 3-meri. Corolla regularis, petalis sepalisque valvatis, sæpe connatis. Stamina petalorum numero æqualia, dupla v. indefinita.

XXX. Entada, Adans. Fam. vol. ii. p. 318; Endl. Gen. n. 6832; Benth. Fl. Austr. vol. ii. p. 297. Calyx brevis, cupulæformis, 5-dentatus. Petala 5, lanceolata, cohærentia v. libera, æstivatione valvata. Stamina 10, exserta; filamenta libera; antheræ glandula terminatæ. Ovarium subsessile, ∞ -ovulatum. Stylus filiformis; stigma truncatum. Legumen elongatum, amplum, compressum, coriaceum v. lignosum, articulatum, valvis in membranas 2 separabilibus, articulis 1-spermis, a reple persistente solutis. Semina orbiculata, crassa, compressa, exarillata.—Frutices scandentes, inermes; foliis 2-pinnatis, rachi sæpe in cirrhum producta; floribus dense spicatis, parvis, albis; bracteis parvis.—*Pursætha*, Linn. Zeyl. 644. *Gigalobium*, P. Browne, Jam. 362.

1. **E. scandens**, Benth. in Hook. Journ. of Bot. vol. iv. p. 332; inermis; foliis cirrhiferis; pinnis 1-2-jugis; foliolis 2-5-jugis ovatis v. oblongo-obovatis obtusis acuminatis emarginatisve, sæpius obliquis, supra nitidis, subtus glabris puberulisve, spicis elongatis solitariis geminisve longe racemosis.—*Mimosa scandens*, Linn. Spec. ed. vol. ii. p. 1501; Benth. Fl. Austr. vol. ii. p. 298. *Adenanthera scandens*, Forst. Prodr. n. 117; Icon. (ined.) t. 131. *Entada (?) Adenanthera*, DC. Prodr. •

vol. ii. p. 525. *E. Pursætha*, DC. l.c. p. 425. Nomina vernac. Vitiensia, "Wa lai" et "Wa taqiri."—Common amongst the mangrove vegetation all over Viti (Seemann! n. 139). Also found in Malicollo (Forster!), Samoan Islands (U. S. Expl. Exped.), Eastern Australia, and tropical Asia.

Kitlitz ('Twenty-four Views of the Vegetation of the Coasts and Islands of the Pacific,' sub tab. V.) remarks on the absence of creepers amongst the mangrove vegetation of the Pacific. *Entada scandens* is the only real exception I can call to mind. I have seen festoons of this plant several hundred yards long in the mangrove swamps of Viti. *Guilandina Bonducella* and *Derris uliginosa*, though sometimes throwing their branches over such mangrove trees as happen to grow close to soil just above high-water mark, cannot be classed with the real swamp vegetation which often covers the mouth of rivers and low shores. They belong rather to the vegetation immediately succeeding the mangroves, composed of such plants as *Bar-ringtonia speciosa*, *Calophyllum Inophyllum*, *Ximenia inermis*, *Hibiscus tiliaceus*, *H. tricuspis*, *Thespesia populnea*, etc. The flat round seeds of the Walai (*Entada scandens*, Benth.), called "ai Cibi," or "ai Lavo," have suggested to the Fijians a comparison with our coins, and supplied a word for money (ai Lavo), of which their language was formerly destitute, because that article was entirely unknown to them, all commercial exchange being carried on by barter. Its stem, when young used in place of ropes for fastenings, occasionally attains a foot in diameter, and its pods arrest attention by their gigantic dimensions, measuring as they do several feet in length.

XXXI. **Mimosa**, Adans. Fam. vol. ii. p. 319; Endl. Gen. n. 6831; Benth. in Hook. Journ. vol. iv. p. 358. Flores superiores v. plerique hermaphroditi 4-5-meri, rarius 3- v. 6-meri, inferiores sæpe abortu masculi. Calyx nunc minutus inconspicuus v. paleaceo-plicatus pappiformis, nunc campanulatus, dentibus tot quot petalis. Petala magis minusve coalita. Stamina numero petalorum æqualia v. dupla; antheræ parvæ, suborbiculatæ, non glanduliferæ. Legumen compressum, sæpius planum, valvulis 2 a margine persistente secedentibus eoque latioribus integris v. transversim articulatim divisim dehiscens, intus epulposum, inter semina subseptatum v. 1-loculare. Semina funiculo filiformi appensa.—Herbæ suffrutices frutices v. rarius arbores; foliis sensitivis 2-pinnatis, rarissime nullis v. ad petiolum phyllodineum reductis; glandulis petiolaribus nullis v. in perpaucis speciebus obviis; floribus capitatis v. spicatis; pedunculis axillaribus v. ad apicem ramorum racemosis v. paniculatis; staminibus sæpius corolla plus duplo longioribus et in speciebus plerisque roseis v. albis.

1. **M. pudica**, Linn. Spec. 1501; caule suffruticoso aculeato plus minus petiolis pedunculisque piloso-hispidis; foliis subdigitato-pinnatis, pinnis 4-∞-jugis; foliolis linearibus; capitulis ovoideis; legumine oblongo-sinuato 2-5-spermo, valvis articulatis glabris inermibus.—"Sensitive plant" of the English and American settlers. In open, exposed places, Lakeba and other islands (Seemann! n. 140; U. S. Expl. Exped.). Also collected in the Tongan (Barclay!), Society (U. S. Expl. Exped.), and Sandwich Islands.

I have not been able to obtain any satisfactory evidence of this weed having been introduced, and hence have admitted it amongst the indigenous plants. At all events it is now perfectly naturalized, and grows in the same kind of places as I have seen it in South America and other countries where it is supposed to be truly indigenous.

XXXII. **Leucaena**, Benth. in Hook. Journ. of Bot. vol. iv. p. 416. Calyx tubuloso-campanulatus, 5-dentatus. Petala 5, libera, membranacea, basi angustata. Stamina 10, antheræ ovato-oblongæ v. subglobosæ, sæpe pilosæ, eglandulosæ. Legumen stipitatum, lato-lineare, plano-compressum, valvulis 2 rigide membranaceis dehiscens, intus 1-loculare, seminibus ∞ transversis.—Arbores v. frutices inermes; foliis 2-pinnatis; petiolo sæpius infra jugum infimum pinnarum, glandula majuscula, interdum evanida onusto; pedunculis axillaribus subfasciculatis, folio multo brevioribus, apice v. infra apicem 2-bracteolatis; capitulis globosis; floribus albis.

1. **L. Forsteri**, Benth. in Hook. Lond. Journ. of Bot. vol. v. p. 94; pinnis 12-15-jugis; foliolis ∞-jugis oblongo-linearibus approximatis obliquis; calyce petalis paulo brevioribus; antheris glabris.—*Mimosa glandulosa*, Soland. in Forst. Prodr. n. 565. *Acacia insularum*, Guill. Zeph. Tait.

p. 66. Nomen vernac. Tahitense, teste Guillemain, "Toroire."—Vanua Levu (U. S. Expl. Exped.), Taviuni (Seemann! n. 142). Also collected in Tahiti (Forster!), the Tongan Islands (Capt. Cook!), and New Caledonia (W. Anderson!).

Though at the British Museum there are authentic specimens to which the name *Mimosa glandulosa* is attached, and though this is one of Solander's species, yet it is not taken up in Solander's MS. Flora of the Society Islands, a work which I have invariably quoted because, independent of its intrinsic merit, a good many of the names there used have found their way into systematic works, such as the supplement of Forster's 'Prodromus,' Parkinson's 'Voyage to the South Seas,' and other publications.

2. **L. glauca**, Benth. in Hook. Lond. Journ. of Bot. vol. iv. p. 416; pinnis 4–8-jugis; foliolis 10–20-jugis distantibus lineari-falcatis membranaceis, subtus pallidis glaucisve; bracteolis apice ovatis calycem æquantibus; calyce corolla dimidio brevior.—*Mimosa glauca*, Linn. Spec. 1504. *Acacia glauca*, Willd. Spec. Plant. vol. iv. p. 1075; DC. Prodr. vol. ii. p. 467. *A. biceps*, Willd. l. c.; DC. l. c. n. 191. *A. leucocephala*, Link, Enum. vol. ii. p. 444. *A. frondosa*, Willd. l. c. 1075; DC. l. c. n. 207.—Bau and Viti Levu, in hedges (Seemann! n. 141). Also collected in the Sandwich Islands (Barclay!). Common in the East and West Indies.

XXXIII. **Acacia**, Neck. Elem. n. 1297; Endl. Gen. n. 6834; Benth. in Hook. Lond. Journ. of Bot. vol. i. p. 318. Flores sæpius polygami. Sepala 3–5 in calycem campanulatum coalita v. libera. Petala totidem magis minusve coalita, rarius demum libera. Stamina ∞ (sæpius ultra 50), libera v. ima basi in cupulam brevem v. in discum perigynum breviter irregulariter coalita, rarius (in floribus masculis) in columnam centram congesta, nec in tubum cylindricum monadelpha. Legumen varium, sæpissime siccum.—Arbores v. frutices, rarissime herbæ, inermes v. aculeatæ; foliis omnibus v. saltem primordialis 2-pinnatis, caulinis in *Phyllodineis* ad petiolum foliiformem simplicem reductis v. in *Aphyllis* omnino nullis, glandulosis v. eglandulosis; floribus capitatis v. spicatis, flavis v. albidis, sæpius odoratis.

The genus *Acacia* is represented in Polynesia by four species, all of which belong to the Phyllodineous section, viz. *A. spirorbis*, Labill., from the Isle of Pines (M'Gillivray!) and New Caledonia (W. Anderson! M'Gillivray!), *A. Koa*, A. Gray, from the Sandwich Islands (Nelson! Menzies! Macrae! Barclay! Nuttall! Seemann!), *A. Richii*, A. Gray, from the Viti Islands (Seemann! Græffe!), and *A. laurifolia*, Willd., a seaside plant, common in the Samoan, Tongan, Vitian, and New Hebridian groups.

1. **A. Richii**, A. Gray, Bot. Wilkes, p. 482. t. 53; arborea; glaberrima; ramulis angulatis; phyllodiis lanceolatis acuminatis subfalcatis chartaceo-coriaceis ∞ -nerviis, apice sæpius hamato; pedunculis fasciculatis capitulo parvo ∞ -floro longioribus; calyce dentato; legumine oblongo plano glabro recto, marginibus acutis angustissimis.—Nomen vernac. Vitiense, "Qumu."—Ovalau (Seemann! n. 144), Viti Levu (Græffe! n. 19), Vanua Levu and Nalua (U. S. Expl. Exped.).

The Qumu yields a hard wood, and supplies the paint which the heathen natives use for blacking their faces when they wish to look particularly smart, hence Qumu = paint. That a black colour should ever be used as a cosmetic may seem rather singular to Europeans; but there can be no doubt that the cosmetic properties of black are considerable. I was much struck with this in the islands, and have made the same observation at home, where we often have opportunities of seeing white men who blacken their faces to look like negroes, and by doing so improve their features considerably.

2. **A. laurifolia**, Willd. Spec. vol. iv. p. 1053; arborea; glaberrima; ramulis vix angulatis, phyllodiis ovato-oblongis acutis v. ellipticis v. emarginatis 7–11-nerviis, capitulis 2–8 axillaribus; legumine compresso toruloso incurvo; seminibus 5–8. Labill. Austr. Caled. t. 68.—*Mimosa Mangium*, Forst. Prodr. n. 395, non Willd. *M. simplicifolia*, Linn. f. Suppl. 436.—Nomen vernac. Vitiense, "Tataquia."—Common on the sea-beach throughout the Viti group (Seemann! n. 143; Barclay!). Also collected in the Samoan (U. S. Expl. Exped.) and Tongan Islands (Capt. Cook! Sir E. Home!), and the New Hebrides (W. Anderson! Forster!).

This seaside tree has a hard wood, used for axe-handles and smaller pieces of carpentry. The leaves are

used instead of spoons (*ai taki*) by the natives, hence I should say the vernacular name ought to be spelled "Tatakia," not "Tataqia," as the Vitian Dictionary, p. 323, has it.

XXXIV. **Serianthes**, Benth. in Hook. Lond. Journ. of Bot. vol. iii. p. 225. Calyx ample campanulatus, 5-fidus. Corolla 5-partita, laciniis basi tubo stamineo adnatis. Stamina monadelphia, ∞ . Ovarium sessile, 6-ovulatum. Stylus filiformis; stigma truncatum. Legumen oblongum v. ovatum, compressum, lignosum, dehiscens.—Arbores inermes; foliis 2-pinnatis, glandulosis v. eglandulosis; foliolis ∞ -jugis; pedunculis axillaribus subramosis; floribus coccineis.

1. **S. myriadenia**, Planch. in A. Gray, Bot. Wilkes, p. 485 (Tab. XIV.); pinnis 7–8-jugis; foliolis 14–16-jugis, plerisque alternis trapezoideo-oblongis obtusis inæquilateralibus, supra atro-viridibus, subtus pallidis penninerviis, glandula elevata infra medium petiolum et jugales inter pinnas et foliola suprema; legumine lignoso oblongo v. obovato-oblongo subfalcato, obtuso v. breviter apiculato, tomentello ferrugineo, valvis transverse rugosis.—*Acacia myriadenia*, Bert. mss. in Guill. Zeph. Tait. p. 65, excl. syn. Nomen vernac. Tahitense, teste Guillemain, "Faifai;" Vitiense, "Vaivai."—Taviuni (U. S. Expl. Exped.), Ovalau (Seemann! n. 145; Storck! n. 887). Also found in the Society Islands (U. S. Expl. Exped.), and, according to Mr. W. T. Pritchard, in the Samoan group.

This is a fine timber-tree, often sixty feet high, with a spreading crown, and a fine thick foliage and scarlet flowers. The wood is of a yellowish tinge, and is one of the most useful in Viti; several of the island schooners are built of it.

EXPLANATION OF PLATE XIV.—Fig. 1, a leaflet; 2, an entire flower; 3, the same, cut open; 4, section of the ovary; 5, ripe fruit:—*all, with the exception of Fig. 5, magnified.*

2. **S. Vitiensis**, A. Gray, Bot. Wilkes, p. 485; foliolis ellipticis emarginatis utrinque læteviridibus supra lucidis penninerviis; glandulis petiolaribus nullis; legumine tenui lignoso, tomentello, valvis laxis venosis.—Bua Bay, Vanua Levu (U. S. Expl. Exped.; Williams!).

Mr. Williams collected only a few leaves, which, I think, must belong to this species; they have sixteen pairs of leaflets on each *pinna*, and are generally quite glabrous, but have occasionally a few isolated white hairs.

A number of Leguminosæ have of late years been introduced to the Viti Islands, but they were at the time of my visit strictly confined to the gardens of the foreign traders and missionaries. I noticed *Clitoria Ternatea*, Linn., a climber with fine blue flowers, *Cajanus Indicus*, Spr. (Seemann! n. 115), the Pigeon Pea, grown on account of its seeds, which are an excellent substitute for green peas; *Casalpinia pulcherrima*, Swartz, the so-called Pride of Barbadoes, a favourite in gardens on account of its superb large panicles of red or yellow flowers; *Tamarindus Indica*, Linn., the Tamarind tree, and *Acacia Farnesiana*, Willd., a great favourite on account of its sweet-scented yellow flowers.

ORDO XXXIV. CHRYSOBALANEÆ.

It has been proposed to unite *Chrysobalanæ* with *Rosaceæ*, but they seem to be sufficiently distinguished to justify their being kept apart. Their solitary carpels, erect ovules, and basilar style, are good characters. Mr. Benjamin Clarke says of them, in a communication to me:—"In *Chrysobalanus* and *Hirtella* the carpel is invariably anterior; they both have two erect ovules, the raphe in one is dorsal, in the other lateral, *i.e.* between the two ovules; I am persuaded that none of these characters occur either in *Rosaceæ* or *Amygdaleæ*, and I believe *Chrysobalanæ* to be sufficiently distinct to constitute a separate Natural Order. Nor is there, as far as I am aware, any connecting link between *Amygdaleæ* and *Rosaceæ*; and they should also be kept separate, because what distinction is there between *Thymeleæ* and *Sanguisorbeæ*? Yet the two are not considered in near affinity; in *Sanguisorba* the position of the carpels is very variable, but in *Thymeleæ* all are posterior in the genera I have examined, except one, in which it is always as regularly lateral. I do not know of any other difference between *Sanguisorba* and *Thymeleæ*. In *Amygdaleæ* the carpel is very variable in its position, in *Prunus Laurocerasus* very often posterior."

I. **Parinarium**, Juss. Gen. 342; Endl. Gen. n. 6411. Calyx tubo brevi, basi inæquilatero, cum ovarii stipite connato, limbi 5-partiti laciniis æqualibus, æstivatione imbricatis. Petala 5 v. 4, calycis fauci alterna, decidua. Stamina pauca v. ∞ , basi in anulum coalita, omnia fertilia v. alterius lateris ananthera; filamenta subulata; antheræ 2-loculares, longitudinaliter dehiscentes. Ovarium exsertum, 2-loculare, loculis 1-ovulatis, ovulis e basi erectis anatropis. Stylus basilaris, filiformis; stigma truncatum. Drupa ovoidea v. sphærica, cortice fibroso, putamine osseo, abortu 1-loculari, 2-abortu 1-spermo. Semina erecta. Embryonis exalbuminosi orthotropi cotyledones carnosæ; radícula brevissima, infera.—Arbores inermes; ramulis villosis v. glabris; foliis alternis stipulatis integerrimis; floribus racemoso-paniculatis v. corymbosis, 2-bracteolatis albis v. roseis.—*Petrocarya*, Jack in Hook. Bot. Misc. vol. ii. p. 220. *Grymania*, Presl, Epimel. p. 193.

1. **P. insularum**, A. Gray, Bot. Wilkes, p. 488, t. 54; foliis lanceolato-ovatis seu oblongo-lanceolatis basi subcordatis v. obtusissimis, supra nitidis, subtus incanis; stipulis lanceolato-subulatis petiolo eglanduloso duplo longioribus; floribus cymoso-paniculatis; staminibus fertilibus 6–8, sterilibus 2–4; drupa 2-loculari sæpius 2-sperma.—Bua Bay, Vanua Levu, and Bau (U. S. Expl. Exped.). Also collected in the Samoan Islands (U. S. Expl. Exped.).

I did not collect this species. It certainly does not grow on Bau at present, as that island is now almost entirely covered with houses and gardens; and I examined its vegetation very closely during my frequent visits.

2. **P. laurinum**, A. Gray, Bot. Wilkes, p. 490. t. 55; ramis junioribus subsericeis; foliis oblongis acuminatis basi rotundatis v. acutis biglandulosis glabris lucidis; stipulis linearibus caducis; floribus racemosis; calyce infundibuliformi subobliquo, ore æquali, lobis obovatis obtusis petalis brevioribus; staminibus fertilibus circiter 15, anticis elongatis, sterilibus 7–10 brevissimis dentiformibus; drupa septo tenui evanido demum sæpe 1-loculari; cotyledonibus conferruminatis.—*P. (?) Margarata*, A. Gray, Bot. Wilkes, p. 489. t. 54 a. Nomen vernac. Vitiense, “Makita.”—Bua Bay, Vanua Levu (U. S. Expl. Exped.; Williams!), Viti Levu (Seemann! n. 146). Also collected in the Samoan Islands (U. S. Expl. Exped.).

What A. Gray has described as *P. (?) Margarata* is the fruiting state of his *P. laurinum*. When the leaves are old, the two glands are sometimes rather obscure; the silky down of the branches disappears with age. The native name of the plant is Makita, and not “Margarata,” as stated by some clerical error in Dr. Pickering’s notes. The Makita is a tree about fifty feet high, supplying tough spars for canoes, and having oblong leathery leaves formerly used exclusively in thatching heathen temples, but now also for common dwelling-houses. The flowers are small and white, slightly tinged with purple, and the fruit has a rough, woody rind, of a light-brown colour, enclosing a large kernel, which possesses a scent much esteemed by the Fijians, but in which we could detect nothing remarkable either as regards strength or beauty. It is however largely employed in scenting cocoa-nut oil. Dr. Pickering states (Bot. Wilkes, p. 490) that it is “used to blacken the face and hair.” But I cannot endorse that statement from personal observation.

ORDO XXXV. ROSACEÆ.

This Natural Order is but sparingly represented in tropical Polynesia; all hitherto come to light are *Acana exigua*, A. Gray, from the Sandwich Islands, *Fragaria Chilensis*, Ehr., from the Sandwich Islands (Macrae!), *Rubus tiliaceus*, Smith, from Viti (Seemann!), *R. Hawaiensis*, A. Gray, from the Sandwich Islands (Menzies!), *R. Macraëi*, A. Gray, from the same group (Macrae!), and *Osteomeles anthyllidifolia*, Lindl., from the Sandwich Islands (Menzies! Macrae! Barclay! Seemann!).

I. **Rubus**, Linn. Gen. n. 864; Endl. Gen. n. 6360. Calyx explanatus; limbo 5-partito, ebracteolatus, persistens. Petala 5. Stamina ∞ , cum petalis calyci inserta; filamenta libera; antheræ 2-loculares, longitudinaliter dehiscentes. Ovaria ∞ , receptaculo convexo inserta, libera, 1-locularia;

ovula 1 v. rarius 2, collateraliter pendula, altero minore effæto. Styli subterminales, filiformes; stigmata simplicia v. subcapitata. Achænia succosa, supra receptaculum conicum subcarnosum baccatim congesta. Semen inversum. Embryonis exalbuminosi radícula supera.—Herbæ v. sæpius frutices, plerumque sarmentosi et aculeati, polymorphi; foliis alternis simplicibus, 3-natis, digitatis v. imparipinnatis; stipulis petiolo aduatis; floribus terminalibus et axillaribus paniculatis v. corymbosis, rarius solitariis, albis roseis v. purpureis.

1. **R. tiliaceus**, Smith in Rees' Cycl. vol. xxx.; fruticosus; caule ramisque tomentosiss scandentibus, aculeis sparsis; foliis rotundato-ovatis lobatis crenatis supra glabriusculis, subtus incanis; racemis axillaribus; bracteis dissectis serratis parvis; laciniis calycinis lanceolatis villosis subdeflexis; petalis spathulatis (albis) fructibus rubris.—*R. cordifolius*, Don, Prodr. Fl. Nep. p. 233 (non Weihe et Nees)? Nomen vernac. Vitiense, "Wa gadrogadro."—Ovalau (Seemann! n. 147; U. S. Expl. Exped.), Viti Levu (U. S. Expl. Exped.). Not observed in Taviuni, Vanua Levu, or any other part of Eastern Viti. Also found in the East Indies.

The fruit of this Raspberry is eaten by the natives, and made into puddings and pies by the white settlers.

ORDO XXXVI. MYRTACEÆ.*

I. **Eugenia**,† Micheli, Nov. Gen. 226. t. 108; Endl. Gen. n. 6323. Calyx 4- rarissime 5-lobus. Petala 4 v. 5, libera v. calyptratim cohærentia. Stamina ∞ , calycis faucis et disco epigyno ∞ -seriatim inserta; filamenta libera, filiformia; antheræ 2-loculares, dorso insertæ. Ovarium 2-3-

* At the British Museum there is a plant from New Caledonia, collected in 1774 by W. Anderson, which, on account of its opposite or ternate entire leaves with a marginal vein, had been placed provisionally amongst the unarranged *Myrtaceæ*. On dissecting what appeared to be a fruit not unlike that of *Eugenia corynocarpa*, A. Gray, only larger, I found it to be a tubular, very coriaceous calyx, in the throat of which numerous stamens were inserted, and enclosing an inferior free 2-celled ovary, with numerous horizontal ovules, proving the plant to be a new genus of *Myrtaceæ*. I find no petals; even in a young bud (just opening and all the stamens being yet recurved) there is no indication of them. I therefore conclude that the plant is apetalous, and that one of the rows of stamens may be standing in place of the corolla.—*Cupheanthus* (gen. nov. *Myrtacearum*), Seem. mss. in Herb. Mus. Brit. Calyx ebracteolatus, persistens, tubulosus, coloratus, obsolete striatus, 3-fidus, laciniis triangularibus, æstivatione valvatis. Corolla nulla (v. caduca?). Stamina ∞ , pluriseriata, libera, summo calycis tubo inserta, exserta, æstivatione incurva; filamenta filiformia, libera; antheræ introrsæ, oblongæ, 2-loculares, longitudinaliter dehiscentes. Ovarium liberum, sessile, 2-loculare. Ovula in placentis dissepimento utrinque adnatis ∞ -horizontalia. Stylus solitarius, elongatus, subexsertus; stigma emarginato-bilobum. Fructus ignotus.—Frutex (v. arbor?) Neo-Caledonicus, glaber, ramis crassis subangulatis; foliis exstipulatis oppositis v. ternis simplicibus longe petiolatis oblongo-lanceolatis obtusis in petiolum attenuatis integerrimis coriaceis penninerviis, nervis transversis in nervos margini parallelis combinatis epunctatis, supra lucidis viridibus, subtus subferrugineis; pedunculis axillaribus et lateralibus, 2-floris.—Species unica, *C. Neo-Caledonicus*, Seem. mss., New Caledonia (W. Anderson! in Mus. Brit.). Petiole 1-1½ inch long. Blade of leaf 3-4 inches long, about 1 inch broad. Peduncles ¼ of an inch long; calyx 1½ inch long, slightly curved, and either purplish or red. The ripe fruit is unknown, but the ovules do not seem to have a tendency to become winged.

† The following two new Polynesian species I find in the Herbarium of the British Museum:—

Eugenia Homei (sp. nov.), Seem.; arborea; calycibus exceptis, glabra; ramulis ultimis compressis; foliis obovatis v. ovali-oblongis obtusis, basi obtusis v. subcordatis crasse coriaceis, supra nitidis atroviridibus, subtus pallidioribus, venis vix conspicuis; floribus congestis e trunco ramisque excorticantibus ad veteres axillas ortis; pedicellis brevissimis 1-floris; calycibus 4-lobis tomentellis, lobis obtusis; petalis 4 glabris; staminibus ∞ ; ovario 2-loculari, ∞ -ovulato.—Isle of Pines, off New Caledonia (Sir E. Home! in Herb. Mus. Brit.).—A robust-looking plant, with greyish branches. Leaves thick and leathery, on short rusty petioles, 2-2½ inches long, 1-1½ inch broad. Fruit unknown.

Eugenia Austro-Caledonica (sp. nov.), Seem.; glabra; ramulis ultimis teretibus; foliis longiuscule

∞ -loculare, ∞ -ovulatum. Stylus simplex; stigma terminale. Bacca calycis limbo coronata, abortu sæpissime 1-locularis, 1-2-sperma. Semina crassa. Embryonis exalbuminosi cotyledones crassæ, carnosæ, plus minus in massam cum radícula brevissima continuam coalitæ.—Arbores v. frutices; foliis oppositis exstipulatis pellucido-punctatis integerrimis; floribus axillaribus v. terminalibus, solitariis cymosis v. cymoso-paniculatis, bibracteolatis, albis flavis v. purpureis; baccis nigris rubris v. purpureis.—*Jambosa*, Rumph. Amb. vol. i. p. 121; Endl. Gen. n. 6324. *Syzygium*, Gærtn. Fruct. vol. i. p. 166. t. 33; Endl. Gen. n. 6320.

1. **Jambosa**, Rumph. Calyx fauce ultra ovarium producta, lobis rotundatis æstivatione manifeste imbricatis. Petala in anthesi expansa. Flores sæpissime magni v. majusculi.—A. Gray, Bot. Wilkes, p. 510.

1. **J. Malaccensis**, Linn. Spec. Plant. p. 672; Wight, Ill. Ind. Bot. vol. ii. t. 98; arborea; foliis ovato-lanceolatis utrinque attenuatis; cymis lateralibus abbreviatis; fructu subgloboso.—*Jambosa domestica*, Rumph. Amb. vol. i. p. 127. t. 37. *J. purpurascens*, DC. Prodr. vol. iii. p. 287. Nomen vernac. Vitiense, "Kavika."—Common on the outskirts of woods all over the Viti group (Seemann! n. 161). Also collected in the Sandwich (Menzies! Macrae! Seemann! n. 1732 et 1733) and Society Islands (Banks and Solander!).

Var. *a.* floribus albis.—*E. Malaccensis*, DC. Prodr. l. c.—Nomen vernac. Vitiense, "Kavika vulavula."

Var. *β.* floribus purpureis.—*E. purpurascens*, DC. l. c.—Nomen vernac. Vitiense, "Kavika damudamu."

The Kavika or Malay-apple (*Eugenia Malaccensis*, Linn.) abounds in all the forests. As in the Hawaiian and other Polynesian islands, there are two varieties—the purple (Kavika damudamu) and the white (Kavika vulavula). When the tree, which attains about forty feet in height, is in flower, the ground underneath is densely covered with petals and stamens, looking, especially if the two varieties grow together, like a fine Turkey carpet. I have often seen the natives gathering handfuls of them to strew on their heads. In their idea, there is scarcely a finer tree than the Kavika; and when in their fairy tales the imagination runs riot, and describes all that is lovely and beautiful, the Kavika is rarely omitted. The Hawaiians, as I have stated elsewhere ('Narrative of the Voyage of H.M.S. Herald,' vol. ii. p. 83), thought this tree worthy of supplying materials for their idols; and thus, like the Fijians, recorded their veneration for it. A botanist, himself more than half a tree-worshipper, can fully sympathize with them. The fine oblong leaves, their smooth shining surface, the deep purple or pure white flowers, and afterwards the large quince-shaped fruits, with their apple-like smell and delicate flavour, are well calculated to justify much of the praise Polynesians bestow upon the tree.

2. **E. Richii**, A. Gray, Bot. Wilkes, p. 510. t. 58; arborea; ramulis ultimis 4-angulatis sæpius argute marginatis; foliis brevipetiolatis ovatis oblongis v. obovatis obtusis basi subcordatis coriaceis venosis (venis infra marginem laxè arcuato-anastomosantibus) impellucidis opacis; cyma ∞ -flora; pedunculis partialibus subgracilibus; calycis tubo turbinato, lobis 4 subæqualibus; petalis (albis) subrotundatis; baccis pomiformibus (albidis).—Nomen vernac. "Bokoi" (v. Sea?).—Common on the sea-beach of Viti Levu (Seemann! n. 164 et 165), Ovalau, Taviumi, and north coast of Vanua Levu (U. S. Expl. Exped.; Seemann!). Also collected in the Tongan Islands (Harvey!).

Varying considerably in the shape and size of the leaves, unless what A. Gray and I take to be a small-leaved variety should turn out to be a distinct species, and the native name "Sea" should be restricted to the latter. My inquiries about this point were not quite completed. The Fijian Dictionary enumerates

($\frac{1}{2}$ - $\frac{3}{4}$ unc. long.) petiolatis ovatis acuminatis basi acutis, coriaceis, tenuiter penninerviis; cymis terminalibus compositis fastigiatis densifloris folia vix superantibus, divisionibus primariis secundariisque teretibus; calycis limbo 4-lobo; petalis calyptratis.—New Caledonia (Sir E. Home! in Herb. Mus. Brit.).—The whole plant has turned black in drying. Leaves shining, on long petioles; blades 2-2 $\frac{1}{2}$ inches long, about 1 inch broad. Inflorescence resembling that of *Eugenia confertiflora*, A. Gray.

the "Bokoi" and the "Sea" as two distinct trees. The "Bokoi" is said to produce a fruit scarcely distinguishable from that of the Kavika (*E. Malaccensis*), and the "Sea" to have a fruit which is edible and has a very agreeable smell.

3. *E. quadrangulata*, A. Gray, Bot. Wilkes, p. 511; fruticosa; ramulis ultimis tetragonis, angulis argute marginatis alatisve; foliis brevissime petiolatis oblongo-lanceolatis acutis v. acuminatis basi obtusis supra lucidis chartaceis pellucido-punctatis crebre penninerviis; cymis multifloris; pedunculis communi partialibusque brevissimis fructiferis incrassatis; calycis tubo turbinato; limbo 4-fido; bacca (rubra) obovoideo-urceolata.—Ovalau, common in woods (U. S. Expl. Exped.), Buke Levu, Kadavu (Seemann!).

4. *E. neurocalyx*, A. Gray, Bot. Wilkes, p. 512. t. 59; arborea; ramulis teretibus; foliis brevissime petiolatis elongato-oblongis seu elliptico-lanceolatis obtusissimis basi subcordatis chartaceis crebre penninerviis; floribus in capitulum sessile congestis; calycis tubo cylindraco ∞ -costato; limbo ampliato fructifero crateriformi 4-lobo; fructu purpureo.—Nomen vernac. "Leba."—Viti Levu (Seemann! n. 159), Ovalau, and Macuata coast of Vanua Levu (U. S. Expl. Exped.; Seemann!), Moturiki (Milne!).

The "Leba" is a tree of middle size, with oblong leaves and white flowers, both of large size, considering the Order to which it belongs. It blossoms about August, and the fruit ripens about the middle of September. The latter is 3 inches long, about 8 inches in circumference, prominently ribbed, and of a deep purple colour. It has a most agreeable scent, gravitating between that of an apple and a melon, and contains from 3-5 large angular seeds of a most beautiful carmine colour. The natives wear the whole fruit, or part of it, around their neck, suspended on a string, for the sake of its delicious odour, and also scent with it the cocoa-nut oil used for greasing their naked bodies.

5. *E. gracilipes*, (Tab. XV.) A. Gray, Bot. Wilkes, p. 513; arbuscula; ramulis gracilibus teretibus pendulis; foliis subsessilibus lanceolato-oblongis subacuminatis basi parum cordatis chartaceis pellucido-punctatis penninerviis; racemis terminalibus 3-7-floris; pedunculis filiformibus; calycis tubo turbinato basi acuto, lobis 4 æqualibus; petalis subrotundatis (pallide flavis); ovario 2-loculari; fruct. ignot.—Nomina vernac. "Lutulutu" v. "Bogibalewa."—On the outskirts of forests, Viti Levu (Seemann! n. 158), Bua Bay, Vanua Levu, and Ovalau (U. S. Expl. Exped.; Harvey!).

A most elegant and graceful little tree, both on account of its drooping branches, fine foliage, and flowers. Allied to *E. laurifolia*, Wall. Cat.

EXPLANATION OF PLATE XV.—Fig. 1, an entire flower; 2, the same, with the petals and stamens removed; 3, section of ovary:—all slightly magnified.

II. *Eugenia*. Calyx tubo subrotundo, fauce ultra ovarium vix aut ne vix producta, limbo 4-5-partito, lobis sæpe leviter imbricatis. Petala in anthesi expansa. Testa seminum tenuis. Flores parvuli, A. Gray, l. c.

6. *E. rariflora*, Benth. in Hook. Lond. Journ. of Bot. vol. ii. p. 221; A. Gray, Bot. Wilkes, p. 514. t. 60; fruticosa; foliis coriaceis ovalibus late ovatisque breviter petiolatis glabris subvenosis, supra nitidis, marginibus subrevolutis; pedicellis 1-floris solitariis v. geminis (nunc 4-5-nisve ad apicem ramorum) ramulisque appressis puberulis folio brevioribus; flore 2-bracteolato; calycis tubo globuloso-obconico sericeo-pubente, limbo inæqualiter 4-partito, subæquilongo, lobis rotundatis; petalis brevioribus; bacca (rubra) subglobosa.—*E. sicca*, Soland. Prim. Fl. Ins. Pacif. p. 265 (ined.). *Jossinia cotinifolia*, Hook. et Arn. Bot. Beech. p. 62. Nomen vernac. Tahitense, teste Solander, "Ehitoa."—Rather common in the outskirts of forests all over Viti (Seemann! n. 160; Hinds! Barclay!). Also collected in the Samoan (U. S. Expl. Exped.), Society (Banks and Solander! Bidwill!), Roratongan (Cunningham!), and Tongan Islands (Sir E. Home!), Gambier Island (Beechey!).

There is a different look about the Tahitian specimens than the Vitian; their leaves are less coriaceous, and the flowers more numerous. If they should ultimately prove to belong to a different species,

Solander's name should be given to them. The fruit of the Vitian plant resembles in look and size a cherry, and did not strike me as being particularly dry, as is insisted upon by those who have described the Tahitian plant.

7. **E. Grayi**, (sp. nov.) Seem. Mission to Viti, p. 436 (Tab. XVI.); arborea, glabra; foliis ovalibus v. ovali-oblongis acuminatis v. acutis, basi cordatis v. subrotundatis, paniculis terminalibus; calycis fauce ultra ovarium vix producto, limbo obscure repando 4-dentato; petalis (purpureis) subrotundatis; ovario obconico 2-loculari.—Northern coast of Kadavu, on hillsides (Seemann! n. 163).

I have named this species in honour of Professor Asa Gray, of Cambridge, Massachusetts, to whom we are indebted for so many valuable publications relating to Polynesian botany, and to whom I am much obliged for sending me specimens and information to help on the present work. *E. Grayi* seems to be one of those species which may be referred, with almost equal propriety, to the *Eugenia vera* or the *Syzygium* section of the genus, the petals either remaining after the opening or being pushed off at the opening of the flowers. A tree 30-40 feet high. Leaves variable in size; the largest nearly a foot long, about 4-4½ inches broad, the smaller about 4 inches long and 2½ inches broad. Stamens numerous; ripe fruit unknown.

EXPLANATION OF PLATE XVI.—1, a flower-bud; 2, an expanded flower; 3, a petal; 4, ovary and style; 5, cross-section of ovary:—*all magnified*.

8. **E. Brackenridgei**, A. Gray, Bot. Wilkes, p. 521. t. 61 A; arborea; ramis validis; foliis oblongo-cuneatis v. obovatis obtusissimis in petiolum attenuatis crasse coriaceis supra lucidulis creberrime penninerviis, venis in venam intra marginalem decurrentibus, venulis reticulatis; cyma terminali sessili fastigiata, divisionibus repetito-trichotomis brevibus incrassatis apice glomerulifloris; calycis margine repando-4-lobo; fruct. ignot. Nomen vernac. Vitiense, "Sogasoga."—Ovalau (U. S. Expl. Exped.), Namosi, Viti Levu (Seemann! n. 155; Græffe! n. 50).

Fruit red, and eaten by pigeons (Soga).

9. **E. confertiflora**, A. Gray, Bot. Wilkes, p. 523. t. 61 B; arborea; foliis obovatis v. oblongis retusis v. acuminatis basi in petiolum brevem angustatis v. obtusis coriaceis pallidis tenuiter penninerviis, venis vix reticulatis in venam intramarginalem confluentibus; cymis terminalibus et in axillis supremis compositis fastigiatis densifloris folia vix superantibus, divisionibus primariis gracilibus vix angulatis, ultimis brevibus apice glomerulifloris; floribus parvis; calycis margine 4-lobo; fructu ignoto.—Ovalau (U. S. Expl. Exped.), Viti Levu (Seemann! n. 152).

10. **E. effusa**, A. Gray, Bot. Wilkes, p. 524; arborea; foliis obovatis subretusis basi acutis breviter petiolatis coriaceis opacis, venis haud perspicuis; cymis terminalibus decompositis corymbosis diffusis laxè multifloris; pedunculis folia superantibus, primariis et secundariis gracilibus acute 4-gonis; calycis margine repando.—Bua Bay, Vanua Levu (U. S. Expl. Exped.), Ovalau (Seemann! n. 151) and Viti Levu (Milne!).

A tree 80 feet high, yielding timber; flowers sweet-scented.

11. **E. Amicorum**, A. Gray, Bot. Wilkes, p. 524. t. 62; arborea v. fruticosa; foliis oblongo-lanceolatis utrinque subacuminatis subcoriaceis opacis creberrime ac tenuiter penninerviis reticulatis; cymis terminalibus decompositis effusis ∞-floris folia æquantibus; pedunculis primariis et partialibus gracilibus compressis; floribus pedicellatis; alabastris subglobosis; calycis margine repando; fructu depresso-globoso.—*Eugenia (?) paniculata*, Forst. Prodr. n. 522, sine descript. et in Sched. Herb. Mus. Brit.!—Viti islands, exact locality not mentioned (U. S. Expl. Exped.), Vanua Levu, above Nandy and Viti Levu (Milne!). Also collected in the Tongan islands (Forster! Captain Cook!) and Uvea or Wallis Island (Sir E. Home!).

This is certainly the plant which Forster enumerated as *Eugenia (?) paniculata*. At the British Museum there are several authentic specimens of it. Sometimes the branches are somewhat swollen at the place where the leaves are inserted, and sterile branches then have the look of *Memecylon-Vitiense*. Indeed, until I saw a larger suite of specimens, I thought that one of the sheets containing some of Forster's specimens bearing his manuscript name might possibly have the flowers of our *Eugenia* and the leaves of that

Memecylon pasted on it. But I now find that my suspicion was ill-founded. Milne's Vitian specimens have but very young flower-buds.

12. **E. rubescens**, A. Gray, Bot. Wilkes, p. 525. t. 63; arborea; foliis oblongis seu lanceolato-ellipticis utrinque acuminatis subcoriaceis opacis crebre ac tenuiter penninerviis; cymis terminalibus paniculato-decompositis patentibus folia multo superantibus; pedunculis primariis et partialibus gracilibus teretiusculis; calyce clavato-turbinato rufescente, margine tenui repando-subquadrilobo; fruct. ignot.—Nomen vernac. "Yasi dravu."—Ovalau (U. S. Expl. Exped.; Seemann! n. 154). Also collected in Aneitum (M'Gillivray!) and Eromanga (M'Gillivray!).

13. **E. rivularis**, (sp. nov.) Seem. in Bonplandia, vol. ix. p. 256; arborea, glabra; ramulis teretibus; foliis brevipetiolatis lanceolatis v. oblongo-lanceolatis acuminatis; floribus axillaribus terminalibusque cymoso-paniculatis; pedunculis primariis secundariisque acute 4-gonis; calycis limbo 4-lobo, lobis obtusis; ovario 2-loculari.—Nomen vernac. Vitiense, "Yasi ni wai."—On the banks of rivers and rivulets, Gau (Milne!), Viti Levu, on the Rewa (Milne!), and Navua river (Seemann! n. 162).

A tree 40 feet high, growing, like our Willows, on the banks of rivers, and having somewhat the look of them. Leaves 3-4 inches long, $\frac{1}{2}$ -1 inch broad, dark-green above, paler below; veins close together; flowers white; petals falling off in anthesis.

14. **E. corynocarpa**, A. Gray, Bot. Wilkes, p. 526. t. 64; arborea?; foliis elliptico-lanceolatis oblongisve subacuminatis basi acutis breviter petiolatis fere membranaceis laxe penninerviis, venis intra marginem arcuato-anastomosantibus; cymis paniculatis decompositis folia superantibus; pedunculis partialibus gracilibus divaricatis; calyce clavato limbo subintegro; fructu clavato-fusiforini, 1-loculari; semine oblongo.—Viti Islands, exact locality not recorded (U. S. Expl. Exped.). Also collected in Uvea or Wallis Island (Sir E. Home!) and the Samoan group (U. S. Expl. Exped.).

II. **Nelitris**, Gært. Fruct. vol. i. p. 134. t. 27; Endl. Gen. n. 6313. Calyx tubo obovato, cum ovario connato, limbo supero, 4-5-dentato. Petala 4 v. 5. Stamina ∞ ; filamenta filiformia, libera; antheræ 2-loculares, dorso insertæ, longitudinaliter dehiscentes. Ovarium inferum, 4-5-loculare, loculis 2-ovulatis, ovulis collateralibus adscendentibus. Stylus filiformis; stigma capitatum. Bacca calycis limbo coronata, spurie 8-10-locularis, loculis 1-spermis. Semina teretiuscula v. compressa, testa ossea. Embryonis exalbuminosi rectiusculi cotyledones minutæ, ovato-lanceolatae; radícula elongata, crassa.—Arbusculæ v. frutices; foliis oppositis ovatis v. ovato-lanceolatis, nitidis impunctatis 1-nerviis integerrimis; floribus axillaribus 2-bracteolatis albis.—*Decaspermum*, Forst. Char. Gen. p. 74. t. 37.

1. **N. Vitiensis**, A. Gray, Bot. Wilkes, p. 548. t. 60; fruticosa v. arbuscula; foliis ovatis v. ovato-lanceolatis acuminatis basi acutis v. attenuatis glabratis supra lucidis venis obliquis obsoletis penninerviis, junioribus ramulisque tenuiter sericeo-pubescentibus; cymis laxifloris foliolosis folio æquilongis; calycis tubo cano-sericeo, lobis 5 ovatis obtusis; masculis ovario abortivo.—Nomen vernac. Vitiense, "Nuqanuqa."—Common in Lakeba, Moturiki, Kadavu, and Viti Levu (Seemann! n. 166; Storck! n. 888), Ovalau and Macnata coast of Vanua Levu (U. S. Expl. Exped.). Also collected in Uvea (Græffe! n. 24) and Aneitum, New Hebrides (M'Gillivray!).

This species closely resembles a plant which Forster called *Decaspermum fruticosum*, from Tahiti, but it may at once be known by its pink filaments and its free-flowering habit.

2. **N. fruticosa**, A. Gray, Bot. Wilkes, p. 547. t. 60 d. exclus. syn.; foliis ovatis v. ovato-lanceolatis acuminatis; pedunculis axillaribus 1-floris folio multum brevioribus; limbo calycis 5-dentato; fructu 10-spermo.—Viti islands, but exact locality not mentioned (U. S. Expl. Exped.). Also collected in the Tongan islands (U. S. Expl. Exped.).

I admit this species with some hesitation, believing it to be founded upon an imperfect specimen of

N. Vitiensis. It is certainly not the Tahitian *Decaspermum fruticosum* of Forster, of which there are at the British Museum numerous specimens collected by Banks and Solander, and Forster, in the Society Islands, a coloured drawing by Parkinson and a pencil sketch by Forster himself, and which I should like to name *N. Forsteri*. The peduncles of *N. Forsteri* are generally 3-, and only by abortion 1-florous, and the filaments white. It has not yet been found out of the Society Islands. De Candolle was wrong to combine Forster's plant with Gærtner's *N. Jambosella* from Ceylon, and Labillardière's New Caledonian species; the latter I have named after its discoverer (*N. Billardieri*).*

III. **Calyptranthes**, Swartz, Flor. Ind. Occ. vol. ii. p. 917. t. 15; Endl. Gen. n. 6319. Calyx tubo obconico, limbo clauso operculiformi, anthesi circumscisso deciduo. Petala 4-5, libera v. operculo intus adnata. Stamina ∞ , calycis fauci ∞ -seriatim inserta; filamenta filiformia, libera; antheræ 2-loculares, ovatae, longitudinaliter dehiscentes. Ovarium inferum, 2-loculare, loculis ∞ -ovulatis. Stylus cylindricus, simplex; stigma obtusiusculum. Bacca ovata, calycis tubo inclusa, 2- v. abortu 1-ocularis. Semina ∞ .—Frutices v. arbores; ramis ultimis angulatis v. compressis; foliis oppositis integerrimis penninerviis; floribus terminalibus cymoso-paniculatis.—*Acicalyptus*, A. Gray, Bot. Wilkes, p. 551. t. 67.

In *Acicalyptus myrtoides* the operculum is quite subulate, and different from anything known in the older species of *Calyptranthes*. But in *A. Seemanni*, afterwards discovered by me, which is so close to the just-mentioned species as to be scarcely distinguishable in habit and foliage, the operculum is conical, and shortly apiculate. This, as A. Gray pointed out in the 'Bonplandia,' weakens *Acicalyptus*. In a third Vitian species, also discovered by me, the operculum is just as it is in the ordinary American *Calyptranthes*. We have therefore no option but to unite *Acicalyptus* with *Calyptranthes*, a genus of which no representative was previously known to exist beyond the limits of the New World.

1. **C. myrtoides**, Seem.; foliis ellipticis v. ovatis acuminatis basi acutis; floribus terminalibus corymboso-cymosis plerumque pedicellatis; alabastris elongato-oblongis acute 4-angulatis; operculo subulato.—*Acicalyptus myrtoides*, A. Gray, Bot. Wilkes, p. 551. t. 67, et in Bonplandia, vol. x. p. 35.—Mountains of the Macuata coast of Vanua Levu (U. S. Expl. Exped.).

2. **C. Seemanni**, Seem. (sp. nov.); ramis teretibus; foliis ovatis acuminatis, basi acutis; floribus terminalibus in cyma subthyrsoidea plerumque sessilibus; pedunculis primariis secundariisque angulatis; alabastris clavatis inferne tantum 4-gonis; operculo conico breviter apiculato.—*Acicalyptus Seemanni*, A. Gray in Bonplandia, vol. x. p. 35.—Macuata coast of Vanua Levu (Seemann! n. 168).

The two species are extremely similar in foliage, but seem to be well distinguished by the characters pointed out by the great American botanist. My specimens are in bud only.

3. **C. eugenioides**, (sp. nov.) Seem.; ramis ultimis angulatis v. compressis; foliis ovatis

* The synonymy of these species would be as follows:—

1. *N. Forsteri*, Seem. *Decaspermum fruticosum*, Forst. Char. Gen. t. 37. *Psidium decaspermum*, Forst., Linn. fil.; Forst. Prod. n. 219; Forst. Icon. (ined.) t. 159. *Psidium myrtifolium*, Soland. Prim. Fl. Ins. Pacif. p. 264, et in Parkins. Drawings of Tahit. Plants, t. 55 (ined.). Nomen vernac. Tahitense, teste Solander, "Aranoa."—Society Islands (Banks and Solander! Forster! Bidwill!). The following description is taken from Solander's manuscript Flora, and may be compared with that of Forster in Guillemin's Zeph. Tait.:—*Frutex* altus 20-pedalis, ramosissimus. *Ramuli* villis tenuissimis sericeis albis tomentosus. *Folia* opposita, brevissime petiolata, oblonga, apice attenuata, integerrima, glabra, supra nitida, profunde viridia, subtus (præcipue superiora) villis minutissimis vix conspicuis conspersa, pallidiora, plana, obsolete venosa, *venis* tenuibus obliquis subparallelis, sesquiuncialia et biuncialia. *Petioles* vix lineam unam longi, superiores villosi. *Pedunculi* axillares, oppositi, teretes, villosiusculi, foliis triplo breviores, triflori, raro uniflori. *Pedicelli* divaricati, vix semiunciales, intermedio brevior, interdum sub pedicellis quasi involucri loco foliola duo, parva, lanceolata. *Calycis* urceolus villosus. *Petala* alba, inodora, circiter duas lineas longa. *Bacca* subglobosa, magnitudine Pisi. *Semina* circiter 12.

2. *N. Jambosella*, Gærtner. Fruct. vol. i. p. 134. t. 27.—Ceylon.

3. *N. Billardieri*, Seem. sp. nov. New Caledonia (Labillardière! in Herb. Hook.). Peduncles 1-florous, and leaves glaucous below.

obtusis v. retusis in petiolum angustatis, supra lucidis atro-viridibus subtus pallidioribus minute punctatis; floribus terminalibus cymoso-paniculatis; pedunculis primariis secundariisque compressis; operculo hemisphærico apiculato; corolla operculo intus adnata; bacca ovata.—Viti Levu (Seemann! n. 156).

In habit this plant is so much like some of the Vitian *Eugenias*, especially *E. confertiflora*, A. Gray, that in my preliminary list I mistook it for that species. The calyx-tube has several deep furrows, which do not seem to be wholly caused by drying, but they disappear as the fruit advances towards maturity. The operculum consists of a single piece, is hemispherical, and has a point in the centre. The corolla is membranaceous, closely attached to the calyx, and falls off along with it. It does not seem to become detached entirely; but if the calyx be soaked in water and afterwards allowed to dry, it will generally peel off to a great extent. *C. eugenoides* is a shrub about 12 feet high, with stoutish erect branches, and coriaceous leaves 3–4 inches long, and about 1–1½ inch broad.

IV. **Barringtonia**, Forst. Char. Gen. 38; Endl. Gen. n. 6325. Calyx tubo ovato cum ovario connato, limbi superi 2- rarius 3–4-partiti laciniis ovatis obtusis concavis persistentibus. Petala 4, magna, coriacea. Stamina ∞ , pluriseriatim inserta; filamenta filiformia, libera; antheræ 2-loculares. Ovarium inferum, 2–4-loculare, loculis 2–6-ovulatis, glandula epigyna annulari styli basin vaginante. Stylus filiformis; stigma simplex. Bacca fibrosa, 4-gona, e basi ventricosa pyramidata v. oblonga, calycis limbo coronata, abortu 1-ocularis, endocarpio subpyrenaceo 1-spermo. Semen obovatum, pendulum. Embryonis exalbuminosi elliptico-globosi cotyledones cum radícula supera in massam homogineam carnosam arctissime coalitæ.—Arbores v. frutices; foliis oppositis v. verticillatis confertis petiolatis obovatis punctatis integerrimis crenatis v. serratis; floribus amplis in thyrsum v. racemum terminalem dispositis; pedicellis 1-bracteatis.—*Butonica*, Lam. Dict. vol. i. p. 515. *Commersonia*, Sonn. Voy. t. 8, 9. *Mitraria*, Gmel. Syst. 799. *Huttum*, Adans. Fam. vol. ii. p. 88. *Stravadium*, Juss. Gen. 326. *Stravadia*, Pers. Ench. vol. ii. p. 30. *Meteorus*, Lour. Fl. Cochin. vol. ii. p. 498. *Menichia*, Sonn. Voy. 138. t. 92, 93.

The Vitians have for the whole of *Barringtonia* (including *Stravadium*) the generic names “Vutu” (=“Futu” of the Tonguese, “Hutu,” “Hudu,” or “Fudu” of the Tahitians, and “Hutum” of the Amboinese).

1. **B. speciosa**, Linn. fil. Suppl. 312; Forst. Icon. (ined.) t. 191, 192; arborea; foliis cuneato-oblongis obtusis integerrimis nitidis; floribus in thyrsum erectum dispositis; fructu pyramidato acute tetragono.—*Butonica*, Rumph. Amb. vol. iii. t. 114. *Barringtonia Butonica*, Forst. Gen. t. 38. *Mammea Americana*, Linn. Spec. 731. *Mitraria Commersonia*, Gmel. Syst. 799. *Butonica speciosa*, Lam. Dict. vol. i. p. 521. *Butonica splendida*, Sol. Prim. (ined.) p. 282, et in Parkins. Drawings of Tahit. Plants, t. 68, 69. Nomina vernac. Vitiensia, “Vutu rakaraka” v. “Vutu vala.”—On the seaside of all the Vitian islands (Seemann! n. 148; Sir E. Home!). Also collected in the Tongan (Forster!) and Society Islands (Banks and Solander!), Wallis Island or Uvea (Sir E. Home!), and New Caledonia (Sir E. Home!). Common in the East Indies, the Archipelago, and the east coast of Africa.

A magnificent seaside tree, from which Liku (woman’s dress) is made. The large square fruits are used by the natives for floats of fishing-nets, and in a favourite game (“Veitegi vutu”). The outer portion of the fruit, which is poisonous, is employed for stupefying fish, for the purpose of catching them.

2. **B. edulis**, (sp. nov.) Seem.; arborea; foliis brevipetiolatis cuneato-oblongis acutis integerrimis coriaceis lucidis glabris; racemis elongatis pendulis, rachi pedicellis calycibusque cinereo-tomentosis; sepalis 2 subrotundatis retusis; venis primariis 8–10; petalis (albis) oblongis glabris; fructu oblongo obscure 4-gono (eduli).—Nomen vernac. “Vutu kana” v. “Vutu kata.”—Korovono, Viti Levu and Viwa (Seemann! n. 150). Sometimes cultivated.

A tree 30–40 feet high, of erect growth. Leaves more than a foot long, and more coriaceous than those of the following species. Petals and stamens white. Fruit baccate, and eaten either raw or cooked

by the natives: it is said to be rather insipid, but I did not see it when ripe; the largest I saw was about 4 inches long and 1½ inch across, the angles very much subdued. Easily distinguished from the following species by its tomentose rachis, pedicels, and calyx. An imperfect specimen of *Barringtonia* from Lizard Island, east coast of New Holland (Banks!), would seem to belong to this species.

3. **B. racemosa**, Blume in DC. Prodr. vol. iii. p. 288; fruticosa v. arborea; foliis cuneato-oblongis acuminatis crenatis v. obscure serratis; racemis elongatis pendulis, rachi pedicellis calycibusque glabris; sepalis 2 ovato-rotundatis acutis mucronatis, venis primariis 2; petalis (albis) obovatis obtusis; fructu ovato 4-angulato—*Eugenia racemosa*, Linn. Spec. 673, et Forst. Prodr. n. 221. Nomen vernac. Vitiense, "Vutu ni wai" (i.e. Water Vutu).—Common on running streams and on the seabeach, Taviuni, and the larger islands (Seemann! n. 149). Also collected in New Caledonia (Forster!).

The fruit of this species is considered poisonous by the natives. Barclay collected an allied species, with crenate leaves and tomentose rachis and 3-leaved calyx, in Tana, New Hebrides, which has been referred by Bentham to *B. excelsa*, Blume.

4. **B. sp.**; fructu eduli.—Vulgo "Vutu dina."

This species I only know from the description given me by the natives. It is said to have an edible fruit like *B. edulis*, but to be superior,—hence it is named "Vutu dina," i.e. the genuine Vutu; but whilst the fruit of the "Vutu kana" has a soft outside, that of this species is so hard that, say my informants, it requires the application of a knife or some other sharp instrument before the edible portion can be got at.

V. **Metrosideros**, R. Brown in Flinders' Voy. vol. ii. p. 547; Endl. Gen. n. 6303. Flores axillares v. terminales, pedunculati v. sessiles. Calyx tubo campanulato, cum ovario plus minus connato, limbo 5-fido v. 5-dentato. Petala 5, rotundata, annulo calycis faucem marginanti inserta, ejusdem laciniis alterna. Stamina 20–100; filamenta filiformia, longissime exserta, libera; antheræ 2-loculares. Ovarium inferum v. semi-inferum, 3-loculare, loculis ∞-ovulatis. Stylus cylindricus; stigma simplex v. capitatum. Capsula intra calycis tubum libera, accreta, 3-ocularis, apice v. ad medium loculicide dehiscens, rarius lateraliter. Semina ∞, irregulariter rupta, linearia, aptera.—Arbores v. frutices; foliis oppositis v. alternis exstipulatis integerrimis; floribus axillaribus terminalibusque, coccineis rubris luteis v. albidis.

This genus is in a fair way of becoming in Polynesia what *Rubus* is in Europe; it is very much given to variation, and it is very difficult to find out the limits of the different species. I am inclined to regard all the *Metrosidera*, with the exception, perhaps, of *M. macropus*, hitherto discovered in tropical Polynesia, as one species, for which Gaudichaud's name, *M. polymorpha*, might be adopted. At the British Museum there is a most extensive set of specimens, more than 100, from all parts of Polynesia. The greatest number of forms exist in the Hawaiian Islands, and all of them are represented in the Society Islands, with the exception of the extreme tomentose. Solander (Prim. Fl. Ins. Pacif. (ined.) p. 263) enumerates four Tahitian varieties of what he termed *M. spectabilis*, one of which, founded upon sterile specimens, has square branches. The colour of the flowers can scarcely be relied upon as marks of specific difference. The yellow flowering-plant of the Hawaiian Islands is undoubtedly a form of the variable *M. polymorpha*. In Viti one of the narrow-leaved forms has also yellow flowers, and the other scarlet. Both are so much alike that they cannot be otherwise distinguished; and in foliage they agree exactly with some of the Hawaiian forms.

1. **M. polymorpha**, Gaud. Bot. Voy. Freyc. p. 99 et 482, t. 108, 109; arborea, erecta, glabra villosa v. tomentosa; ramulis teretibus v. 4-angulatis; foliis oppositis decussatis, brevipedicellatis ellipticis oblongis, ovatis v. suborbiculatis acutis v. obtusis, basi acutis rotundatis v. cordatis; supra lævibus v. rugosis; cymis terminalibus simplicibus v. thyrsoides; floribus pedicellatis v. subsessilibus (rubris v. luteis); capsula semisupera 3-loba 3-valvi.—*M. lutea*, A. Gray, Bot. Wilkes, p. 560. t. 69 B. *M. rugosa*, A. Gray, Bot. Wilkes, p. 561. t. 69 A. *M. collina*, A. Gray, Bot. Wilkes, p. 558. t. 68. *M. villosa*, Smith in Trans. Linn. Soc. vol. iii. p. 268. *M. spectabilis*, Gært. Fruct. vol. i. p. 172. t. 34. f. 9; Sol. Prim. Fl. Ins. Pacif. p. 263 (ined.), et in Parkins.

Drawings of Tahit. Plants, t. 54 (forma floribus rubris). *M. obovata*, Hook. et Arn. Bot. Beech. p. 63. t. 12. *M. diffusa*, Hook. et Arn. Bot. Beech. p. 63, non Smith. *Melaleuca villosa*, Linn. fil. Suppl. p. 342. *M. æstiosa*, Forst. Prodr. n. 215; Icon. (ined.) t. 157. *Leptospermum collinum*, J. R. Forst. Char. Gen. p. 72. t. 38. f. *m-p*.—Nomen vernac. Tahitense, "Pua Rata" (*i.e.* flos ruber); Vitiense, "Vuga."—Common all over Viti (Seemann! n. 169, 170, 171; Storck! n. 889). Also collected in the Hawaiian (D. Nelson! Menzies! Macrae! Nuttall! Barclay! Seemann!), Society (Banks and Solander! D. Nelson! Forster! Barclay!), and Kermadec Islands (M'Gillivray! in Mus. Brit.).

Var. *a.* floribus rubris.—*M. collina*, var. *Vitiensis*, A. Gray, Bot. Wilkes, p. 559. t. 68 (Seemann! n. 170, 168; Storck! n. 889).

Var. *β.* floribus luteis; foliis elliptico-lanceolatis, pedunculis calycibusque glabris.—Interior of Viti Levu (Seemann! n. 171).

This tree yields an excellent close-grained timber, much esteemed for posts of houses.*

ORDO XXXVII. MELASTOMACEÆ.

In the geographical distribution of this Natural Order, it is a singular fact that *Melastomaceæ* should be excluded from the Hawaiian and the Marquesas Islands; the same was formerly thought to be the case with regard to the tropical parts of New Holland, but we are now acquainted with several species from that country, viz. *Osbeckia Chinensis*, *O. Australiana*, *Melastoma Novæ-Hollandiæ*, and *M. velutinum*. In the south-western parts of tropical Polynesia *Melastomaceæ* are tolerably abundant; and the number of known species, judging from scraps collected by the United States Exploring Expedition and others, will yet be increased when all the islands have been thoroughly explored. They belong to the genera *Memecylon*, *Astronia*, *Astronidium*, *Naudinia*, *Amplectrum*, *Medinilla*, *Erpetina* (from the Solomon Islands), and *Melastoma*.

I. **Memecylon**, Linn. Gen. n. 481; Naudin, Melast. p. 684; Endl. Gen. n. 6269. Calyx lato-campanulatus v. hemisphæricus, limbo nunc integerrimo nunc obtuse et breviter 4-lobo. Petala 4, ovata, aut etiam suborbicularia, nonnunquam in apiculum producta. Stamina 8, æqualia, antheris brevibus securiformibus rima antica duplici dehiscentibus, connectivo postice in calcar seu cornu conicum subtus excavatum producto. Ovarium omnino adhærens, 1-loculare; stylo magis minusve exserto, stigmatibus punctiformi. Ovula 6–12, reniformia, placentæ centrali affixa. Bacca globosa, sæpius 1-sperma (siccine semper?).—Frutices v. arbores, glaberrimi; foliis coriaceis integerrimis penninerviis aut nervulorum transversorum copia in parenchymate folii evanida 1-nerviis, rarius *Melastomearum* more 3–5-nerviis; cymis subumbellatis v. subcapitatis axillaribus aut in nodis ramorum annotinorum lateralibus; floribus pedicellatis, cæruleis v. cærulescentibus.—*Valikana*, Adans. Fam. vol. ii. p. 84. *Scutula*, Lour. Fl. Cochinch. vol. i. p. 290.

1. **M. Vitiense**, A. Gray, Bot. Wilkes, p. 573; ramulis subteretibus ad articulos subnodosis; foliis subsecundis 1-nerviis, aveniis oblongis obtusis sæpiusve in acumen obtusum v. retusum productis basi in petiolum breviusculum attenuatis, siccatis subtus flavidis; pedunculis solitariis brevissimis ∞-floris; pedicellis nudis fructu globoso seu ovoideo lævi dimidio brevioribus.—Ovalau and Macuata coast of Vanua Levu, at the elevation of 1000–1500 feet (U. S. Expl. Exped.).

* Another capsular *Myrtaceæ* was collected in New Caledonia, and named *Bæckeia nelitroides*, Seem. Journ. of Bot. vol. ii. p. 74. It must, however, be referred to the recently-established genus *Cloëzia*, and seems to be identical with *C. canescens*, Brongn. et Gris.

Supra, p. 76, in the account of *Cupheanthus*, there are two errata. Line 26 from below, omit the word "free," and line 18 from below, read "inferum" for "liberum."

Var. β ; foliis latioribus nunc ovalibus apice rotundatis subtus haud flavescens. A. Gray, l.c.—Ovalau and north coast of Vanua Levu (U. S. Expl. Exped.); Kovovono, Viti Levu (Seemann! n. 172).

The leaves of *M. Vitiense* are not strictly opposite, but rather one-sided, and somewhat swollen at the insertion of the leaves. These characters, as well as the shape of the leaves, distinguish it from another Polynesian species, viz. *M. Harveyi* (sp. nov.), Seem.; glabra; ramulis junioribus acute angulatis ad insertionem foliorum haud incrassatis; foliis stricte oppositis ovatis v. ovalibus acuminatis basi acutis, supra nitidis atroviridibus venis prominulis, subtus subglaucis subaveniis; cymis axillaribus pedunculatis; pedunculis petiolo longioribus; bacca globosa 1-sperma.—Vavau and Lifuka, Tongan Islands (Harvey!). Leaves, including the short petioles, 2–2½ inches long, 1–1½ inch broad. Flowers fallen off.

II. **Astronia**, Blume, Bijdr. p. 1080; Naud. Melast. p. 677. Calycis tubus hemisphaericus; limbus sub anthesi clausus, post anthesin irregulariter lacerus. Stamina 10–12, æqualia; antheris dolabriformibus apice obtusis antice rima duplici longitudinali dehiscentibus, connectivo postico basi mutico aut in tuberculum vix perspicuum desinente; filamentis complanatis brevibus. Ovarium cum calyce omnino adnatum, 2–5-loculare. Placentæ nunc in fundo loculorum depressæ planæ, fere semilunares, nunc e basi columnæ centralis productæ ∞-ovulatae. Capsulæ globosæ limbi calycini vestigiis coronatæ, in fragmenta undique disruptæ, nervis coriaceis parenchyma solutum superantibus. Semina ∞, minuta, linearia aut acicularia, raphe laterali fusca hinc excurrenti lineata.—Arbores et arbusculæ; foliis petiolatis ovatis ovato-oblatis acuminatis integerrimis 3-nerviis 3-plinerviisque; floribus in paniculas terminales digestis, albis aut purpurascens.—*Pharmacum*, Rumph. Amb. vol. iv. t. 69. *Conostegia* et *Melastomæ* sp. auct.

1. **A. fraterna**, A. Gray, Bot. Wilkes, p. 576; glaberrima; foliis longe petiolatis oblongis acuminatis basi acutis manifeste 3-plinerviis (prætermisso utrinque nervo tenui submarginali); cymis corymbosis; pedicellis gracilibus; alabastris ellipticis; calycis limbo clauso demum aperto ultra ovarium longiuscule producto, margine 4–5-fido; ovario 5-loculari; placentis ima columella ortis.—*Melastoma glabra*, Forst. Herb., Icon. (ined.) t. 137, 138, et in Guill. Zephyr. Tait. p. 61, nec Prodr. *Astronia Forsteri*, Naud. Melast. p. 258 ex parte.—In woods of the interior of Viti Levu (Milne!), Tahiti (Forster! in Mus. Brit.).

Milne's specimen is merely a sterile branch, but as far as it goes agrees with the Tahiti specimens. It should here be mentioned that two generically different plants have been confounded under the name of *Melastoma glabra* (*Conostegia glabra*), the one having obscurely 3-nerved leaves and a calyx which has a persistent limb, splitting longitudinally in anthesis into 3–5 lobes, 10 stamens, and a 5-celled ovary, the other manifestly 3-ribbed leaves, a deciduous calyx-limb, which in anthesis separates by a transverse circumscission in the form of a calyptra, 8 stamens, and a 4-celled ovary. Asa Gray named the former *Astronia fraterna*, and says that he has seen Forster's original specimens at the British Museum, which, he adds, belong to the latter species. But here he was mistaken. The six original specimens which the two Forsters collected at Tahiti, and which, with their own labels attached, are preserved at the British Museum, do all belong to Asa Gray's *Astronia fraterna*. The two plates, one of them coloured, which Forster in his MS. drawings devotes to the illustration of his *Melastoma glabra*, also represent A. Gray's *Astronia fraterna*. Moreover, in the detailed MS. description of Forster, published by Guillemain (Zeph. Tait.), the calyx is described as "apice 4-fidum rarius 5-fidum, laciniis irregularibus laceris," clearly referring to Asa Gray's *A. fraterna*. But it is evident, from the brief diagnosis in his 'Prodr.,' that Forster also knew the second Tahitian species, and confounded it with that of which his specimens are preserved in the British Museum, of which he made two drawings, and of which he gave a detailed description, for he says, in the 'Prodr.,' of *Melastoma glabra*, "foliis integerrimis 3-nerviis elliptico-lanceolatis scabris [evidently a misprint for glabris—B. S.], calycibus circumscissis." Naudin, in his valuable Monograph of *Melastomaceæ*, re-names Forster's *Melastoma glabra*, *Astronia Forsteri*, and seems to include both plants under that name, saying of the calyx, "sub anthesi partim circumscissum aut etiam in lobos 2–4 dentiformes obtusos laceratum fuisse ostendebant." But it should be added that he also had no perfect specimens.

On mentioning my ideas about the generic differences to M. Triana, who is now occupied with a revision of the *Melastomaceæ*, he examined these two plants, and agreed in my opinion; and he has since ascertained that M. Decaisne arrived at the same conclusion, and had given the name *Naudinia* to this

new genus, as the other genera named in honour of M. Naudin do not stand. The synonymy of the two plants would then be as follows:—

1. *Naudinia glabra*, Dene. mss.; *Melastoma glabra*, Forst. Prodr. n. 194, nec Herb. et Icon. (ined.) nec Guill. Zephyr. Tait. *Conostegia glabra*, Don in Mem. Wern. Soc. vol. iv. p. 316. *Astronia Forsteri*, Naud. in Ann. Sc. Nat. 3 Ser. tom. xviii. p. 258, ex parte.—Tahiti (W. Anderson! anno 1774, Captain Cook!).

2. *Astronia fraterna*, A. Gray, Bot. Wilkes, p. 576. t. 72 A. *Melastoma glabra*, Forst. Herb. Icon. (ined.) t. 137, 138, et in Guill. Zeph. Tahit. p. 61, nec Prodr. *Astronia Forsteri*, Naud. l. c. p. 258, ex parte.—Tahiti (Forster! in Herb. Mus. Brit.).

2. **A. Pickeringii**, A. Gray, Bot. Wilkes, p. 577. t. 72; glabra; foliis longe petiolatis ovalibus oblongisve utrinque subacutis nunc basi obtusis 3–5-nerviis; cyma corymbosa composita laxiflora; pedicellis gracilibus; alabastris subglobosis; calycis limbo clauso demum aperto ultra ovarium longiuscule producto, margine in dentibus brevissimis 9–20 irregulariter fisso; antherarum connectivo deorsum gibboso; ovario 5-loculari; placentis e fundo loculorum ortis.—Ovalau, on the mountains (U. S. Expl. Exped.), Viti Levu, in woods (Milne!). Also collected in the Samoan Islands (U. S. Expl. Exped.).

Var. *Vitiensis*, A. Gray, l. c.; inflorescentia glabriore; pedicellis paullo brevioribus.

Milne's are fruiting specimens, only the remnant of the berry remaining. The foliage has turned almost black in drying.

3. **A. confertiflora**, A. Gray, Bot. Wilkes, p. 579; foliis longe petiolatis ovalibus obtusis basi rotundatis 3–5-nerviis, costis subtus ramulisque junioribus cum cyma composita corymbosa confertiflora rufo-pubescentibus; floribus in ramulis ultimis capitato-congestis subsessilibus; calyce glandulis rufis consperso, limbo ultra ovarium breviter producto, margine irregulariter 8–10-crenato; ovario 3–4-loculari; placentis e fundo loculorum ortis.—Bua Bay, Vanua Levu, on the banks of streams (U. S. Expl. Exped.).

4. **A. tomentosa**, (sp. nov.) Seem.; fruticosa v. arbuscula; ramulis junioribus petiolis bracteis cymis calycibusque dense ferrugineo-tomentosis, demum glabratis; foliis ovatis v. subcordato-ovatis obtuse acuminatis 3–5-nerviis v. 3–5-plinerviis, supra glabris, subtus dense ferrugineo-tomentosis, demum glabratis; cymis corymbosis compositis, bracteis linearibus; alabastris globosis, calyce irregulariter rumpente?; ovario 5-loculari; placentis e fundo loculorum ortis; seminibus ∞ subaciculiformibus.—Summit of Voma Peak, near Namosi, interior of Viti Levu (Seemann! n. 174).

A shrub or small tree, with stiff, generally fistulose obtusely and obscurely 4-angular branches. Petioles 1–1½ inch long. Blade of leaf 2½–3 inches long, 1–1½ inch broad. My flowering specimens being in very young bud, the dehiscence of the calyx cannot be satisfactorily ascertained. Capsule, as in other species, not properly dehiscent, but the dry epicarp decays or falls away in fragments, and the thin endocarp splits into numerous pieces, leaving a frame of simple or forked nerves, which surround the placenta and columella.

5. **A. (?) robusta**, (sp. nov.) Seem.; fruticosa, erecta, robusta, glabra; ramis crassis fistulosis; foliis obovato-oblongis v. ovalibus acutis in petiolum attenuatis integerrimis 3–5-plinerviis, supra atro-viridibus, subtus pallidioribus; cymis paniculatis terminalibus, rachis pedunculis pedicellisque subcompressis; pedunculis ultimis 3-floris; floribus ignotis; capsula subglobosa infera 7–8-loculari calycis limbo irregulariter fisso coronata; placentis e fundo loculorum ortis; seminibus ∞ subdolabri-formibus; raphe laterali nigro.—Banks of the Rewa river, near Namosi, interior of Viti Levu (Seemann! n. 181).

A robust plant, 4–6 feet high, with stout fistulose branches, of which I collected fruiting specimens only, whilst the United States Exploring Expedition (as Professor A. Gray advises me) brought home the foliage only. I have provisionally referred it to *Astronia*, with which it agrees in habit and fruit, unless exception is taken to the latter being 7–8-celled. Petioles 1½–2 inches long. Leaves opposite; blade 4–10 inches long, 4–7 broad. Fruit as large as a sloe, and decaying like that of the preceding species. There is a specimen of an *Astronia* in young fruit, collected by Harvey in Viti, which may possibly be a

small-leaved form of this species. But both mine and Harvey's materials are too imperfect to venture upon their identification.

III. **Astronidium**, A. Gray, Bot. Wilkes, p. 581. t. 72. f. 7. Flores 4-meri. Calycis tubus hemisphæricus, nudus; limbus clausus, quasi in calyptram obtusam conflatus et sub anthesi irregulariter lacerus. Petala 4. Stamina 8, æqualia; filamenta complanata, subulata, brevia; antheræ oblongo-lineares, antice rima duplici longitudinali dehiscentes; connectivo dorsali carnosio angusto basi calcarato. Stylus filiformis; stigma minutum simplicissimum v. capitellatum. Ovarium omnino adnatum, 3-4-loculare; placentæ e fundo loculorum ortæ, supernè dilatatæ, compressæ. Capsula globosa. Semina ∞ .—Arbusculæ glabræ v. hispidae, micranthæ, microcarpæ, facie *Astronia*; foliis petiolatis oblongis v. ellipticis integerrimis 3-5-nerviis; cymis terminalibus paniculatis; floribus brevissime pedicellatis, albis.

1. **A. parviflorum**, A. Gray, Bot. Wilkes, p. 582. t. 72. f. 7; ramulis foliisque junioribus glabris v. minute ferrugineo-pubescentibus; foliis oblongis v. ellipticis utrinque obtusis v. acutis aut apice acuminatis; cymis decomposito-paniculato-corymbosis, ramis compresso-angulatis; stigmatibus simplicissimis; ovario 3-4-loculari; capsula gibbosa.—Ovalau and Bau, along the banks of streams (U. S. Expl. Exped.), Voma Peak, Viti Levu (Seemann! n. 173, in fruit only).

2. **A. Storckii**, (sp. nov.) Seem.; ramis petiolis costis et venis foliorum paniculis bracteisque rufo-hispidis; foliis ovato-oblongis longe acuminatis, supra costis exceptis glabris, subtus hispidis; cymis paniculato-corymbosis, ramis obscure tetragonis; stigmatibus capillatis; ovario 4-loculari; capsula ignota.—*Astronia Storckii*, Seem. in Bonpl. vol. x. p. 296. Nomen vernac. Vitiense, teste Storck, "Cavacava."—Port Kinnaird, Ovalau (Storck! n. 890).

"A small spreading tree."—Storck. Branches, petioles, ribs, and veins of the leaves covered with rusty hispid, almost hispid-tomentose hair. Petioles $1\frac{1}{2}$ inch long. Blade of leaf 4-6 inches, $1\frac{1}{2}$ -2 inches broad. Flower-buds obovate-obtuse, the calyx splitting irregularly when the flowers open. Bracts lanceolate or ovate-lanceolate. Petals 4, white. Stamens 8, in shape exactly agreeing with those of *A. parviflorum*. Stigma capitellate. The flowers of Storck's specimens are in bud, the petals just pushing through.

IV. **Anplectrum**, A. Gray, Bot. Wilkes, p. 597. Flos 4-merus. Calycis campanulati limbus integer aut 4-dentatus, denticulis externis punctiformibus aut subulatis. Petala ovato-acuminata aut lanceolata. Stamina 8, alternatim inæqualia aut heteromorpha, fertilia et effœta; 4 cum petalis alternantium antheræ lineares aut ovoideæ, 1-porosæ, polliniferæ, connectivo basi postica nonnihil tuberculato aut in membranulam lateraliter 2-lobam postice acutam expanso; 4 petalis oppositorum antheræ sæpius steriles, filiformes, connectivo postice in membranulam producto. Ovarium toto ambitu adhærens, apice breviter marginatum aut 4-alatum, 4-loculare. Stylus subulatus, stigmatibus obtuso punctiformi. Fructus (ex auctoritate Blume) baccatus, sphæricus, calyce vestitus, 4-locularis. Semina ∞ , minuta, irregulariter dimidiato-ovoidea aut pyramidata, raphem lateralem nigram monstrantia.—Frutices sarmentosi, habitu *Dissochætas* plures referentes, glabri aut glabriusculi, micranthi; ramis gracilibus teretibus; foliis æqualibus aut vix disparibus breviter petiolatis ovato-ellipticis acuminatis integris 3-nerviis; cymis paucifloris axillaribus; floribus pedicellatis albis.—*Anplectrum*, Blume (non Nutt.) Fl. 1831, p. 502; Endl. Gen. n. 6247; Naud. Melast. p. 322, cum icon.

Bentham (Fl. Hongkong, p. 116) has amplified the generic character of *Anplectrum* so as to include a Chinese species with only 4 stamens, capsular fruit, etc. If this view should be adopted, the generic name, slightly altered by Asa Gray, would have to undergo a third change, as I have shown (Journ. of Bot. 1863, p. 281) that the Hongkong species is the type of Loureiro's *Blastus*, a good genus, overlooked by De Candolle, Endlicher, Lindley, and even Naudin, and placed, oddly enough, by its founder in *Gynandria Tetrandria*, probably on account of the way in which the anthers are buried in the ovary. But I think the two

genera will be found sufficiently distinct, the one having 8 stamens and a fleshy fruit, the other 4 stamens and a 4-celled capsule.

1. **A. (?) ovalifolium**, A. Gray, Bot. Wilkes, p. 597; fere glaberrimum; foliis late ovalibus seu ovato-rotundatis breviter acuminatis petiolatis submembranaceis 3-5-plinerviis; cymis pulverulento-puberulis folio brevioribus; calycis dentibus brevissimis callosis, denticulis externis nullis; petalis ovatis acutis; antheris 8 homomorphis.—*Aplectrum (?) ovalifolium*, Naud. in Sched.—Bua or Sandalwood Bay, Vanu Levu (U. S. Expl. Exped.).

Until the fruit of this shrub is known the genus must remain doubtful, especially as the 8 stamens are probably all homomorphous and perfect.

V. **Medinilla**, Gaud. Voy. Freyc. p. 484. t. 106; Naud. Melast. p. 304. Flores 4-5, rarius 6-meri, nudi. Calycis tubus ovoideus aut turbinatus, carnosus; limbus integer v. in lobos obsoletos divisus, rarissime irregulariter lacerus, denticulis externis v. punctis denticulorum vestigia exhibentibus, sæpissime ornatus. Petala ovata obovatave, acuta, interdumque acuminata. Stamina 8 v. 10, rarius 12, dolichanthera, subæqualia v. manifeste inæqualia, non tamen omnino disparia; antheris basi affixis, sæpius incurvis, lineari-subulatis, antice basi 2-lobis v. 2-calcaratis, postice 1-2-lobis v. 1-calcaratis. Ovarium toto ambitu aut septis antheras in præfloratione inflexas separantibus tubo calycino usque ad apicem aut saltem maxima parte adhærens, 4-5- rarius 6-loculare; placentis lamelliformibus, margine libero incrassato carnosulis aut ex utroque latere in membranam ovuligeram expansis, ∞-ovulatis. Stylus filiformis, stigmatе punctiformi. Bacca calycis limbo coronata, 4-5-6-locularis. Semina irregulariter ovoidea v. ovoideo-dimidiata, raphe laterali nigra hinc notata.—Frutices erecti aut radicanes et epiphytici, glaberrimi, rarius furfure stellato detergibili obducti; ramis teretibus v. angulosis; foliis verticillatis v. oppositis, rarissime abortu solitariis et alternis, ut plurimum ovato-ellipticis acutis integerrimis carnosis succulentisque, nervis primariis solito more convergentibus, nonnunquam autem divergentibus, sæpe purpurascens; floribus paniculatis aut ad axillas foliorum nodosve ramorum fasciculato-cymosis, ut plurimum roseis, interdum albis; calycibus pedunculisque sæpissime rubicundis, nonnunquam subdiaphanis.

1. **M. heterophylla**, A. Gray, Bot. Wilkes, p. 598. t. 75; alte scandens; ramis teretibus ad nodos sæpius radiciferis; foliis cujusque jugi valde disparibus 5-plinerviis, majore ovato seu ovato-oblongo subcordato subacuminato, petiolo ejus folium alternum cordato-rotundum adæquante v. superante; racemis paniculatis elongatis; bracteis verticillatis bracteolisque obovatis magnis petaloideis (albis); floribus 4-meris; calycis limbo fere integerrimo; antheris basi breviter 3-calcaratis.—Ovalau (U. S. Expl. Exped.), Viti Levu, about Navua (Seemann! n. 176). Also collected more recently by Storck, probably on the Rewa river.

Bracts and calyx white, corolla pink, berry black.

2. **M. rhodochlæna**, A. Gray, Bot. Wilkes, p. 600; subscandens; ramulis teretibus hinc inde radicanibus junioribus racemis calycibusque ferrugineo-pubescentibus; foliis cujusque jugi inæqualibus homomorphis ovato-oblongis acuminatis 5-plinerviis basi sæpe obliquis acutis v. obtusis petiolatis puberulis; racemis axillaribus; bracteis bracteolisque dilatatis rubris; floribus 4-meris; calycis limbo integerrimo. Nomen vernac. Vitiense, teste Storck, "Cavacava resiga."—Mountains of Ovalau (U. S. Expl. Exped.; Seemann! n. 177; Storck! n. 891), Viti Levu, between the head waters of the Navua river and Namosi (Seemann! n. 75).

Bracts, peduncles, and calyx, red; corolla white.

3. **M. amœna**, (sp. nov.) Seem.; erecta; ramulis teretibus, junioribus foliisque puberulis demum glabris; foliis cujusque jugi inæqualibus homomorphis ovatis v. ellipticis in petiolum attenuatis breviter acuminatis 3-7-plinerviis, supra atro-viridibus, subtus pallidioribus; pedunculis axil-

laribus elongatis apice trichotomo-cymosis bracteatis, bracteis inferioribus oppositis, superioribus bracteolisque verticillatis; pedicellis alatis; floribus 4-meris; calycibus 4-dentatis, petalis purpureis; antheris 1-porosis; baccis purpureis.—On hillsides, Namosi, interior of Viti Levu (Seemann! n. 182; Milne!).

An erect shrub, about 4–6 feet high. Petioles $\frac{1}{2}$ –1 inch long. Blade of leaf 2 inches long, $1\frac{1}{2}$ inch broad. Peduncles as long as the leaf. Flowers small. I saw this plant only once, and as my dried specimens were in a bundle that fell into the Rewa river the description is not so perfect as could be wished. Milne's specimen consists of a sterile branch only.

4. **M. Waterhousei**, (sp. nov.) Seem. mss.; epiphytica; glabra; ramulis acute 4-gonis radican-
cantibus; foliis oppositis cujusque jugi homomorphis inæqualibus obovatis v. subellipticis acumi-
natis v. acutis in petiolum angustatis 3-plinerviis; racemis amplis paniculatis, bracteis oppositis
verticillatisve ovatis v. obovatis 3–5-nerviis; bracteis calycibus petalisque pulchre roseis; cæt. ign.—
Mountains above Somosomo, island of Taviuni (Seemann! n. 175), usually growing on the top of
small trees.

This is certainly one of the most ornamental of Vitian plants, which I have named in honour of its
discoverer, the Rev. J. Waterhouse, one of the enterprising band of Christian missionaries in Viti, to whom
I am indebted for much kindness during my explorations of the group. It would be a great acquisition to
our hot-houses, growing as it does only about a foot and a half high, and having small leaves and very large
flowers. Unfortunately my flowering specimens are imperfect. Largest leaves, including petiole, 2–2 $\frac{1}{2}$
inches long, $\frac{3}{4}$ –1 inch broad. Bracts about 1 inch long.

5. **M. parvifolia**, (sp. nov.) Seem.; ramulis obtuse tetragonis, foliis bracteisque junioribus
furfuraceo-puberulis, demum glabris; foliis oppositis cujusque jugis homomorphis æqualibus obovatis
obtusis v. retusis basi cuneatis integerrimis 3-plinerviis; racemis axillaribus; bracteis oppositis spa-
thulatis v. obovatis; cæt. ign.—Top of Voma Peak, interior of Viti Levu (Seemann! n. 178).

All I collected were a few scraps, the inflorescence just appearing, but the flower-buds too young for
examination. Petiole $\frac{1}{2}$ inch long. Blade of leaf 1–1 $\frac{1}{2}$ inch long, about 1 inch broad.

VI. **Melastoma**, Burm. Fl. Zeyl. 72; Naud. Melast. p. 139. Flos 5-, rarius 6–7-merus.
Calycis dentes sæpius acuti, tubum campanulatum subæquantur, cum denticulis totidem subulatis
sæpissime alternantes, decidui. Petala inæquilatera obovata retusa aut omnino obovato-cordata,
rarius apiculata, ciliata. Stamina 10–12, valde inæqualia, raro subæqualia discolora et subdissimilia;
antheris ut plurimum lineari-subulatis 1-porosis recurvis, antice magis minusve undulatis; 5 majo-
rum violaceis, connectivo infra loculos sæpissime longe producto (loculorum circiter longitudine)
arcuato et ad insertionem filamenti antice plerumque 2-lobo aut 2-calcarato; 5 minorum luteis
connectivo infra loculos nullo aut subnullo, ibi autem sæpius 2-testiculato. Ovarium ovoideum,
nunc fere omnino liberum, nunc et sæpius ad mediam usque septis antheras in præfloratione
inflexas separantibus calyci adnatum, apice setosum, 5–6-loculare. Stylus filiformis, crassus, sig-
moideus, stigmatibus obtusis. Fructus maturus globosus, calycis tubo persistente et tunc subsphærico
vestitus, magis minusve carnosus, interdumque fere capsularis, demum lacerus. Semina cochleata.—
Frutices, rarius fruticuli strigosi, ut plurimum macranthi; foliis in eodem jugo æqualibus aut vix
disparibus, ovatis lanceolatisve, sæpius integerrimis, 3–5–7-nerviis; floribus ad apices ramorum fasci-
culatis aut glomeratis, nonnunquam solitariis; calycibus setosis, strigoso-palcaceis, rarius barbatis aut
echinatis; petalis violaceis purpureisve interdumque pallide roseis v. albis.

Besides the species mentioned below, we have in Polynesia *M. pelagicum*, from the Salomon's Islands,
and perhaps *M. microphyllum*, of which the exact native country is unknown.

1. **M. denticulatum**, Labill. Sert. Austr. Caled. p. 65. t. 64; fruticosum, micranthum, brachy-
andrum; ramis strigosis; foliis ovatis oblongove-ovatis acuminatis subintegerrimis 5-nerviis, pagina
utraque strigilloso-scabris; floribus 5-meris ad apices ramorum paniculato-corymbosis; petalis

obovatis; antheris oblongis subobtusis v. acuminatis, majorum connectivo infra loculos breviusculo et ad insertionem filamentum antice 2-lobo.—*M. Vitiense*, Naud. Melast. p. 141.—Common throughout the Viti group, in open places (U. S. Expl. Exped.; Seemann! n. 180; Milne! Sir E. Home! Harvey! M'Gillivray!), Aneitum, New Hebrides (Milne! M'Gillivray!), New Caledonia Labillardière! ex Herb. Webb.

I have no doubt about the identity of *M. denticulatum* and *M. Vitiense*. The anthers are not always so acuminate as they are in Labillardière's figure; very frequently they are obtuse, though never to the same degree as in *M. Taitense*.* The flowers vary from almost pure white to deep pink.

2. **M. Novæ-Hollandiæ**, Naud. Melast. p. 156; ramis teretiusculis furfuraceo-ferrugineis v. strigillosis; foliis petiolatis oblongo-ovatis ellipticove-lanceolatis acutis integerrimis, adjecto utroque nervo submarginali 5-nerviis, supra strigosis, subtus setulosis; floribus ad apices ramorum 5-7-nis, interdum paucioribus aut numerosioribus, corymbosis v. umbellatis; calycis tubo strigoso-candicanti, dentibus acutis tubum æquantibus, denticulis minutis acutis; petalis elliptico-obovatis.—*M. Banksii*, A. Cunningham. in Sched. Herb. et in Steud. Nom. Bot. ed. ii. ex parte.—Common in Viti Levu (Milne!) and Ovalau, about Port Kinnaird (Seemann! n. 179), Queensland (Banks! Cunningham! Forster!).

I fancy this must be the plant which A. Gray, with a mark of doubt, referred to *M. polyanthum*, for which, indeed, at the first blush it may well be mistaken. The calyx-tube is covered with glossy whitish paleæ. I am not aware that Cunningham ever gave a definition of his *M. Banksii*, and I should be inclined to refer some of his specimens to which that name is attached to *M. denticulatum*.†

ORDO XXXVIII. RHIZOPHORACEÆ.

I. **Haplopetalon**, A. Gray, Bot. Wilkes, p. 608. t. 7 C. Calyx profunde 4-5-fidus, lobis triangularibus æstivatione valvatis. Petala 4-5, obovata, calyce inserta, fere exunguiculata, integerrima, carinata, æstivatione involuta, decidua. Stamina 16-20, brevissima, 1-serialia, margini disci perigyni tenuis inserta; antheræ ovales, introrsæ, 2-loculares, longitudinaliter dehiscentes, filamentis subulatis æquilongæ. Stylus brevis, apice 4-7-fidus, lobis linearibus demum patentibus apice stigmatosis. Ovarium depressum, calycis tubo (mediante disci) semiadnatum, 1-loculare. Ovula 8-10, anatropa, e columna centrali geminatim appensa.—Arbusculæ glabræ; foliis oppositis oblongis v. obovatis obscure serrulatis v. subintegerrimis; stipulis interpetiolaribus caducis; pedicellis in axillis laxè fasciculatis.

1. **H. Richii**, A. Gray, Bot. Wilkes, p. 608. t. 76; foliis oblongis v. obovato-ellipticis obtuse acuminatis v. obtusis in petiolum attenuatis, obscure serrulatis, glabris; alabastris pubescentibus; calycis segmentis petalisque 4; styli lobis 4-5.—Bua Bay, Vanua Levu (U. S. Expl. Exped.).

2. **H. Seemanni**, A. Gray in Bonplandia, vol. x. p. 37, et in Proceed. Amer. Acad. vol. v. p. 318; foliis obovatis subtus cum ramis novellis molliter pubescentibus; alabastris hirsutis; calycis segmentis petalisque sæpius 5; styli lobis 7.—Island of Kadavu (Seemann! n. 184).

* *M. Taitense*, DC. Prodr. vol. iii. p. 144; Naud. Melast. p. 141 (*M. Malabathricum*, Forst. Prodr. n. 193 (non Linn.); Sol. Prim. Fl. Ins. Pacif. p. 256, et in Parkins. Drawings of Tahit. Plants, t. 48), does not seem to have been found as yet out of the Society Islands. It has narrower leaves than *M. denticulatum*, invariably white flowers (judging from Solander's, Forster's, Parkinson's, and Pickering's notes and drawings), and differently-shaped, always obtuse anthers. I have seen specimens from Banks and Solander, Forster, Barclay, and Bidwill.

† An allied Australian species, which Dr. F. Mueller has distributed as *M. Novæ-Hollandiæ*, and named *M. Malabathricum* in his 'Fragmenta,' vol. iv. p. 161, collected in Arnheim Land and at Port Essington (Armstrong! n. 351), I hold to be new. It is *M. velutinum*, Seem., and may be known by its ovate or ovate-oblong, acute or shortly acuminate, 5-ribbed leaves, which on the upper surface are softly strigose, and on the lower covered with a thick velvety, generally rusty tomentum.

The discovery of this second species, as A. Gray justly observes in 'Bonplandia,' strengthens *Haplopetalon*, and somewhat modifies the generic character. The leaves are much larger than in *H. Richii*, being 5-7 inches long and 3-4 broad.

II. **Rhizophora**, Linn. Gen. n. 592; Endl. Gen. n. 6098. Calyx tubo cum ovarii basi connato, limbi 4-partiti laciniis tubum duplo v. triplo superantibus. Petala 4, annulo carnosissimo summum calycis tubum vestienti extus inserta, ejusdem laciniis alterna, acuminata, apice nuda. Stamina 8-12, cum petalis inserta, 4 iisdem opposita; filamenta brevissima, subnulla; antheræ introrsæ, 2-loculares, oblongo-lineares, acuminatæ, basi insertæ, conniventes, longitudinaliter dehiscentes. Ovarium semiinferum, parte adnata 2-loculari, 4-ovulata, parte libera solida ovata carnosissima, sensim in stylum brevem conicum attenuata, stigmate 2-dentato. Fructus coriaceus, subovatus, supra basin calycis limbo reflexo cinctus, abortu 1-ocularis, 1-spermus, apice seminis exalbuminosi inversi mox germinantis, radícula elongata clavata perforatus.—Arbores litorales; foliis oppositis integerrimis glabris; stipulis interpetiolaribus caducis; pedunculis axillaribus 2-3-fidis v. dichotomis; calyce bractea cupulæformi suffulto; floribus majusculis, alabastris ovoideis lævibus.

1. **R. mucronata**, Lam. Dict. vol. vi. p. 169; Ill. t. 396. f. 2; foliis ovatis v. oblongo-ellipticis abrupte acuminatis; stipulis oblongis obtusis mox deciduis; floribus dichotomo-cymosis, marginibus petalorum pilosis, staminibus 8; fructu ovoideo.—*Rhizophora Mangle*, Forst. Prodr. n. 202, non Linn. (?). Nomen vernac. Vitiense, "Dogo."—Common at the mouths of rivers and on swampy parts of all the islands (Seemann! n. 185). Also collected in New Caledonia (W. Anderson! anno 1774), Tongan and Samoan islands (U. S. Expl. Exped.), and on the east coast of New Holland, the East Indies, and Mauritius.

This tree produces a hard and durable wood. The sap has a blood-red colour, and is much employed by the natives, amongst whom it is as fashionable to dye their hair red as it was amongst the ladies of ancient Rome, after their roving husbands had become acquainted with the fair locks of the Teutonic race. When first put on, the sap is allowed to run freely over the face and neck, producing an effect very much like that a crown of thorns is represented to do in some of our familiar pictures. On the island of Nukubati, on the Macuata coast of Vanua Levu, I also saw the sap employed by potters for painting their crockery. Just after the pots had been baked, and were still quite hot, a mixture consisting of this fluid and the sap of *Hibiscus moschatus*, Linn., was used for that purpose, the colour of the paint remaining almost unchanged after the vessels had become cool and dry. The aerial roots, being very elastic, offer good materials for bows, of which the Fijians avail themselves.

III. **Bruguiera**, Lam. Dict. vol. iv. p. 696. t. 397; Endl. Gen. n. 6101. Calyx tubo turbinato, cum ovario connato, limbi 8-14-partiti laciniis tubum subæquantibus. Petala 8-14, annulo carnosissimo summum calycis tubum vestienti inserta, oblonga, 2-fida, basi conduplicata v. convoluta, stamina retinentia. Stamina 16-28, cum petalis inserta et geminatim opposita, tandem elasticè ab iisdem resilientia; filamenta filiformia, petalis subdimidio breviora, alternatim inæquilonga; antheræ introrsæ, 2-loculares, lineares v. oblongæ, acutæ, basi insertæ, longitudinaliter dehiscentes. Ovarium inferum, 2-3-4-loculare, loculis 2-ovulatis, stylo filiformi staminum longitudine; stigmate 2-4-dentato. Fructus coriaceus, turbinatus, calycis limbo coronatus, apice haud exserto seminis exalbuminosi inversi, mox germinantis, radícula elongato-cylindrica perforatus.—Arbores v. arbusculæ littorales; foliis oppositis integerrimis glabris, stipulis interpetiolaribus deciduis; pedunculis axillaribus 1-3-∞-floris; calycibus ebracteatis, alabastris fusiformibus v. ovoideis.

1. **B. Rheedii**, Blume, Fl. Jav.; Benth. Fl. Austr. vol. ii. p. 494; foliis ovatis v. oblongo-ellipticis breviter acuminatis in petiolum attenuatis; stipulis oblongis, mox deciduis; pedunculis axillaribus solitariis deflexis (1 unc. et ultr. long.); petalis apice setosis; fructibus teretibus 6-angulatis.—*B. australis*, A. Cunn. in Ann. Nat. Hist. vol. i. p. 367. *B. Rheedii* et *B. Rumphii*, Blume, Mus. Bot. vol. i. p. 138. *B. gymnorhiza*, Forst. Prodr. n. 201 (non Lam.?). Nomen vernac. Vitiense,

“Dogo” (v. [?] “Dogo kana”).—Common at the mouths of rivers and on swampy shores of various Vitian islands. Also collected in the Tongan islands (Forster! in Mus. Brit.) and Samoan islands (U. S. Expl. Exped.).

The general Vitian name for Mangroves is “Dogo,” and the natives speak of four different kinds, but the United States Exploring Expedition and myself only collected two. The fruit of one of these, which is termed “Dogo kana” (*i. e.* edible Mangrove), is made into bread (*madrai*) and eaten in times of scarcity, and I believe *B. Rheedii* to be that species, as we know it is resorted to for that purpose in various other countries. The fruit of other Mangroves is also eaten, but at the best it must be but poor food, and we can well believe in the sufferings of Pizarro and his companions when on their voyage of discovery to Peru, whilst staying in the little island of Gorgona, their staple food was partly supplied by Mangrove fruits.

The wood of *B. Rheedii* is hard and durable. The aerial roots are employed for making bows. It is well known that the use of the bow is restricted in Polynesia to the dark-skinned Papuan race, to which the Viti people belong. The light-skinned Malay Polynesians were ignorant of it. To a certain extent the absence, or let us rather say scarcity, of Mangroves in the islands of eastern Polynesia inhabited by the Malay Polynesians, and the abundance of these trees in the western parts peopled by the dark Papuans, may account for it. We have no record of any Mangroves being found in the Hawaiian or in the Marquesas islands. Forster mentions a Mangrove as occurring in the Society Islands, but there is no specimen of it in his herbarium, nor have I ever seen any other specimen from there. A fragment, ticketed Tahiti, was in the collections made by the United States Exploring Expedition, but it was thought to be a mistake; and Dr. Pickering, in his notes, does not mention Mangroves as occurring in Tahiti. Nor does Guillemain (Zeph. Tait.) seem to know of any Mangroves in Tahiti. But there seems to be no doubt about the occurrence of Mangroves in the Samoan or Navigator group, both the species found in Viti having been collected thereby the American Expedition, but whether they are abundant or rare in those islands is not stated. Two species are also found in the Tongan islands, according to Forster, but only of one of them has an imperfect specimen been preserved. The subject is deserving of further investigation.

ORDO XXXIX. COMBRETACEÆ.

I. **Terminalia**, Linn. Mant. 21. Flores polygami. Calyx tubo cylindraco, cum ovario connato, supra ovarium constricto, limbo campanulato 4–5-dentato deciduo. Corolla 0. Stamina 8–10, calycis limbo 2-seriatim inserta; filamenta subulata; antheræ 2-loculares, ovatæ v. subglobosæ, longitudinaliter dehiscentes. Ovarium inferum, 1-loculare; ovula 2, rarius 3, pendula, anatropa. Stylus subulatus; stigma acutum. Drupa angulata v. compressa, ad margines sæpe 2–5-alata, carnosa v. exsucca, putamine lignoso 1-spermo. Semen inversum. Embryonis exalbuminosi orthotropi cotyledones circa radiculam superam spiraliter convolutæ. Arbores v. frutices; ramis sæpe subverticillatis; foliis ad apices ramorum confertim alternis integerrimis v. crenulatis, sæpe pellucido-punctatis, exstipulatis; floribus abortu polygamis bracteatis racemosis v. glomeratis, albis viridibus v. coloratis.—*Chuncoa*, Pav. in Juss. Gen. 76. *Gimbernatia*, Ruiz et Pav. Prodr. 138. t. 36. *Catappa*, Gært. Fruct. vol. ii. p. 206. t. 127. *Myrobalanus*, Gært. Fruct. vol. ii. p. 90. t. 97.

Under the name of “Katappers of Indianensche Amandelboom,” *Terminalia Catappa* was first mentioned by Johan Nieuhof, in his ‘Gedenkwaardige Brasilianense Zee- en Lant-Reize,’ Amsterdam, 1682, fol., who at p. 237 gives a general description of the tree and its uses, and says there is more than one kind of the fruit:—“Daer is meer als eenerlei flagh van deze vruchten; want zommige hebben een bleek rootachtige schil, en zijn wat grooter; en andere een geele, gelijk gezeit is.” The former is doubtless Hasskarl’s var. *macrocarpa*, the latter his *chlorocarpa* (fructibus minoribus viridi-flavescentibus). Rheede (Hort. Mal., part iv. p. 5. t. 3, 4, 1682), under the name of *Adamarum*, gives in pl. 3 an excellent portrait of the tree, in which its coniferous habit is faithfully represented. He says the drupe is at first green, ultimately “*rufo*.” Hence his plant represents probably the var. *macrocarpa* of Hasskarl. Ray (Historia Plant., pp. 1521, 1688) quotes both Nieuhof and Rheede, and copies almost verbatim Rheede’s description. Plukenet (‘Almagest,’ p. 28; Lond. 1696) enumerates “*Amygdala Indica sive Adamarum*, H. Malab., p. 4, cujus meminit Joh. Nieuhof, in suo itinerario.” A specimen preserved in Plukenet’s herbarium (Herb. Sloane, vol. xcii., back of fol. 12, Brit. Mus.), is the true *Terminalia Catappa*. Linnæus

('Mantissa,' p. 519, 1767) quotes Nieuhof and Ray's names as synonyms of his *Terminalia Catappa*, so there can be no doubt about the plant he really meant. Rumphius (Herb. Amb. vol. i. p. 175. t. 68, 1750), enumerates under the heading "*Catappa, Catappan*," three kinds of *Terminalia*, viz. *domestica*, *litorea*, and *sylvestris*. The description of the first belongs undoubtedly to *Terminalia Catappa*, Linn. But which is the second (*litorea*)? Rumphius has well stated the difference between them. The true *T. Catappa* (*Catappa domestica*) is a middle-sized tree with the habit of a Conifera, extremely well figured by Rheede, and it is largely cultivated throughout the eastern hemisphere. The branches are always in whorls, and nearly at right angles with the stem. The leaves are generally crowded at the extremity of the branchlets in spurious whorls, and before drooping they undergo a series of changes in colour from grey to yellow and bright red, as many North American, but few Asiatic or Polynesian, plants do. *Catappa litorea* is a much higher tree than *Catappa domestica*, but does not possess that regularity of growth; the leaves are more irregularly placed, and do not undergo a change of colour to the same extent. The plant is never cultivated, and closely confined to the sea. Its branches, as Rumphius well observes, overhang the salt water. The fruit is much smaller than that of *T. Catappa*, compressed, and those I have seen were not spoon-shaped as is sometimes the case in *T. Catappa*. But very little reliance can be placed on the shape of the fruit in this genus, it being extremely variable. On a branch of *T. Catappa*, now before me, there are seven fruits, all of which are different, and three of them quite spoon-shaped. A. Gray has remarked the same in the specimens collected in Wilkes's Expedition. Lamarck (Encyclop. Méthod., Paris, 1783), established, upon Rumphius's pl. 58, a new species which he terms *Terminalia Moluccana*, and he distinguishes the two species thus:—

T. Catappa, foliis obovatis crenulatis, subtus tomentosis. Rheede, Mal. vol. iv. p. 5. t. 3 et 4.

T. Moluccana, foliis obovatis, integerrimis utrinque glabris. Rumph. Herb. Amb. vol. i. p. 174. t. 68.

Now, the leaves of the genuine *T. Catappa* are, when the plant is old, generally quite glabrous, though they are more or less tomentose in young plants, and the crenulation of the edge is at the best of times obscure, and in some instances the margin is quite entire. Rumphius's figure, quoted by Lamarck, certainly belongs to the true *Terminalia Catappa*, as expressly stated by Rumphius. Lamarck's *T. Moluccana* must therefore fall to the ground, and has already been suppressed by Miquel (Fl. Neerl. Ind. vol. i. part i. p. 599). The species which several authors have mistaken for *T. Moluccana* seems to have been what Rumphius calls *Catappa litorea*. Specimens which I collected in Viti agree with A. Gray's brief description of what he believed to be Lamarck's *T. Moluccana*, but what I take to be Rumphius's *Catappa litorea*, and shall call *T. litoralis*. When young this species is more or less hairy, but when old perfectly glabrous, much more so than any specimen of *T. Catappa* I have ever seen. Forster's *T. glabrata*, an original specimen of which is preserved at the British Museum, is identical with *T. Catappa*. A. Gray was right in his conjecture that Forster must have taken his character of the drupe from immature fruit; it is described as "green" by Forster, whereas in Parkinson's drawing of Tahitian plants, t. 116, it is shown to be purple, and Solander, in his manuscript notes, terms it "obscure purpurea." The Tahitian plant might, on account of the difference of colour in its fruit from the ordinary red-fruited plant, be regarded as a distinct variety, for there is no specific difference between Forster's and Linnæus's plant. *T. Richii*, A. Gray, must also be a small form of *T. Catappa*.

1. ***T. Catappa***, Linn. Mant. 519; arborea; ramis pseudoverticillatis subhorizontaliter patentibus, ramulis petiolisque ferrugineo-tomentosis; foliis sparsis v. in extremitate ramulorum subverticillato-aggregatis, longiuscule petiolatis, obovato-oblongis, rotundatis v. breviter acuminatis, basi subcordatis v. in petiolum angustatis, obsolete crenulatis, supra glabris, subtus ad costas pubescentibus, basi et in axillis nervorum glandulosis, nervis primariis utriusque lateris 8–10; racemis erectis, pedunculo ferrugineo-tomentoso v. glabrato; calyce 5-fido, extus glabro; drupa compressa cochleata v. ovata obscure angulata glabra.—*Katappers*, of *Indianensche Amandelboom*, Nieuhof, Reize, ed. Amst., 1682, p. 237. *Adamarum*, Rheede, Hort. Mal. pars iv. p. 5. t. 3 et 4; Pluk. Alm. p. 28; Ray, Hist. Plant. p. 1521; Rumph. Herb. Amb. vol. i. p. 175. *T. Moluccana*, Lam. Encycl. Méth. p. 349. *T. glabrata*, Forst. Plant. Escul. n. 20 et Prodr. n. 389; Spreng. Antiq. Bot. t. 2 (?). Sol. Prim. Fl. Ins. Pac. p. 348, et in Parkinson's Drawings of Tah. Plants, t. 116. Nomina vernac. Tahitensia, teste Forster, "Auwiri," "Tara iri" v. "Taraheiriri;" Vitiensis, teste Seemann, "Tavola."—Common throughout Viti, and often cultivated (Seemann! in 187; Barclay! in Mus. Brit.). Also collected in the Society Islands (Forster! Mus. Brit.), and much cultivated throughout the tropics of both hemispheres.

The "Tavola" supplies a valuable timber, used for various purposes, the most singular of which is, that it is made into drums, called "Lali," the beating of which is resorted to when distinguished guests arrive,

on festive occasions, or to call the Christian natives to divine worship; and it is a curious coincidence, but nothing but a coincidence, that the ancient Egyptian term for rejoicing was "lali," as in the Arabian song "Doos ya-lal-lee." These drums are beaten with two short and thick pieces of wood, and the sound produced can be heard within a radius of several miles. From Forster's account, it appears that the Tahitians also made drums of this wood ("Materies pro extruendis cymbis, tympanis, scamnisque usurpatur"). The seed is edible, and the white colonists have given it the name of "Fijian almonds;" but as it has only the shape and whiteness, but not the flavour of the almond, that name must be received *cum grano salis*. The natives are extremely fond of the Tavola as an ornamental tree, and frequently plant it near their houses and around their public buildings. The horizontal tendency of the branches, upon which they improve by applying weights, the clean look of the tree and its freedom from epiphytic plants, and the animals hoarding in them, as well as the change of colour which the leaves undergo before falling off—brown, red, yellow, and scarlet,—seem to please them very much.

2. **T. litoralis**, (sp. nov.) Seem.; arborea; ramis sparsis suberecto-patentibus, ramulis junioribus petiolisque albido-tomentosis, demum glabris; foliis sparsis breviter petiolatis obovatis obtusis v. emarginatis basi subcordatis, integerrimis, utrinque glaberrimis, subtus in axillis nervorum glandulosis, nervis primariis utriusque lateris 7-8; racemis filiformibus, pedunculis pedicellisque glaberrimis; calyce 4-5-fido extus glabro intus albido-villoso; drupa compressa obovato-rotundata multo minore quam in *T. Catappa*.—*T. Moluccana*, auct., non Lam.? *Catappa litorea*, Rumph. Herb. Amb. p. 175.—Nomen vernac. Vitiense, "Tiwi."—Common on the sandy sea-beaches; never found inland (Seemann! n. 188).

A tree often sixty feet high, branches crooked, and irregularly scattered around the stem. Wood used for building purposes; the seeds sometimes eaten by children, and inferior in quality to those of *T. Catappa*.

II. **Lumnitzera**, Willd. in Berl. Nat. Fr. vol. iv. p. 186; Endl. Gen. n. 6084. Calyx tubo oblongo compresso adnato 2-bracteolato, limbi superi persistentis tubuloso-campanulati 5-lobi lobis obtusis, sæpe inæqualibus. Petala 5, summo calycis limbo inter ejusdem lobos inserta, oblonga, patentia. Stamina 10, 3 v. 5 interdum abortiva; filamenta filiformi-subulata, antheræ 2-loculares, longitudinaliter dehiscentes. Ovarium inferum, 1-loculare. Ovula 3-5, pendula, anatropa. Stylus subulatus; stigma acutum. Drupa coriacea, calycis limbo coronata, ovato-oblonga, compressa, angulata, 1-sperma. Semen inversum. Embryonis exalbuminosi orthotropi cotyledones foliaceæ, circa radiculam superam convolutæ.—Frutices v. arbores, inter Rhizophoras littorales; foliis alternis cuneato-oblongis retusis v. emarginatis integerrimis v. obsolete crenatis glabris crassiusculis subaveniis, spicis brevibus plerumque simplicibus, axillaribus solitariis v. terminalibus corymbosis, floribus albis v. coccineis, bractea parva stipatis.—*Phyrranthus*, Jack in Malay. Misc. *Petaloma*, Roxb. Fl. Ind. vol. ii. p. 372.

1. **L. coccinea**, Wight et Arn. Prodr. p. 316; arborea v. fruticosa, glabra; foliis obovatis v. oblongo-cuneatis obtusissimis crassis; floribus (coccineis) racemosis terminalibus, sæpius subcorymbosis; calycis laciniis obtusis; staminibus petalis duplo longioribus.—Benth. Fl. Austr. vol. ii. p. 503.—Nomen vernac. Vitiense, "Sagali."—Common in the Mangrove swamps of all the islands (Seemann! n. 189). Also found on the east coast of Australia (Banks and Solander!) and in the Indian Archipelago.

The wood is blackish, hard, and durable, and used for various purposes.

III. **Gyrocarpus**, Jacq. Amer. p. 282. t. 178. fig. 80; Endl. Gen. n. 2068. Flores polygami. Hermaphr.: Calycis tubus cum ovario connatus; limbus superus, 4-6-8-lobus, lobis 2 oppositis persistentibus, demum incrementibus. Petala 0. Stamina 4; filamenta glandulis (staminodiis) stipitatis distinctis v. utrinque adnatis interposita; antheræ valvulis dehiscentes. Ovarium adhærens, 1-loculare; ovulum 1, pendulum, anatropum. Stigma sessile, subobliquum. Drupa apice bialata, 1-sperma. Semen inversum, testa cartilaginea. Embryo orthotropus, exalbuminosus. Cotyledones

petiolatæ; plumulæ spiraliter circumvolutæ. Masc.: Calyx liber et andrœcium ut in hermaphrodito.—Arbor excelsa, foliis alternis integris lobatisve, paniculis florum cymosis præcocibus.

Lindley and Bentham have referred this genus to *Combretaceæ*, from the typical forms of which it differs in having valvate anthers; and until some better place has been found, it must remain there. I agree with Bentham in reducing all the species of *Gyrocarpus* proposed by different authors to only one species, which, like most litoral plants, has a wide range in both the eastern and western hemispheres. Nothing is more striking than the differences observable in the young and the old plants. In the former the leaves are large, broadly cordate, and deeply 3-lobed, as figured in Jacq. Ic. Amer. t. 178, f. 80, and loosely tomentose on both sides; in the latter they are quite entire, glabrous, more acuminate and more acute at the base than in the form characterized as *G. acuminata*, Meisn., as already pointed out by Bentham.

1. **G. Jacquini**, Roxb. Pl. Corom. vol. i. p. 2. t. i.; Lam. Ill. t. 850; Benth. Fl. Austr. vol. ii. p. 505; Pers. Syn. vol. i. p. 143.—*G. Americanus*, Jacq. Am. p. 282. t. 178. f. 80. *G. Asiaticus*, Willd. Sp. vol. iv. p. 982. *G. acuminatus*, Meisn. in DC. Prodr. vol. xv. sect. i. p. 248. *G. sphenopterus*, R. Brown, Prodr. 405; Endl. Iconogr. t. 43. *G. rugosus*, R. Brown, Prodr. 405. Nomen vernac. Vitiense, "Wiriwiri."—Common on the sea-beach, Taviuni and other islands (Seemann! n. 561). Also found in Eastern Australia, and in tropical America and Asia.

A large, quick-growing tree, with soft, useless wood. In old trees the heart of the trunk is often found decayed in the manner of our Willows.

ORDO XL. HOMALINEÆ.

1. **Homalium**, Jacq. Am. 170. t. 183. f. 72; Benth. in Journ. Linn. Soc. vol. iv. p. 33; Endl. Gen. n. 5086 et 5087. Calycis tubus turbinatus v. oblongus, ovarii basi adnatus; limbus ∞ -partitus, segmentis (4–12) petalisque totidem cum iis alternantibus persistentibus post anthesin sæpius accretis. Glandula pulvinata, intus ad basin cujusve calycis segmenti. Stamina ad basin petalorum inserta, iis opposita, tot quot petala, vel ad quodque petalum 2–7 approximata v. fasciculata. Ovarium 1-loculare, basi adnatum et vacuum, superne liberum, conicum, stylis 3–5 liberis v. basi connatis coronatum; placentæ parietales, versus apicem cavitatis tot quot styli et cum iis alternantes; ovula in quaque placenta 2–6 (sæpius 4), pendula. Fructus paullo accretus, siccus, medio calycis segmentis petalisque persistentibus et sæpius accretis cinctus, apice valvulis stylos findentibus et medio placentiferis breviter dehiscens (v. induratus et indehiscens?) Semina pauca, parva, pendula, oblonga. Albumen haud copiosum. Embryo rectus, radícula brevi supera, cotyledonibus oblongis tenuiter foliaceis.—Arbores v. frutices; stipulis parvis sæpe caducis, foliis alternis integerrimis v. sæpius obtuse dentatis penniveniis; racemis axillaribus simplicibus v. in paniculas terminales dispositis v. paniculis divaricate ramosis; floribus parvis, sæpe inconspicuis, sessilibus v. breviter pedicellatis, solitariis v. fasciculatis.—*Blackwellia*, Comm. ex Juss. Gen. p. 343. *Cordylanthes*, Blume, Mus. Bot. vol. ii. p. 27.

1. **H. Vitiense**, Benth. in Journ. Linn. Soc. vol. iv. p. 36; foliis ovatis vix coriaceis glabris; floribus subsessilibus 8–10-meris; calycis tubo oblongo-turbinato; segmentis linearibus quam petala lineari-cuneata vix minoribus, staminibus ad petala 2–3-nis; stylis sæpius 4.—Viti Levu (Milne!)

This plant has the shuttlecock flowers of several species of the *Blackwellia* section of the genus, and is allied to, though quite distinct from, *H. fœtidum*. The leaves are 2–3 inches long. Another Polynesian species with shuttlecock flowers was gathered at Kanala, New Caledonia (Macgillivray! n. 30), which may bear the name of *H. (Racoubea) Austro-Caledonicum*, (sp. nov.) Seem. in Herb. Mus. Brit.; ramis angulatis folisque glabris; foliis petiolatis oblongis v. obovato-oblongis obtusis v. breviter acuminatis grosse et irregulariter crenatis, crasse coriaceis; racemis simplicibus elongatis villosiusculis; floribus subsessilibus 10–12-meris, calycis tubo turbinato, segmentis linearibus quam petala linearia longioribus; stylis 3. The only specimen at my disposal has the branches curiously ringed at the lower end, but it remains to be seen whether this is so in other specimens. Petioles $\frac{1}{2}$ inch long. Blade of leaf 3–3 $\frac{1}{2}$ inches long, 2 inches broad. Stamens arranged in three whorls, opposite the petals; those of the outer two whorls in pairs those of the inner whorl single.

ORDO XLI. PASSIFLORACEÆ.

In 'The Botany of the Voyage of H.M.S. Herald' I endeavoured to show that *Passifloraceæ* and *Turneraceæ* were so intimately connected as to constitute one Natural Order. I believe this view is now generally adopted. In Polynesia the Order is represented by one species of *Passiflora* and seven species of *Disemma*.

I. **Disemma**, Labill. Nov. Caled. 78. t. 79; Endl. Gen. n. 5100. Perigonium tubo brevi, subtus sulcato, limbi 10-partiti lobis 2-seriatis, interioribus minoribus corollinis. Corona faucis duplex, exterior filamentosa, filis 1-seriatis, interior tubuloso-conica, longitudinaliter plicata, ore truncato v. denticulato. Urceolus carnosus, gynophori basim laxè cingens, 5-lobus. Stamina 5, perigonii laciniis exterioribus opposita, cum gynophoro longo connata; filamenta apice libera; antheræ 2-loculares, oblongæ, incumbentes, longitudinaliter dehiscentes. Ovarium longe stipitatum, 1-loculare. Ovula in placentis parietalibus tribus ∞ , ∞ -seriata, horizontalia, anatropa. Styli 3, cylindrico-subclavati; stigmata subcapitata. Bacca subglobosa, 2-locularis, intus pulposa, placentis parietalibus 3. Semina ∞ , ovata, compressa, funiculi apice in arillum carnosum expanso inclusa, testa crustacea scrobiculata. Embryo in axi albuminis carnosi orthotropus, cotyledonibus foliaceis, radícula umbilico proxima centrifuga.—Frutices, *Passifloræ* facie, foliis alternis 3-5-lobis, stipulis setaceis, pedunculis axillaribus solitariis v. geminis 1-floris, bracteis a flore remotis.—*Passifloræ* sp., Forst.; *Murucujæ* sp., Lindl. Coll. t. 36.

This genus is confined to New Holland and the Pacific Islands; the most eastern species is *Disemma cærulescens*, Seem.* *D. aurantia* is found in New Caledonia and the adjacent islets (Forster! Milne!), *D. adiantifolia* and *Baueriana* in Norfolk Island, and three new species in Viti.

1. **D. (?) Barclayi**, Seem. (sp. nov.); petiolis eglandulosis; foliis glabris basi ovatis late 3-lobis, lobis oblongis v. obovatis obtusis mucronatis, medio productiore; cæt. ign.—In woods, Taviuni and Viti Levu (Barclay! n. 3459 in Mus. Brit.; Seemann! n. 190, ex parte).

A small-leaved, delicate-looking plant, discovered in 1840 by Barclay, but his specimens, as well as mine, are not in flower. I confused it in the distribution of my specimens with the following species, which I collected in bud. Petiole almost filiform, 1-2 inches long. Blade of leaf 1-1½ inch long 1½ inch broad. The natives of Taviuni, and probably also those of other parts of Viti, make wreaths of this creeper, which they wear around their heads.

2. **D. Storckii**, Seem. (sp. nov.); petiolis medio 2-glandulosis; foliis glabris basi ovatis late 3-lobis, lobis ovatis v. oblongis obtusis mucronatis, supra viridibus, subtus pallidioribus, 3-5-nerviis; pedunculis apice 2-articulatis, 2-3-bracteatis, bracteis setaceis; floribus masculis 4-meris.—Taviuni, in woods (Seemann! n. 190, ex parte).

A more robust-looking plant than the preceding. Petioles 2-2½ inches long. Blade of leaf 3 inches long. Flowers greenish, as far as could be seen from the young buds. Hermaphrodite flowers not seen.

3. **D. Vitiensis**, Seem. (sp. nov.); petiolis apice 2-glandulosis; foliis glabris basi ovatis late 3-lobis ovatis obtusis, supra viridibus, subtus pallidioribus, 3-5-nerviis; filis coronæ exterioris lobis perigonii internis duplo brevioribus; corona interiore truncata, ore dentato.—Viti Levu (Milne!).

* *D. cærulescens*, Seem. in Bonplandia, vol. x. p. 366; glabra, petiolis 2-glandulosis, foliis basi ovatis late 3-lobis, lobis indivisis triangularibus acutis, medio productiore, supra viridibus, subtus pallidioribus; cirrhis simplicibus; floribus solitariis; pedunculis bracteolis 3 setiformibus instructis; perigonii laciniis linearibus (cærulescentibus); corona interiore truncata ore minute undulato-crispa; antheris tortis; ovario subgloboso.—Tongan Islands (Capt. Cook! in Brit. Mus.). Blade of leaf 3½ inches long; petiole 2½ inches long. Outer segments of perigonium 1½ inch long. Differs from *D. adiantifolia* and *Barclayi* in having glandulose petioles, from *D. aurantia*, *coccinea*, *Herbertiana*, and *Baueriana* in the colour of the flowers and the form of the leaves.

Petiole 1 inch long. Blade 2 inches long, 2-2½ inches broad. Flowers large; external parts of perigonium, judging from Milne's indifferent specimens, greenish, internal red or blood-colour.

ORDO XLII. PAPAYACEÆ.

I. **Papaya**, Tourn. Inst. p. 659, t. 441; DC. Prodr. pars xv. sect. i. p. 414. Lobi corollæ masc. æstivatione dextrorsum v. sinistrorsum contorta. Ovarium 1-loculare, ovulis secus lineas 5 in pariete externa dispositis. Stylus minimus. Stigma obovato-oblonga, planiuscula, patentia, obtuse lobata. Semina rugoso-echinata.—Arbusculæ inermes, foliis simplicibus palmatifidis v. subpartitis.—*Carica*, Linn. Gen. ed. 1. n. 759. Endl. Gen. n. 5119.

In the Fijian specimens the æstivation of the corolla of the male flowers is in one and the same raceme both dextrorse and sinistrorse, so that one of the characters by which Alph. De Candolle distinguished *Papaya* from *Vasconcellea* breaks down.

1. **P. vulgaris**, DC. in Lam. Dict. vol v. p. 2; dioica v. subdioica; foliis ambitu ovatis 7- (raro 6-9-)fidis v. subpartitis, lobis ovato-acutis varie sinuatis lobatisve inferioribus petiolo approximatis; racemis masc. pendulis v. patentibus petiolo brevioribus, fœmineis abbreviatis 1-3-floris; fructibus approximatis pendulis obovato-ellipsoideis obtusis viridi-luteis obtuse lateque subcostatis; tuberculis seminum obtusis.—*Papaya orientalis*, Col. in Hern. Thes. p. 870, cum icone. *Papaya* et *Ambapapaya*, Rheede, Mal. vol. i. t. 15. *Papaya*, Rumph. Amb. vol. i. t. 50. *Papaya*, Hughes, Barbad. t. 14, 15. *Carica Papaya*, Linn. Sp. p. 1466, excl. syn.; Lindl. Bot. Reg. t. 459; Hook. Bot. Mag. t. 1298, 2899; Wight, Ill. t. 106, 107. *Papaya sativa*, Tuss. Antil. vol. iii. p. 45. t. 10, 11. *Papaya communis*, Desc. Fl. Med. Antil. vol. i. t. 47, 48. *Carica Mamaya*, Vell. Fl. Flum. vol. x. t. 131 (*pessima*).—Nomen vernac. Vitiense, "Oleti."—Common about the European settlements and native villages.

The Oleti or Papaw-tree has been introduced into Viti,—I am told in the early part of this century,—and Barclay collected specimens of it in 1840 in Viti Levu, but I have not been able to learn from what country it has been brought over. The white settlers generally term the tree, which is now found in almost every part of the group, "Mammey-apple," and this may point to Brazil, where it is known by the name of "Mamaya." I have also seen specimens of this *Papaya* from the Marquesas Islands. Ellis (Polyn. Researches) does not enumerate it in 1829 as existing in Tahiti; Guillemin, in 1837, has it in his Tahitian list; but we have no other record of its being cultivated or wild in any other part of Polynesia. Neither the natives nor the white settlers seem to care much for the tree; only a few seem to be aware that saponaceous properties reside in the leaves, which, in the absence of soap, may be, and in tropical America are, turned to advantage; that both the leaves and the fruit act in a hitherto unexplained way upon the animal fibre, and make tough meat tender if either boiled with portions of them or even wrapped up in the leaves; that the fruit is very good eating, either raw or boiled, and that the seeds, distinguished by a mustard-like pungency, are an efficacious vermifuge for children. I do not know whence the Vitian name "Oleti" is derived. The Tongan form is "Oliji." The Tahitian name is "Ninita," and the Samoan "Esi." *Papaya*, whence the English corruption "Papaw," is a name given in America to several plants; the Papaw-tree of the United States is *Uvaria triloba*, Torr. et Gray; the *Papaya* of Spanish America is in most cases *Papaya vulgaris*, DC.; the *Papaya* cimarron of the Isthmus of Panama is *Vasconcellea cauliflora*, or some closely-allied species; and the *Papaya* colorada of New Granada is *Urera girardinoides*, Seem., anno 1854 (*U. laciniata*, Weddell, anno 1856).

The size of the fruits of the Fijian tree appeared to me to be smaller than I have seen it in other parts of the tropics, and possibly we may have here a distinct variety.

ORDO XLIII. SAMYDEÆ.

I. **Casearia**, Jacq. Amer. p. 132; Endl. Gen. n. 5060. Calyx persistens, 4-6-fidus, laciniis subæqualibus. Corolla 0. Stamina 12-30, summo calycis tubo inserta, exserta; filamenta basi inter se coalita, alterna subulata antherifera, alterna squamæformia, sterilia; antheræ ovatæ, erectæ,

2-loculares. Ovarium liberum, 1-loculare, placentis parietalibus 3 v. 4, ovulis ∞ , ∞ -seriatis semi-anatropis. Stylus terminalis, indivisus v. breviter 3-fidus; stigmata 3, distincta v. coalita. Capsula subglobosa, coriacea, carnosa, 1-locularis, 3-4-valvis, valvis medio seminiferis. Semina pauca, ovato-angulata, umbilico ventrali, raphæ brevi, crassiuscula, intra integumentum exterius baccatum, integrum v. in arillum multifidum fatiscens prorepente, cum chalaza basilari excavata juncto, testa crustacea, fragili, endopleura membranacea. Embryo in apice albuminis carnosus parvus, foliaceus, orthotropus, radícula chalazæ e diametro opposita.—Arbores v. frutices; foliis alternis, distichis, integerrimis v. serratis, pellucido-punctatis v. impunctatis, stipulis petiolaribus geminis; floribus in axillis foliorum umbellatis v. glomeratis, rarius solitariis v. corymbosis, albo-viridescentibus v. rarius roseis, pedicellis articulatis, basi bracteatis.—*Antigona*, Vell. Fl. Flum. vol. iv. t. 145. *Melistaureum*, Forst. Gen. t. 72.

1. **C. (?) acuminatissima**, A. Gray, Bot. Wilkes, p. 80; glabra; foliis nitidis oblongo-lanceolatis longe acuminatis basi rotundatis vix punctatis subintegerrimis; fructu obovato-globoso 3-valvi 1-spermo.—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.).

2. **C. disticha**, A. Gray, Bot. Wilkes, p. 81. t. 5. excl. syn. Forst., Willd. et DC.; fruticosa; foliis brevissime petiolatis oblongis seu ovali-oblongis integerrimis v. hinc inde dentatis membranaceis crebre punctatis; floribus e gemma axillari pluribus parvis subsessilibus; filamentis fertilibus 10 glabris, sterilibus villosis; stigmatibus integerrimo.—Bua Bay, Vanua Levu (U. S. Expl. Exped.), Ovalau (Seemann! n. 11).

A. Gray referred Forster's *Melistaureum distichum* to this species as a doubtful synonym; but from Forster's authentic specimens and his drawing, existing at the British Museum, the two are widely separated. I may add a description of Forster's plant:—

C. Melistaureum, DC. Prodr. vol. i. p. 51; glabra; foliis brevipetiolatis, ovato-oblongis seu oblongo-lanceolatis acuminatis integerrimis crasse coriaceis impunctatis utrinque glabris et lucidis, costis nervisque supra impressis; floribus e gemma axillari ∞ parvis pedicellatis; floribus hermaphroditis, laciniis calycinis 5 ovatis obtusis, æstivatione quincuncialis; antheris fertilibus 10, sterilibus 10, apice pilosis, stylo brevissimo; stigmatibus peltato.—*Melistaureum distichum*, Forst. Gen. t. 72; Prodr. n. 570, et Icon. (ined.) t. 301. *Samyda polyandra*, Willd. Sp. vol. ii. p. 626.—New Caledonia (Forster! W. Anderson! Vieillard! n. 1169).

The leaves of *C. Melistaureum* are large, very leathery and shining, especially on the upper side; petioles $\frac{1}{2}$ inch long, blade from 5-9 inches long, and often 4-5 inches broad.

3. **C. Richii**, A. Gray, Bot. Wilkes, p. 82. t. 5 B; foliis distichis modice petiolatis ovatis subacuminatis subcoriaceis vix punctatis; floribus minimis e gemma axillari fasciculatis subsessilibus; filamentis fertilibus 10 inferne ciliatis; stigmatibus subtrilobo.—Ovalau (U. S. Expl. Exped.).

“A close congener of *C. disticha*, from which it is distinguished by its much smaller and crowded ovate and somewhat tapering leaves, of a rather coriaceous texture, very obscurely punctate, and on petioles of greater proportionate length.” A. Gray.

Hooker and Arnott's *C. (?) impuncta*, from Tahiti, must be close to this, but there are no specimens of it in Hooker's herbarium; and I do not find in any other collection specimens of a Tahitian *Cusearia*. The two authors themselves were doubtful about the genus.

ORDO XLIV. BALANOPHOREÆ.

The position of this Order in the Natural System (represented in Polynesia by *Balanophora fungosa*, Forst., of the tropical islands, and *Dactylanthus Taylori*, Hook. fil., of New Zealand) has given rise to much discussion, and is still unsettled. *Balanophoreæ* have been regarded as *Acotyledons*, *Monocotyledons*, and *Dicotyledons*, but they are now generally regarded as Exogens. J. Hooker, one of the latest writers on the subject, compares them (Linn. Soc. Trans. vol. xxii. p. 21) to *Haloragineæ*; but in his subsequently published ‘Handbook of the New Zealand Flora,’ he places them at the end of his Subclass *Incompletæ*, near *Chloranthaceæ* and *Piperaceæ*, where Bartling (Ordines Plantarum, 1830, p. 79) had previously referred them, whilst inserting *Halorageæ* amongst the *Calycifloræ*. Regarding the more intimate relation-

ship of *Balanophoreæ* with other Natural Orders, Bartling seems to have taken a comprehensive view of it, though the material at his command must have been scanty. He regarded *Balanophoreæ*, *Rafflesiaceæ*, *Aristolochiæ*, *Cytineæ*, and *Tacceæ* as forming a closely united class (into which he was inclined to admit even *Nepenthes* as a distinct Order). This class he termed *Aristolochiæ*, and grouped it amongst his *Chlamydoblastæ*, a division of Dicotyledons, including *Piperaceæ*, etc., now broken up. To this day none of the leading botanists have adopted Bartling's view in its entirety; but hardly any one of them has not furnished proofs of its general correctness. Endlicher kept *Balanophoreæ*, *Cytineæ*, and *Rafflesiaceæ* together in his Class *Rhizanthææ*, and associated *Aristolochiæ* with *Nepentheæ* in his Class *Serpentariæ*; but he did not allow *Tacceæ* to have any relationship with *Aristolochiæ*. Meisner and Lindley (Veg. Kingdom) adopted Endlicher's views. A. Brongniart, again, showed a greater leaning towards Bartling's opinion, grouping together in his Class *Asarineæ*, *Balanophoreæ*, *Rafflesiaceæ*, *Cytineæ*, *Nepentheæ*, and *Aristolochiæ*, whilst retaining *Tacca* amongst Monocotyledons. Grisebach (Grundriss der Syst. Bot. 1854) associated *Aristolochiæ* with *Cytineæ* (including *Rafflesiaceæ*), placed *Balanophoreæ* in their immediate neighbourhood, though in a different Class (*nixus*), referred *Nepentheæ* to the neighbourhood of *Droseraceæ* and *Sarraceniaceæ*, and incorporated *Tacceæ* with the *Liliaceæ*. J. G. Agardh (Theoria) supported to a great extent Bartling's view of the relationship of *Tacceæ*, *Aristolochiæ*, *Cytineæ*, *Rafflesiaceæ*, and *Balanophoreæ*. J. Hooker and Bentham (Gen. Plantarum) have not yet dealt with this group of plants; though, as they have passed *Halorageæ*, and not inserted *Balanophoreæ* and their allies near them, they will probably place them at the end of the *Incompletæ*. The relationship between *Tacceæ* and *Aristolochiæ* was suggested long ago by Brown and Blume; and the objection, that *Tacca* has no cotyledons, and can therefore not be placed in Dicotyledons, is removed when we remember that *Orobanche* has always been admitted amongst *Monopetalæ*, although it has no cotyledons. I would therefore urge the adoption of Bartling's Class *Aristolochiæ* to include *Balanophoreæ*, *Cytineæ*, *Rafflesiaceæ*, *Nepentheæ*,* and *Aristolochiæ* proper. The chief objection formerly entertained to a closer union of *Nepentheæ* with their superior ovary, and *Aristolochiæ* with their inferior ovary, is in a measure removed by our knowing that the *Ceratasarum* section of *Asarum* (*Heterotropa*, A. Gray) has a semi-inferior, almost superior ovary.

Granting that the Orders just mentioned are natural allies, the question arrives near what other Orders should they be placed in the system. Duchartre, who lately worked up the *Aristolochiæ* for De Candolle's 'Prodromus,' is silent on this point. Klotzsch, in his paper on "*Aristolochiæ*" (Proceedings of the Berlin Academy, 1859) assigns to the *Aristolochiæ*, *Nepentheæ*, *Cytineæ*, and the genuine *Rafflesiaceæ* a place near *Cucurbitaceæ* (*Tacceæ* he does not take into consideration), and from that opinion I am not inclined to dissent.

1. **Balanophora**, Forst. Char. Gen. t. 50; Hook. fil. in Linn. Trans. vol. xxii. p. 30. Fl. ♂: Perianthium 3-6-phyllum. Stamina connata; antheræ extrorsæ. Fl. ♀: Perianthium 0. Stylus 1. Pistilla bracteolis clavatis intermixta v. pedicellis bractearum inserta.—Rhizoma tuberosum v. ramosum; pedunculis nudis v. squamosis, capitulis 1- v. 2-sexualibus; floribus 1-sexualibus.—*Cynopsole*, Endl. Gen. n. 718. *Cynomorium*, Willd. Spec. vol. v. p. 177. *Acroblastum*, Sol. Prim. Fl. Ins. Pacif. p. 310 (ined.).

1. **B. fungosa**, Forst. Char. Gen. t. 50; Prodr. n. 333; Icon. (ined.) t. 253; Rich. Élém. de Bot. (1833), t. 15; Hook. in Trans. Linn. Soc. vol. xxii. p. 46. t. 8; flavo-albida; rhizomate tuberoso lobato granulato; pedunculi squamis alternis v. imbricatis; capitulis bisexualibus ovoidis subglobosisve; antheris 3-6 bilocularibus.—*Cynomorium australe*, Willd. Spec. Plant. vol. v. p. 177. *Acroblastum pallens*, Sol. Fl. Ins. Pacif. p. 310, et in Parkins. Drawings of Tahit. Plants, t. 91 (ined.).—Moala, up a small brook (Milne). Also found in Tana, New Hebrides (W. Anderson! in Mus. Brit.), in the Society Islands (according to Solander's notes and Parkinson's drawing), and the east coast of New Holland (M'Gillivray!).

Milne, in Captain Denham's Expedition, gathered a *Balanophora* on Moala (see Hooker's Kew Misc. vol. vii. p. 152), which, however, does not seem to have reached the Kew Museum, where most of Milne's specimens were sent; and I myself did not see *Balanophora fungosa* in Fiji, but at the proper season the plant, a pale-yellow parasite, is doubtless not rare, growing as it does on the widely-diffused *Hibiscus tili-*

* The only representative of this singular Order in Polynesia is *Nepenthes Bongso*, Korth., found by M'Gillivray in swampy spots near running streams in the Isle of Pines, off New Caledonia, and by Strange in New Caledonia itself, according to specimens preserved at the British Museum. I believe these localities are the most southern as yet recorded of any *Nepenthes*.

ceus, and having an extensive geographical range, from the Society Islands to Viti, New Hebrides, and the east coast of New Holland. As several points connected with the structure of the plant are still obscure, I subjoin Solander's description, made from fresh specimens:—

“ACROBLASTUM (*Ἀκρόβλαστος*, germina in summitate habens). Fl. fœminei superiores totum spadice[m] tegentes. *Cal.* (spathæ (potius folia) vagæ, concavæ, foliaceæ, in caule infra flores masculos.) *Spadix* ovatus, simplicissimus, undique tectus fructificationibus fœmineis numerosissimis. *Perianthium* nullum. *Cor.* nulla. *Pist. germen* oblongum, utrinque attenuatum, parvum. *Stylo* capillari, longitudine germinis. *Stigma* simplex. Fl. masculi infra spadice[m] in superiore parte caulis sparsi. *Cal.* nullus, nisi folia sunt spathacea. *Cor. petala* quatuor, ovata, obtusissima, cruciata, duo opposita minora. *Stam. filamenta* nulla, eorum antherarumque loco columna subtetragona, superne convexa ibique excavata foveis circiter duodecim polliniferis.

“ACROBLASTUM *pallens*. ‘Ea-owa,’ *Tahitensibus*. Hab. in Tahiti parasitica. ♀. Planta parasitica radicum, quoad omnes partes e flavo-albida. *Radix* bulboso-tuberosa, magnitudine nucis Juglandis, albida, extus scabriuscula, tandem pro scapo vel caule superne aperiens, evadensque cyathiformis seu suburceolata, margine inæquali, e cujus centro *caulis* unicus subspithamæus vel sæpius brevior, crassitie pennæ olorinæ vel interdum digiti minimi, erectus, simplex, teres, vestitus; *foliis* sessilibus, oblongo-ovatis, obtusis, concavis, glabris, crassiusculis, sesquiuncialibus, quinque vel sex in singulo caule, basi vaginantibus. *Fructificatio* terminalis. *Cal. spatha* nulla; *folia* enim illius loco serviunt. *Spadix* simplex, oblongo-ovata, caule duplo crassior, magnitudine et crassitie articuli ultimi pollicis, obtusus, densissime tectus *flosculis* numerosissimis *fœmineis*; infra spadice[m] in superna parte caulis flores masculi sparsi, remotiusculi, distincti. *Masculi flores* infra fœmineos. *Perianthium* nullum. *Cor. petala* quatuor, ovata, obtusissima, subtruncata, cruciata, ante explicationem arcte conniventia et fornicata, dein patentia, planiuscula, extus glabra, lævia, intus striata, farinacea; duo opposita paulo minora, vix lineam longa. *Stam. filamenta* nulla, sed earum loco *columna* e receptaculo parum elevata, crassa, subtetragona, superne convexa, ibique excavata foveis circiter 12 vel 15 polline repletis; ideoque antheræ propriæ nullæ. *Pollen* dispergitur aperiente corolla. *Pistillum* nullum. *Flores fœminei* totum spadice[m] tegentes. *Cal.* proprius nullus. *Corolla* nulla. *Pist. germen* oblongum, utrinque attenuatum, parvum, terminatum *stylo* capillari longitudine germinis semilineari. *Stigma* simplex.

“*Obs.*—Inter flosculos fœmineos immixta sunt corpuscula brevissime pedicellata, obovata, germinibus duplo majora, obtusa, glabra, microscopio inspecta reticulata, superficiem totius spadiceis tegentia, germinibus enim sunt altiora, intus viscida, unde nec antheræ ob defectum pollinis, forte semina maturescentia. Etsi semina matura nobis non visa, distinctum judicavi. Genus ob columnam polliniferam, defectum spathæ propriæ, etc.” (Soland. *Primitiæ Floræ Insularum Oceani Pacifici* MS., pp. 310, 311.)

ORDO XLV. TACCACEÆ.

This Order was thought to be confined to the eastern hemisphere until Parker found a species (*Tacca Parkeri*, Seem.) with simple leaves in British Guiana. The different species have as yet not been worked out properly. All those with bipinnatifid leaves are generally regarded as belonging to *T. pinnatifida*. But that is an erroneous view. The type of *T. pinnatifida* of Forster, judging from his specimens and his figure, is the broad-leaved species, which Rumphius terms *T. litorea*, from its being always found on or near the sea-beach. Forster gathered it in the Society Islands. It has probably an extensive geographical range, but that has not yet been accurately traced out. Allied to it, but quite distinct, is *T. involucreta*, Schum. et Thonn. (*T. Guineensis*, Don), from tropical Africa, and a species which occurs in the Sandwich Islands (Macrae!) is probably *T. Oceanica*, Nutt., in ‘*American Journal of Pharmacy*,’ vol. ix. p. 305.* I say probably, because this periodical is not in the Library of the British Museum, and the copy of it existing at the Pharmaceutical Society of London wants the ninth and several other volumes. Next to this Sandwich Island species, ranges my *T. maculata*, a very distinct-looking plant, whilst *T. pinnatifida*, Brown, Prodr., from the north coast of New Holland, constitutes an additional very distinct species (*T. Brownii*, Seem.). Of all the bipinnatifid *Taccas* *T. Brownii* has the smallest leaf-segments; they are ovate-acuminate or lanceolate, and minutely dentated; the involucreal leaves are narrow, and the

* The *Pia* of the Sandwich Islands grows spontaneously in sunny places, and is also cultivated to a considerable extent; it is about 2 feet high, and every part of it is extremely bitter. The fecula obtained from its tubers is equal to the best West Indian arrowroot, and is much used by the inhabitants for culinary purposes, starching linen, and various other uses. It sells in Honolulu at about five cents a pound; and according to official returns, 13,683 pounds of it were exported in 1845, 10,000 in 1846; in the three following years the quantity sent abroad was less, but in 1850 it had again increased.—Seemann, ‘*Narrative of the Voyage of H.M.S. Herald*,’ vol. ii. p. 85.

flowers very small. *T. artocarpifolia*, Seem., from the islands of Eastern Africa, is different from any other species known to me.*

The general Polynesian name for the different *Taccas* is *Pia* (i. e. *semen hominis*), the Vitian form of which is "Yabia." Pereira (Mat. Medica) seemed to think that "Chailea tacca," which he quoted from Ellis ('Polynesian Researches,' vol. i. p. 361), was a native Tahitian name, whilst it is merely Solander's scientific name mis-spelt. The arrowroot of Fiji is not, as erroneously stated by Wilkes and others, produced by *Maranta arundinacea*, Linn., but by two species of *Tacca*, the foliage of which springs up in great abundance in the beginning of the warm season, and their tubers ripen about June, when leaves and flowers die off. The most common is that kind termed on the Macuata coast Yabia dina (genuine arrowroot), the *Tacca pinnatifida*, Forst. It delights in light sandy soil, and is therefore most frequently encountered on the seashore; whilst the second species (*T. maculata*, Seem.), known in Macuata as "Yabia sa," is almost entirely confined to the sides of hills and heavy soils. The natives prefer the first-mentioned species for the purpose of making arrowroot, though they own that there is no difference in the quality of the farinaceous substance prepared from either. In most parts of Fiji there are no distinctive names for the two kinds, both being called "Yabia;" yet the natives are perfectly well acquainted with their various characters and peculiarities of habitat. The leaf, stalks, and scape of the Yabia sa are prominently speckled, and the segments of the leaves are long and narrow, by which it is at once distinguished from its ally. The tubers, when quite ripe, are dug out of the ground and rasped on the mushroom coral (*Fungia* sp.). The fleshy mass thus produced is washed in fresh water, to allow the starch to settle at the bottom of the vessel in which the operation is carried on; by pouring off the dirty water, and repeated washings, the starchy sediment may be made to assume any desired degree of whiteness. Since Fijian arrowroot has become an article of foreign demand, it has been pointed out to the natives that the impurities imparting a greyish colour to the production, caused partly by not peeling the tubers previous to rasping them, partly by not washing the sediment a sufficient number of times, must be removed in order to raise the marketable value of the article. When a satisfactory degree of whiteness has been attained, the starch is dried in the sun. For their own consumption the Fijians do not dry their arrowroot, but tie it up in bundles of leaves and bury it in the ground, when it speedily ferments, and emits a rather disagreeable odour. South Sea arrowroot fetches from threepence-halfpenny to fourpence per pound in London; and as it is invaluable when taken in cases of dysentery and diarrhœa,—the bane of the South Seas,—it is necessary to have it genuine. The Tonguese have of late years been known to adulterate it to a great extent with lime in order to increase its weight and volume, but this fraud may readily be detected by watching the arrowroot when it first comes in contact with water; if adulterated with lime, it will fizz. Care should also be taken to guard against the starch of the Cassava or Tapioca plant being passed off for Polynesian arrowroot, which, from its slightly purgative tendency and poisonous properties, is ill-adapted for bowel complaints. It is much whiter than the arrowroot made of *Tacca*, sticks to the hands like flour, and when a little water is allowed to act upon it, it assumes a pinkish colour; whilst the arrowroot made of *Tacca* has a granulated feel, does not adhere to the hand like flour, and is not changed in colour by contact with water. From the leaf- and flower-stalks the Tahitians made a superior kind of plat, of which George Pritchard (Missionary Reward, p. 179) says:—"It is beautifully white, smooth, and bright, not much unlike narrow satin ribbon, and so remarkably light as to make it peculiarly suitable for the summer season. As a proof of its excellent quality, a house in Scotland has engaged to take all that the Polynesians will manufacture." I have been told that Queen Victoria had a bonnet made of this plat.

I. **Tacca**, Rumph. Amb. vol. v. p. 328. t. 114, 115, excl. sp. Forst. Gen. n. 35 (*Ataccia*, Presl, in Reliq. Hænk. vol. i. p. 149). Perigonii corollini tubus cum ovario connatus; limbus superus, 6-partitus, subæqualis, persistens. Stamina 6, basi laciniarum limbi inserta; filamenta petaloidea, lata, apice cucullata v. concava; antheræ introrsæ, 2-loculares, loculis discretis parallelis, cucullo v. concavitate intus adnatis, apicibus solutis deorsum spectantes. Ovarium cum perigonii tubo connatum, 1-loculare, placentis parietalibus simplicibus (?) v. 2-lobis, axim fere attingentibus, subtriloculare. Ovula ∞, horizontalia. Stylus brevis, crassus, 3-sulcus, stigmatibus 3 dilatatis emarginato-2-lobis. Bacca 1- v. spurie 3-locularis, ∞-sperma. Semina ovata v. lunata, testa coriacea, striata. Embryo minimus, in basi albuminis carnosus, umbilico proximus.—Herbæ acaules,

* *Tacca artocarpifolia* (sp. nov.), Seem.; foliis 3-partitis, ramis pinnatifidis, laciniis lineari-oblongis longe acuminatis integerrimis; involucro 6-7-phyllo, phyllis lanceolatis acuminatissimis omnibus integerrimis v. exterioribus 3-fido.—Madagascar and other islands of Eastern Africa (Lyall! Blackbourn! in Herb. Hook.).—A very distinct species; the primary divisions of the leaves look exactly like some of the common forms of the Breadfruit-tree (*Artocarpus incisa*, L.).

glabræ, radice tuberosa subglobosa v. conica; foliis omnibus radicalibus petiolatis palmatis, palmato-bi-tripinnatifidis v. indivisis, venosis, scapo radicali indiviso, umbella terminali simplici, involucre 2-4-∞-phyllo; floribus longe pedicellatis; pedicellis sterilibus (bracteis auct.) filiformibus intermixtis. — *Chaitæa*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 246.*

The genus was confounded with *Amorphophallus*, not only by Rumphius, but also by Solander and Forster.

1. **T. pinnatifida**, Forst. Plant. Escul. p. 59, exclud. syn. Rumph. et nom. vernac. "e-Vé;" tota planta viridis; petiolo sulcato; foliis 3-partitis, ramis pinnatifidis v. bipinnatifidis, segmentis ovato-oblongis acuminatis rugosis, ultimis 3-fidis, involucre ∞-phyllo, phyllis spathulato-rhombeis v. ovatis acuminatis, exterioribus pinnatifidis v. 3-fidis; floribus 4-8, pedicellis sterilibus filiformibus ∞. — Forst. Prodr. n. 209. Icon. (ined.) t. 151, et Herb. Propr.—*T. litorea*, Rumph. Herb. Amb. vol. v. p. 328. t. 114. *Chaitæa Tacca*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 246, excl. syn. Rumph. et Rheede, et in Parkins. Drawings of Tahit. Plants, t. 40 (ined.). Nomina vernac. Vitiensia, "Yabia" v. "Yabia dina;" Tahitense et Samoëse, "Pia."—Common on the seashore, in light sandy soil, throughout Viti (Seemann! n. 633, 908; Barclay!). Also collected in the Society (Banks and Solander! Forster! Barclay!), Tongan (Herb. Hook.), and Samoan Islands (Sir E. Home!), and Straits of Sunda (Staunton!).

G. Forster quotes Rumphius's *Tacca sativa* (which is identical with *Amorphophallus campanulatus*, Blume) and *T. sylvatica* (which has not yet been identified) as synonyms of his *T. pinnatifida*; and Solander also refers erroneously Rheede's and Rumphius's plates to this species. It may be useful to add here Solander's description of this species:—

"CHAITÆA (*Xairîs*, comatus, frondosus, Ic.). *Cal. perianthium* ovatum hexaphyllum, *foliolis* ovatis, apice conniventibus, tribus exterioribus angustioribus. *Cor. petala* sex, calyce minora, pileiformi cucullata, emarginata: *unquibus* calycis fundo adnatis. *Stam. filamenta* nulla. *Antheræ* sex, oblongæ, cucullo intus adnatæ, apice deorsum spectantes. *Pist. germen* inferum, turbinatum, triquetrum. *Stylus* brevis, erectus. *Stigma* orbiculatum, stellatum, *radiis* obtusiusculis, supra convexis. *Per.* bacca? ovato-globosa, calyci marcescenti coronata, sex-carinata, unilocularis. *Sem.* numerosa, ovalia, compressa, sulcata, involuta substantia fungosa singulo semini propria distincta, polyedra.

"CHAITÆA *Tacca*, Sol. ms. p. 247. *Tacca litorea*, Rumph. Amb. vol. v. p. 328. t. 114. 'Pia,' *Incolarum Oceani Pacifici*. Hab. in Tahiti, Huahine, Raiatea, Tahaa, in collibus et locis montosis. *Radix* tuberosa, subrotunda: substantia alba. *Folia* petiolata, ad basin usque sinuato-tripartita, glabra, rugosa, late viridia, pedalia et sesquipedalia. *Lobi laterales* bipartiti, inæqualiter bipinnatifidi seu lobato-sinuati: lobulis ovato-lanceolatis, acutis, integris, bi- et triuncialibus: *sinubus* latissimis. Lobus intermedius eodem modo lobato-sinuatis, non vero bipartitus. *Petioli* omnes radicales, pedales et bipedales, teretes, mutici, glabri, obsolete striati, herbacei, fistulosi, prope radicem *nodo* oblongo tumido instructi, pallide virides. *Scapus* herbaceus, fistulosus, bipedalis vel brevior, erectus, strictus, glaber, muticus, inferne lævis, crassitie digiti minimi, superne angustiores, striati. *Umbella* simplex, multiflora, comosa, involucre folioso et bracteis numerosis crinita. *Involucrum* polyphyllum. *Foliola* 6-10, per paria opposita, ovata, acuminata, glabra, interdum extus incisa; externa basi connata, interiora basi in unguis breves attenuata (2-3 unc. longa, 1¼ lata). *Bracteæ* numerosissimæ, filiformes, receptaculo inter pedunculos inserta, illisque quadruplo longiores; sæpe 9- vel 10-unciales, penna passerina graciliores, undique divaricatæ, a basi ad medium virides, extus purpurascens. *Pedunculi* numerosi (10-40), bracteis tamen pauciores, teretes, filiformes, glabri, crassitie pennæ passerinæ, inter bracteas et involucra reflexi (unde flores penduli) uniflori, unciales et sesquiunciales. *Calyx* hexaphyllus, ovatus, persistens, circiter semiuncialis. *Foliola* erecta, apice conniventia, obsolete immarginata; *tria interiora* ovata, *tria exteriora* angustiora sed paulo longiora; marginibus purpurascens. *Petala* sex, calycis fundo inserta illoque multo minora: *laminæ* albæ, pileiformi-cucullatæ, intus profunde emarginatæ; *sinubus* denticulo parvo bifido instructis.

* *Tacca Parkeri* (sp. nov.), Seem.; foliis ovato-oblongis acuminatis in petiolum angustatis integerrimis; involucre 4-phyllo, phyllis valde disparibus et heteromorphis 2 majoribus spathulato-ovatis acuminatis, 2 minoribus sessilibus ovato-acuminatis; stigmata 3, biloba; capsula 1-locularis, loculis ∞-spermis; seminibus angulatis striatis.—British Guiana (Parker! Appun! n. 251). The larger involucral leaves twice or thrice the length of the two smaller ones. Possibly the specimens distributed by Dr. Spruce under n. 3762, and provisionally named *T. lanceolata* by Bentham, may be merely young plants of my *T. Parkeri*.

Ungues lati, purpurei, calycis fundo adnati marginibus liberis, solutis inflexis. *Filamenta* nulla. *Antheræ* sex, oblongæ, flavæ cucullo corollæ intus prope sinum adnatæ, ita ut apex deorsum spectet. *Germen* inferum, turbinatum, triquetrum; supra receptaculum parum extumescens, ibique alte tricarinatum. *Stylus* filiformis, crassiusculus, erectus, strictus, brevis (1 lin. longus), albus. *Stigma* orbiculato-explanatum, magnum (diametro $1\frac{1}{2}$ lin.), stellatum, *radiis* obtusiusculis, ex albo pellucidis, supra convexis, subtus concavis, per paria connatis, etsi omnes distincti videantur. *Bacca?* ovato-globosa, magnitudine nucis juglandis, glabra, calyce marcescente persistente coronata, sex-angulata, seu potius sex-carinata, carinis acutiusculis, unilocularis (forte bivalvis?). *Semina* numerosa, ovata, compressa, obtusa, profunde striata, vix duas lineas longæ: *substantia* alba, fungosa, singulum semen arcte adhæret præcipue ad apices, hæc lateribus planis inæqualibus gaudet ut semina primo intuitu polyhedra apparent. Ob substantiam semina adhærentem, fructum baccatum judicamus, nec suturas ullas observare potuimus. Radices hujus suppeditant incolis escam illis gratissimam: illam eodem modo in farinam præparant, ac Ambonienses *Taccam* suam *sativam*, conf. Rumph. Amb. vol. v. p. 325, scilicet Radices primum raspatae, dein in aqua ter vel quater mutanda macerantur, quo acredine liberantur et in farinam redigantur.—Sol. Prim. Fl. Ins. Pacif.

2. **T. maculata**, (sp. nov.) Seem.; petiolis scapisque sordide maculatis; foliis 3-partitis, ramis dichotomo-multifidis, segmentis longe linearibus apice subulatis integerrimis lævibus; involucrio ∞ -phylo, phyllis ovato-lanceolatis v. lanceolatis integerrimis v. rarius 2-fidis.—*T. pinnatifida* var. *sylvestris*, Forst. Plant. Escul. p. 59? Nomina vernac. Vitiensia, “Yabia” v. “Yabia sa.”—On hill-sides in heavy soil, Moturiki and other islands (Seemann! n. 632, 909), north coast of New Holland (F. Mueller!).

If my conjecture be correct, that Forster's *pinnatifida* var. *sylvestris* is identical with this species, my *T. maculata* is also found in Tahiti, though I have not seen specimens of it from there; and as Forster quotes the Tahitian name of *Amorphophallus campanulatus* (e-Vé) for his *T. pinnatifida* var. *sylvestris*, and as that *Aroidea* has also speckled petioles, I am not very sanguine about it. Dr. F. Mueller collected it, together with *T. Brownii*, Seem., on the north coast of New Holland, and distributed both under the name *T. pinnatifida* var. *aconitifolia*. Leaves one or two on petioles, which are $2\frac{1}{2}$ -3 feet long, speckled with dirty-white spots, and not grooved as those of *T. pinnatifida* are, but smooth. Blade primarily divided into three branches; these branches repeatedly dichotomously split into narrow linear and quite entire segments, tapering into a subulate apex. Scape longer than the petiole, but shorter than the entire leaf. Involucral leaves ∞ , ovate-lanceolate, quite entire or occasionally 2-fid. Pedicels shorter than the involucral leaves. Bracts (sterile pedicels) very long, thread-like. Calyx 6-partite, the segments in one whorl, though in æstivation the points of three are overlapping the others. Ovary spuriously 3-celled, ovules many. Ripe fruit not seen.

ORDO XLVI. CUCURBITACEÆ.

The *Cucurbitaceæ* of tropical Polynesia are involved in considerable confusion, owing to Forster having admitted into his ‘Prodromus’ several species named by Solander, but of which no description has been published. The authentic specimens and manuscript descriptions of Solander, together with Sidney Parkinson's drawings, all preserved at the British Museum, have enabled me to clear up the synonymy of these plants. To set this matter finally at rest, I thought it advisable to enumerate, in the ‘Journal of Botany,’ 1864, p. 47, all the *Cucurbitaceæ* hitherto found in the region alluded to, including the species generally cultivated, and amounting to eighteen species, distributed over the genera *Melothria*, *Zehneria*, *Karivia*, *Citrullus*, *Momordica*, *Luffa*, *Lagenaria*, *Cucumis*, *Cucurbita*, and *Sycios*.

I. **Karivia**, Arn. in Hook. Journ. of Bot. vol. iii. p. 275; Endl. Gen. Suppl. ii. p. 77. Flores monoici v. dioici. Calyx urceolato-campanulatus. Corolla vix exserta, lobis 5 minutis. Filamenta 3-adelpha, perigonii basi inserta; antheræ 2-loculares. Stylus indivisus, basi glandula 5-loba lacerata cinctus; stigma magnum, pileiforme, 3-fidum. Fructus obtusus v. crasse et breviter rostratus, subpeponideus.—Herbæ, radice tuberosa, perennantes, glabræ; cirrhis simplicibus; foliis cordatis 3-5-lobatis; floribus masculis racemosis, fœmineis solitariis v. ternis.

1. **K. Samoensis**, A. Gray, Bot. Wilkes, p. 643; dioica; foliis cordatis acuminatis denticulatis modice petiolatis; floribus masculis racemosis, pedicellis subverticellatis; fœmineis solitariis ternisve, pedunculo bacca ovoidea ∞ -sperma brevior; seminibus lævibus compressis.—*Cucumis Maderaspatanus?*, Sol. Prim. Fl. Ins. Pacif. p. 337 (ined.); Parkins. Drawings of Tahit. Plants, t. 111 (ined.).

—Samoan Islands (U. S. Expl. Exped.), Society Islands (Banks and Solander! in Brit. Mus.). Nomen vernac. Tahitense, teste Pritchard, "Tavivi" (*i. e.* twiner), teste Solander, "Tahwihwi," vel "Tawhiwhi;" Raiatense, teste Solander, "Hoohove," vel "Huhue."

I take A. Gray's *Karivia Samoensis*, var. β , from Viti, to be the same plant which Banks and Solander gathered in the Society Islands, which Solander, in his unpublished Prim. Fl. Ins. Pacif., describes as *Cucumis Maderaspatanus?*, and for which he quotes Parkinson's Drawings, t. 111, with his own manuscript name attached. Solander describes the female flowers as growing in the same axils as the male, and on isolated, thin, and 1-florous peduncles. The fruit he has not seen, nor do his specimens exhibit any trace of either female flowers or fruit. The male flowers are racemose, the pedicels being arranged in whorls, which, when the racemes are just beginning to blossom, gives them the appearance of small umbels or corymbs, as stated by A. Gray. The racemes are either simple or furcate, 4–5 inches long; the corolla cream-coloured. The upper surface of the leaves is generally covered with minute white dots, which are noticed by A. Gray, but not indicated by the accurate Parkinson, probably they are not so prominent in fresh specimens; even in some of the leaves before me they are scarcely perceptible. Solander says of them, "Glandulis minutis distinctis, in siccis parum incrustatis." When the female flowers and fruit are better known, it will probably turn out that the species now under consideration is not a true *Karivia*. *Bryonia?* (sp. nov.?), No. 290 of Guillemain's list, Tahiti (Bert. et Mœrenh.), and *Bryonia Johnstoni*, Cuzent, O'Taiti, p. 232 (name only), are doubtless identical with this plant.

Var. β . *Vitiensis*; foliis supra scabridis; pedunculis fructiferis brevissimis. A. Gray, l. c.—Ovalau (U. S. Expl. Exped.), Viti Levu (Seemann! n. 192).

II. **Citrullus**, Neck. Elem. n. 389; Endl. Gen. n. 5131. Flores monoici. Masc.: Calyx profunde 5-fidus, planiusculus, laciniis lanceolato-linearibus. Corolla imo calyci adnatim inserta, 5-partita, plana, subrotundata. Stamina 5, imæ corollæ inserta, 3-adelpha; filamenta brevia, antheræ 1-loculares, loculo lineari, secus connectivi inciso-3-lobi marginem dorsalem gyrose adnato. Fœm.: Calyx tubo globoso, cum ovario connato, limbo supero, profunde 5-fido. Corolla maris. Stamina sterilia rudimentaria. Ovarium inferum, 3–6-loculare, placentis juxta septa utrinque parietalibus, ∞ -ovulatis. Stylus cylindræus, 3-fidus; stigmata convexa, reniformi-cordata. Bacca globosa, carne solida, ∞ -sperma. Semina obovata v. oblongo-obovata, compressa, basi truncata, margine obtusa. Embryonis exalbuminosi cotyledones foliaceæ, plano-convexæ, radícula brevissima centrifuga.—Herbæ annuæ, humifusæ; foliis alternis cordatis lobatis, lobis integris pinnatisectisve, cirrhis 2–3-fidis; pedunculis axillaribus solitariis 1-floris.—*Colocynthis*, Tourn. Inst. 107. *Rigocarpus*, Neck. Elem. n. 386.

1. **C. vulgaris**, Schrad. in Eckl. et Zeyh. En. 279; valde pilosus; foliis obtuse pinnatisectis subglaucescentibus; floribus 1-bracteatis, bractea oblonga; bacca subglobosa glabra stellato-maculata.—*Cucurbita Citrullus*, Linn. Spec. 1435. *Cucumis Citrullus*, Ser. in DC. Prodr. vol. iii. p. 301.—Cultivated and almost naturalized in Viti (Seemann!).

The Water-Melon is also cultivated in the Hawaiian (Seemann!) and Society Islands (Cuzent), but in all these groups it is known to have been introduced by Europeans. The fruit is eaten.

III. **Momordica**, Linn. Gen. n. 1477, excl. sp.; Endl. Gen. n. 5133. Flores monoici. Masc.: Calyx brevissime campanulatus, 5-partitus, patens. Corolla calyci inserta, 5-partita, laciniis patentibus obtusis subundulatis. Stamina 5, imo calyci inserta, 3-adelpha; filamenta brevia, crassa; antheræ conniventes, 1-loculares, loculo lineari, connectivi crassi undulati margini extus adnato. Fœm.: Calyx tubo obovato v. subcylindrico, cum ovario connato, limbo supero 5-partito patulo. Corolla maris annulo epigyno inserta. Stamina 3 rudimentaria, styli basim cingentia. Ovarium inferum, 3-loculare, placentis juxta septa hinc parietalibus ∞ -ovulatis. Stylus cylindricus, 3-fidus v. 3-partitus. Bacca pulposa muricata v. tuberculata, maturitate elastice irregulariter rupta, ∞ -sperma. Semina compressa, marginata, integumento baccato colorato, exsiccatione rugoso. Embryonis exalbuminosi cotyledones foliaceæ, plano-convexæ, radícula brevissima centrifuga.—Herbæ glabriusculæ v. hirtæ;

foliis alternis cordatis palmato-3-7-lobis; cirrhis simplicibus elongatis; pedunculis axillaribus filiformibus 1-floris medio v. supra basim bractea foliacea instructis.—*Elaterium*, Tournef. *Amordica* et *Poppya*, Neck. Elem. n. 391, 392. *Muricia*, Lour. Coch. 733.

1. **M. Charantia**, Linn. Spec. 1433; foliis 7-lobo-palmatis dentatis subhirsutis; cirrhis pubescentibus; bractea cordata integerrima infra medium pedicelli; baccis oblongis acuminatis angulatis tuberculatis (coccineis v. rubris); pulpa (lutea) molli; seminibus oblongis tuberculatis; arillo rubro-sanguineo.—Sims, Bot. Mag. t. 2455. Rheede, Mal. vol. viii. p. 71. t. 9.—Viti, probably Vanua Levu (Williams!). Also collected in Tahiti (Banks and Solander! U. S. Expl. Exped.). Common in the East Indies.

A. Gray, not knowing this plant was amongst the older collections, supposed it to be a recent introduction to Tahiti. "In Venezuela," says Mr. A. Ernst, "the ripe fruit, bruised and mixed with olive oil, is put on wounds or contusions. Children are very fond of eating the red pulp. It is, however, insipid, and thought to produce diarrhœa."

IV. **Luffa**, Tournef. Act. R. S. 107; Endl. Gen. n. 5134. Flores monoici v. dioici. Masc.: Calyx campanulatus, 5-dentatus. Corolla calyci inserta, profunde 5-partita, patens. Stamina 5, imo calyci inserta distincta v. 1-3-adelpha; filamenta brevia; antheræ 1-loculares, loculo lineari, connectivi crassi margini sinuato extus adnato. Fœm.: Calyx tubo clavato, cum ovario connato, limbo supero 5-fido. Petala 5, annulo epigyno inserta, basi vix coalita. Stamina abortiva. Ovarium inferum, 3-loculare, placentis juxta septa hinc parietalibus ∞ -ovulatis. Stylus 3-fidus; stigmata crassa, reniformi-2-loba v. 2-partita. Bacca obovata v. oblonga, demum exsucca, intus pilosa, indehiscens v. disco epigyno deciduo apice operculo aperta, ∞ -sperma. Semina compressa, reticulata v. scrobiculata.—Herbæ scandentes; foliis alternis petiolatis lobatis dentatis scabris; cirrhis simplicibus; floribus masculis racemosis, fœmineis solitariis.—*Trevouxia*, Scop. Introd. 575.

1. **L. insularum**, A. Gray, Bot. Wilkes, p. 644; caule sulcato glabro; foliis rotundatis 5-lobatis v. 5-angulatis sinu profundo cordatis margine denticulatis v. repando-dentatis; racemis masculis elongatis; staminibus discretis; calycis lobis fl. fœm. subtus glanduliferis; bacca oblonga lævi haud sulcato bipollicari.—*Cucurbita multiflora*, Sol. ms. in Forst. Prodr. n. 556, et in Parkins. Drawings of Tahit. Plants, t. 108 (ined.); Sol. Prim. Fl. Ins. Pacif. p. 335 (ined.); Sprengel, Syst. vol. v. p. 45; DC. Prodr. vol. iii. p. 318. Nomen vernac. Tahitense, "Huerharho," teste Solander, "Huaroro," teste Cuzent.—Common throughout Viti (Seemann! n. 193). Also found in Tahiti (Banks and Solander! Forster! in Mus. Brit.), Tongan Islands (Barclay! n. 3405, in Mus. Brit.).

A *Cucurbitacea*, mentioned by Collie under the native name of "Arroro," and thought by Hooker and Arnott to be *Cucurbita Aurantia*, is probably this species, the name being simply incorrectly spelt, whilst the statement that the fruit was employed for holding scented cocoa-nut oil is correct, though throughout Polynesia the Bottle-gourd (*Lagenaria vulgaris*) has, from time immemorial, been more commonly used for that purpose.

V. **Lagenaria**, Ser. in Mem. Soc. H. N. Genev. vol. iii. p. 29. t. 2; DC. Prodr. vol. iii. p. 299; Endl. Gen. n. 5136. Flores monoici. Masc.: Calyx tubo campanulato, limbo brevi 5-partito. Petala 5, summo calycis tubo inserta, ovata, acuta, patentia. Stamina 5, imo calyci inserta, 3-adelpha; filamenta brevia, conniventia; antheræ 1-loculares, loculo lineari, connectivi crassi, anfractuoso-sinuati, papilloso margini dorsali adnato. Fœm.: Calyx tubo cylindrico v. ventricoso, superne attenuato, cum ovario connato, limbo supero brevi 5-partito. Corolla maris. Ovarium inferum, 3-loculare, placentis juxta septa parietalibus ∞ -ovulatis. Stylus subnullus; stigmata 3, crassa, 2-loba, granulosa. Bacca carnosissima, maturitate lignescens, ∞ -sperma. Semina obovato-oblonga, compressa, margine tumido, apice truncato-2-lobo cincta. Embryonis exalbuminosi cotyledones foliaceæ, radice brevissima centrifuga.—Herba annua, molliter pubescens, moschata; foliis alternis petiolatis

cordatis subintegris v. lobatis, basi biglandulosis; cirrhis 3-4-fidis; pedunculis axillaribus 1-floris fasciculatis albis.

1. **L. vulgaris**, Ser. in DC. Prodr. vol. iii. p. 299.—*Cucurbita Lagenaria*, Linn. Spec. 1434; Forst. Prodr. n. 362. Nomen vernac. Tahitense, "Hue," teste Pritchard; Vitiense, "Vago," teste Seemann.—Cultivated and naturalized in Viti (Seemann! n. 495), Tahiti (Banks and Solander! in Mus. Brit.), Java (Horsfield! in Mus. Brit.), Easter Island (Forster!), Sandwich Islands (Seemann!).

The Bottle-gourd is one of the *Cucurbitaceæ*, found cultivated in the different Polynesian Islands when they were discovered by Europeans. In Viti it is extensively used for making bottles for holding oil and other fluids.

VI. **Cucumis**, Linn. Gen. n. 1479; Endl. Gen. n. 5137. Flores monoici v. polygami. Masc.: Calyx campanulatus, 5-dentatus. Petala 5, calyci inserta, ovata, acuta, patentia. Stamina 5, calyci inserta, 3-adelpha; filamenta conniventia; antheræ lineares; loculi lineares; connectivi crassiusculi, recti, dorso infra apicem integrum v. bipartitum anfractu simplici adnati. Fœm.: Calyx tubo subgloboso v. cylindrico, cum ovario connato, limbo supero 5-dentato. Corolla maris. Ovarium inferum, 3-loculare, placentis juxta septa utrinque parietalibus, ∞-ovulatis. Stylus brevis; stigmata 3, crassa, 2-partita. Bacca carnosula sulcata verrucosa v. lævis, indehiscens v. irregulariter rupta, ∞-sperma. Semina ovata, compressa, margini acuta. Embryonis exalbuminosi cotyledones foliaceæ, radícula brevissima centrifuga.—Herbæ annuæ, humifusæ, cirrhiferæ; foliis alternis petiolatis, integris v. lobatis; pedunculis axillaribus 1-floris, masculis sæpissime aggregatis, fœmineis solitariis.—*Melo*, Tournef. Inst. 104. excl. sp.

1. **C. Melo**, Linn. Spec. 1436; caule scabro; foliis rotundatis angulosis; floribus masculis, tubo calycis basi subventricosulo apice dilatato, staminibus inclusis, antheris connectivo brevioribus; floribus hermaphroditis, antheris ut in masculis; stigmatibus 3-4 breve 2-lobis; bacca ovata v. subglobosa 8-12-sulcata, carne saccharata flava v. alba.—"Melon" of the English colonists. Cultivated in Viti (Seemann!). Also grown in the Sandwich (Seemann!) and Society Islands (Cuzent), but in all these islands known to be introduced by Europeans.

2. **C. sativus**, Linn. Spec. 1437; caule scabro; foliis cordatis obscure 5-lobis, lobo terminali; floribus breve pedunculatis subternis majusculis, florum mascul. tubo calycis tubuloso-campanulato, limbo patente deflexo, petalis acutiusculis; baccis oblongis subtriquetris per maturitatem sublævibus sæpe nitidis, carpellis intus distinctis separabilibus.—"Cucumber" of the English colonists. Cultivated in Viti (Seemann!); also in the Sandwich (Seemann!) and Society Islands (Lay and Collie! Cuzent), but in all these groups introduced by Europeans.

3. **C. acidus**, Jacq. Obs. Bot. pars iv. p. 14 (1764); foliis cordatis subangulatis acutiusculis argute dentatis scabris; baccis subglobosis, ovatis v. ellipticis obtusis pubescentibus v. glabratis viridibus striis obscurioribus angustis longitudinalibus pictis, adultis albis absque ullis striis.—*Cucumis pubescens*, Willd. Spec. vol. iv. p. 614 (1805); DC. Prodr. vol. iii. p. 301; Wight, Icon. t. 496. *Cucumis Maderaspatanus*, Roxb. Fl. Ind. vol. iii. p. 723, non alior. *Cucurbita aspera*, Sol. ms. in Forst. Prodr. n. 555 (1786), et in Parkins. Drawings of Tahit. Plants (ined.), t. 110; Sol. Prim. Fl. Ins. Pacif. p. 336. Nomen vernac. Tahitense, "E-atu" vel "Ea-ea," teste Solander; Vitiense, "Timo."—Viti Levu (Seemann! n. 194). Also gathered in Tahiti (Banks and Solander! in Mus. Brit.), Java (Horsfield! in Mus. Brit.), East Indies (Roxburgh! in Mus. Brit.), Ceylon (Thwaites! in Mus. Brit.), Cape de Verd Islands (fide A. Gray), Kuka, Central Africa (Eduard Vogel! n. 59, in Mus. Brit.).

An authentic specimen of *Cucumis acidus* in the British Museum, with Jacquin's manuscript note:—"Nova certe species, nata in Horto Bot. Vind. anno 1762 e seminibus Indicis sine nomine a Gronovio acceptis. Fructus interne uti *Cucumis*, sed acidissimus, figura obovata glabra," has enabled me to identify

C. acidus and *C. pubescens*, and to vindicate the priority of the former name, a name evidently overlooked by all writers on *Cucurbitaceæ*. A. Gray has attempted to establish two varieties of this species, distinguished by the shape and the glabrous or pubescent state of the surface of the fruit, but the characters assigned do not seem to hold good. Parkinson's figure of the fruit exactly corresponds with the shape assigned to it by Jacquin, but it is pubescent. In Wight's plate one of the fruits is ovate, the other almost elliptical. The tendrils are always simple. Forster's *Cucumis bicirrho*, which A. Gray hesitatingly refers to this plant, is identical with *Cucurbita pruriens*, Sol., as far as can be made out from description.

VII. **Cucurbita**, Linn. Gen. n. 1478; Endl. Gen. n. 5138. Flores monoici. Masc.: Calyx tubo brevi campanulato 5-fido. Corolla imo calyci adnatim inserta, campanulata, limbi 5-fidi lobis æstivatione induplicatis. Stamina 5, imæ corollæ inserta, 3-adelpha, in columnam conniventia; antheræ 1-loculares, loculo lineari, connectivi vix incrassati mutici dorso pluribus anfractibus longitudinalibus adnato. Fœm.: Calyx tubo ovato v. obovato, cum ovario connato, limbo supero 5-fido. Corolla maris. Stamina sterilia. Ovarium inferum, 3-5-loculare, placentis juxta septa utrinque parietalibus ∞-ovulatis. Stylus 3-fidus; stigmata incrassata, 2-loba. Bacca obovato-clavata, globosa v. depresso-sphærica, ∞-sperma. Semina ovata, compressa, margine tumido cincta. Embryonis exalbuminosi cotyledones foliaceæ, radícula brevissima centrifuga.—Herbæ annuæ, cirrhosæ; foliis alternis petiolatis cordatis integris v. 3-5-lobis; pedunculis axillaribus solitariis 1-floris; floribus luteis.—*Pepo et Melopepo*, Tourn. Inst. t. 33, 34.

1. **C. Pepo**, Linn. Spec. 1435; foliis cordato-obtusis sub-5-lobis denticulatis; calycibus in collum infra limbum desinentibus; baccis subrotundis oblongisve lævibus.—Ser. in DC. Prodr. vol. iii. p. 317. "Pumpkin" of the English colonists.—Cultivated in Viti as in the Hawaiian and other Polynesian islands, but known to be introduced by Europeans. According to Solander (Prim. Fl. Ins. Pacif.), it was brought to Tahiti in 1767 by Captain Wallis.

The fruit is an excellent sea-stock, and much valued by whaling-ships as such. In the Voyage of H.M.S. Herald to the Arctic regions, we had it on board for months, and found it to keep sound long after the yams and other tropical vegetables had become rotten.*

I have specimens of a *Cucurbitacea*, collected by Mr. Williams in Viti, but they are without flowers. Leaves 5-lobed, glabrous, lobes pinnatifid or dentated, tendrils simple. At the base the leaves form an acute angle, otherwise they look like some forms of *Momordica Charantia*.

* *Cucurbita maxima*, Duch. in Lam. Diet. vol. ii. p. 151; DC. Prodr. vol. iii. p. 316, though cultivated in the Sandwich Islands (Seemann!) from time immemorial, has not yet reached Viti. The shells of this gourd are converted, by the Sandwich Islanders, into vessels (ipu), out of which they eat their "poè," i.e. fermented corms of *Colocasia antiquorum*, var. *esculenta*, as stated in my Narrative of the Voy. of H.M.S. Herald, vol. ii. p. 86.

Another species is peculiar to the Society Islands, viz. *Cucurbita pruriens*, Sol. ms. in Forst. Prodr. n. 554, sine descrip., et in Parkins. Drawings of Tahit. Plants, t. 109 (ined.); Seem. Journ. of Bot. vol. ii. p. 50. Pilis rigidiusculis pruritum momentaneum excitantibus hispida, caule angulato; foliis profunde cordatis sublobato-5-angulatis sinuato-dentatis; cirrhis 2-fidis; pedunculis axillaribus solitariis; calycis laciniis oblongo-lanceolatis reflexis; fructibus globosis, junioribus farinosis pilosis. *Cucumis bicirrho*, Forst. mss. in Guill. Zeph. Tait. p. 56.—Society Islands (Banks and Solander! in Mus. Brit.).

"Annuæ. Caules longissimi, angulati, hispidi. Folia alterna, petiolata, magna, latiora (sæpe spithamam lata) quam longiora, profunde cordata, sinibus latis subrotundatis sublobato-angulata, angulis acutis, denticulata, denticulis minutis teretiusculis, molliuscule, pilosa, pilis supra longioribus adpersis, 5-nervia, venosa. Glandulæ nullæ. Petioli plerumque foliis longiores, hispidissimi. Cirrhi 2-fidi, longi, inferne hispidi. Pedunculi axillares, 1-flori, hispidissimi. masculi plerumque petiolis longiores, feminei ex eadem axilla, breves unciales, raro sesquiunciales. Flores magni, lutei. Calyx hirsutus, laciniis oblongo-lanceolatis semiuncialibus reflexis. Filamenta 3. Antheræ valde contortuplicatæ. Germen oblongum, hirsutissimum. Pomum globosum, cortice duro sublignoso tectum, farina alba facile detergenda dense irroratum, pilisque rigidiusculis pallidis sesquilinearibus undique adpersum, diametro 2- vel raro 3-unciali, dum penitus maturum Pomum læve evadit absque farina pilisve. Semina magnitudine seminum *Cucumeris sativæ*,

ORDO XLVII. SAXIFRAGACEÆ.

In 1836, when Endlicher published his list of South Sea Island plants, he was able to enumerate only four species of *Saxifragaceæ* from tropical Polynesia, viz. *Codia montana*, Forst. (New Caledonia, Forster), *Weinmannia parviflora*, Forst. (Tahiti), *Geissois racemosa*, Labill. (New Caledonia), and *Broussaisia arguta*, Gaud. (Sandwich Islands). Since then the number has so rapidly increased, that I am acquainted with no fewer than 38 species, distributed over 7 genera, viz. *Geissois* (5), *Cunonia* (5), *Weinmannia* (8), *Spiræanthemum* (6), *Pancheria* (7), *Codia* (5), and *Broussaisia* (2). I hold the two species of the latter genus sound ones. *Broussaisia arguta*, Gaud., A. Gray, Bot. Wilkes, t. 87, was collected in Oahu (Macrae! in Mus. Brit.), *B. pellucida*, Gaud. Bonit. t. 9, in Hawaii by Deal, and also in Captain Cook's second voyage, with the schedule "*Hydrangeoides*. Frutex 9-pedalis; fl. pallide rubicundi; Hawaii in sylvis."

I may here express my conviction that *Saxifragaceæ* and *Crassulaceæ* should be fused into one great Natural Order. At present they are kept apart merely by imaginary differences. The calyx is 5-sepalous in several *Saxifragaceæ*, as it usually is in *Crassulaceæ*. The hypogynous scales, upon which Lindley laid undue stress in *Crassulaceæ*, are present in *Spiræanthemum*; there is every possible degree of transition from apocarpous to syncarpous fruits; and there are inferior, semi-inferior, and free ovaries.

I. **Geissois**, Labill. Ser. Austr. Cal. p. 50. t. 50; Brongn. et Gris, in Ann. Sc. Nat. Ser. 5. t. i. p. 368. Calyx liber, 4-partitus, sepalis acutis margine crassis, intus sæpe hirsutis, caducis, æstivatione valvatis. Corolla 0. Stamina 12–16, hypogyna. Ovarium oblongo-conicum, basi in discum annularem crenatum angustum expansum, 2-loculare. Ovula ∞ , biseriata, ascendencia. Styli 2, graciles, basi connati; stigmata parva, acuta. Capsula elongata, styli basi simplici cuspidata,

sed margine tumido cincta. *Pili* in tota planta pellucidi, rigidiusculi, quasi articulati, subulati, prurimum momentaneum excitantes.—Hab. in Tahiti, Huahine, etc."—Sol. Prim. Fl. Ins. Pacif. p. 336 (ined.). This plant is allied to *C. ovifera*, but perfectly distinct, the calyx being very different in the two species.

There are besides in tropical Polynesia the following *Cucurbitaceæ* :—

Sycios australis, Endl. Fl. Norfolk, p. 67 (1833): *S. Fretensis*, Hook. fil. in Lond. Journ. Bot. vol. vi. p. 473 (1847); Walp. Ann. vol. i. p. 317: *S. angulata*, Forst. Prodr. n. 363 (non Linn.); Hook. fil. Fl. N. Zealand, vol. i. p. 72, ex parte.—Norfolk Island (Bauer), New Zealand (Banks and Solander! in Mus. Brit.), New South Wales (fide A. Gray). Forster and Hooker fil. have regarded this species as identical with *S. angulatus* of America, but the two seem to be quite distinct. A. Gray (Bot. Wilkes, p. 648) has already pointed out that the flower and fruit of *S. australis* are not larger than those of *S. parviflorus*, and less than half the size of those of *S. angulatus*. There are besides other distinctions. *S. angulatus*, Linn. is covered with long, floccose, often glandulose hair on the peduncles and fruit, its tendrils are 4- or more generally 5-fid, and its fruit sparingly covered with spines, whilst *S. australis* is without the long floccose hair, has always 3-fid tendrils, and its fruit is densely covered with spines. Besides, the form of the leaf is different in the two.

Sycios pachycarpus, Hook. et Arn. Bot. Beech. p. 83; A. Gray, Bot. Wilkes, p. 650, t. 80.—Oahu (Macrae! Lay and Collie, Gaudichaud). Maui, Sandwich Islands (U. S. Expl. Exped.).

Sycios macrophyllus, A. Gray, Bot. Wilkes, p. 651, t. 81.—Hawaii, Sandwich Islands (U. S. Expl. Exped.).

Sycios cucumerinus, A. Gray, Bot. Wilkes, p. 652, t. 82.—Hawaii, Sandwich Islands (Macrae! U. S. Expl. Exped.).

Melothria Samoensis, A. Gray, Bot. Wilkes, p. 641.—Samoan Islands (U. S. Expl. Exped.).

Zehneria Bauermania, Endl. Fl. Norf. n. 126.—Norfolk Island (Bauer, fide Endl.).

Guillemin (Zeph. Tait.) mentions a *Cucurbitacea*, of which only a single branch was collected by Bertero and Moerenhout, and which he refers, with a mark of doubt, to *Trichosanthes*. It is said to be called "Patara" by the natives, and is stated to have palmate leaves, with seven large lanceolate leaflets; the flowers are unknown. Ellis ('Polynesian Researches,' vol. i. p. 360) says:—"Patara is a root growing wild in the valleys, in shape and taste resembling a potato, more than any other root found in Tahiti. It is highly farinaceous, though less nutritive than the Yam; the stem resembles the Woodbine or Convolvulus. The natives say the flower is small and white; I never saw one, for it is not cultivated, and but seldom sought, as the tuberous root is small, and more than two are seldom found attached to the same vine or stalk."—The *Patara* will probably be found to be no *Cucurbitacea* at all, but *Dioscorea pentaphylla*, Linn., which I find mentioned in Cuzent's list under the native name of "Paauara;" but *Patara* is probably the correct name. The "Paauara" proper, of Tahiti, is, from all I can learn, identical with *Dioscorea aculeata*.

2-locularis, carpellis ab apice septicide et rima interiori dehiscentibus, endocarpio tenui ab epicarpio non secedente. Semina imbricata, apice alata. Albumen carnosum. Embryo radícula inferiore, cotyledonibus ellipticis planis.—Arbores v. frutices, foliis digitatim 3–5-foliolatis, stipulis interpetiolaribus magnis; racemis lateralibus v. axillaribus solitariis v. aggregatis, bracteis nullis v. minimis, floribus coccineis.

For a long time we knew only one species of this genus (*G. racemosa*, Labill.), published in 1824. Thirty years later A. Gray added a second (*G. ternata*), and in 1862 A. Brongniart and Gris three others (*G. pruinosa*, *montana*, and *hirsuta*), all from New Caledonia; one of the latter (*G. pruinosa*) was discovered in 1858 by Admiral Denham's expedition, at Kanala, New Caledonia (M'Gillivray! n. 24 in Mus. Brit.). For a sixth species, found at the New Hebrides, we are also indebted to the same expedition, and I have named it, in honour of its distinguished commander, Admiral Denham, *Geissois Denhami* (sp. nov.), Seem. mss. in Herb. Mus. Brit.; foliolis ternatis longiuscule petiolatis ovalibus v. ellipticis obtuse acuminatis basi acutis integerrimis glaberrimis concoloribus; stipulis ignotis; racemis axillaribus solitariis folio brevioribus; pedicellis medio articulatis; sepalis ovato-acuminatis extus glabris 3-nerviis intus dense hirsutis; ovario dense villosa; stylis glaberrimis; capsula ignota.—Aneiteum, New Hebrides (M'Gillivray!). Closely resembling in habit and look *G. ternata*, A. Gray, but at once distinguished by its very woolly ovary. It is also very near *G. montana*, Vieill., but differs in the shape of the leaves and sepals. The ovary of *G. montana* is not described; that of *G. pruinosa* is glabrous, as is that of *G. ternata*.

1. ***G. ternata***, A. Gray, Bot. Wilkes, p. 679. t. 86; arborea; foliolis ternatis oblongis v. ovato-ellipticis obtusis acutis v. breviter acuminatis, basi acutis, integerrimis v. serratis glaberrimis discoloribus; stipulis canescenti-hirsutis; racemis lateralibus solitariis v. aggregatis; pedicellis medio articulatis; sepalis triangulari-oblongis, extus glabris subaveniis, intus subpubescentibus (coccineis); staminibus 12–16; ovario glabro; capsula lineari-oblonga, subcurvata, teretiuscula v. subcompressa.—Nomen vernac. Vitiense, "Vuga."—Macuata coast of Vanua Levu and Ovalau (U. S. Expl. Exped.); Kadavu (Seemann! n. 201); Viti Levu (Græffe! n. 27); Lakeba (Seemann! Harvey!); Gau (Milne!); Moturiki (Seemann!).

A timber-tree about 40–50 feet high, growing on hillsides, and presenting, when covered with its bright scarlet flowers, a most beautiful appearance. The native name I had for this is "Vuga," identical with that of *Metrosideros polymorpha*, but either in the one case or the other I must have been misinformed.

II. ***Weinmannia***, Linn. Gen. n. 493; Brongn. et Gris, in Ann. Sc. Nat. Ser. 5. t. i. p. 372. Calyx 4–5-fidus, persistens, lobis æstivatione valvatis v. vix margine imbricatis. Petala subrotunda, sessilia. Stamina 8–10, filamentis gracilibus, subæqualia; glandulæ totidem, cum staminibus alternantes. Ovarium 2-loculare, ovulis ∞ 2-seriatis. Styli 2 e basi divergentes, stigmatibus parvis subcapitatis. Capsula 2-locularis, dehiscentia septicida et rima interna aperta, carpellis demum 2-fidis. Semina ovata, pilosa.—Arbores v. frutices, foliis oppositis simplicibus ternatis v. sæpius pinnatis; floribus racemosis v. racemis compositis, paniculatis.

A large American, Indian, Australian, and Polynesian genus, all the species of which are very local. It is unknown in the Sandwich Islands. One species (*W. Samoensis*, A. Gray) is found in the Samoan Islands, another (*W. parviflora*, Forst. Prod. n. 174, Sol. Prim. Fl. Ins. Pacif. p. 257; *Leiospermum parviflorum*, Don; *Marattia terminalis*, Sol. in Parkins. Drawings of Tahit. Plants, t. 48), grows in the Society Islands (Banks and Solander! Dav. Nelson! Forster! W. Anderson!), and it is also said to occur in Elizabeth Island, though I believe the genus *Fitchia*, as well as this *Weinmannia*, were not collected there by Cuming, but in Tahiti. Two species (*W. serrata*, Brongn. et Gris, and *dichotoma*, Brongn. et Gris) are known from New Caledonia, four from Viti, and two from the New Hebrides, viz. :—

W. Denhami (sp. nov.), Seem.; ramulis paniculisque puberulis; foliis pinnatim 2–3-jugis cum impari glabris; rachi late alata; foliolis lateralibus sessilibus lanceolatis acutis basi obliquis calloso-serratis supra nitidis, terminali petiolulato, petiolulo alato; racemis elongatis ternatis v. paniculatis; floribus 4-meris, petalis ovatis obtusis; fruct. ignot.—Aneiteum, in woods (M'Gillivray!). Collected by Captain Denham's Expedition. Terminal leaflets the largest, including petiolule 1½ inch long. Racemes 3–4 inches long.

W. Macgillivrayi, (sp. nov.) Seem. mss. in Mus. Brit.; ramulis paniculisque pubescentibus; foliis pinnatim 5–9-jugis cum impari; rachi tereti supra barbata; foliolis lateralibus sessilibus, terminali petiolulato, ovato-oblongis acuminatis calloso-serratis, utrinque glabris, supra nitidis; stipulis subrotundatis;

racemis folio longioribus; floribus 4-meris; petalis obovatis; fruct. ignot.—Aneiteum, (M'Gillivray! Milne!). Leaflets smaller than those of *W. Denhami*.

Milne also gathered imperfect, specimens of another possibly new species of *Weinmannia*, with 3-foliolated, glabrous leaves, above Nady, Vanua Levu, which must remain undescribed till better materials shall have come to hand.

1. *W. affinis*, A. Gray, Bot. Wilkes, p. 674; glabra; foliis simplicibus oblongis v. ovalibus calloso-serratis basi in petiolum brevem contractis rarissime 2-foliolatis, foliolis in petiolo superne marginato sessilibus; racemis geminis ternisve corymboso-paniculatis; "floribus roseis;" calyce deciduo; stylis capsula ovoidca glabella dimidio brevioribus; seminibus ovalibus utrinque comosis.—Ovalau, 1200 feet above the sea (U. S. Expl. Exped.), Viti Levu (Seemann! n. 197), Taviuni (Seemann! 200).

All my specimens have simple leaves, and are, unfortunately, in fruit only. The leaves are very variable in size, though not in texture and mode of venation. A. Gray's var. β must probably be excluded, and may be identical with the following species.

2. *W. Vitiensis*, (sp. nov.) Seem.; glabra; foliis 3-foliolatis, lateralibus sessilibus, intermedio petiolulato, foliolis lanceolatis v. ovali-lanceolatis acutis v. acuminatis calloso-serratis supra nitidis, venis prominulis, subtus opacis nigro-punctatis; racemis ternis v. subpluribus paniculatis, junioribus (sub lente) puberulis; stylis capsula 3-4-sperma ovoidca dimidio brevioribus; seminibus oblongis utrinque comosis.—Kadavu (Seemann! n. 199). Also collected by Harvey in Viti (fruiting specimens), but locality not specified.

This may possibly be A. Gray's *W. affinis*, var. β . *foliis trifoliolatis*, as it was pronounced by the American botanist a variety of that species; but it is very different in look, and I cannot make up my mind to put it with *W. affinis*, which is well known to me. Unfortunately, my specimens have very young flowers only, and the diagnosis must for the present remain incomplete. There are no simple leaves on any of my specimens; the lateral leaflets are the smallest, 1-1½ inch long and $\frac{3}{4}$ of an inch broad. All are finely reticulated underneath.

3. *W. Richii*, A. Gray, Bot. Wilkes, p. 675. t. 85 B; arborescens; ramulis junioribus petiolis costisque subtus pube brevi velutinis cinereisve; foliis simplicibus v. pinnatim 1-4-jugis cum impari; foliolis oblongis acuminatis subserratis glabris; stipulis orbiculatis integerrimis; racemis geminis v. ternis confertis; floribus 4-meris parvis; petalis obovatis calyce persistente duplo longioribus; stylis gracilibus capsula 2-4-sperma paullo brevioribus; seminibus oblongis utrinque comosis.—Bua Bay, Vanua Levu, at the altitude of 2000 feet (U. S. Expl. Exped.). Recently collected by Mr. Storck, probably in Viti Levu.

4. *W. spiræoides*, A. Gray, Bot. Wilkes, p. 677; arborea; hirto-pubescens; foliolis 2-jugis cum impari oblongo-lanceolatis seu elliptico-oblongis grosse serratis utrinque acutis; stipulis orbiculatis serratis; cæt. ign.—Ovalau, at the altitude of 500 feet (U. S. Expl. Exped.).

III. *Spiræanthemum*, A. Gray, Bot. Wilkes, p. 666. t. 83; Brongn. et Gris in Ann. Sc. Nat. Ser. vol. v. t. 1. p. 373. Flores hermaphroditi v. polygami. Calyx 4-5-fidus (in eodem specimine), persistens, lobis acutis, æstivatione valvatis. Corolla 0. Stamina 8-10 v. 4-5, hypogyna, filamentis gracilibus, antheris subglobosis 2-lobis. Squamulæ hypogynæ, carnosæ truncatæ v. emarginatæ, cum staminibus alternantes. Ovaria 4-5 (v. rarius 2-3), libera, ovoidco-fusiformia, in stylum gracilem attenuata; stigmatibus parvo capitato; ovulis 1-5, angulo interiori latere affixis, amphitropis, micropyle superiore. Folliculi 2-5 fertiles v. abortu solitarii, rima interiore dehiscentes. Semina pauca (1-2), superne v. utrinque in alam producta. Embryo (ex A. Gray) subcylindricus, albumine carnosio paulo brevior, radícula supera.—Frutices v. arbores, foliis oppositis v. ternis simplicibus; stipulis interpetiolaribus deciduis; floribus parvis paniculatis, pedicellis articulatis.

This singular genus is rapidly increasing, and now consists of seven species. A. Gray was acquainted with only two, *S. Samoense*, from the Samoan, and *S. Vitiense*, from the Viti Islands. Since then, Brongniart and Gris have added two others from New Caledonia, (*S. densiflorum* and *Austro-Caledonicum*), and I have

to augment the number still further by two from Viti (*S. Katakata* and *Græffei*), and one from the New Hebrides (*S. Macgillivrayi*, sp. nov., Seem. mss. in Herb. Mus. Brit.; arbuscula; ramis pubescentibus; foliis oppositis ovatis v. ovalibus acuminatis basi acutis, callososerratis utrinque glabris, insigniter penninerviis, nervis subrectis; paniculis folia excedentibus; floribus 4-meris, diplostemonibus; squamulis hypogynis oblongis truncatis basi connatis, intus barbatis; folliculis ignot.—Aneitum, New Hebrides (M'Gillivray! n. 59). In habit resembling *S. Samoense* and *Katakata*).

1. **S. Vitiense**, A. Gray, Bot. Wilkes, p. 669. t. 83; glabrum; foliis oppositis et verticillatis obovato-ellipticis oblongisve obtusis basi attenuatis integerrimis paucivenosis paniculas excedentibus; floribus 4-5-6-meris diplostemonibus; squamulis hypogynis cuneatis v. oblongis truncatis v. emarginatis glabris; folliculis 4 monospermis; semine superne alato.—At Bua Bay and Macuata coast of Vanua Levu (U. S. Expl. Exped.); Viti Levu (Dr. Græffe! n. 16, ex parte).

2. **S. Græffei**, (sp. nov.) Seem.; glabrum; foliis oppositis ellipticis acuminatis basi acutis integerrimis v. versus apicem obscure denticulatis insigniter penninerviis; paniculis folia multo excedentibus; floribus ignotis; folliculis 4; cæt. ignot.—Buke Levu, Kadavu (Græffe! n. 16, ex parte).

Discovered by Dr. Græffe, whose specimen was kindly sent to me by Dr. F. Müller, and nearest to *S. Vitiense*, from which it differs by the shape of the leaves, and very large panicles. I have only seen one fruiting specimen, all the follicles having shed their seed. Leaves on petioles $\frac{1}{2}$ –1 inch long; blade $2\frac{1}{2}$ –3 inches long, $1-1\frac{1}{4}$ inch broad, on the upper side more prominently feather-veined than *S. Vitiense*; veins from 7–9 on each side of the midrib. Panicles twice or thrice as long as the leaves.

3. **S. Katakata**, (sp. nov.) Seem. in Bonplandia, vol. x. p. 36. (Tab. XVII.); arborea; ramis petiolisque puberulis; foliis oppositis ovatis v. ovato-oblongis acuminatis basi rotundatis v. obtusis minute denticulatis insigniter penninerviis, nervis curvatis, utrinque costis nervisque exceptis, glabris; paniculis folia excedentibus; floribus 4-meris diplostemonibus; squamulis hypogynis obovato-oblongis emarginatis intus barbatis; folliculis 4 extus puberulis; cæt. ignot.—Nomen vernac. Vitiense, "Katakata."—Kadavu (Seemann! n. 196).

A middle-sized tree; petioles $1-1\frac{1}{2}$ inch long; blade of leaf 4–5 inches long, $2\frac{1}{2}$ –3 inches broad. Primary veins more curved than in *S. Macgillivrayi*. Bracts lanceolate, opposite. Flowers polygamous. My specimens have male flowers only, whilst Milne's fruiting specimens, from which Fig. 5 and 6 of our Plate are copied, have shed the seeds.

EXPLANATION OF PLATE XVII.—Fig. 1, a male flower; 2, the same, with the calyx removed; 3 and 4, front and back view of one of the eight hypogynous scales, alternating with the stamens; 5, branchlet with ripe fruit; 6, the folliculi after shedding their seed:—all, with exception of Fig. 5, magnified.

ORDO XLVIII. HEDERACEÆ.

It is a matter of importance to ascertain the æstivation of all the plants regarded by us as Umbelliferæ and Araliaceæ, because, for systematic purposes, most useful characters are to be found in it; and as there is a vast number of species to be examined, it is desirable there should be a good many observers. I am more and more convinced that the only clear line between Umbelliferæ and Araliaceæ, or, as I should prefer calling the latter, Hederaceæ, can be drawn by relying upon the characters derivable from the æstivation of the corolla. Not one of the distinctive characters usually assigned to the two Orders holds good, and in elementary books this state of things is extremely puzzling to the student. If, for instance, a beginner wished to find *Hydrocotyle* and *Crithmum* by means of the analytical key given in one of the leading British Floras, he could never hope to succeed. After getting to the neighbourhood of the Orders in which they are placed in that work, he would meet with the following enigma:—

"33. Petals imbricate in bud. 34.

Petals valvate in bud. 35."

Of course, having ascertained the petals to be valvate in bud, he would continue his search by turning to "35," and there find,—

"Fruit a berry. Styles several. Leaves alternate. Araliaceæ."

Now as neither *Hydrocotyle* nor *Crithmum* have a berried fruit or more than two styles, his search for the two genera by means of this analytical key would have come to an end. I have quoted this example, out of many, because it came ready to hand, and it illustrates the practical inconvenience arising from our neglecting the æstivation. The conspectus of the calycifloral Orders given in Hooker and Arnott's 'British Flora,' places the student in the same dilemma.

Systematic botanists who have dealt with the whole vegetable kingdom have been as unsuccessful in finding distinctive characters for the two Orders as our local botanists, and the confusion that is thus caused in general systematic works is embarrassing. After the grave errors introduced into the ordinal characters of Hederaceæ by Don, and copied by Bartling and De Candolle, had been corrected by Brown and Bennett in 'Plantæ Javanicæ,' it became evident that Umbelliferæ and Hederaceæ were not so distinct as had been supposed by botanists labouring under the belief that Don's errors were the result of true observations. Lindley, in his 'Vegetable Kingdom,' makes the following distinctions between the two Orders:—

"*Umbelliferæ*. Fruit didymous, with a double epigynous disk.

"*Hederaceæ*. Fruit not didymous, without a double epigynous disk, 3- or more celled. Pentamerous flowers. Corolla valvate. Leaves alternating, without stipules."

The principal distinctive characters here relied upon (the didymous or non-didymous fruit and the presence or absence of the double epigynous disk) do not stand the test of practical application. About one-half of all known Hederaceæ have a didymous fruit, and in many Umbelliferæ the disk is not double if the styles are closely united, there being in that instance only one disk, as is the case in most Hederaceæ. The pentamerous flowers are general in both Orders, tetramerous ones forming the exceptions. Alternate leaves are also a feature common to both Orders, opposite ones being again the exception. Stipules cannot be denied to many Hederaceæ, being, for instance, highly developed in *Tetrapanax papyrifera*, C. Koch, the rice-paper plant.

Unless some additional characters besides those derivable from the æstivation of the corolla can be found, it will scarcely be possible to make Hederaceæ more than a suborder of Umbelliferæ. The general name of Umbelliferæ might be retained for the whole Order, whilst that of Apiaceæ (following Lindley) might be adopted for one suborder and Hederaceæ for the other. The two suborders would occupy the same relative position as do Clematideæ and Anemoneæ in Ranunculaceæ, and Papilionaceæ, Cæsalpineæ, and Mimoseæ in Leguminosæ, all of which are distinguished by the æstivation. However, when the whole genera belonging here shall have been carefully examined, it may become necessary to establish even more suborders. In *Trachymene carulea* (*Didiscus*, Hook.) and most genera with irregular corollas, the petals are vexillary in bud, exactly as they are in Papilionaceæ; in *Aralia racemosa*, *Stilbocarpa polaris*, and a few others, the æstivation of the corolla is quincuncial. Both being different degrees of imbrication, we may, in the present stage of the inquiry, rest content with two suborders of Umbelliferæ being defined:—

1. *Apiaceæ*. Corolla variously imbricate in æstivation.

2. *Hederaceæ*. Corolla valvate in æstivation.

I prefer the name Hederaceæ because it is not an innovation; *Hedera Helix* is a widely-diffused and very characteristic plant of the Order, and the few typical species at present retained in *Aralia*, having a quincuncial corolla, must be shifted to Apiaceæ.

In many, but by no means in all Apiaceæ, the carpels separate mechanically from the carpopods. In Hederaceæ the carpels also separate occasionally, but there are never any thread-like carpopods. So it may be stated that all Umbelliferæ with separating carpels and distinct carpopods are genuine Apiaceæ, but that not all Apiaceæ have separating carpels and distinct carpopods. But the systematic value of the carpopod or carpophorum is depreciated by the recent observations of Von Mohl, which tend to show that the carpophorum is not a distinct organ, but part and parcel of the carpels.*

I may add that Corneæ are chiefly distinguished from Hederaceæ, according to most authors, by their tetramerous flowers and opposite leaves. But there are Corneæ with pentamerous flowers, for instance, *Griselina* and *Corokia*; and *Cornus alternifolius*, Linn., is a familiar instance of alternate leaves. Corneæ agree in every respect with Hederaceæ, except that, as the younger Agardh has pointed out, Hederaceæ, like Apiaceæ, have epitropous ovules, and Corneæ apotropous (Gemmulæ "sunt nempe in Araliaceis et Umbelliferis velut in Hamamelideis epitropæ, in Cornaceis vero (observavi gemmulas *Corni*, *Benthamicæ*, *Corokiæ* et his proximæ *Aucubæ*) ut in Caprifoliaceis et Viburneis apotropæ." J. G. Agardh, *Theoria Syst. Plant.* p. 303).—For a series of papers on *Hederaceæ* consult Seem. *Journ. of Botany*, vol. i.-iii.

I. **Hydrocotyle**, Tournef. *Inst.* t. 173. Pedicelli inarticulati. Flores ecalyculati, herma-

* "The different views [taken of the nature of the carpophorum of Umbelliferæ] are contradicted by a microscopic examination of the fruit, yielding as it does the result that a carpophorum distinct from the carpels and joined to them by accretion does not exist, but that it forms really a part of the carpels themselves, and, when the fruit is ripe, separates from them, and then only becomes apparently a separate organ. This upsets all the speculations as to whether the carpophorum is to be regarded as an axial formation or (as De Candolle explains it) as the petiole of the carpellary leaf. The true state of the case becomes evident if in different heights of the unripe fruit transverse sections are made, and these be compared with vertical ones."—Hugo von Mohl, "On the Carpophorum of Umbelliferæ," *Bot. Zeitung*, vol. xxi. (1863) p. 264.

phroditi. Calycis tubus subcompressus, limbus obsolete. Petala 5, ovato-triangularia, 1-nervia, libera, æstivatione valvata. Stamina 5; antheræ ovatæ; pollinis granula plano-convexa. Ovarium 2-loculare, loculis 1-ovulatis. Drupa a latere plano-compressa, 2-pyrena, pyrenis evittatis. Carpophorum nullum. Semen carinato-compressum. Albumen æquabile.—Herbæ perennes repentes v. suffrutices erecti, foliis stipulatis simplicibus integris v. varie divisis, floribus in umbellis capitatis v. spicis axillaribus dispositis, albidis, viridiusculis v. purpureo-maculatis, drupis viridiusculis purpureis v. maculatis.—Seem. in Journ. of Bot. 1863, p. 278. *Trisanthus*, Lour. Fl. Coch. p. 219.

Though the genus *Hydrocotyle* must have passed through the hands of innumerable botanists, its true position in the Natural System was not suspected until pointed out by me in the 'Journal of Botany,' 1863, p. 278. Every one regarded it as a genuine Umbellifera, and yet how different is its look to all the most typical members of that order or suborder. Its fruit is didymous, it is true, but the two carpels do not separate, and there is no distinct carpophorum except in several annual Australian species, which have been erroneously referred to this genus, such as *H. tripartita*, R. Brown; *verticillata*, Turcz.; *pilifera*, Turcz.; *medicaginoïdes*, Turcz.; *diantha*, F. Müll.; *capillaris*, F. Müll.; *lobocarpa*, F. Müll., etc.—all belonging to *Dimetopia* and other genera not yet worked out. In tropical Polynesia only three genuine *Hydrocotyles* have as yet turned up; the widely-diffused and rather variable *H. Asiatica*; in the Samoan Islands the allied *H. leucocephala*, Cham. et Schlecht., according to A. Gray,—a species I have not seen from any but Brazilian stations; and in the Sandwich Islands *H. verticillata*, Thunb. (*interrupta*, Mühl.). The latter will probably be found in other Polynesian groups, as it is one of the most widely-diffused species; we know it from the Cape of Good Hope (Wallich! Roberts! Lind!), Virginia (Mitchell!), Carolina (Beyrich!), Massachusetts (Greene!), California (Chamisso), Jamaica (Wright! Swartz!), and Gipps Land, Australia (F. Müller!). I hold *H. pleiantha*, of Cesati (Linnæa, vol. xi. p. 313), from Tuscany, identical with *H. verticillata*, as far as such an opinion can be of value, judging from the description only. If it should be confirmed, *H. verticillata*, Thunb., would range over Polynesia and all the continents except Asia. It is very near the much more local *H. vulgaris*, but I have never seen any transition, it being easily distinguished by its 11-nerved leaves, entirely glabrous petioles, and uniformly purplish fruit (not maculate or at the base emarginate).

1. **H. Asiatica**, Linn. Spec. p. 234; Rich. Hydr. n. 15. f. 11; Wight, Icon. vol. ii. t. 565; glabra v. villosa; caule repente; foliis orbiculato- v. cordato-reniformibus crenatis v. crenato-dentatis 7-9-nerviis; umbellis capitatis paucifloris; involucre 2-5-phyllo; fructu orbiculari 4-costato.—*H. repanda*, Pers. Ench. vol. i. p. 302; Rich. Hydr. n. 13. f. 14. *H. ficarioides*, Lam. Dict. vol. iii. p. 153; Rich. Hydr. n. 12. f. 12. *H. abbreviata*, Rich. Hydr. n. 17. f. 19. *H. lunata*, Lam. Dict. vol. iii. p. 152. *H. nummularioides*, Rich. Hydr. n. 11. f. 9. *H. hebecarpa*, DC. Prodr. vol. iv. p. 63. *H. inæquipes*, DC. Prodr. vol. iv. p. 63. *H. pallida*, DC. Prodr. vol. iv. p. 63. *H. brevipes*, DC. Prodr. vol. iv. p. 63. *H. lurida*, Hance in Walp. Ann. vol. ii. p. 690; Seem. Bot. Herald, p. 379. *H. triflora*, Ruiz et Pav. Fl. Per. vol. iii. p. 24. t. 245. f. 6. *H. cordifolia*, Hook. Icon. t. 303. *H. Brasiliensis*, Scheidw. in Otto und Dietrich, Gartenz. vol. x. 286; Walp. Rep. vol. ii. p. 383. *H. reniformis* et *cordata*, Walt. Fl. Car. p. 113. *H. reniformis*, Bosc, Poir. Suppl. vol. iii. p. 21. *H. repanda*, Spreng. Umb. n. 4. t. 2. f. 4. *H. sp.*, e Nov. Caledon. Forst. Prodr. n. 512. *Glyceria repanda*, Nutt. Gen. Amer. vol. i. p. 177. *Trisanthus Cochinchinensis*, Lour. Fl. Cochinch. p. 219 (ed. Willd.). *Pes equinus*, Rumph. Amb. vol. v. p. 455. t. 169. f. 1.—Nomen vernac. Vitiense, "Totono."—Common all over Viti, in open, damp places or cultivated ground. Also found in the Tongan (Barclay!) and Samoan Islands (U. S. Expl. Exped.), and New Caledonia (Forster!). Common in Asia, viz. China (Herb. Mus. Brit.); Hongkong (Campion! Hance!); Java (Horsfield!); Philippine Islands (Cuming!); Cochinchina (Loureiro!); Coromandel coast (Roxburgh! Kœnig!); Ceylon (Thwaites!); Africa, viz. Mauritius (Roxburgh!); Abyssinia (Schimper! n. 13); Congo (Congo Expedition!); West tropical Africa (G. Don!); Angola (Welwitsch! n. 619, 620, 621, 622, 623); Cape of Good Hope (Masson! Wallich! Bunbury!); America, viz. Jamaica (F. Masson!); Chili (Bridges!); Rio, Brazil (Gardner! n. 52); Australia, viz. Queensland at Endeavour River (Sir J. Banks!).

Used medicinally by the Vitians, but I have not been able to find out for what diseases.

II. **Nothopanax**, Miq. in Bonplandia, 1859, p. 139, et Fl. Herb. Ind. vol. i. pars i. p. 765.

Pedicelli articulati. Flores calyculati, polygami. Calycis tubus obconicus; limbus minute 5-dentatus. Petala 5, æstivatione valvata. Stamina 5. Styli 2 (per excessum 3) dein divergentes, fere ad basin usque facie interiore stigmatosi. Ovarium 2-, rarissime 3-loculare. Drupa didymo-compressa v. rarissime 3-gona. Albumen æquabile.—Frutices sæpius anisati, foliis pinnato-decompositis, pinnatis v. simplicibus; petiolis basi stipulatim dilatatis; umbellis decompositis v. racemoso-paniculatis, floribus parvis albidis v. viridiusculis.—*Panax*, *Araliæ* et *Paratropiæ* sp. auct.

Nothopanax was established in 1856 by Miquel in the 'Bonplandia' for a set of shrubby *Hederaceæ* having articulate pedicels, polygamous 5-androus flowers, and a two-celled ovary. The generic character there given was admitted by him, unaltered, into his 'Flora of Dutch India;' but in the Supplement of that work he amplified it so far as to admit a *Hederaceæ* with 5-7 styles, which he named *N. tricochleatum*. In another more recent publication (Ann. Mus. Lugd. Bat. vol. i.), he rejects the genus altogether, and refers all the species once more to the old Linnæan genus *Panax*. I think *Nothopanax* ought to be upheld, and be restricted to the dicarpous (by excess tricarpous) species. The 5-carpous plant Miquel referred to it I consider to be *Polyscias pinnata*, Forster. With *Panax*, as I understand the genus, *Nothopanax* has but distant relationship. The genus now comprises about a dozen species, but it is quite possible that some of them will have to be rejected when better specimens can be examined. I more than half suspect that *N. (?) obtusum*, of which I have not seen a specimen, may belong to my new genus *Heteropanax*, which is founded upon the East Indian *Panax fragrans*, Roxb.* What I have seen in herbaria under the name of *Panax pinnatum*, Lam., is certainly a species of *Arthrophyllum*, a genus easily known by its 1-celled ovary; and Miquel's description of "*Panax pinnatum*," given in the Annales above quoted, must refer to a different plant, perhaps a genuine *Nothopanax*. I have also my suspicion about *N. cochleatum* (known to me only from books). It has simple leaves, whilst all the other species of the genus have compound ones. Most of the species have a very strong smell of aniseed and celery,—hence the name of "celery-tree" is given to *N. elegans*, Seem., by the Queensland colonists.†

* *Heteropanax*, Seem. (gen. nov.). Pedicelli inarticulati. Flores ecalyculati, hermaphroditi. Calyx tubo obconico, limbo minute 5-dentato. Petala 5, ovata, 1-nervia, æstivatione valvata. Stamina 5. Ovarium 2-loculare, loculis 1-ovulatis. Styli 2, liberi, demum divaricati. Drupa exsucca, didyma, compressa, 2-pyrena. Albumen ruminatum.—Arbuscula inermis Indiæ orientalis, foliis alternis simpliciter impari- v. supradecomposite pinnatis, foliolis petiolulatis ovatis acuminatis integerrimis, umbellis paucifloris paniculatis, pedunculis pedicellis calycibusque stellato-tomentosis, floribus odoratis.—*Panax* sp. auct. Species unica: 1. *H. fragrans*, Seem. mss. *Panax fragrans*, Roxb. Cat. Calc. 21; DC. Prodr. vol. iv. p. 254, excl. syn. Don.—Bootan (Griffith! n. 2073), Kumaon (Strachey et Winterbottom!), Sikkim, 2-4000 feet (Hooker fil. et Thomson!), Khassia (Hooker fil. et Thomson!), Calcutta Bot. Garden (Wallich! n. 4929 b), Assam plains (Jenkins!).—Very variable in foliage, some leaves being scarcely a foot long, others exceeding 4-5 feet in length, with petioles 2 feet and more. Don's *Hedera fragrans*, referred doubtfully to this species by De Candolle, is *Pentapanax Leschenaultii*, Seem., a common Nepal plant.

† The following is an enumeration of all the species of *Nothopanax* known to me:—

* *Folia decomposite tripinnata.*

1. *N. fruticosum*, Miq. in Bonpl. 1856, p. 139; Fl. Ned. Ind. l. c. p. 765.—*Panax fruticosum*, Linn. Spec. p. 1515; Wight. Icon. t. 573. *Scutellaria tertia*, Rumph. Amb. vol. iv. p. 78. t. 33.—Indian Archipelago (Horsfield!), Cochinchina (Loureiro! in Brit. Mus.), Ceylon (Seemann!), Wallis Island (Sir E. Home!), Viti Islands (Seemann! n. 204). Much cultivated about houses by all Malayan and Polynesian races.

2. *N. (?) obtusum*, Miq. in Bonpl. 1856. p. 139; Fl. Ned. Ind. l. c. p. 166.—*Panax obtusum*, Bl. Bijdr. p. 890; Miq. Ann. Lugd. Bat. vol. i. p. 15.—Western Java (Blume!). Perhaps a species of *Heteropanax*.

3. *N. elegans*, Seem.—*Panax elegans*, Fraser, mss.; Muell. Fragm. vol. ii. p. 107, et in Trans. Phil. Soc. Victoria, 1857. *Panax polybotrys*, F. Muell. Herb. *Panax decompositum*, Muell. Herb.—"Celery-tree" of Moreton Bay. Island and shores of Moreton Bay (A. Cunningham! F. Mueller!).

** *Folia simpliciter pinnata.*

4. *N. Cumingii*, Seem.—*Paratropia Cumingiana*, Presl, Epim. p. 250; Walp. Ann. vol. ii. p. 725.—Philippine Islands (Cuming! n. 1553), Borneo (Motley! in Herb. Hook.).

5. *N. multijugum*, Seem. *Paratropia (?) multijuga*, A. Gray, Bot. Wilkes, p. 722.—Viti (Seemann! n. 205; Harvey! U. S. Expl. Exped.).

6. *N. Macgillivrayi*, Seem. mss. (sp. nov.).—Cape York, Australia (McGillivray!). Somewhat resembling *N. Cumingii* in leaf.

7. *N. Murrayi*, Seem.—*Panax Murrayi*, F. Muell. Frag. vol. ii. p. 106.—New South Wales (Oldfield! in Herb. Hook.).

8. *N. (?) Anisum*, Miq. in Bonplandia, 1856, p. 139, et Fl. Ned. Ind. l. c. p. 766.—*Panax Anisum*, DC.

1. **N. fruticosum**, Miq. in Bonplandia, 1856, p. 139; Fl. Ned. Ind. l. c. p. 765; foliis decomposito-pinnatis, foliolis petiolulatis ovali-oblongis acuminatis grosse dentato-serratis, ultimis inciso-3-fidis, umbellis corymboso-paniculatis.—*Panax fruticosum*, Linn. Spcc. p. 1515; DC. Prodr. vol. iv. p. 254; Roxb. Fl. Ind. vol. ii. p. 76; Wight, Icon. t. 573; Andr. Rep. vol. x. p. 595. *Scutellaria tertia*, Rumph. Amb. vol. iv. p. 78. t. 33. Nomen vernac. Vitiense, "Danidani."—Frequent about villages throughout Viti, and often cultivated (Seemann! n. 204). Also collected at Uvea or Wallis Island (Sir E. Home!). Common in the Indian Archipelago (Horsfield! Wallich!), Cochinchina (Loureiro! in Mus. Brit.), Ceylon (Seemann!), and India.

This species is much cultivated by all Malayan and Polynesian races, both for its ornamental foliage and medicinal properties. The root has an agreeable and strongly aromatic smell, tastes not unlike parsley, and is used as a diuretic. In Viti the bark of this shrub is scraped off, and its juice taken as a remedy for "macake," the thrush,—ulcerated tongue and throat.

2. **N. multijugum**, Seem. (Tab. XVIII. et XIX.); glabra; foliis imparipinnatis ∞ -jugis rhachi nodosa 2-pedali et ultra; foliolis breviter petiolulatis elliptico-oblongis v. ovato-oblongis integerrimis basi subcordatis; umbellis racemoso-paniculatis; drupis obovatis.—*Paratropia (?) multijuga*, A. Gray, Bot. Wilkes, p. 722.—Nomen vernac. Vitiense, "Danidani."—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped. Harvey!); Somosomo, Island of Taviuni (Seemann! n. 205).

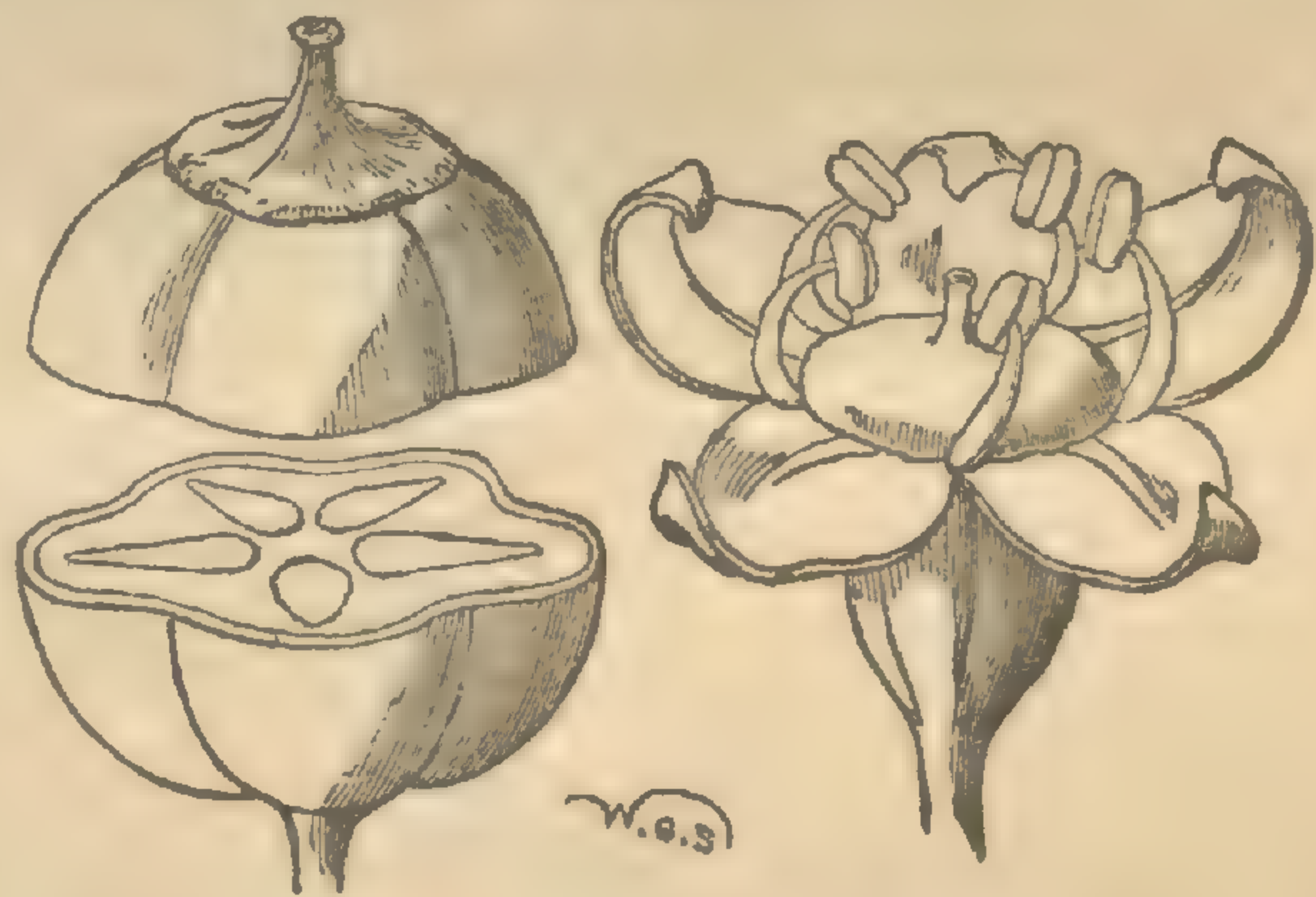
A straggling shrub, 4–8 feet high, with few branches. Leaves 2–4 feet long, leaflets often a foot long. Flowers in very large terminal panicles, the branches of which are $1\frac{1}{2}$ –2 feet long. Umbels few-flowered, arranged in racemes; racemes of the male flowers scattered, those of the hermaphrodite arranged in whorls. Drupe in my specimens not quite ripe, generally 2-, seldom 3-seeded.

EXPLANATION OF PLATE XVIII., representing the male flowers of *Nothopanax multijugum*, with the upper portion of a large leaf at the back.—Fig. 1, an umbel of male flowers; 2, a flower-bud; and 3, an open male flower:—all magnified.

EXPLANATION OF PLATE XIX., representing the hermaphrodite flowers and young fruit of *Nothopanax multijugum*, with the upper portion of a branch, and one of the smaller leaves at the back.—Fig. 1, an umbel of hermaphrodite flowers; 2, hermaphrodite flower; 3 and 4, young fruit; 5, the same magnified; 6 and 7, cross sections of a dicarpous and tricarpous fruit:—all, except 3 and 4, magnified.

III. **Agalma**, Miq. in Bonplandia, 1856, p. 138; Fl. Ned. Ind. vol. i. pars i. p. 752. t. 11 et 12; Seem. Journ. of Botany, 1864, p. 296. Pedicelli inarticulati. Flores ecalyculati, hermaphroditi. Calyx tubo obconico, limbo 5–6-dentato. Petala 5–6, ovato-triangularia, libera, 1-nervia, apice incurvula, æstivatione valvata. Stamina 5–6; antheræ oblongæ. Stylus 1; stigma 5–6-lobatum. Ovarium 5–6-loculare, loculis 1-ovulatis. Drupa oblonga, exsucca, 5–6-angulata, 5–6-pyrena. Albumen æquabile.—Arbores inermes Asiæ tropicæ; foliis digitatim foliolatis; foliolis integerrimis v. dentatis; floribus racemosis v. umbellatis in paniculas dispositis, petalis viridiusculis.

—*Hederæ et Paratropiæ* sp. auct.



Agalma rugosum (after Miquel).

Prodr. vol. iv. p. 254. *Anisum Moluccanum*, Rumph. Amb. vol. ii. p. 132. t. 42.—Moluccas, (Rumphius). Known only from Rumphius's figure and description.

9. *N. sambucifolium*, C. Koch, Wochenschrift, 1859, p. 77.—*Panax sambucifolium*, Sieb. in DC. Prodr. iv. p. 255. *P. margaritifera*, Visiani (ubi?), teste C. Koch, Wochenschrift, 1859, p. 370. *Panax dendroides*, F. Muell. Fragm. vol. ii. p. 107; Plants of Victoria, t. 28. *Panax angustifolium*, F. Muell. Fragm. vol. ii. p. 107.—East Coast of New Holland (Sieber! n. 256; A. Cunningham! Beckler!), Victoria and Australia Felix (F. Mueller!). Varies with narrow and broad leaves, Mueller's *P. dendroides* and *angustifolium* representing the narrow-leaved forms.

10. *N. Zippelianum*, Seem.—*P. Zippelianum*, Miq. Ann. Lugd. Bat. vol. i. p. 15.—New Guinea (Zippelius).

Miquel wished to confine the genus *Agalma* to those species which have truly racemose flowers, represented typically by *A. rugosum* (*Aralia rugosa*, Blume), and it is only in this particular that his *Agalma* differs from his *Paratropia*. Singular as is the inflorescence in *A. rugosum*, *simillimum*, and *racemosum*, few botanists would follow him in thinking that character sufficient to found a genus upon. I have therefore sought for better limits, and, adopting Miquel's two *Agalmæ* as the type, added all the species which agreed generically with them. Most of their congeners had been referred to *Paratropia*, even by Miquel himself, where, on account of their long style, they were quite misplaced. De Candolle established *Paratropia* for plants with *sessile stigmas*, and three out of the four species he referred to it have sessile stigmas, the fourth being a species of *Polyscias*, and having long styles. Now *Paratropia*, restricted to the species with sessile stigmas, is identical with *Heptapleurum* of Gærtner; and as the latter was established as early as 1791, that name, quite as appropriate as *Paratropia*, claims the right of priority by thirty-nine years. *Agalma* and *Heptapleurum* have certain features in common, but they differ in several essential points, viz.:—

Agalma. Stylus 1, elongatus.—Arbores plerumque terrestres, floribus viridiusculis.

Heptapleurum. Stigmata ovario immersa, punctiformia.—Arbusculæ epiphytæ, floribus viridiusculis v. sæpe purpureis v. sanguineis.

1. **A. Vitiensis**, (sp. nov.) Seem.; glabra; foliis digitatim 3-5- rarissime 1-foliolatis, foliolis obovato-oblongis obtusis in petiolum attenuatis integerrimis penninerviis, nervis horizontaliter divaricatis; floribus in umbellas pauci-(3-7-)floras dispositis; ovario 5-loculari.—Viti Levu (Græffe! n. 38, in Herb. Melbourne).

This is one of the plants kindly placed at my disposal by Dr. F. Müller. There is only a single indifferent specimen; better specimens will probably have more than the stated number of leaflets and flowers. Leaflets underneath looking like those of certain *Garcinias*, on account of the horizontally divaricate veins. Petiolules 1-1½ inch long; blade 3-4 inches long, 1½-2 inches broad.

IV. **Schefflera**, Forst. Gen. p. et t. 23. Pedicelli inarticulati. Flores ecalyculati, polygami. Calyx tubo obconico, limbo minute 5-dentato. Petala 5, ovato-triangularia, 1-nervia, æstivatione valvata. Stamina 5; antheræ oblongæ. Ovarium 5-10-loculare, loculis 1-ovulatis. Styli 5-10, basi coadunati, distincti. Drupa baccata, globosa, 5-10-pyrena. Albumen æquabile.—Arbores vel frutices inermes, glabræ; foliis alternis stipulatis digitatim 7-9-foliolatis; foliolis longe petiolulatis oblongis v. ellipticis serrulatis, umbellis racemoso-paniculatis.—*Araliæ* sp. auct.

Schefflera (not *Schæfflera*, as some authors incorrectly write) contains two species, one inhabiting New Zealand, and having 8-10 styles; the other Viti, and having five styles only.

1. **S. Vitiensis**, Seem. in Journ. of Bot. 1865, p. 176; arborescens; foliolis 7-9 petiolulatis cuneato-oblongis subter acuminatis subserratis, lateralibus parvis; umbellis confertis pedunculatis in racemum compositum magnum paniculæformem digestis; stylis pyrenisque 5.—*Aralia* (*Schefflera*) *Vitiensis*, A. Gray, Bot. Wilkes, p. 715, t. 89.—Ovalau (Seemann! n. 203; Harvey! U. S. Expl. Exped.).

V. **Nesopanax**, (gen. nov.) Seem. Journ. of Bot. 1864, p. 249. Pedicelli inarticulati. Flores ecalyculati. Calyx tubo obconico, cum ovario connato; limbo supero, obsolete 5-dentato. Petala 5, ovato-triangularia, disci epigyni margini inserta, libera, æstivatione valvata. Stamina indefinita, cum petalis inserta, pluriserialia; filamenta brevia; antheræ oblongæ. Ovarium inferum, 5-7-

11. *N. Samoense*, Seem.—*Panax Samoense*, A. Gray, Bot. Wilkes, p. 717.—Samoan Islands (U. S. Expl. Exped.!).

*** *Folia simplicia*.

12. *N. cochleatum*, Miq. in Bonplandia, 1856, p. 139, et Fl. Ned. Ind. l. c. p. 766.—*Aralia cochleata* Lam. Dict. vol. i. p. 224. *Panax cochleatum*, DC. Prodr. vol. iv. p. 255. *Panax scutellarioides*, Reinw. in Blume, Bijdr. p. 888. *Panax conchifolium*, Roxb. Fl. Ind. vol. ii. p. 77. *Scutellaria prima*, Rumph. Amb. vol. iv. p. 75. t. 31.—Indian Archipelago.

Species exclusæ.

N. (?) pinnatum, Miq. = *Arthrophyllum*, sp.

N. tricochleatum, Miq. = *Polyscias pinnata*, Forst.

loculare. Ovula in loculis solitaria, pendula. Styli 5-7, breves, distincti; stigmata simplicia. Drupa oblonga, 5-7-pyrena, calycis limbo stylisque coronata. Albumen . . .—Arbor mediocris, glabra, inermis; foliis digitatis; foliolis 7-9 obovato-oblongis utrinque attenuatis integerrimis; petiolis basi stipulatim dilatatis; umbellis multiradiatis, umbellulis 26-30-floris; floribus viridibus.

This genus differs from *Plerandra*, A. Gray, in having free petals, 5-7 distinct styles, and a 5-7-celled drupe. It agrees with it in habit, and the indefinite number of stamens. I have only one species:—

1. **N. Vitiensis**, Seem. l. c. (sp. nov.) Tab. XX.—Viti Islands (Seemann! n. 207; Milne!).

Petiole $1\frac{1}{2}$ feet long. Leaflets pinnately veined, coriaceous; blade 6-7 inches long, $2\frac{1}{2}$ -3 inches broad; petiolules $1\frac{1}{2}$ -2 inches long. Peduncles 6-8 inches long. Pedicels of fruiting specimens $1\frac{1}{2}$ -2 inches long.

EXPLANATION OF PLATE XX.—Fig. 1, a flower; 2, a stamen; 3, ovary; 4 and 5, sections of ovary; 6, fruit nearly ripe; 7, section of fruit nearly ripe:—*all, except Fig. 6, magnified.*

VI. **Bakeria**, Seem. in Journ. of Bot. 1864, p. 248. Pedicelli inarticulati. Flores ecalyculati. Calyx tubo turbinato cum ovario connato, limbo brevissimo repando-undulato. Petala 5, ovato-triangularia, æstivatione valvata, apice incurvula, libera, intus 1-nervia. Stamina 15, uniserialia; filamenta compressa; antheræ lineari-oblongæ. Ovarium 5-loculare, loculis 1-ovulatis. Stigma obscure 5-fidum, stylopodio subconico 5-angulato sulcato impositum. Drupa . . .—Arbor mediocris, glaberrima, inermis; foliis digitato-5-foliolatis; foliolis longe petiolulatis obovato-obtusis v. acutis in petiolum angustatis integerrimis; petiolo basi stipulato-dilatato; umbellis compositis exinvolucratis; floribus viridiusculis.

This new genus, named in honour of Mr. J. G. Baker, of Thirsk, Yorkshire, a distinguished British botanist, and author of 'North Yorkshire: Studies of its Botany, Geology, Climate, and Physical Geography,' differs from *Plerandra* in having free petals, a definite number of stamens (15) arranged in a single series, and a 5-celled ovary; from *Tetraplasandra*, in having only 5 petals and a 5-celled ovary, and a different habit; from *Reynoldsia*, in having three times as many stamens as petals, and a 5-celled ovary; and from all the other genera of the Order in having 5 free petals, 15 stamens, and a 5-celled ovary. There is as yet only one species, viz.:—

1. **B. Vitiensis**, (sp. nov.) Seem. l. c. (Tab. XXI.)—Namosi, interior of Viti Levu (Seemann! n. 209). Also collected in the same island (foliage only), twenty miles inland, and there plentiful, by Milne.

A slender tree; petioles 4-5 inches long, petiolules 1 inch long; blade of leaflets 3-4 inches long, $1\frac{1}{2}$ -2 inches broad; pedicels 4-angular, not articulated.

EXPLANATION OF PLATE XXI.—Fig. 1, a flower-bud; 2, an open flower; 3, ovary; 4 and 5, sections of ovary,—*all magnified.*

VII. **Plerandra**, A. Gray, Bot. Wilkes, p. 729. t. 95; Seem. Journ. of Bot. 1864, p. 241. Pedicelli inarticulati. Flores ecalyculati, polygami. Calyx tubo turbinato, limbo brevissimo post anthesin repando-undulato. Petala ovato-triangularia v. oblonga 5, calyptratim cohærentia, æstivatione valvata. Stamina ∞ , ∞ -seriata; antheræ oblongæ. Ovarium 12-15-loculare, loculis 1-ovulatis. Stigma truncatum v. depressum, obsolete ∞ -radiatum, stylopodio impositum. Drupa obovata, 12-15-pyrena; pyrenis 1-spermis. Albumen æquabile.—Arbores inermes, glabræ; foliis exstipulatis digitatim 9-foliolatis; foliolis obovato-oblongis integerrimis; umbellis compositis.

1. **P. Pickeringii**, A. Gray, Bot. Wilkes, p. 729. t. 95; petiolis fistulosis; foliolis oblongis v. oblongo-obovatis acutis in petiolum attenuatis submembranaceis ($1-1\frac{1}{2}$ ped. long.) supra viridibus subtus (siccitate) purpurascens; petalis oblongis; ovario 14-15-loculare; stylopodio conico; stigmate 14-15-radiato; drupa Nomen vernac. Vitiense, teste Milne, "Vola."—Ovalau (U. S. Expl. Exped.), Viti Levu (Seemann! n. 206), Vanua Levu, above Nady (Milne!).

2. **P. Grayi**, (sp. nov.) Seem. in Journ. of Bot. 1864, p. 242 (Tab. XXII.); petiolis solidis; foliolis obovatis v. obovato-oblongis obtusis in petiolum attenuatis coriaceis utrinque viridibus, subtus

pallidioribus; petalis ovato-triangularibus; ovario 12-15-loculari; stigmatibus obscure ∞ -radiato, in floribus fœmencis depressis, in fl. masculis stylopodio conico imposito; drupa obovata obscure 12-15-costata.—Viti Levu (Seemann! n. 208).

I have named this second species in honour of the illustrious founder of the genus, Professor Asa Gray. It is a small tree. Petioles about a foot long, petiolules $1\frac{1}{2}$ inch long, or even shorter. The largest (upper) leaflets 6-7 inches long, and $2\frac{1}{2}$ inches broad. Flowers greenish, the umbels on very long (1-1 $\frac{1}{2}$ foot long) peduncles, the whole inflorescence forming a gigantic compound umbel.

EXPLANATION OF PLATE XXII., representing *Plerandra Grayi*.—Fig. 1, a male flower, the calyptrate petals just pushed off; 2, ovary; 3 and 4, sections of ovary:—all, except Fig. 1, slightly magnified.

The singular genus *Meryta*, Forst., which was shown by me (Bonplandia, 1862, p. 294) to be identical with *Botryodendrum*, Endl., will probably be found in Viti, as it has been met with in New Zealand, Norfolk Island, the Isle of Pines, the Tongan, Samoan, and Society Islands. The position of *Meryta* in the Natural System is as yet undecided. Most authors, following Endlicher, refer it to *Araliaceæ*. Agardh (Theoria Syst. Plant. p. 231) is inclined to regard it as a separate Natural Order, analogous to *Juglandææ* and *Hippomanææ*, and closely allied to *Araliaceæ*, of which, he says, it is a lower, diclinous, and apetalous type. We have diclinous genera in *Hederaceæ* (*Oreopanax* for instance), but all the genuine *Hederaceæ* have a polypetalous corolla, and thus *Meryta*, if admitted, would be the only apetalous genus. Another peculiarity of *Meryta* is its highly-developed and valvate calyx, which removes it entirely from *Hederaceæ*, and shows it to be a member of the Natural Order *Haloragineæ*. The two Forsters placed *Meryta* in *Diœcia Triandria* and Solander, who, in his unpublished Flora, gave it the name "*Neara*," in *Diœcia Tetrandria*. In the male flower there seem to be normally 4 calyx-lobes, and opposite to them 4 stamens; in the female flowers 8 calyx-lobes and 8 stigmas; but these numbers vary by abortion or excess. The generic character would thus be remodelled:—

Meryta, Forst. Char. Gen. t. 60 (*Botryodendrum*, Endl. Fl. Norf. p. 62; Gen. Plant. n. 4563. *Neara*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 339). Flores polygamo-dioici. Masc.: Calyx 3-4-partitus, laciniis æstivatione valvatis. Stamina 3-4, toro glandulæformi inserta, calycis laciniis opposita; filamenta filiformia; antheræ 2-loculares, introrsæ, longitudinaliter dehiscentes. Ovarii rudimentum nullum. Hermaphr.: Calyx tubo cum ovario connato, limbo supero, supra ovarium producto 5-9-, vulgo 8-partita, patente. Corolla 0. Stamina 5-9, disci epigyni margini inserta, calycis laciniis opposita, iisdem breviora, patentia. Ovarium inferum, 5-9-, vulgo 8-loculare. Ovula in loculis solitaria, pendula, anatropa; rraphe ventrali. Styli 5-9, vulgo 8, intus stigmatosi, stellatim patentes. Drupa baccata, ovoidea v. oblonga, calycis limbo coronata, 5-9-locularis, loculis 1-spermis. Semina inversa. Embryo in axe albuminis cylindraceus, curvatus; radícula supera.—Arbores mediocres, trunco elato simplici gracili, apice in ramos simplices diviso; foliis in apicibus ramorum alternatim approximatis, simplicibus penninerviis, capitulis florum involucrentis in paniculum terminalem dispositis.

1. *M. lanceolata*, Forst. Char. Gen. p. 120. t. 60; Prodr. n. 558; Icon. (ined.) t. 299; Guill. Zeph. Tait. p. 76. *Neara longifolia*, Sol. Prim. Fl. Ins. Pacif. p. 339 (ined.). *Botryodendrum Taitense*, Guill. Zeph. Tait. p. 55 (sine char.); Nouv. Ann. Scienc. Nat. vol. vii. p. 349; A. Gray, Bot. Wilkes, p. 731, tab. 96. *B. cerberoides* et *lanceifolium*, Rich in Herb. U. S. Expl. Exped.—Nomen vernac. Tahitense, teste Guillemain, "Toe Oë Phepara;" teste Solander, "Epuluwhi."—Tahiti (Forster! Banks and Solander! in Mus. Brit.).—It may be useful to subjoin Solander's description of this plant, extracted from his MS. Flora:—

"NEARA (*Νεαρός*, = recens, novus). *Diœcia Tetrandria*. Mas.: Cal. nullus. Cor. petalula quatuor, oblonga, plana, acutiuscula, æqualia. Stam. filamenta quatuor, filiformia, corolla longiora, divaricata. Antheræ oblongæ, erectæ. Femina in distincta planta. Cal. perianthium octo-dentata: dentibus ovatis, acutis, parvis, subæqualibus. Cor. nulla. Pist. germen inferum, subrotundo-ovatum, magnum. Styli nulli. Stigmata octo, reflexa, supra canaliculata. Per. subrotundum, glabrum, carnosum? octo-loculare. Sem. solitaria de apice loculamentorum pedicello dependentia. Fructificatio hujus generis præcipue quoad fructum melius extricanda.

NEARA *longifolia*, ms. p. 1451. "Epuluwhi," Tahitensibus. Hab. in Tahiti. Frutex altus, totus glabratus, *Nerii* seu *Plumieri* facie. Folia numerosa, circa apices ramorum sparsa, petiolata, oblanceolata, acuta, integerrima, glaberrima, coriacea, pedalia et longiora; rachi lata, parum convexa, utrinque simili. Petioli palmares, rotundato-depressi. Paniculæ terminales, erectæ, pedunculatæ, florum masculorum magnæ, ramosissimæ; femineorum longæ, angustiores: ramulis apice florigeris. Peduncululi crassitie digiti miuimi, palmares. Masculi flores circiter octo vel decem, aggregati inter singulam squamam seu bracteam late ovatam acutam carnosam carinatam, in medio etiam transversali rugulosa præditam; his bracteis ramuli paniculæ fere cooperti. Calyx nullus. Corolla campanulata, interdum compressa, tetra-

petala. *Petalis* oblongis, acutis, planis, e flavicanti-albis, duas lineas longis. *Filamenta* quatuor, filiformia, fundo corollæ inserta, petalis paulo longiora. *Antheræ* oblongæ, pallide flavæ, erectæ. *Feminei flores* in apice ramulorum paniculæ subcapitati, duodecim ad quinquedecim sessiles, basi subconnati intra singulam bracteam. *Bracteæ* ovatæ, acuminatæ, vix quatuor lineas longæ. *Calyx* ex herbaceo-albidus, plerumque octo-dentatus *dentibus* parvis, ovalis, acutis, apice conniventibus. *Corolla* nulla. *Germen* inferum, magnum, subrotundo-ovatum, basi calycis indutum. *Styli* nulli. *Stigmata* octo, divaricatissima, reflexa, supra canaliculata. *Pericarpium* (adhuc immaturum) crassum, carnosum, glabrum, subrotundum, 8-loculare. *Semina* solitaria."—Solander, 'Primitiæ Floræ Insularum Oceani Pacifici,' p. 339.

2. *M. macrophylla*, Seem. in Bonplandia, 1862, p. 294. *Botryodendrum macrophyllum*, Rich in A. Gray, Bot. Wilkes, p. 732, t. 97.—Samoan and Tongan Islands (U. S. Expl. Exped.).

3. *M. latifolia*, Seem. in Bonpl. l. c. p. 295. *Botryodendrum latifolium*, Endl. Fl. Norf. p. 62; Ferd. Bauer, Illustr. Pl. Norf. t. 183, 185, 209, 211 (ined.). *Aralia macrophylla*, Cunn. ex Loudon, Hort. Brit. Suppl. vol. i. p. 58.—Norfolk Island. Cultivated in European gardens.

4. *M. angustifolia*, Seem. in Bonpl. l. c. p. 295. *Botryodendrum angustifolium*, Endl. Fl. Norf. p. 64; Ferd. Bauer, Illustr. Pl. Ins. Norf. t. 184, 208 (ined.).—Norfolk Island.

5. *M. Sinclairii*, Seem. in Bonplandia, 1862, p. 295; Hook. Handb. New Zeal. Fl. p. 104 (1865). *Botryodendron Sinclairii*, Hook. Fl. N. Zeal. vol. i. p. 95.—New Zealand (Sinclair! Colenso!).

M. Denhami, Seem. in Bonpl. l. c. p. 295; foliis obovato-ellipticis utrinque attenuatis v. elongato-linearilanceolatis; calyce hermaphr. 5-9-partito, laciniis ovatis acuminatis v. acutis recurvis; stylis 5-9; ovario 5-9-loculare.—Isle of Pines, off New Caledonia (Capt. Denham's Expedition!).—Cultivated at Kew.

ORDO XLIX. CORNACEÆ.

I. **Rhytidandra**, A. Gray, Bot. Wilkes, p. 302, et in Proceed. Am. Acad. vol. vi. p. 55. Flores hermaphroditi. Calyx parvulus, tubo cum ovario connato, limbo cupulari truncato, margine 6-7-denticulato. Petala 6-7, linearia, conniventia, æstivatione valvata. Stamina 6-7, petalis alterna, cum iisdem inserta, libera; filamenta brevissima, intus barbata; antheræ lineares, introrsum adnatæ, dithecæ, 4-locellatæ, locellis transversim annulato-rugosis v. cameratis. Discus epigynus scutelliformis. Ovarium inferum, 1-loculare, 1-ovulatum; ovulo ex apice loculi parvi suspenso. Stylus elongatus, sulcatus, 2-fidus, lobis sæpius apice 2-3-dentatis; stigmatibus terminalibus parvis. Drupa ovata, subacuminata (ultra pollicaris), sarcocarpio tenui, putamine osseo ruguloso. Seminis testa membranacea. Albumen carnosum, copiosum, per cotyledones tenui-foliaceas orbiculares fere 2-partitum. Radicula supera, cylindrica, quam cotyledones dimidio brevior.—Frutex sarmentosus; foliis ovatis obliquis; pedunculis axillaribus cymulam paucifloram gerentibus. Species unica.

1. **R. Vitiensis**, A. Gray, l. c. p. 303. t. 28.—Viti Islands, particular habitat not recorded (U. S. Expl. Exped.).

At first referred by A. Gray to *Olacaceæ*, but afterwards removed by him to the neighbourhood of *Marlea*.

ORDO L. LORANTHACEÆ.

I. **Viscum**, Tournef. Inst. 380; Linn. Gen. n. 1105; Endl. Gen. n. 4584; Oliver in Journ. Linn. Soc. Lond. vol. vii. p. 103. Flores unisexuales, dioici v. monoici. Masc.: Perigonium simplex, coriaceo-carnosum, 4-partitum, rarius 3-5-partitum, laciniis triangularibus, erectis, æstivatione valvatis. Antheræ numero lorum perigonii, singulæ iisdem medio adnatæ, ∞-cellulosæ, poris ∞ dehiscentes. Ovarii rudimentum, glandulare v. sæpius 0. Fœm.: Calyx tubo cum ovario connato, limbo obsolete. Petala 4, nunc 3 v. 5, coriaceo-carnosa, summo calyci inserta, valvata. Staminum rudimenta nulla. Ovarium inferum, 1-loculare; ovulo 1, pendulo. Stylus 0 v. brevis, stigmatate obtuso. Bacca pulposa, 1-sperma. Semen inversum. Embryones intra albumen carnosum sæpis-

sime plures; cotyledonibus brevibus, radícula supera.—Frutices super alias stirpes endogenas parasitici, dichotome ramosi; ramis teretibus, 4-gonis v. compressis, sæpe articulatis; foliis oppositis aut rarissime alternis, nunc 0 v. squamæformibus; floribus spicatis v. fasciculatis.

There are two species of *Viscum* in Polynesia, *V. articulatum*, Burm., and *V. moniliforme*, Blume. The latter is confined to the Hawaiian Islands, where I found it chiefly on the Koa tree (*Acacia Koa*, A. Gray), and where it has also been found by Barclay and Nuttall. The two species are closely allied; *V. moniliforme* is, however, at once distinguished by its prominently-veined articulations and more crowded flowers.

1. **V. (§ *Aphyllæ* Oliv.) *articulatum***, Burm. Fl. Ind. 311; aphyllum; caule basi teretiusculo; ramis compressis articulatis, articulis elongatis substriatis latitudine sua decupla longioribus; fasciculis florum ad apices articularum oppositis sessilibus 1-3-floris.—*V. compressum*, Poir. Dict. Suppl. vol. ii. p. 861; Decaisne, Herb. Timor. p. 87; Fl. Jav. Loranth. t. 26. *V. opuntiodes*, Forst. Prodr. n. 369, et Hook. et Arn. Bot. Beech. non Linn.—On a *Myrtacea*, Taviuni (Seemann! n. 212), Vanua Levu, Ovalau, etc. (U. S. Expl. Exped.; Harvey!). Also found in the Society Islands (Forster! Barclay! Bertero! Capt. Cook!).

II. **Loranthus**, Linn. Gen. n. 443; Endl. Gen. n. 4586. Flores hermaphroditi, rarius abortu 1-sexuales, singuli 1-3-bracteati. Calycis tubus ovatus v. turbinatus, teres, cum ovario connatus, limbus superus brevis, truncatus, dentatus v. partitus. Petala 4-8, sæpius 5-6, summo calyci inserta, libera v. plus minus in tubum sæpius hinc fissum coalita, æstivatione valvata, sub anthesi erecta, patentia v. apicibus reflexa. Stamina petalis numero æqualia et opposita; filamenta iisdem basi v. ultra medium adnata, apice libera, æqualia v. alterna breviora, antheræ introrsæ, 2-loculares basifixæ v. adnatæ, erectæ, nunc incumbentes versatiles, loculis oppositis, longitudinaliter dehiscen-tibus. Ovarium inferum, 1-loculare; ovulo 1, pendulo. Stylus filiformis; stigma simplex, capitatum v. turbinatum. Bacca ovata v. turbinata, vertice nuda v. calycis limbo coronata, 1-ocularis, 1-sperma. Semen inversum. Embryo intra albuminis cavitatem excentricam rectus v. curvatus; cotyledonibus brevibus, distinctis v. cohærentibus, radícula supera.—Frutices dichotome ramosi, parasitici; foliis oppositis v. alternis integerrimis, sæpissime carnosocoriaceis; floribus in spicas corymbas v. paniculas axillares aut terminales dispositis, rarius umbellatis v. subcapitatis, rarissime glomeratis, viridibus croceis v. flavicantibus, sæpissime puniceis v. purpureis, ob diversam petalorum longitudinem et varium cohæsionis gradum variis.

“Loranthus,” says Oliver, “is figured by Blume, Griffith, and others, as with abundant albumen; and so I find it in the seeds of the Indian species which I have examined. In *L. Europæus*, too, it is abundant. I cannot doubt, therefore, that Mr. Miers has had old or decayed fruits for examination, in which the albumen had shrivelled up from the enclosed embryo, and that the albumen has been taken for a layer of the pericarp (putamen).”

We have in tropical Polynesia, besides, the two species of *Loranthus* mentioned below, *L. Stelis*, Forst. Prodr. n. 157. et Icon. Ined. t. 109; Parkins. Drawings of Tahit. Plants (ined.), t. 41, from Tahiti, (Willes and Smith! Forster in Mus. Brit.). In Parkinson’s beautiful figure the flowers are orange towards the base and greenish on the outside, purplish on the inside of the upper part of the petals.

1. **L. (*Dendrophthoe*) *insularum***, A. Gray, Bot. Wilkes, p. 738. t. 98; glaber; ramis teretibus; foliis oppositis petiolatis ovatis obtusis subquintuplinerviis vix venosis; pedunculis axillaribus brevibus racemoso-∞-floris; pedicellis 3-floris; floribus (sesqui-bipollicaribus) 6-7-meris.—Vanua Levu and Viti Levu (U. S. Expl. Exped.; Seemann!), Taviuni (Seemann! n. 211), Nairai (Milne!). Also collected in the Samoan and Tongan Islands (U. S. Expl. Exped.).

This is very frequent on *Inocarpus edulis*, in the lower coast region; flowers red, often yellow towards the base.

2. **L. (*Dendrophthoe*) *Vitiensis***, (sp. nov.) (Tab. XXIII.) Seem.; glaber; ramis teretibus; foliis oppositis petiolatis ellipticis, obtusis triplinerviis crassis vix venosis; pedunculis axillaribus corymbosis; pedicellis 3-floris; floribus (sesqui-bipollicaribus) 5-6-meris, singulatim 1-bracteatis;

ovario basi rotundato.—Buke Levu, island of Kadavu, and Voma Peak, Viti Levu, 4000 feet above the sea (Seemann! n. 210).

This *Loranthus* was seen only on the highest mountains of Viti, and is a more beautiful species than *L. insularum*, to which it approaches very closely. The branches are straight and stiff, the leaves 2-2½ inches long (including petiole) and ¾-1 inch broad. The petals are bright crimson, tipped with dark purple, and the anthers yellow. The berry is dark purple.

EXPLANATION OF PLATE XXIII.—1, a flower-bud; 2, flower, open; 3, stamen; 4, upper part of anther; 5, calyx and pistil; 6, a peduncle, with ripe fruit; 7, a single ripe fruit; 8 and 9, sections of ripe fruit:—*all, except fig. 6, magnified.*

ORDO LI. RUBIACEÆ.

SUBORDO I. CHINCHONACEÆ.—Semina in loculis ∞.

TRIBUS I. CHINCHONEÆ.—Fructus capsularis. Semina alata.

Of this Tribe there are in Polynesia, besides the three species of *Dolicholobium*, *Nauclea Forsteri*, Seem. (*N. orientalis*, Forst. Prodr. n. 85, non alior., Soland. Prim. Fl. Ins. Pacif. p. 225, et in Parkins. Drawings of Tahit. Plants, t. 20), from the Society Islands (Banks and Solander! Wiles and Smith!), and *Badusa corymbifera*, A. Gray in Proceed. Am. Acad. vol. iv. (*Chinchona corymbifera*, Forst. Prodr. n. 88, et Icon. (ined.) t. 49), from the Tongan Islands (Forster! Nelson! Sir E. Home! in Mus. Brit.! Mathews! Harvey!).

I. **Dolicholobium**, A. Gray in Proceedings of Amer. Acad. vol. iv. p. 308. Calyx tubo cylindrico elongato; limbo amplo submembranaceo cyathiformi truncato integerrimo (rarius sublobato) persistente. Corolla hypocraterimorpha; limbo 4-5-partito, lobis oblongis obtusissimis ∞-nerviis æstivatione contortis. Stamina 4-5, tubo infra faucem inserta, glabra, inclusa; filamenta brevissima; antheræ lineares, basifixæ, introrsum adnatæ. Stylus 2-fidus, ramis subspathulatis sursum petaloideo-dilatatis intus secus costam stigmatosis. Ovarium 2-loculare. Ovula in placentis elongatis crassis ∞, minuta, sursum imbricata, acicularia. Capsula siliquæformis, cylindrica, longissima (4-6-pollicaris), calycis limbo crateriformi (fructu multoties latiori) plerumque coronata, demum septicida? Semina creberrima, nucleo ovali, ala angusta utrinque in caudam simplicem longissimam sensim attenuata. Embryo in albumine parco carnosus rectus; cotyledonibus ovatis radícula infera parum brevioribus.—Frutices erecti; foliis petiolatis membranaceis, recte penninerviis, venulis pulchre reticulatis; stipulis interpetiolaribus membranaceo-foliaceis distinctis obtusis planis plerumque caducis; pedunculis brevibus ex axillis superioribus 3-paucifloris; floribus majusculis; tubo calycis et corollæ albæ extus pube appressa indutis.

A genus allied to *Cosmibuena*, and as yet not found out of the Viti Islands.

1. **D. oblongifolium**, A. Gray in Proceed. Amer. Acad. vol. iv. l. c.; foliis oblongis seu elongato-oblongis utrinque acutiusculis (2½-5 poll. longis); flore 5-mero.—Bua or Sandalwood Bay and Nady, Vanua Levu (U. S. Expl. Exped.; Milne!), Viti Levu (Milne!).

2. **D. latifolium**, A. Gray, l. c.; ramulis stipulis petiolisque rufo-villosis; foliis latissime obovatis basi rotundatis v. obtusissimis (5-7 poll. longis); flore 4-mero (an semper?).—Ovalau (U. S. Expl. Exped.).

3. **D. longissimum**, Seem. in Bonplandia, vol. ix. p. 256 (Tab. XXV.); foliis ovalibus v. obovatis obtusis basi acutis supra glabriusculis subtus pubescenti-hirsutis et ad costas venasque villosis; flore 5-mero.—Viti Levu (Seemann! n. 215).

Asa Gray thought this might possibly be a variety of *D. latifolium*, with less ample leaves and more

downy underneath, but his specimens were not complete enough to settle the question. I have myself little doubt that *D. longissimum* is a distinct species.

EXPLANATION OF PLATE XXV.—Fig. 1, an entire flower; 2, part of corolla and pistil; 3, pistil and part of calyx; 4, a stamen; 5, a capsule, nearly ripe:—*all, with the exception of fig. 5, magnified.*

TRIBUS II. GARDENIÆ.—Fructus baccatus, 2- v. abortu 1-locularis.

Besides the species mentioned below, we have in tropical Polynesia of this tribe: *Gouldia Sandwichensis*, A. Gray in Proceed. Am. Acad. vol. iv. (*Kadua affinis*, Cham. et Schlecht. in Linn. vol. iv. p. 164; *Petesia* (?) *terminalis*, Hook. et Arn. Bot. Beech. p. 85; *Petesia coriacea*, Hook. et Arn. Bot. Beech. p. 85), and *G. Romanzoffiensis*, A. Gray, l. c. (*Kadua Romanzoffiensis*, Cham. et Schlecht. in Linn. vol. iv. p. 162, to which A. Gray refers—erroneously, I think—*P. carnosus*, Hook. et Arn.). Both these species are indigenous to the Hawaiian group and Romanzoff Island.

II. **Gardenia**, Ellis in Linn. Gen. n. 296; Endl. Gen. n. 3305. Calyx tubo ovato, lævi v. costato, limbo tubuloso, truncato, dentato, fisso v. partito. Corolla infundibuliformis v. hypocraterimorpha, tubo calycem longe superante, fauce glabra, limbi 5–9-partiti laciniis æstivatione contortis, sub anthesi patentibus. Antheræ 5–9, lineares, ad faucem corollæ sessiles, subexsertæ. Ovarium dissepimentis 2–5 ad axim deliquescentibus, 1-loculare. Ovula in placentis dissepimentis insertis ∞, horizontalia. Stylus simplex; stigma clavatum, 2-dentatum v. 2-fidum, lobis incrassatis erectis. Bacca carnosus, calycis limbo coronata, intus chartacea v. nucleata, incomplete 2–5-locularis. Semina ∞, minuta, placentis parietalibus carnosus immersa. Embryo in axi albuminis carnosus rectus; cotyledonibus foliaceis, radícula tereti, vaga.—Arbores v. frutices, inermes v. armati; foliis oppositis rariusve verticillatis, ovalibus; stipulis interpetiolaribus integris; floribus axillaribus v. terminalibus, plerumque solitariis, albis, demum flavescentibus, sæpius odoratis.

Besides the species enumerated below, there are in New Caledonia, according to Vieillard (Ann. Sc. Nat. (ser. iv.) vol. xvi. p. 65), four *Gardeniæ*, which he has briefly described as *G. Aubryi*, Vieill., *G. Oudiepe*, Vieill., *G. sulcata* (?), Gærtn., and *G. edulis*, Vieill. Like *G. Vitiensis*, all of them produce a gum resin at the top of the nascent branches, which is collected and used by the natives for caulking their canoes, and other useful purposes. In 1774 W. Anderson collected an unnamed *Gardenia*, with opposite rough leaves, in New Caledonia, which may prove identical with *G. Aubryi*, Vieill. It has vaginate stipules, like *G. Vitiensis*.

1. **G. Taitensis**, DC. Prodr. vol. iv. p. 380; fruticosa, erecta, inermis, glabra, ad apices ramorum resinosa; foliis oppositis obovatis subsessilibus; stipulis latis connatis persistentibus breve acuminatis; floribus ad axillas supremas solitariis pedicellatis; calycis tubo angulato, limbo 3–4-partito; stigmatibus 2-fido, cruribus longis acutis; bacca . . . —*G. florida*, Forst. Prodr. n. 122, non Linn.; Parkins. Drawings of Tahit. Plants (ined.), t. 31.—Viti Islands, exact locality not recorded (U. S. Expl. Exped.). Also collected in the Marquesas (Barclay!), Society (Forster! Banks and Solander!), and Tongau Islands (Forster!). Græffe (n. 28) found it in Wallis Island.

2. **G. Vitiensis**, (sp. nov.) Seem. (Tab. XXVI.); fruticosa, erecta, inermis, glabra, ad apices ramorum resinosa; foliis oppositis, breviter petiolatis ovalibus v. obovatis breviter acuminatis basi acutis; stipulis vaginantibus; floribus (albis odoratis) terminalibus solitariis; calycis tubo infundibuliformi lævi, limbo 3-partito, laciniis linearibus corollæ 5-partitæ subæqualibus; stigmatibus clavato; ovario 3-loculari; bacca ignota.—Northern coast of Vanua Levu (Seemann! n. 218).

This is a very distinct species, about 3 feet high. The young leaf-buds are thickly covered with a gum resin, which is transparent and of a greenish-yellow colour. I have not heard of its being used by the Vitians, as that of several other species is by the New Caledonians. The leaves are 1½–2 inches broad, and 3–4 inches long. The flowers are milk-white, and emit a delightful scent. The ripe fruit is unknown.

EXPLANATION OF PLATE XXVI., representing *Gardenia Vitiensis*.—1, calyx; 2, a flower-bud, open, and the calyx removed; 3, corolla; 4, anther; 5, pistil; 6, cross-section of ovary,—*all slightly magnified.*

3. **G. (?) pentagonioides**, (sp. nov.) Seem.; arbuscula 8–10 ped., glabra; trunco erecto simplici; foliis oppositis oblongis acuminatis in petiolum alatum decurrentibus; stipulis ovatis longe

attenuatis; baccis terminalibus solitariis geminisve, ovatis corticatis albidis 2-ocularibus, loculis ∞ -spermis; seminibus horizontalibus in pulpa nidulantibus, 2-serialibus, compressis.—Woods of Somosomo, Island of Taviuni (Seemann! n. 219).

This little tree reminded me very much of the different species of *Pentagonia*, and grows as underwood as they do. When the flowers shall have become known, it may probably turn out to be the type of a new genus allied to *Gardenia* and *Genipa*; provisionally it may be referred to *Gardenia*. It is a large-leaved plant, of which I only saw one specimen. The petioles are 7-8 inches long, and the blade of the leaf $1\frac{1}{2}$ -2 feet long, and 8-10 inches broad. The fruit is as large as a good-sized walnut, and has a smooth whitish surface. The seeds are flat, and placed horizontally.

III. **Mussænda**, Linn. Gen. n. 241; Endl. Gen. n. 3313. Calyx tubo oblongo turbinato, limbi 5-partiti demum decidui lobis erectis acutis, uno exteriorum interdum producto in folium petiolatum, amplum, reticulato-venosum, coloratum. Corolla infundibuliformis, fauce villosa, limbo 5-partito. Antheræ 5, intra corollæ faucem sessiles, lineares, inclusæ v. subexsertæ. Ovarium 2-loculare. Ovula in placentis e medio dissepimento utrinque stipitatis revoluto-bilobis plurima, horizontalia, anatropa. Bacca subglobosa, apice denudata, 2-ocularis. Semina plurima, parva, lenticulari-compressa, scabrida. Embryo in basi albuminis dense carnosissimi minimus; radícula crassa, umbilico proxima, centripeta.—Arbusculæ v. frutices; foliis oppositis, petiolatis, ovatis, villosis v. glabris, stipulis utrinque binis, liberis v. basi concretis, acuminatis; floribus terminalibus, corymbosis, bracteis sub pedicellis et corymbi ramis parvis.

1. **M. frondosa**, Linn. Spec. 251; foliis ovalibus acuminatis, ramulis corymbisque puberulis; stipulis subulatis; corymbo terminali subpaniculato; calycis lobis elongatis subulatis, uno petiolato ovato acuminato membranaceo puberulo (albo); corolla flava.—*M. formosa*, Linn. Mant. 338; Forst. Icon. (ined.) t. 56 et 57. Nomen vernac. Vitiense, "Bovu."—Common throughout Viti (Seemann! n. 238; Milne! Harvey!). Also collected in the Tongan Islands (Harvey!), Aneitum (Milne!), Solomon group (Milne!), and Wallis Island (Græffe!). Common in India and the Archipelago.

IV. **Stylocoryne**, Cav. Icon. vol. iv. p. 45. t. 368; Endl. Gen. n. 3293. Calyx tubo turbinato, limbo 5-dentato v. 5-partito, persistente. Corolla infundibuliformis v. hypocraterimorpha, limbi 4-5-partiti lobis patentibus v. recurvis. Stamina 4-5; filamenta brevissima; antheræ longe lineares, exsertæ. Ovarium 2-loculare. Ovula in placentis parvis medio dissepimento utrinque insertis 2 v. ∞ , amphitropa. Stylus filiformis, exsertus; stigma incrassatum clavatum v. fusiforme, indivisum. Bacca globosa, 2-ocularis v. rarissime abortu 1-ocularis, 1-sperma. Semina pauca v. ∞ , angulata, umbilico ventrali rugoso. Embryo in albumine subcartilaginea subdorsalis; cotyledonibus foliaceis parvis, radícula cylindrica, in diversis infera, centrifuga v. centripeta.—Arbores v. frutices inermes; foliis oppositis, petiolatis, oblongo-lanceolatis, stipulis intrafoliaceis, latis, breve acuminatis, corymbis v. cymis terminalibus, axillaribus v. oppositifoliis; floribus albis, fragrantibus v. foetidis.

1. **S. coffæoides**, A. Gray in Proceed. of Amer. Acad. vol. iv. excl. syn. Forst. et Hook. et Arn.; ramis teretibus; foliis elliptico-oblongis basi acutis apice acuminatis glabris; paniculis axillaribus dichotomis laxis folio dimidio brevioribus, corolla hypocraterimorpha, lobis 5 tubo longioribus.—*Coffea cymosa*, β . cyma laxiore, Forst. mss. *Stylocoryne racemosa*, Cav. Icon. vol. iv. t. 368.—Viti, but exact locality not specified (Sir E. Home! in Mus. Brit.). Also collected in Tana, New Hebrides (Forster!), Wallis Island (Sir E. Home! Græffe! n. 32), Tongan (Barclay! Harvey!) and Society Islands (U. S. Expl. Exped.).

The question raised by A. Gray, whether Hooker and Arnott's *Stylocoryne racemosa*, from Tahiti, Cavanilles' *Stylocoryne racemosa*, from the Philippine Islands, and Forster's *Coffea odorata*, from Tana and Tonga, are identical, I can partly answer. Hooker and Arnott's *S. racemosa* is nothing but *S. sambucina*,

judging from the authentic specimens at Kew, and Forster's *Coffea odorata* is a *Canthium*, judging from the authentic materials existing at the British Museum. As Forster gave the mss. name *Coffea cymosa* to this plant, A. Gray's name, *S. coffeoides*, may be retained. Whether Cavanilles' *S. racemosa* is absolutely identical I am not able to decide satisfactorily; but the figure published by Cavanilles (making allowance for the primitive manner in which it is executed) is sufficiently like *S. coffeoides* to justify us in retaining it as a synonym.

2. **S. sambucina**, A. Gray in Proceed. Amer. Acad. vol. iv.; ramis tetragonis; foliis ovali- v. oblongo-ellipticis acutiusculis, basi angustatis submembranaceis; panicula terminali corymbosa brevissime pedunculata laxe ∞ -flora; calycis laciniis latis obtusis; corollæ puberulæ lobis 5 tubo brevioribus.—*Coffea sambucina*, Forst. Prodr. n. 92, et Icon. (ined.) 51. *Pavetta sambucina*, DC. Prodr. vol. iv. p. 492. *Chiococca sambucina*, Spr. Syst. vol. i. p. 756. *Stylocoryne pepericarpa*, Benth. in Hook. London Journ. of Bot. vol. ii. p. 223. *Stylocoryne racemosa*, Hook. et Arn. Bot. Beech. p. 64, non Cav. *Rondeletioides*, Sol. in Forst. Prodr. n. 511. *Rondeletioides tetragona*, Sol. Prim. Fl. Ins. Pacif. p. 377 (ined.). *Rondeletia tetragona*, Parkins. Drawings of Tahit. Plants, t. 23 (ined.). Nomen vernac. Tahit., teste Solander, "Manono."—Common throughout Viti (Seemann! n. 242; Barclay! Harvey!). Also collected in the Tongau (Forster! Barclay!) and Society Islands (Banks and Solander! D. Nelson! Lay and Collie!).

Parkinson figures and Solander describes fruiting specimens only. A tree 40 feet high. Flowers white, fetid.

Very much like *S. sambucina* in look is *Coffea opulina*, Forst. Prodr. n. 93 (*Pavetta opulina*, DC. Prodr. vol. iv. p. 492. *Chiococca opulina*, Spr. Syst. vol. i. p. 756. *Stylocoryne corymbosa*, Labill. Austr. Caled. t. 48. *Olostyla corymbosa*, DC. Prodr. vol. iv. p. 440. *Gardenia corymbosa*, Reichb. Icon. Exot. t. 106), from New Caledonia (W. Anderson! Forster! Sir E. Home!), Isle of Pines (Sir E. Home!), and Eromanga (M'Gillivray!); but the corolla is quite glabrous, and at the base of the inflorescence there are large bracts, which at once distinguishes the plant from *Stylocoryne sambucina*.

3. **S. Harveyi**, A. Gray in Proceed. of Amer. Acad. vol. iv.; glaberrima; foliis chartaceis oblongis acuminatis basi in petiolum longiusculum contractis; cymis axillaribus terminalibusque petiolum vix superantibus subsessilibus; calycis limbo 4-fido, lobis 3-angulari-subulatis tubo vix brevioribus; corollæ lobis 4 lineari-oblongis tubo longioribus, fauce imberbi.—Viti, locality not specified (Harvey!).

Allied to *S. coffeoides*, according to A. Gray.

V. **Pelagodendron**, (gen. nov.) Seem. Calyx tubo obovato, limbo clauso, demum irregulariter fisso, persistente. Corolla hypocraterimorpha, tubo brevi, limbo 5-partito, lobis æstivatione imbricatis. Stamina 5, intra corollæ faucem insertæ; filamenta brevissima; antheræ lineares. Ovarium 2-loculare. Ovula in placentis dissepimento utrinque adnatis ∞ , horizontalia. Stylus brevis; stigma crassum, 2-lobum, glabrum. Bacca corticata, 2-locularis. Semina in loculis ∞ , in pulpa nidulanta, orbiculata, subcompressa, horizontalia. Embryo intra albumen cartilagineum rectus, cotyledonibus subfoliaceis, radícula longiuscula, tereti.—Frutex glaber, foliis oppositis oblongis v. ovato-oblongis acuminatis, basi obtusis v. acutis; stipulis ovatis acuminatis caducis; floribus axillaribus fasciculatis albis; baccis obovatis.

Allied to *Griffithia*, *Gymnopachys*, and *Randea*, from all of which it differs by its peculiar calyx, stigma, and direction of the ovules, etc. There is as yet only one species known.

1. **P. Vitiense**, (sp. nov.) Seem.—Island of Ovalau (Seemann! n. 240).

TRIBUS III. HEDYOTIDEÆ.—Fructus capsularis, loculicide valvatus v. rarissime evalvis. Semina aptera.

Of this tribe we have in tropical Polynesia, besides the species enumerated or incidentally alluded to below: *Dentella repens*, Forst. Prodr. n. 98, et Icon. (ined.) t. 54, from New Caledonia (Forster!), *Bikkia tetrandra*, A. Gray in Proceed. Amer. Acad. vol. iv. (*B. grandiflora*, Reinw. Portlandia, Forst. Prodr. n. 86, et Icon. ined. t. 48; *Hoffmannia Amicorum*, Spreng. Syst. vol. i. p. 416; *Petesia carnea*,

Hook. et Arn. Bot. Beech. p. 64), from the Society Islands (Lay and Collie!), Low Island (Capt. Cook!) Savage Island (Forster!), Fotuna (Milne!), Tobie Island (Barclay!), Tongan Islands (Nelson! Mathews! Harvey!), and New Hebrides (M'Gillivray!), and a new allied genus from New Caledonia.* We have also the genus *Kadua*, confined to the Sandwich Islands, and of which A. Gray (Proceed. Amer. Acad. vol. iv.) enumerates ten species, viz. 1. *K. centranthoides*, Hook. et Arn. Bot. Beech. p. 85, collected by Nelson!, Macrae!, Nuttall!, and Menzies!; 2. *K. glomerata*, Hook. et Arn. Bot. Beech. p. 85; 3. *K. cordata*, Cham. et Schlecht. in Linnæa, vol. iv. p. 160 (*Wiegmannia glauca*, Meyen, Reise, vol. ii. p. 139), which I have seen from Nuttall! and Menzies!; 4. *K. Cookiana*, Cham. et Schlecht. in Linnæa, vol. iv. p. 158; 5. *K. parvula*, A. Gray, l. c., collected by D. Nelson!; 6. *K. glaucifolia*, A. Gray, l. c.; 7. *K. Menziesiana*, Cham. et Schlecht. in Linnæa, vol. iv. p. 160 (*Hedyotis coriacea*, Smith; *H. conostyla*, Gaud.; *Kadua Smithii*, Hook. et Arn. Bot. Beech. p. 86), collected by Menzies!; 8. *K. acuminata*, Cham. et Schlecht. in Linnæa, vol. iv. p. 163; 9. *K. petiolata*, A. Gray, l. c., and var. *ovalifolia*; and 10. *K. grandis*, A. Gray, l. c. *Kadua affinis* and *K. Romanzoffiensis* have been referred to the genus *Gouldia* in *Eugardeniæ*.

VI. **Hedyotis**, Linn. Gen. n. 118; Endl. Gen. n. 3240 e. Calyx tubo ovato v. globoso, limbo 4-fido, laciniis in fructu patentibus, sinu angusto separatis. Corolla breviter tubulosa, tubo vix limbum calycis æquante, fauce pilosa. Stamina exserta; filamenta brevia; antheræ ovatæ. Ovarium inferum. Capsula subglobosa, nucamentacea, vertice breviter exserto styli basi persistente mucronata, indehiscens v. tardius dehiscens. Semina pauca, peltata.—Suffrutices, ramis procumbentibus divaricatis; foliis venoso-lineatis, stipulis 1-∞-setis; floribus axillaribus corymbosis v. capitatis, pedunculatis v. sessilibus.—*Euhedyotis*, Wight et Arn. Prodr. p. 411; A. Gray in Proceed. Amer. Acad. vol. iv.

Hedyotis gracilis, DC. Prodr. vol. iv. p. 419, from New Caledonia (Labillardière), which must look very much like *Oldenlandia tenuifolia*, and *H. Laperousii*, DC. l. c. p. 420, from Vanikoro (Lesson), have not been met with in Viti, and must be re-examined now that the limits of *Hedyotis* and allied genera are more clearly defined.

1. **H. Cratæogonum**, Spreng. Pug. vol. ii. p. 35; caule tereti glabro articulato; foliis lanceolatis acuminatis venosis; stipulis setoso-laceris; floribus sessilibus glomerato-verticillatis.—DC. Prodr. vol. iv. p. 420; Rumph. Amb. vol. vi. p. 25. t. 10.—A common weed throughout Viti (Seemann! n. 235; Harvey! Milne!). Also collected in the Solomon group (Milne!).

My plant has not the leaves scabrous, as those of the Java plant are described to be, but otherwise it does not seem to differ from it. It is closely allied to *H. venosa*, Korth., but differs in shape of leaf and general glabrousness.

VII. **Oldenlandia**, Linn. Gen. n. 154; Endl. Gen. n. 3240 g. Calyx tubo ovato v. globoso, limbo 4-dentato v. -fido, lobis v. dentibus in fructu erectis. Corolla breviter tubulosa, infundibuliformis v. subrotata, fauce glabra v. villosa. Stamina exserta; filamenta brevia; antheræ ovatæ v. orbiculatæ. Ovarium inferum v. semiinferum, 2-loculare. Ovula in placentis dissepimento utrinque adnatis, ∞, horizontalia, anatropa. Capsula ovato-subglobosa, apice breviter exserto, rimula

* TATEA (gen. nov. *Hedyotidearum*), Seem. Calyx tubo oblongo, limbo 5-lobo, lobis inæqualibus lanceolatis. Corolla pentagono-infundibuliformis, tubo brevi, limbo 5-fido, lobis 3-angularibus acutis, æstivatione plicato-valvatis. Stamina 5, ima basi corollæ insertæ; filamenta elongata; antheræ lineares. Ovarium oblongum, 2-loculare, loculis ∞-ovulatis, ovulis suborbicularibus compressis in utroque loculo 2-seriatis adscendentibus imbricatis, stylo elongato; stigma indivisum. Capsula inæquilatere pentagono-oblonga. Cæt. ign. Frutex glaber, inermis; foliis oppositis, obovatis breviter acuminatis v. obtusis; pedunculis axillaribus 3-5-fidis; floribus magnis, pulchris, albis.—Species unica, *T. portlandioides*, Seem. mss. Kanala, New Caledonia (Vieillard! n. 890). Corolla 2 inches long, with 5 prominent ribs between the lobes. Stamens and style slightly exserted; filaments hairy towards the base, and merely adhering to the corolla at the point of insertion; anthers slightly twisted in a dried state. This new genus I have named in honour of Mr. Ralph Tate, F.G.S., author of a Flora of Belfast and an Enumeration of Shetland Plants. It is closely related to *Bikkia* and *Portlandia*. From the former it differs by its pentamerous flowers, from the latter in having adscending (not horizontal) ovules, overlapping each other. On account of its beauty, it is fully deserving the attention of the horticulturist.

loculicidæ aperta. Semina ∞ , angulares v. globosa, sæpius obpyramidalia v. trihedra.—Herbæ alsinoideæ, rarissime fruticulosæ; foliis oppositis, mediante stipula 1-pauciseta coadunatis, pedunculis axillaribus v. terminalibus, 1-2- ∞ -floris, sæpius elongatis gracilibus.—*Karamyschewia*, Fisch. et Meyer, teste A. Gray.—A. Gray in Proceed. Amer. Acad. vol. iv.

Besides the two species enumerated below, we have in tropical Polynesia *O. foetida*, Forst. Prodr. n. 55 et Icon. (ined.) t. 27, from the Tongan Islands (Forster!), Palmerston Island (Nelson!), and Savage Island (W. Anderson!).

1. ***O. tenuifolia***, Forst. Prodr. n. 57, et Icon. (ined.) t. 28 non Burm.; caule erecto 4-gono ramoso; foliis linearibus utrinque attenuatis; stipulis subciliatis subscariosis; pedunculis axillaribus 1-floris folio brevioribus, florentibus reflexis, fructiferis erectis.—*Hedyotis tenuifolia*, Smith in Rees' Encycl. 17. n. 19.—Common on roadsides throughout Viti (Seemann! n. 231; Harvey!). Also collected in Tana (Forster! W. Anderson!).

2. ***O. paniculata***, Linn. Spec. 1667; glabra, erectiuscula, ramosa; ramis 4-gonis; foliis ovatis v. ovato-lanceolatis; stipulis parvis indivisis; racemis axillaribus terminalibusque; pedicellis folio longioribus; corolla tubo gibbo fauce tenuiter villosa. DC. Prodr. vol. iv. p. 427.—*O. debilis*, Forst. Prodr. n. 56. DC. Prodr. l.c. p. 428. *Hedyotis racemosa*, Lam. Dict. vol. iii. p. 76; Ill. t. 62. fig. 2.—Abundant in waste places throughout Viti (Seemann! n. 233 et 234). Also collected in the Tongan Islands (Forster! Nelson!), Fotuna (Milne!), and Aneitum and Eromanga, New Hebrides (M'Gillivray!).

VIII. ***Ophiorrhiza***, Linn. Flor. Zeyl. 402; Endl. Gen. n. 3245. Calyx tubo brevi turbinato, limbo 5-fido, persistente. Corolla infundibuliformis, tubo amplo, calycis limbum superante, fauce barbata, limbi 5-fidi lobis brevibus ovatis obtusis. Stamina 5, inclusa v. exserta; filamenta brevia; antheræ lanceolatae, erectæ. Ovarium 2-loculare, disco epigyno carnosio. Ovula in placentis cylindricis liberis, e basi loculorum erectis ∞ , anatropa. Stylus inclusus v. exsertus; stigma 2-lobum. Capsula lata, compressa, 2-lobo-mitræformis, limbo calycino coronata, 2-locularis, vertice rimula loculicida dehiscens. Semina ∞ , minima, subhexagona. Embryo in axi albuminis dense carnosio orthotropus, cylindricus; radícula umbilico contigua.—Herbæ suffrutices v. frutices; foliis oppositis v. verticillatis petiolatis membranaceis, sæpius magnitudine inæqualibus, stipulis utrinque geminis, ovatis, subtriangularibus v. setaceis, deciduis v. persistentibus, pedunculis axillaribus et terminalibus solitariis 1-floris v. sæpius apice cymosis, ramulis subumbellatis, floribus secus ramulos unilateribus, sessilibus v. pedicellatis, corollis albis carneis v. purpurascensibus.

We are at present acquainted with seven Polynesian species of this genus, four, discovered in Captain Cook's voyages, being indigenous to the Society Islands, and three to Viti. The species I have named *O. Solandri* differs from all the other *Ophiorrhizas* of this region by its peduncles being much longer than the leaves, its rugose leaves, and setaceous stipules. *O. Nelsoni*, Seem., is a large-leaved species, with ovate, fimbriate, and persistent stipules, and a many-flowered cyme, shorter than the leaves. *O. Tahitensis*, Seem., has stipules, which at the base are ovate, and suddenly terminate in a long setaceous apex; *O. subumbellata*, Forst., described and figured by Forster with alternate leaves, has, in Forster's authentic specimens, opposite ones. *O. laxa* and *O. leptantha*—if indeed they be two distinct species—have setaceous stipules. On *O. peploides* I cannot find any stipules, unless some of the leaves of each whorl are regarded as such as those of *Galium*, etc. are. The four Tahitian species may be thus defined:—

O. Nelsoni, (sp. nov.) Seem. in Herb. Mus. Brit.; suffruticosa; ramis junioribus petiolis cymisque ferrugineo-puberulis; foliis oppositis petiolatis oblongis v. lanceolato-oblongis acuminatis in petiolum angustatis, supra viridibus, subtus discoloribus; stipulis late ovatis fimbriatis persistentibus; cymis terminalibus ∞ -floris, folio brevioribus; floribus sessilibus v. breviter pedicellatis; bracteis filiformibus; corolla gracili bipollicari; genitalibus inclusis.—Tahiti (David Nelson!)—Petioles 1 inch long; blade of leaf 3-6 inches long, 1-2 inches broad.

O. subumbellata, Forst. Prodr. n. 66, et Icon. (ined.) t. 37; fruticosa, glabra; foliis oppositis lanceolatis v. ovato-lanceolatis longe acuminatis basi acutis v. obtusis, supra viridibus, subtus pallidioribus; stipulis

subtriangularibus minutis deciduis; cymis axillaribus terminalibusque paucifloris folio multo brevioribus; corolla gracili pollicari; staminibus inclusis.—Society Islands (Forster!).—Leaves resembling those of *O. laxa*, about $2\frac{1}{2}$ –3 inches long, 6–9 lines broad.

O. Tahitensis, (sp. nov.) Seem. in Herb. Mus. Brit.; fruticosa; ramulis petiolis cymisque puberulis; foliis oppositis, cuneato-obovatis acuminatis, supra viridibus subtus albidis; stipulis ovatis abrupte elongato-apiculatis deciduis; cymis terminalibus paucifloris folio multo brevioribus; corolla gracili pollicari; staminibus inclusis; fruct. ign.—Tahiti (D. Nelson!).—Leaves 3–4 inches long, in the broadest part 1– $1\frac{1}{2}$ inch.

O. Solandri, Seem.; annua, glabra; foliis oppositis petiolatis lanceolatis acutis rugosis, utrinque concoloribus, costis supra purpurascens; stipulis setaceis; cymis axillaribus terminalibusque 2–5-floris folio longioribus; corolla gracili, pollicari v. ultra; staminibus inclusis.—*O. rugosa*, Sol. Prim. Fl. Ins. Pacif. p. 219, et in Parkins. Drawings of Tahit. Plants, t. 11 (ined.), non Wall. Nomen vernac. Tahitense, teste Solander, “Evayanu no the mona.”—Tahiti (Banks and Solander!).—*Radix* annua, fibrosa. *Caules* teretes, vix pedales, basi decumbentes, ibidemque sordide rubentes, dein erecti, ramosi. *Rami* pauci. *Folia* opposita, petiolata, lanceolata, acuta, integerrima, glabra, valde rugosa, venosa, venis remotiusculis, circiter quadriuncialia. *Petioles* foliis octuplo breviores. *Pedunculi* terminales et axillares, ex unica tantummodo axilla non ex opposita, solitarii, filiformes, erecti, foliis longiores, circiter 5 uncias longi. *Panicula* subdichotoma, brevis, pauciflora; *pedicellis* alternis brevioribus. *Stipula* filiformi-subulata, ad exortum pedicellorum. *Calyx* monophyllus quinqueangulato-anceps basi sua germen includens, persistens, unam lineam altus, quinquedentatus; *dentibus* parvis, e lata basi subulatis, erectis, æqualibus. *Corolla* monopetala, infundibuliformis. *Tubus* cylindraceus, longissimus, uncialis, crassitie pennæ passerinæ, extus glaber, amœna ruber, intus supra medium villis albis raris adpersus. *Limbus* planiusculus, albus, brevis, quinquepartitus; *laciniæ* oblongo-lanceolatæ, acutæ, glabræ, crassiusculæ ($1\frac{1}{2}$ lin. longæ). *Staminum filamenta* quinque, filiformia, alba, tubo infra medium inserta, illoque breviora. *Antheræ* oblongo-lineares, erectæ, pallide flavicantes, infra faucem subreconditæ. *Pistilli germen* fundo calycis immersum, anceps, superne longitudinaliter fissum. *Stylus* filiformis, rectus, longitudine staminum. *Stigmata* duo, oblonga, crassiuscula. *Pericarpium capsula* fundo calycis induta, illiusque dentibus latere coronata, compressa, lata, subdidyma, rubescens, bilocularis, superne dehiscens; dissepimentum contrarium. *Semina* numerosissima, subrotunda, parva, circa conceptaculum globosum dense stipata.” Sol. mss.

1. ***O. peploides***, A. Gray in Proceed. Amer. Acad. vol. iv.; herbacea, pumila, diffuse ramosa; ramis puberulis foliosis; foliis parvis 2–6-natis vel pseudo-verticillatis spathulatis seu ovato-spathulatis basi longe attenuatis glabris; floribus subsolitariis glabris; filamentis filiformibus cum stylo exsertis.—On the banks of rivers and rivulets, Ovalau, Matuku, Taviuni, and Viti Levu (Seemann! n. 228; M’Gillivray! U. S. Expl. Exped.! Harvey! Milne! Græffe!).

A very distinct-looking species; the leaves resemble those of *Peplis Portula*.

2. ***O. leptantha***, A. Gray in Proceed. Amer. Acad. vol. iv.; suffruticosa, fere glabra; foliis oppositis petiolatis læte viridibus oblongo- v. elongato-lanceolatis utrinque acuminatis; stipulis utrinque 2 setaceis; cyma ∞-flora puberula; floribus plerisque secundis subsessilibus; corolla (alba) gracili pollicari, ore tenuissime barbato; staminibus inclusis; filamentis antheræ æquilongis; stylo glabro.—Rather common in Viti Levu, Gau, and Ovalau (Seemann! n. 229; Harvey! U. S. Expl. Exped.).

3. ***O. laxa***, A. Gray in Proceed. Amer. Acad. vol. iv.; suffruticosa; ramis junioribus sæpe ferrugineo-puberulis; foliis oppositis longe petiolatis oblongis v. subovatis acuminatis; stipulis utrinque 2 setaceis; cymis pauci-plurifloris laxis; floribus pedicellatis; corolla semipollicari; cæt. fere præcedentis, sed ramosior laxior.—With the preceding, generally growing on the outskirts of woods (Seemann! n. 227; Milne! U. S. Expl. Exped.).

A. Gray thinks these two last species confluent, and future investigation will probably confirm that opinion.

IX. ***Lerchia***, Linn. Mant. Plant. p. 155; Bennett, Plant. Horsf. p. 98. t. 23; Endl. Gen. Suppl. i. n. 3251/1. Calyx tubo obovato, limbo 5-fido v. -dentato. Corolla infundibuliformis, fauce barbata, limbi 5-fidi lobis æstivatione valvatis. Stamina 5; filamenta brevissima; antheræ exsertæ. Ovarium 2-loculare, disco epigyno carnosissimo, demum aucto. Ovula in placentis hemisphæricis, medio dissepimento utrinque insertis ∞. Stylus filiformis; stigma 2-partitum, lobis linearibus,

conniventibus. Capsula disco coronata, 2-locularis, 2-partibilis, coccis dehiscentibus.—Frutices humiles; foliis oppositis membranaceis; stipulis interpetiolaribus integris; cymis condensatis v. spicatis elongatis; floribus parvis.

To R. Brown is due the merit of having recovered this genus when, owing to the insufficient definition given of it by Linnæus and a misplacement of Linnæus's authentic specimens, it was on the point of being altogether lost to science. There is only one species from Java known besides the following:—

1. **L. calycina**, A. Gray in Proceed. Amer. Acad. vol. iv.; foliis oblongo-lanceolatis acuminatis basi attenuatis, junioribus (præsertim costis venisque subtus cum stipulis integerrimis ovato-lanceolatis caudato-acuminatis ramulis floribusque) ferrugineo-sericeis; cymis condensatis; lobis calycis lineari-spathulatis foliaceis tubo corollæ parum brevioribus.—Woody districts of Ovalau (U. S. Expl. Exped.), Viti Levu (Milne! in Herb. Hook.).

“A shrub, 6–12 feet high.”—Milne.

X. **Lindenia**, Benth. mss. in Endl. Gen. Plant. Suppl. vol. ii. p. 53; Seem. in Bonplandia, 1862, p. 33. t. 8. Calyx tubo turbinato 5-costato, limbi 5-partiti laciniis angustis erectis. Corolla hypocraterimorpha, tubo longissimo tenui æquali, limbi 5-partiti laciniis oblongis patentibus, æstivatione contorto-imbricatis. Antheræ 5, lineares, in limbi corollini sinubus sessiles. Ovarium 2-loculare. Ovula in trophospermiis dissepimento insertis, ∞. Styli filiformis, glaber, apice incrassatis; stigma 2-fidum. Capsula calycis limbo coronata, 2-locularis. Semina ∞, angulata.—Frutices rivulares; foliis oppositis ad apices ramorum approximatis, breviter petiolatis, oblongo-lanceolatis; stipulis utrinque solitariis in vaginam brevem connatis; corymbi terminales, condensati, pauciflori, bracteis oblongo-linearibus.—*Siphonia*, Benth. Plant. Hartwegianæ, p. 84.

This genus was thought to be confined to tropical America until I discovered a second species in Viti, which, like the original one (*L. rivalis*, Benth.), grows on the banks of rivers, and has exactly the same habit as its congener.

1. **L. Vitiensis**, (sp. nov.) Seem. in Bonplandia, 1862, p. 33. t. 8 (Tab. XXIV.); foliis oblongo-lanceolatis utrinque glabris; calycis pubescentis costis acutis; corollæ sericeo-tomentellæ laciniis ovato-oblongis obtusis. Nomen vernac. Vitiense, “Bore ni wai” (i. e. *Bore rivularis*).—On the banks of rivers and rivulets, islands of Ovalau and Viti Levu (Seemann! n. 217).

A highly ornamental shrub, 3–4 feet high. Leaves glabrous, 4–6 inches long, 1–1½ inch broad; petioles and lower part of costa purplish; blade of leaf dark-green above, paler below; anthers and pistil projecting beyond the tube of the cream-coloured corolla. The popular name “Bore ni wai” signifies “the Bore which grows on the river.”

EXPLANATION OF PLATE XXIV.—1, upper portion of corolla, with the lobes cut off; 2, an anther; 3, calyx and pistil; 4, cross-section of ovary,—all magnified.

SUBORDO II. COFFEACEÆ.—Semina in loculis solitaria v. rarissime gemina.

TRIBUS IV. GUETTARDEÆ.—Flores distincti v. connati. Ovarium 2–∞-loculare, loculis 1-ovulatis. Drupa 2–∞-pyrena. Albumen carnosum. Stipulæ utrinque solitariae.

Besides the *Guettardeæ* alluded to below, there are in tropical Polynesia, *Bobea elatior*, Gaud., *Bobea brevipes*, A. Gray, and *Chomelia* (?) *Sandwichensis*, A. Gray, from the Sandwich Islands, and all of them in the British Museum collection. There are flowering specimens of *Ch.* (?) *Sandwichensis*, collected in Captain Cook's voyages in Hawaii, which are ticketed “*Cestroides*. Arbor parva; fl. sordide flavescens. Hawaii, prope sylvas.” The corolla is hypocraterimorphous, and outside covered with adpressed hair. *Myonima umbellata* of Hook. et Arn. non Bartl., also from the Sandwich Islands, is *Straussia Mariniana*, A. Gray (*Coffea Mariniana*, Cham. et Schlecht.).

XI. **Morinda**, Vaill. in Act. Acad. Par. 1722. p. 275; Endl. Gen. n. 3183. Flores in capitulum globosum conferti, sæpissime mediantibus tubis calycinis connati. Calyx tubo obovato v.

obpyramidato, limbo brevi obsolete dentato. Corolla infundibuliformis, tubo subtereti, limbo 5-lobo v. rarissime 4-lobo, patente. Stamina 4 v. 5, inclusa v. rarissime exserta; filamenta brevia; antheræ erectæ. Ovarium inferum, 2-4-loculare. Ovula in loculis solitaria, e basi erecta, anatropa v. semi-anatropa. Stylus filiformis, exsertus v. interdum inclusus; stigma 2-fidum, rarius indivisum. Baccæ 2-4-pyrenæ, pressione mutua angulatæ, sæpius in syncarpium carnosum calycum vestigiis areolatum concretæ, pyrenis 1-spermis. Semina erecta, raphe interdum fungosa. Embryo in axi albuminis carnosus orthotropus; cotyledonibus semicylindricis, radícula tereti, infera.—Frutices v. arbores, stantes v. scandentes; foliis oppositis v. 3-4-natimve verticillatis; stipulis intrafoliaceis sæpius obtusis membranaceis; pedunculis axillaribus v. terminalibus, simplicibus v. ramosis; floribus supra receptaculum subglobosum nudum sessilibus, dense aggregatis, albis v. flavis.—*Sphærophora*, Blume. *Renellia*, Korth. *Tribrachya*, Korth.

1. **M. citrifolia**, Linn. Sp. 250; arborea, glabra; ramulis 4-gonis; foliis ovalibus utrinque attenuatis lucidis; stipulis membranaceis obtusis; capitulis brevipedunculatis oppositifoliis ebracteatis; floribus 5-meris (albis); syncarpio ovato (albo) in massam ovatam concreto. Parkins. Drawings of Tahit. Plants, (ined.) t. 21.—*M. quadrangularis*, Don, Gard. Dict. vol. iii. p. 545; Benth. Niger Flora, p. 406. Nomen vernac. Vitiense, "Kura;" Tahitense et Hawaiiense, "Noni."—Common throughout Viti, and often cultivated (Seemann! n. 225; Milne!). Also collected in the Sandwich (Barclay! Seemann! n. 1716; Nuttall! Macrae!), Marquesas (Barclay!), Society Islands (Banks and Solander! Forster! Barclay!), and Tongan Islands (Harvey!), New South Wales (J. Banks!), Bow Island, Dangerous Archipelago (Barclay!), Indian Archipelago (Horsfield!), Ceylon (Kœnig! Seemann!), and west coast of Africa (Don! Smeathman! Afzelius!).

I do not think that *M. quadrangularis*, Don, differs from *M. citrifolia*. The flower-heads are usually oppositifolious, but sometimes short compressed branchlets bearing flower-heads and a few leaves, issue from the axils of the leaves. That is the case in Don's specimens, and imparts to them a somewhat strange look.

The "Kura" (or "Noni," or "Nono," as *M. citrifolia* is more commonly termed by the Polynesian races) is a tree of middle size, the root of which yields a yellow, the bark a red dye, used by the natives to colour their dresses,—hence the Vitian verb "kurata," to stain with Kura. The leaves are used medicinally. The fruit, though rather insipid, is eaten, either raw or after undergoing some kind of cooking process.

2. **M. Forsteri**, Seem.; fruticosa v. subarborea, glabra; ramis teretibus; stipulis in vaginam brevem connatis; foliis ovato-oblongis, ovatis v. ellipticis acutis v. acuminatis nitidis, subtus ad axillas venarum glandulosis, glandulis solitariis foveolatis; pedunculis plurimis in umbella terminali; capitulis plurifloris; corolla 4-5-mera (viridi-flavescente); syncarpio subgloboso (Pisi majoris magnitudine).—*M. umbellata*, Forst. Prodr. n. 99, (non Linn.) Sol. Prim. Fl. Ins. Pacif. (ined.) p. 229, excl. syn. Rheed.; Parkins. Drawings of Tahit. Plants, t. 22 (ined.). Rather common throughout Viti (Seemann! n. 222). Also collected in the Society (Forster! Nelson!) and Tongan Islands (Sir E. Home!).

At the British Museum there is the authentic specimen amongst Hermann's Ceylon Plants, with Linnæus's mss. name, upon which Linnæus founded his *M. umbellata*; and this has enabled me to clear up the doubt about Forster's *M. umbellata* from the Society Islands. Linnæus's *M. umbellata* is an entirely different plant from Forster's; its leaves are obovate-oblong, abruptly acuminate, and have little tufts of hair in the axils of the veins of the under side of the leaves, whilst the flowers are always terminal, as far as can be seen from the specimens. The specimens of Ceylon plants distributed by Thwaites under n. 1669, agree with the typical one, as does also a specimen of König's, collected in Malacca. I do not hold *M. tetrandra*, Jack, to be either synonymous with *M. umbellata*, Linn., or *M. Forsteri*, Seem.

3. **M. myrtifolia**, A. Gray in Proceed. Amer. Acad. vol. iv.; fruticosa, scandens; ramis teretibus gracilibus; stipulis in vaginam truncatam brevem connatis; foliis sublonge petiolatis subcoriaceis nitidulis lanceolato- seu elliptico-oblongis obtusis nunc obtuse acuminatis, venis primariis

haud conspicuis axillis nudis; pedunculis terminalibus brevibus solitariis 2-4-nisve; capitulis ∞ -floris globosis; tubo corollæ (albæ) 4-fidæ intus villosa-barbato; ovulis semianatropis.—Macuata coast of Vanua Levu (Seemann! n. 223 et 226). Also collected in Viti (U. S. Expl. Exped.)

My specimens have larger leaves than those collected by the American Expedition.

4. **M. Grayi**, Seem.; fruticosa, scandens, glabra; ramulis teretibus; foliis ovatis et oblongo-lanceolatis acuminatis chartaceis supra lucidis, venulis reticulatis, subtus opacis, venis primariis tantumperspicuis in axillis sæpius barbellatis; stipulis in vaginam brevem connatis, summis utrinque cuspidatis; pedunculis (fructiferis) solitariis ternisve terminalibus petiolos adæquantibus; capitulis ∞ -floris; syncarpio globoso pollicari.—*M. lucida*, A. Gray in Proceed. Amer. Acad. vol. iv., non Benth. in Niger Flora.—Viti, locality not specified (U. S. Expl. Exped.).

5. **M. mollis**, A. Gray in Proceed. Amer. Acad. vol. iv.; fruticosa, scandens, undique velutino-pubescentis; ramulis teretibus; foliis membranaceis ovato- seu obovato-oblongis caudato-acuminatis basi sinu parvo subcordatis perspicue penninerviis; stipulis . . .; pedunculis ∞ in umbella terminali; capitulis ∞ -floris, syncarpio globoso pubescente.—Ovalau (Seemann! n. 224; U. S. Expl. Exped.).

6. **M. bucidæfolia**, A. Gray in Proceed. Amer. Acad. vol. iv.; fruticosa, scandens, glabra; ramulis . . .; foliis obovato-cuneatis obtusis v. retusis coriaceis supra nitidulis subtus venulis inter costas rectas prominulas crebre reticulatis; stipulis subdistinctis; pedunculis ∞ terminalibus; capitulo globoso 7-10-floro.—Viti, locality not specified (U. S. Expl. Exped.).

XII. **Timonius**, Rumph. Amb. vol. iii. p. 216. t. 140; A. Gray in Proceed. Amer. Acad. vol. iv. Flores polygami. Calycis limbus cupuliformis, persistens. Corolla hypocraterimorpha, intus nuda, lobis 4-10 æstivatione valvatis. Stamina tubo inserta; filamenta brevissima. Stylus apice 5-10-fidus, lobis subulatis inæqualibus intus stigmatosis. Ovarium ∞ -seriatim ∞ -loculare. Ovula in loculis solitaria, funiculo brevissimo cupuliformi suspensa. Drupa ∞ -pyrena; pyrenis ∞ angustis circa axim elongatam imbricatim et ∞ -seriatim superpositis, putamine apice pervio funiculo seminis strophiolæformi (obturementi suberosi instar) clauso. Semen lineare v. oblongum; albumen vix 0. Embryo semini conformis, cylindricus; cotyledonibus radícula multo brevioribus.—Arbores v. frutices; stipulis interpetiolaribus perulatis vernatione convolutis mox caducis; foliis coriaceis, venulis (pagina superiore præsertim) sæpius tenuissime et creberrime reticulatis; pedunculis axillaribus 1- ∞ -floris.—*Porocarpus*, Gært. Fruct. vol. ii. p. 473. t. 178. *Erithalis*, Forst. Prodr. n. 101, non Linn.; Gært. f. Suppl. p. 92. t. 196, non Linn. *Polyphragmon*, Desf. in Mem. Mus. Par. vi. p. 6. t. 2; A. Rich. Mem. Rub. p. 151. *Burneya*, Cham. et Schlecht. in Linn. vol. iv. p. 189, excl. n. sp. 2. *Timonius* (excl. sp. et char.) et *Polyphragmon*, DC. Prodr. vol. iv. p. 445, 461. *Bobea* (excl. syn. Gaud.) et *Polyphragmon*, Korth. in Neder. Kruidk. Arch. vol. ii. p. 212, 215; Miquel, Fl. N. Ind. vol. ii. p. 234, 260.

Besides the two Vitian species, we have in the South Pacific, *T. Forsteri*, DC. Prodr. vol. iv. p. 461 (*Erithalis polygama*, Forst. Prodr. n. 101, et Icon. (ined.) vol. i. p. 55. *E. uniflora*, Sol. Prim. Fl. Ins. Pacif. p. 231, et in Park. Icon. Tahit. t. 26 (ined.). *E. cymosa*, Sol. l. c. p. 232, et in Park. l. c. t. 25. *Burneya Forsteri*, Cham. et Schlecht. in Linn. vol. iv. p. 189. *Polyphragmon minus*, A. Rich. Mem. Rub. p. 151. *Bobea Forsteri* et *Gærtneri*, Korth. in N. Kruidk. Arch. vol. ii. p. 212, 215), which I have seen from the Society Islands (Banks and Solander!), Palmerston Islands (David Nelson!), and Savage Island (W. Anderson!). Forster's specimen is not at the British Museum, but his unpublished drawing identifies the plant.

1. **T. sapotæfolius**, A. Gray in Proceed. of Amer. Acad. vol. iv.; foliis etiam nascentibus cum stipulis majusculis ramulisque glaberrimis elliptico-oblongis utrinque acuminatis, venulis creberrimis lineato-reticulatis quasi tenuiter nervoso-striatis, areolis lineari-elongatis parallelis, venis primariis obsoletis; pedunculis fructiferis petiolum æquantibus; pyrenis linearibus, putamine tenui.—Viti Islands, exact locality not specified (U. S. Expl. Exped.).

2. **T. affinis**, A. Gray in Proceed. Amer. Acad. vol. iv.; foliis ovalibus obscure penniveniis, venis subreticulatis, retibus venularum varie versis hinc inde contrariis; pedunculis fructiferis petiolum æquantibus; pyrenis linearibus, putamine tenui.—Viti Islands, exact locality not specified (U. S. Expl. Exped.).

XIII. **Guettarda**, Vent. Choix, n. 1; Endl. Gen. n. 3192. Calyx tubo ovato v. globoso, limbo tubuloso, persistente v. deciduo, truncato v. irregulariter subdentato. Corolla hypocraterimorpha, tubo cylindrico fauce nuda, limbi 4–9-fidi lobis ovali-oblongis. Antheræ 4–9, inclusæ. Ovarium 4–9-loculare. Ovula in loculis solitaria, e basi erecta, anatropa. Stylus simplex; stigma capitatum v. rarius 2-lobum. Drupa ovata v. subglobosa, limbo calycino coronata v. apice nuda, putamine osseo, obtuse 4–9-angulato, 4–9-loculari, loculis 1-spermis. Semina e basi loculorum erecta, teretiuscula. Radicula longa; cotyledones parvæ.—Frutices v. arbusculæ; foliis oppositis ovatis v. lanceolatis, rarius cordatis; stipulis lanceolatis deciduis, rarissime vaginantibus truncatis; pedunculis axillaribus 2-fidis, rarius bis 2-fidis, floribus in dichotomiis solitariis, sessilibus, secus ramos unilateralibus.

1. **G. (Cadamba) speciosa**, Linn. Spec. n. 1408; arbuscula; foliis ovatis obovatisve basi sæpius subcordatis apice obtusis subtus pubescentibus; stipulis lanceolatis acuminatis deciduis; cymis pedunculatis velutinis folio multo brevioribus; floribus (odoratis) 4–9-meris; fructu depresso areola superne notato. Lam. Ill. t. 154. fig. 2.—*Cadamba jasminiflora*, Sonn. Voy. vol. ii. t. 128. *Ravalou*, Rheed. Mal. vol. iv. t. 47 et 48; Parkins. Drawings of Tahit. Plants, t. 104 (ined.). Nomen vernac. Vitiense, “Buabua.”—Common on all the seabeaches of Viti (Seemann! n. 237), and widely diffused over Eastern Africa, the East Indies, and Indian Archipelago. Also collected in the Society (Forster! Banks and Solander!) and Tongan Islands (Harvey! Captain Cook! Mathews!). Whitsunday Island (Lay and Collie! Kenne!), Radak and Romanzoff Islands (Chamisso), Queensland, Eastern Australia (Hill!), Bow Island, Dangerous Archipelago (Barclay!), and Pitcairn Island (Cuming!).

The Vitians make necklaces (“taube” or “salusalu”) of the corollas of this and other white odoriferous Monopetalæ. The wood is used in certain games.

2. **G. (Guettardaria) inconspicua**, (sp. nov.) Seem.; fruticosa; ramulis petiolis pedunculisque fusco-hirsutis; foliis ovatis acuminatis, supra glabriusculis, subtus adpresse pubescentibus; pedunculis dichotomis, ramis 5–6-floris; calycibus dentatis pubescentibus; corolla (teste J. Storck rubescente-violacea) extus albo-sericea; drupa 4-loculari. Nomen vernac. Vitiense, teste Storck, “Kau lobo.”—Ovalau (Seemann! n. 257; Storck! n. 893), Gau (M’Gillivray! in Mus. Brit.).

A shrub, with reddish-violet flowers, according to Mr. Storck (Bonpl. vol. x. p. 296). Branches ultimately glabrous, and covered with white spots, somewhat like *Rhamnus cathartica*. Scars of leaves almost round, and white. Leaves rather membranaceous, about 2 inches long, 1 inch broad, and on petioles 6 lines long. Flowers inconspicuous; corolla scarcely 3 lines long.

3. **G. Vitiensis**, A. Gray in Proceed. Amer. Acad. vol. v.; species indescripta et mihi ignota.—Viti (U. S. Expl. Exped.).

According to A. Gray, this resembles, but is not identical with the preceding species.

TRIBUS V. **PSYCHOTRIÆ**.—Flores distincti, interdum aggregato-capitati, nunquam tamen connati. Ovarium 2-loculare, loculis 1-ovulatis. Bacca dipyrena. Albumen corneum. Stipulæ utrinque 2, liberæ v. connatæ.

This tribe is represented in tropical Polynesia, besides the genera and species mentioned below, by *Straussia Kaduana*, A. Gray (*Coffea*. Cham. et Schlecht.), *S. Mariniana*, A. Gray, *S. Hawaiensis*, A. Gray, all from the Sandwich Islands, and *Chasalia pyriformis*, A. Gray, from the Samoan Islands.

XIV. **Canthium**, Lam. Dict. 602; Endl. Gen. n. 3175. Calyx tubo ovato, limbo brevi persistente, 4-5-dentato. Corolla tubo brevi, fauce barbata, limbi 4-5-fidi lobis patentibus. Antheræ 4-5, ad faucem corollæ subsessiles, vix exsertæ. Ovarium 2-loculare. Ovula in loculis solitaria, pendula, amphitropa v. semi-anatropa. Stylus simplex; stigma indivisum, crassum, ovato-globosum v. mitræforme, rarius apice 2-lobum. Bacca globosa v. didyma, carnosâ, lævis v. transversim rugosa, 2-locularis v. abortu 1-locularis, loculis 1-spermis. Semina pendula. Embryo intra albumen dense carnosum homotropus, subarcuatus; cotyledonibus subfoliaceis, radícula elongata, supera.—Frutices ramulis spinosis v. inermibus, foliis oppositis petiolatis coriaceis, stipulis interpetiolaribus utrinque solitariis, pedunculis axillaribus brevibus, ∞ -floris.—*Canthium* et *Psydrax*, DC. Prodr. vol. iv. p. 473 et 476.

1. **C. sessilifolium**, A. Gray in Proceed. Amer. Acad. vol. iv.; inerme, glabrum; foliis fere sessilibus oblongo-ovatis, seu ovato-lanceolatis basi rotundata chartaceis supra lucidis; pedicellis solitariis binis ternisve in axillis flore gracili (semipollicari) dimidio brevioribus; pedunculo communi vix nullo; limbo calycis 5-dentato; pyrenis seminibusque fere rectis angustis.—Vanua Levu (U. S. Expl. Exped.).

2. **C. odoratum**, Seem.; inerme, glabrum; foliis breviter petiolatis ellipticis obovatis v. ovatis acutis v. obtusis, basi paululum attenuatis coriaceis supra lucidis, subtus opacis; cymis pedunculatis folio multo brevioribus; floribus 4-5-meris.—*Coffea odorata*, Forst. Prodr. n. 94. *Coffea sicca*, Forst. mss. *Ixora odorata*, Spreng. Syst. vol. i. p. 409. *Canthium lucidum*, Hook. et Arn. Bot. Beech. p. 65. *C. Beecheyi*, Steud. Nomenclator. *Pavetta dubia*, Endl. Ann. Wiener Museum, vol. i. p. 176, excl. syn. Hook. et Arn.—Lakeba (Seemann! n. 221). Nairai (Milne!). Also collected in the Society Islands (Forster!), Tana, New Hebrides (Forster!), Elizabeth (Cuming!), and Gambier Island (Beechey!).

Asa Gray refers *Coffea odorata* of Forster to *Stylocoryne*; but judging from Forster's authentic specimens at the British Museum, there can be no doubt about its being a *Canthium*. Flowers white; drupe black.

3. **C. flavidum**, (sp. nov.) Seem.; inerme, glabrum; foliis longiuscule petiolatis obovatis obtusis v. obtusiusculis, supra lucidis, subtus opacis venis reticulatis prominulis, petiolis costis venis primariis inflorescentiaque flavidis; pedunculis axillaribus bis v. ter trichotomis folia subæquantibus v. superantibus; calycibus 4-dentatis; stylo 2-fido.—Macuata coast of Vanua Levu (Seemann! n. 256).

Differs from *C. odoratum* by its few-flowered peduncles being as long, or longer than the leaf, and the peculiar yellowish tinge of the petiole, ribs, veins, and inflorescence. Branches obscurely 4-angular. Petioles 6 lines long. Blade of leaf 2-2½ inches long, 1 inch broad. Fruit unknown.

4. **C. barbatum**, Seem.; inerme, glabrum; foliis longiuscule petiolatis ovalibus v. ovatis acutis subcoriaceis, subtus pallidis; cymis axillaribus folio multo brevioribus, 3-4-floris, floribus 5-meris; corolla fauce barbata; latis drupa obcordata.—*Chiococca barbata*, Forst. Prodr. n. 96. et Icon. (ined.) t. 52; Hook. et Arn. Bot. Beech. p. 65. t. 14. *Chiococca odorata*, Hook. et Arn. Bot. Beech. p. 65. excl. syn. Forst. (non Forst.).—Viti Levu (Seemann! n. 220). Also collected in the Marquesas (Forster!), Society (Wiles and Smith! Banks and Solander! Forster! Matthews! Bidwill! Lay and Collie!), and Tongan Islands (Forster!), as well as in Pitcairn (Matthews!), and Elizabeth Island (Cuming! Lay and Collie!).

XV. **Calycosia**, A. Gray in Proceed. Amer. Acad. vol. iv. p. 48. Calyx tubo angusto, limbo valde ampliato infundibuliformi membranaceo 5-fido, lobis sæpe inæqualibus ciliato-barbatis. Corolla calycem modice superans, tubulosa, fauce infundibuliformi; lobis 5 patentibus, apice corniculato-cucullatis æstivatione valvatis. Stamina 5, fauci corollæ inserta, subinclusa; filamenta bre-

vissima; antheræ oblongo-lineares, basi 2-lobæ. Stylus filiformis, basi disco epigyno elevato arcte cinctus; stigmata 2 v. 3, linearia seu filiformia. Ovarium 2-3-loculare. Ovula in loculis solitaria, e basi erecta, anatropa. Drupa apice nuda, 2-pyrena, raro 3-pyrena; pyrenis cartilagineis facie planis. Semen cavitati conforme. Embryo in basi albuminis æquabilis cornei parvus; cotyledonibus late ovalibus planis radícula conica brevioribus et latioribus.—Frutices crassiramei, macrophylli; stipulis intrafoliaceis subvaginatis; floribus capitato-congestis, capitulis bracteis latissimis membranaceis inciso-lobatis involucre ad apicem caulis cymoso-glomeratis.—*Eumachia*, DC. Prodr. vol. iv. p. 479?

This genus, which will probably prove identical with *Eumachia*, DC., is confined to the New Hebrides, Viti, and Samoa, and well distinguished from *Psychotria* or *Cephaëlis* by the remarkably large, funnel-shaped calyx which is fully developed before the tube of the corolla emerges from the tube of the calyx.

Eumachia carnea, DC. Prodr. vol. iv. p. 479 (*Petesia carnea*, Forst. Prodr. n. 51, et Icon. (ined.) t. 22; Gært. Fruct. vol. iii. p. 66. t. 192, non P. Browne et Linn. nec Hook. et Arn.) from the Tongan Islands (Forster! Nelson! U. S. Expl. Exped.), has recently been described as *Chasalia Amicorum* by A. Gray in Proceed. Amer. Acad. vol. iv. A careful revision of *Calycosia*, *Eumachia*, and *Chasalia* will be necessary before any definite opinion is arrived at about the possible identity or difference of these three genera.

1. **C. petiolata**, A. Gray, l. c.; foliis obovatis seu obovato-lanceolatis in petiolum attenuatis; calyce breviter 5-lobo, lobis oblongis; pyrenis dorso haud costatis.—Viti, locality not specified (U. S. Expl. Exped.).

2. **C. pubiflora**, A. Gray, l. c.; foliis membranaceis glabris oblongo-lanceolatis acuminatis in petiolum attenuatis (4-6 poll. longis); cyma laxa trichotoma calycisque tubo viscoso-pubescentibus, limbo crateriformi extus puberulo; drupa turbinata, pyrenis chartaceis intus excavatis.—Namosi, Viti Levu (Milne!), Taviuni (Seemann! n. 214).

Flowers white.

3. **C. Milnei**, A. Gray, l. c.; glaberrima; foliis oblongis sublanceolatisve basi attenuatis longiuscule petiolatis punctulatis (3-6 poll. longis); cyma diffusa, repetito-trichotoma; pedicellis gracilibus.—Nomen vernac. Vitiense, "Kau wai" (i. e. *Frutex aquaticus*).—Ovalau, in woods (Seemann! n. 213; Storck! n. 892). Also collected in Aneitum, New Hebrides (Milne!).

XVI. **Ixora**, Linn. Gen. n. 131; Endl. Gen. n. 3161. Calyx tubo ovato, limbo brevi 4-5-dentato. Corolla hypocraterimorpha, tubo gracili cylindrico, fauce nuda v. barbata, limbi 4-5-partiti laciniis tubo brevioribus, acutis v. obtusis, æstivatione convolutis, sub anthesi patentibus. Stamina 4-5, corollæ fauci inserta, subexserta; filamenta brevissima v. subnulla; antheræ oblongæ, erectæ. Ovarium 2-loculare, disco epigyno carnoso. Ovula in loculis solitaria, medio dissepimento peltatim inserta, amphitropa. Stylus simplex, vix exsertus; stigma 2-fidum, laciniis patentibus v. revolutis. Bacca globosa, 2-pyrena, pyrenis chartaceis, dorso convexo lævibus, facie concavis, 1-spermis. Semina cavitati conformia, umbilico ventrali. Embryo intra albumen cartilagineum dorsalis, homotrope incurvus; cotyledonibus foliaceis, radícula elongata, infera.—Frutices v. arbusculæ; foliis oppositis, petiolatis, stipulis interpetiolaribus utrinque solitariis, e basi lata acuminatis v. in aristam setaceam desinentibus, corymbis terminalibus, sæpius trichotomis, floribus coccineis roseis rariusve albidis, sæpe fragrantibus.—*Pavettæ* sp. auct.

Besides the species indigenous to Viti, we have in tropical Polynesia *Ixora amplifolia*, Gray, *S. Samoensis*, both from the Samoan Islands, and *I. fragrans*, Gray; (*Cephaëlis fragrans*, Hook. et Arn. Bot. Beech. t. 131), from Tonga (Nelson!), and Elizabeth Island (Lay and Collie!), all three belonging to A. Gray's section *Phylleilema*, which is distinguished by a pair of bractean leaves, forming a diphyllous involucre to a cluster of three or more sessile flowers. It is not improbable that *S. Samoensis* is identical with *Ixora triflora*, Seem., (*Pavetta triflora*, DC. Prodr. vol. iv. p. 492. *Coffea triflora*, Forst. Prodr. n. 95. *Chioccoa triflora*, Spreng. Syst. vol. i. p. 756,) which was found in the Society Islands (Forster!).

1. **I. (Phylleilema) Vitiensis**, A. Gray in Proceed. Amer. Acad. vol. iv.; glaberrima; foliis ovato-oblongis acuminatis basi rotundatis v. acutis, floralibus seu bracteis late cordatis arcte sessilibus capitulum 3-florum fulcrantibus; stipulis longissime aristatis; dentibus calycis brevissimis; corolla (alba) glabra; drupa nigra.—Ovalau (U. S. Expl. Exped.), Viti Levu (Seemann! n. 247).

Leaves less coriaceous than the allied *I. fragrans*, A. Gray.

2. **I. pelagica**, (sp. nov.) Seem.; ramulis villosiusculis; foliis brevipetiolatis obovato-oblongis, basi subcordatis, supra glabris, subtus villosopuberulis; stipulis longe setaceis petiolum 4-druplo superantibus; floribus capitatis, capitulis ∞ -floris, ∞ -bracteatis, bracteis linearibus acutis pubescentibus; calycis laciniis 5 linearibus pilosis; corolla ignota; drupa subglobosa pisi maj. magnitudine.—Viti Levu (Seemann! n. 258, ex parte).

Leaves 5–6 inches long, $1\frac{1}{2}$ –2 inches broad. Flowers wanting. Seeds peltate.

3. **I. maxima**, (sp. nov.) Seem.; foliis ovato-oblongis acuminatis basi rotundatis, brevissime petiolatis, supra glabris; subtus paniculisque villosopuberulis; paniculis terminalibus ∞ -floris divaricatis; calycibus 4-fidis; corolla ignota; drupa subglobosa glabra pisi maj. magnitudine.—Viti Levu (Seemann! n. 258, ex parte).

Only two specimens found. Leaves nearly a foot long, and 5–6 inches broad. Panicles 3–4 inches long; drupe 2-pyrenous; seeds solitary, peltate.

4. **I. (?) Storckii**, (sp. nov.) Seem.; glabra; foliis obovato-oblongis acuminatis in petiolum attenuatis; stipulis subulatis; floribus fasciculatim ex trunco ramisque rumpentibus; drupa subglobosa (rubra) Pisi magnitudine.—Nomen vernac. “Kau sulu,” teste Storck. Port Kinnaird, Ovalau (Storck! n. 894).

The specimens, in fruit only, were discovered after my departure from Viti by the indefatigable Mr. Storck. Petioles about 1 inch long; blade of leaf 10–12 inches long, 3–4 inches broad.

XVII. **Psychotria**, Linn. Gen. n. 229; Endl. Gen. n. 3147. Calyx tubo ovato, limbo brevi subintegro v. 4–5-lobo aut 4–5-dentato. Corolla infundibuliformi-tubulosa, tubo tereti, basi æquali, fauce glabra v. barbata, limbi 5-fidi v. rarius 4-fidi lobis patentibus v. recurvis, æstivatione valvatis. Stamina 4–5, corollæ tubo inserta, inclusa v. rarius subexserta; filamenta filiformia, brevissima; antheræ lineares, incumbentes. Ovarium 2-loculare, disco epigyno carnoso pulviniformi. Ovula in loculis solitaria, e basi dissepimenti adscendentia, anatropa. Stylus simplex; stigma 2-fidum. Bacca carnosa, costata v. lævis, 2-pyrena, pyrenis dorso convexo costatis v. rarius lævibus, facie planis, 1-spermis. Semina erecta, cavitati conformia. Embryo brevis, in basi albuminis cartilaginei orthotropus; cotyledonibus foliaceis, lanceolatis, radícula cylindrica infera.—Arbusculæ v. frutices, rarius herbæ perennes; foliis oppositis, petiolatis, stipulis varie connexis, pedunculis rarius axillaribus, plerumque terminalibus, floribus paniculatis v. corymbosis.—*Psychotrophum*, P. Browne, Jam. 160. *Myrtiphyllum*, P. Browne, Jam. 152.

Besides the *Psychotriæ* enumerated below, we have in tropical Polynesia *P. closterocarpa*, A. Gray, from the Samoan Islands; *P. insularum*, A. Gray, from the Samoan and Tongan Islands; *P. apodantha*, A. Gray, from the Samoan Islands; *P. speciosa*, Forst., from the Society Islands, and several other species, of which the materials are not sufficient for accurate determination. *P. speciosa*, Forst. Prodr. n. 89. et Icon. (ined.) t. 50, (*Cephaëlis speciosa*, Spreng. Syst. vol. 1 p. 749,) is a very distinct species, probably a new genus, of which, however, the materials existing at the British Museum are insufficient for closer investigation, and I have not seen it in any other herbarium.

1. **P. sulphurea**, (sp. nov.) Seem.; decumbens; ramis sarmentosis cymisque rufo velutino-puberulis; foliis ovalibus utrinque acutis, venis primariis 10–12-jugis; cymis compositis ∞ -floris; corollis 5-fidis (albido-cæruleis); calycibus 5-dentatis; drupis globosis subcompressis (sulphureis), seminibus ruminatis.—Nomen vernac. Vitiense, teste Storck, “Wa kau.”—Port Kinnaird, Ovalau (Storck! n. 895).

“A decumbent rooting shrub, flowers bluish-white, fruit of a sulphur-yellow colour.”—Storck. Petioles $\frac{3}{4}$ of an inch long; blade of leaf 2–3 inches long, about 1 inch broad; drupe 2-pyrenous.

2. **P. Browerii**, (sp. nov.) Seem.; glabra; stipulis caducis; foliis breviter petiolatis oblongis obovato v. ovali-oblongis acuminatis basi attenuatis, venis primariis 12–15-jugis; cymis axillaribus terminalibusque folio brevioribus ramulis compressis; calycibus cupuliformibus obscure dentatis; drupis costatis.—Island of Moturiki (Seemann! n. 244 et 254).

This species (which I have named in honour of Dr. Brower, United States Consul in Viti, to whose hospitality and kindness I was much indebted during my explorations of the group, and who introduced into the islands sheep-farming, improved varieties of cotton and many useful plants) is allied to *P. collina*, Labill. Austr. Cal. t. 47; but I am not satisfied about their identity. Petiole 6–12 lines long. Blade of leaf 5–8 inches long, 2–3 $\frac{1}{2}$ inches broad. Flowers in my specimens very young.

3. **P. Pritchardii**, (sp. nov.) Seem.; glabra; stipulis intrafoliaceis latis carnosis persistentibus basi subauriculatis; foliis longe petiolatis oblongis v. obovato-oblongis acuminatis in petiolum attenuatis, venis primariis 12–14; cymis terminalibus, pedunculo compresso folia multo superante, radiis 4; calyce cupuliformi truncata; corolla (alba) calyce 4-plo longiore.—Woods of the island of Taviuni (Seemann! n. 259).

A very singular species, named in honour of Mr. W. T. Pritchard, by whom my botanical explorations in Viti were so much facilitated. It is easily distinguished from the other Vitian *Psychotriæ* by its very fleshy persistent and nearly auriculate stipules and long peduncles. Petioles 1 $\frac{1}{2}$ –2 inches long. Blade of leaf 5–6 inches long, 2–2 $\frac{1}{2}$ inches broad. Peduncle 8–10 inches long.

4. **P. Brackenridgii**, (Gray in Proceed. of Amer. Acad. vol. iv.); stipulis caducis; foliis oblongo-lanceolatis utrinque acutis vel acuminatis basi in petiolum longiusculum angustatis fere glabris chartaceis; pedunculis 1–5 terminalibus elongatis cymam trichotomam multifloram gerentibus cum radiis pedicellis calycibusque ferrugineo-puberis; fructibus ovalibus 8-costatis truncatis calycis limbo parvo cupuliformi coronatis puberulis; pyrenis tenuiter cartilagineis intus planis dorso convexo carinato-tricostatis.—Viti islands, locality not mentioned (U. S. Expl. Exped.).

The flowers of this species are still unknown.

5. **P. Forsteriana**, (Gray, l. c.); glabra; stipulis tenuiter scariosis caducis; foliis membranaceis oblongo-lanceolatis nunc obovato-oblongis utrinque acuminatis modice petiolatis, venis primariis 9–11-jugis; cyma multiflora terminali composita tripartita vel tripla pedunculis radiisve petiolum æquantibus; floribus confertis pedicellatis parvis; calycis limbo expanso integerrimo ovario æquilongo; corolla brevi usque ad medium 5-fida fauce villosissima; fructibus obovatis retusis, junioribus fere obcordatis; pyrenis dorso obtuse costatis subrugosis intus concaviusculis.—*P. Asiatica*, Forst. Prodr. n. 90?

Var. *Vitiensis*, A. Gray, l. c.; foliis longius petiolatis nunc undulatis; fructu vix retuso.—Islands of Matuku (Milne!), Moturiki, and Ovalau (Seemann! n. 236).

This variety is widely different from *P. Asiatica* of Forster, and probably a distinct species.

6. **P. turbinata**, (Gray, l. c.); fere glabra; stipulis caducis; foliis obovato-oblongis nunc oblongis nunc oblongo-lanceolatis basi in petiolum longiusculum attenuatis submembranaceis, venis primariis 9–10-jugis; cyma terminali multiflora petiolos vix superante; fructibus turbinatis vertice planis; pyrenis 2 vel 3 ventre inferne planis superne profunde exsculptis dorsoque tuberculato-incrasatis.—Mountains of Viti Levu (Milne!).

Fruiting specimens only were collected.

7. **P. Storckii**, (sp. nov.) Seem.; ramulis petiolis pedunculis bracteis calycibusque rufo-villoso-hirsutis; stipulis caducis; foliis obovato-oblongis acuminatis in petiolum longum angustatis, venis primariis 12–17-jugis supra glabris, subtus ad costas et venis rufo-villoso-hirsutis; cymis terminalibus radiis ter trichotomis divisionibusque divaricatis, primum bracteis squamaceis subrotundis

longe apiculatis caducis involucratis; calyce dentato; corolla hirsuta; fructibus obovatis 6-angulatis.—Viti Levu (Milne! Seemann! n. 255).

A shrub, 8–16 feet high. Blade of leaf 6–7 inches long, $3\frac{1}{2}$ –4 inches broad. Allied to *P. turbinata*, A. Gray, and having the larger bracts of Gray's section *Piptilema*, though the inflorescence is a compound cyme, and as long as or longer than the petiole.

8. **P. tephrosantha**, A. Gray, l. c.; stipulis caducis; foliis ovalibus utrinque abrupte acutis vel acuminatis petiolatis ramisque glabris; cyma terminali pedunculata effusa decomposita, pedicellis gracilibus flore brevioribus; calycis limbo subintegerrimo cupulato ovario turbinato brevioribus; corolla infundibuliformi extus pruinoso-canescens.—Viti, locality not specified U. S. Expl. Exped.).

9. **P. serpens**, Linn. Mant. 204; glaberrima; ramis gracilibus foliosis sarmentosis; stipulis ovatis obtusis caducis; foliis obovatis obtusis v. acutis in petiolum angustatis (pollicaribus) chartaceis, venis utrinque 5–6 inconspicuis; cymis terminalibus laxifloris; calycis limbo parvo acutiuscule 5-dentato; corolla extus farinosa intus ad faucem barbata; drupis ovatis v. globosis (albis); pyrenis hemisphaericis dorso 3–2-costatis, costis obtusissimis.—*P. scandens*, Hook. et Arn. Bot. Beech. p. 193. *P. parvula*, A. Gray in Proceed. Amer. Acad. vol. iv.—Voma Peak, Viti Levu (Seemann! n. 245). Diffused over the East Indies and Southern China (Seemann!)

10. **P. gracilis**, Gray, l. c.; glaberrima; ramis gracillimis; stipulis quadrato-subulatis deciduis; foliis lanceolatis membranaceis attenuato-acuminatis basi in petiolum angustatis; cyma parva terminali ∞ -flora breviter pedunculata; calycis limbo expanso crateriformi ovario subæquilongo 5-dentato; corolla brevi 5-fida intus glabra; filamentis gracilibus; antheris longioribus.—Viti Islands, locality not specified (U. S. Expl. Exped.).

11. **P. calycosa**, Gray, l. c.; erecta; glabra; stipulis caducis; foliis anguste oblongis seu oblongo-lanceolatis subacuminatis basi in petiolum brevem attenuatis; cyma terminali foliis brevioribus pedunculata confertiflora; floribus pedicellatis; calycis limbo amplissimo foliaceo e basi infundibuliformi expanso 5-lobo; corolla tubuloso-infundibuliformi breviter 5-fido, lobis apice saccatis extus hirtellis intus barbatis.—*P. Vitiensis*, Seem. in Bonplandia, vol. ix. p. 257.—Voma Peak, Viti Levu (Seemann! n. 246), Ovalau (Milne!).

The fruit of this species is as yet unknown.

12. **P. macrocalyx**, Gray, l. c.; glabra; ramis gracilibus foliosissimis; stipulis ovatis mucronatis caducis; foliis lanceolatis seu oblongo-lanceolatis longe acuminatis chartaceis basi in petiolum attenuatis; pedunculis 1–3 terminalibus 1–5-floris pedicellis filiformibus; calycis limbo tubuloso angusto breviter 5-dentato persistente drupæ ovoideæ subæquilongo; pyrenis compressis intus planis dorso 1–3-carinatis.—Vanua Levu (Seemann! n. 243). Also collected in the Tongan Islands (U. S. Expl. Exped.).

13. **P. filipes**, Gray, l. c.; glabra; stipulis caducis; foliis lanceolato- seu obovato-oblongis acuminatis basi paullo angustata sæpius subcordatis longe petiolatis; pedunculis terminalibus 2–5 filiformibus folia subæquantibus cymam effusam plurifloram gerentibus, radiis 3–4 pedicellisque gracilibus; calycis limbo crateriformi 4-dentato ovario brevioribus; corolla brevi 4-fida fauce fere nuda, fructu immaturo ovato.—Viti, locality not specified (U. S. Expl. Exped.).

14. **P. pelagica**, (sp. nov.) Seem.; glabra; stipulis caducis; foliis longiuscule petiolatis ovato-lanceolatis longe acuminatis, basi rotundatis, venis primariis 7–8-jugis; pedunculis terminalibus folium subæquantibus et cymam effusam ∞ -floram gerentibus, radiis 4–5 pedicellisque gracilibus; calyce cupuliformi truncato; corolla 4-fida; drupa ovata.—Town of Navua, Viti Levu (Seemann! n. 253).

Near *P. filipes*, A. Gray, but differs in having a truncate calyx and other peculiarities. Petioles $1\frac{1}{2}$ –2 inches long; blade of leaf 3–4 inches long, $1-1\frac{1}{4}$ inch broad. Corolla 3–4 lines long.

15. **P. hypargyræa**, Gray, l. c.; glabra; stipulis bifidis caducis; foliis obovato-oblongis seu

oblongo-lanceolatis acuminatis basi in petiolum brevem attenuatis chartaceis supra viridibus subtus argenteo-pallidis; pedunculis 1-3 terminalibus apice 3-5-floris; floribus brevissime pedicellatis; calycis limbo parvo 5-dentato; corolla infundibuliformi breviter 5-fida intus glabra; filamentis brevissimis; fructibus globosis, in siccis acute costatis, cavis; pyrenis cartilagineis tenuibus ventre planis leviter obcordatis margine acutissimis dorso medio 1-3-cristato-alatis; semine triptero.—Viti, locality not specified (U. S. Expl. Exped.).

PIPTILEMA, A. Gray, Proceed. Amer. Acad. vol. iv. (subgen. Psychotriæ, Cephaëliidi proxima.) Stipulæ squamaceæ, caducissimæ. Flores sessiles, capitellati, ebracteolati; capitulo terminali primum bracteis squamaceis caducis involucrato. Pyrenæ compresso-planæ, costa dorso in cristam seu alam producta, marginibus inferne subulato-dilatatis. Semen quasi tripteron.

16. **P. (Piptilema) cordata**, Gray, l. c.; glabra; stipulis ovatis? caducis; foliis oblongo- seu lanceolato-ovatis promissa acuminatis basi cordatis longe petiolatis; capitulo arcte sessili ∞ -floro bracteis squamaceis obovato-rotundis circiter 6 caducis involucrato; calycis limbo brevi truncato; corolla tubulosa 5-7-mera; fructibus elongato-pyramidatis, pyrenis dorso alato-cristatis marginibus infra medium angulato-productis.—Viti Islands, locality not specified (U. S. Expl. Exped.).

17. **P. (Piptilema) Pickeringii**, Gray, l. c.; glabra; stipulis caducis; foliis oblongo-lanceolatis seu obovato-oblongis promissa acuminatis basi angustata subacutis obtusisve; capitulo arcte sessili ∞ -floro bracteis squamaceis caducis involucrato; calycis limbo brevissimo truncato; corolla tubulosa 4-6-mera; fructibus obovatis obtusis basi 4-angulatis, pyrenis dorso et inferne marginibus cristatis.—Port Kinnaird, Ovalau (Seemann! n. 251).

18. **P. (Piptilema) tetragona**, (sp. nov.) Seem.; glabra; foliis lanceolatis longe acuminatis in petiolum attenuatis, venis primariis 12-13-jugis; stipulis caducis; floribus terminalibus capitatis paucifloris; drupis ovatis tetragonis seminibus dorso acute carinatis.—Ovalau (Seemann! n. 252).

Allied to *P. Pickeringii*. Leaves, including petiole, 5-6 inches long, about 1 inch broad. Flowers unknown. Seeds at the back acutely carinate, and thus making the fruit 4-cornered.

19. **P. (Piptilema) bullata**, (sp. nov.) Seem.; erecta; ramulis petiolis bracteisque rufo-hirsutis; foliis ovali-lanceolatis acuminatis, basi acutis, bullatis, supra glabris, subtus ad costas venisque rufo-hirsutis; capitulo terminali primum bracteis squamaceis involucrato; cæt. ignot.—Korovono, Vanua Levu (Seemann! n. 248).

A shrub, 4 feet high, of which only a couple of specimens were found, both having an undeveloped flowerhead, enclosed in two large bracts, as is the case in A. Gray's section *Piptilema*. But the flowers are too young to admit of a closer examination. The plant is easily recognized by its very bullate leaves, and will doubtless again be met with.

20. **P. (Piptilema) platycocca**, Gray, l. c.; glaberrima; stipulis caducis; foliis oblongis utrinque acutis; pedunculis terminalibus demum lateralibus petiolum adæquantibus glomerulos 1-3 paucifloros bracteis caducis primum involucratos gerentibus; fructibus ovato-tetraquetris, pyrenis dorso et marginibus præsertim inferne acute cristatis.—Viti Levu (Seemann! n. 249).

There are besides several other Vitian specimens in the Kew and British Museum Herbaria, such as my n. 250, in fruit, from Namosi, Viti Levu (probably a near ally of, or identical with *P. insularum*, A. Gray), and my n. 241, as also some scapes collected in Admiral Denham's expedition, which had better be left undescribed until more materials have come to hand.

XVIII. **Myrmecodia**, Jack in Linn. Trans. vol. xiv. p. 122; Endl. Gen. n. 3184. Calyx tubo ovato, limbo tubuloso integerrimo. Corolla infundibuliformis v. tubulosa, fauce pilis squamisve clausa v. glabra, limbi 4-fidi lobis erectis obtusis. Stamina 4, inclusa; filamenta brevissima; antheræ ovatæ, erectæ. Ovarium 4-loculare, disco epigyno carnosio, loculis 1-ovulatis. Stylus simplex; stigma 2-fidum, lobis incis. Drupa baccata, 4-pyrena, pyrenis chartaceis 3-4-quetris 1-spermis.

Semina erecta. Embryo in axi albuminis carnosus orthotropus; radícula incrassata, infera.—Frutices pseudo-parasitici, basi tuberosi, inermes v. aculeis seriatis obsessi; foliis oppositis confertis petiolatis, glabris; stipulis peltatis, ciliatis; floribus axillaribus, sessilibus.

“There is no small obscurity about the one or two old species of this genus, and respecting the distinction between it and *Hydnophytum*, which the Dutch botanists ought to clear up. But the present species (*M. imberbis*), notwithstanding that the corolla wants the beard described by Jack, and the fornicate scales mentioned by Blume, is undoubtedly a genuine member of Jack's genus *Myrmecodia*, and its stigma is probably similar to the ‘*stigma simplex tomentosum*’ of *M. tuberosa*. But this stigma in our plant consists of 4 minute apiculate lobes, terminating a filiform entire style, and surrounded by a kind of indusiate margin, which is fringed by a circle of delicate arachnoid hairs. From the analysis I should refer Gaudichaud's *M. inermis* and *M. echinata* to *Hydnophytum*.”—A. Gray in Proceed. Amer. Acad. vol. iv.

1. **M. imberbis**, A. Gray in Proceed. Amer. Acad. vol. iv.; inermis; foliis lanceolato- seu spathulato-oblongis; corolla tubulosa (6 lin. long.) intus nuda glaberrima calyce cum ovario quadruplo longiore; stylo simplicissimo, stigmatibus 4-apiculato indusio lanato-ciliato cincto; fructu (in sicco) obpyramidato 4-lobo, pyrenis 4 corneis.—Grows epiphytically on trees in Viti, locality not specified (U. S. Expl. Exped.).

XIX. **Hydnophytum**, Jack in Trans. Linn. Soc. vol. xiv. p. 124; Endl. Gen. n. 3185. Calyx tubo ovato, limbo brevi integerrimo. Corolla tubo brevi, intus hirsuta, limbo plano 4-lobo. Stamina 4; filamenta brevissima; antheræ erectæ. Ovarium 2-loculare, disco epigyno carnosum. Ovula in loculis solitaria. Stylus filiformis; stigma 2-lobum. Bacca succosa, dipyrena, pyrenis coriaceis, dorso convexis, facie planis, 1-spermis. Semina erecta. Embryo in axi albuminis rectus; radícula incrassata, infera.—Frutices pseudo-parasitici, basi tuberosa, cava a formicis habitata; foliis oppositis, breve petiolatis, ovalibus; stipulis parvis, linearibus; floribus axillaribus, parvis, albis.

1. **H. longiflorum**, A. Gray in Proceed. Amer. Acad. vol. iv.; foliis elongato-oblongis; corolla gracillima (semipollicari), intus glabra, tubo lobis oblongis pluries longiore; stigmatibus 2 petaloideis reniformibus; drupa 2-pyrena.—*Myrmecodia Vitiensis*, Seem. in Bonpl. vol. ix. p. 256, teste A. Gray in Bonpl. vol. x. p. 36.—Epiphytically on trees, Buke Levu (about 3000 feet above the sea), Island of Kadavu (Seemann! n. 216). Also collected by the United States Exploring Expedition.

Tubers white inside, and as large as a good-sized Swedish turnip.

XX. **Geophila**, Don, Prodr. Fl. Nep. p. 136; Endl. Gen. n. 3139. Calyx tubo obovato, limbi 5-partiti laciniis linearibus, patentibus. Corolla tubulosa, fauce pilosa, limbi 5-lobi lobis ovatis, subrecurvis. Stamina 5; filamenta subnulla; antheræ lineares, erectæ. Ovarium 2-loculare, disco epigyno depresso. Ovula in loculis solitaria, e basi dissepimenti adscendentia, anatropa. Stylus simplex; stigma 2-fidum. Bacca ovoidea, costata, 2-locularis, loculis 1-spermis. Semina erecta.—Herbæ perennes, depressæ, repentes, *Violæ* fere facie; foliis oppositis petiolatis cordatis; stipulis utrinque solitariis; pedunculo e supremi folii axilla solitario, apice ∞ -floro, floribus umbellato-sessilibus bracteis flore brevioribus involucrentibus.—*Psychotriæ* sp. auct.

1. **G. reniformis**, Cham. et Schlecht. in Linnæa, 1829, p. 137; caule pubescente v. glabro, petiolis superne hirsutis; foliis reniformibus obtusis, lobis baseos approximatis, supra pubescentibus v. glabris, subtus glabris; bracteis linearibus; pedunculis 4-6-floris folio brevioribus; corolla alba; bacca rubra.—*Psychotria herbacea*, Linn. Spec. 245, et Forst. Prodr. n. 91.—Common in the woods of Viti (Seemann! n. 239; Harvey! Milne!). Also found in the Society Islands (Forster!), Tahiti, and Marianne Islands (Chamisso), and widely diffused throughout tropical America, north and south of the equator.

TRIBUS VI. ANTHOSPERMEÆ.—Flores distincti. Ovarium 2-loculare, loculis 1-ovulatis. Carpida sicca, recedentia, 1-sperma. Stipulæ parvæ, petiolo adnexæ.

XXI. **Coprosma**, Forst. Gen. 169; Endl. Gen. n. 3109. Flores hermaphrodito-polygami. Calyx tubo ovato, limbo brevissimo 4-6-dentato. Corolla tubulosa, infundibuliformis v. subcampanulata, tubo brevi ventricosus, limbo 4-9-lobo, patente. Stamina 4-9, longe exserta; filamenta filiformia; antheræ lineares, pendulæ. Ovarium 2. v. rarius 3-4-loculare, disco epigyno carnosus. Ovula in loculis solitaria, e basi erecta, anatropa. Styli 2, v. rarius 3-4, elongato-filiformes, ima basi coaliti undique piloso-stigmatosi. Bacca ovata, umbilicata, pulposa, nuculis 2 evalvibus 1-spermis. Semina erecta, dorso convexa, facie plana. Embryo in axi albuminis dense carnosus orthotropus; cotyledonibus foliaceis, radícula elongata, infera.—Frutices v. arbusculæ; foliis oppositis; stipulis petiolaribus utrinque solitariis, persistentibus; floribus terminalibus v. axillaribus, solitariis aut in eodem pedunculo paucis, basi 2-bracteolatis.

This genus extends from New Zealand, Tasmania, and Australia to Borneo, and is largely represented in tropical Polynesia. From the Sandwich group we have *C. rhynchocarpa*, A. Gray, *C. longifolia*, A. Gray, *C. foliosa*, A. Gray (Oahu, Seemann! n. 2269), *C. pubens*, A. Gray, *C. Menziesii*, A. Gray, and *C. ernodeoides*, A. Gray; from Tahiti *C. Taitensis*, A. Gray; from Norfolk Island *C. lucida*, Forst., *C. Baueriana*, Endl., and *C. pilosa*, Endl.; and from the Kermadec group, *C. petiolata*, Hook. f., and *C. acutifolia*, Hook. f. From Viti only one species has as yet been described.

1. **C. persicæfolia**, A. Gray in Proceed. Amer. Acad. vol. iv.; fruticosa, glabra; stipulis connatis late triangularibus cuspidatis; foliis membranaceis lanceolatis sensim acuminatis, petiolo brevi; pedunculis brevissimis paucifloris; calycis limbo vix dentato; corolla profunde 4-fida; drupa oblonga.—Viti, but exact locality not recorded (U. S. Expl. Exped.).

ORDO LII. COMPOSITÆ (CASSINIACEÆ, Schultz-Bip.).

There are in London a good many undescribed and undetermined Polynesian *Compositæ*, which it would lead me too far to insert at this place. I may, however, remark, that there are at the British Museum some fine specimens of the Cichoraceous genus *Fitchia*, which were collected in Tahiti during Captain Cook's first voyage, and to which I alluded in *Bonplandia*, vol. x. p. 294. They are labelled, probably in Solander's handwriting, "*Bidens*, n. 15. Recept. paleaceum. Flores flavi. Frutex 10-pedalis. Habitat in summis montibus." Prof. Dana, as A. Gray states, also collected *Fitchia nutans* in Tahiti, and I believe that Cuming's specimens were likewise obtained there, and not in Elizabeth Island.

I. **Monosis**, DC. in Guillem. Arch. Bot. vol. ii. p. 515; Endl. Gen. n. 2220. Capitula 1-flora, distincta. Involuceri oblongi squamæ imbricatæ, obtusæ, flore multo breviores. Receptaculum punctiforme. Corollæ tubulosæ, 5-fidæ. Antheræ ecaudatæ. Stigmata longe exserta. Achenia glabra, teretiuscula. Pappus 2-3-serialis, setis rigidulis, scabris, æqualibus, v. æquilatis sed inæquilongis.—Suffrutices; foliis alternis, breviter petiolatis, obovato-cuneatis, acutiusculis, subintegerrimis, supra glabris, subtus cum petiolis ramisque tomentosis; paniculæ nudæ, ramis apice capitula, ∞ subumbellata, subsessilia, conferta gerentibus.

1. **M. insularum**, A. Gray in Proceed. Amer. Acad. vol. v.; fruticosa, laxè ramosa; foliis oblongis acuminatis repando-dentatis, basi cuneatis in petiolum attenuatis, puberulis, supra glabris, subtus ad costam venasque cum ramis adpresso-tomentellis; capitulis corymbosis; pappi setis rigidis vix denticulatis, majoribus apice clavellatis.—*Strobocalyx insularum*, Schultz-Bip. in xviii. et xix. Jahresbericht der Pollichia, p. 170.—Viti Islands, locality not recorded (U. S. Expl. Exped.). Also collected in the Tongan Islands (U. S. Expl. Exped.).

“A true congener of *M. Wrightiana*, DC., the type of the genus which stands in nearly the same relation to *Gymnanthemum* than De Candolle's section *Eremosis* does to *Vernonia*.” (A. Gray, l. c.)

Schultz-Bipontinus wishes to restore the genus *Strobocalyx*, distinguished by its caudate anthers, incorporating with it not only *Vernonia*, sect. v. of DC. Prodr. vol. v. p. 21, but also div. iv. *Bojeriæ*, DC.

II. **Ageratum**, Linn. Gen. n. 936; Endl. Gen. n. 2259. Capitulum ∞ -florum, homogamum, subglobosum. Involucri ∞ -phylli, imbricati; squamæ lineares, acuminatæ. Receptaculum nudum. Corollæ tubulosæ, 5-fidæ. Stigmata elongata, cylindræa, obtusiuscula. Achenia subpentagona, basi attenuata. Pappus paleaceus, paleis 5 subserratis, acuminatis, aristatis, vel 10 pectinato-ciliatis.—Herbæ ut plurimum annuæ; foliis oppositis, petiolatis, ovatis, dentatis; capitulis corymbosis; floribus cæruleis v. albis.

1. **A. conyzoides**, Linn. Spec. 1175; DC. Prodr. vol. v. p. 108; caule ramoso annuo; foliis longiuscule petiolatis ovatis rhombeis cordatisve, pappi paleis 5 basi dilatatis serrulatis apice longe aristatis corollam subæquantibus. Schkuhr, Handb. t. 238; Hook. Exot. Fl. t. 15.—Nomina vernac. Vitiensia, “Botebotekoro” et “Matamocemoce.” (The latter name signifies to kill sleep, i. e. to keep awake, but I have not been able to find out why this name was given.)—Common throughout Viti (Seemann! n. 267; Sir E. Home!). Also collected in Tana (Forster! Barclay!), Aneitum (M'Gillivray!), New Caledonia (M'Gillivray!), and Sandwich Islands (Macrae! Nuttall! Barclay! Seemann!). Common throughout the tropics.

III. **Adenostemma**, Forst. Char. Gen. 45; Endl. Gen. n. 2261. Capitulum ∞ -florum, homogamum. Involucri campanulati, flores vix æquantis, demum reflexi squamæ 1-seriatæ, foliaceæ, oblongæ. Receptaculum planum, nudum, foveolatum. Corollæ tubulosæ, fauce vix ampliata, limbo 5-lobo, infra lobos villosa. Stigmata longe exserta, apice dilatata, colorata. Achenia obovato-oblonga, subangulata. Pappi aristæ 3 v. 5, breves, rigidæ, glandula globosa v. clavata terminatæ.—Herbæ glanduloso-pilosæ v. glabriusculæ; foliis oppositis, petiolatis, ovatis v. rhomboideo-3-plinerviis, dentatis, capitulis pedunculatis, corymboso-paniculatis, floribus albis.—*Lavenia*, Swartz, Prodr. 112.

1. **A. viscosum**, Forst. Char. Gen. n. 45; Prodr. n. 284, et Icon. (ined.) t. 207; caule erecto pubescente aut glabro; foliis petiolatis oblongo-lanceolatis basi cuneatis grosse serratis; capitulis laxè paniculatis, pedicellis capitulo vix duplo longioribus; acheniis papuloso-scabris. DC. Prodr. vol. v. p. 111.—*Lavenia erecta*, Gaud. in Bot. Freyc. 470. excl. syn. *Lavenia glutinosa*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 294 et in Parkins. Drawings of Tahit. Plants (ined.) t. 77.—Common throughout Viti (Seemann! n. 262). Also collected in the Society Islands (Forster! Banks and Solander!) New South Wales, and the East Indian Archipelago.

IV. **Erigeron**, Linn. Gen. n. 951. excl. sp.; Endl. Gen. n. 2332. Capitulum ∞ -florum, heterogamum, floribus radii ∞ -seriatis, ligulatis, femineis, disci tubulosi, nunc omnibus hermaphroditis, nunc exterioribus femineis, centralibus hermaphroditis v. masculis. Involucri ∞ -seriati squamæ lineares, imbricatæ. Receptaculum nudum, foveolato-punctatum. Corollæ radii ligulatæ, ligula lineari, disci tubulosæ, limbo truncato-integerrimo v. sub-5-dentato. Antheræ ecaudatæ. Achenia in disco et radio conformia, compressa, erostris. Pappus conformis, 1-serialis, pilosus, scaber.—Herbæ v. rarius frutices; foliis alternis, integerrimis, dentatis v. lobatis, capitulis subhemisphæricis, disco flavo, radio albo, cæruleo aut purpurascendo rarissime ochroleuco.

1. **E. albidum**, A. Gray in Bonplandia, vol. ix. p. 36; herbacea, erecta, caule striato villosa v. glabriusculo; foliis sessilibus lineari-lanceolatis v. lanceolatis acuminatis integerrimis v. apice remote et grosse serratis canescenti-pubescentibus; panicula diffusa, parce foliosa, ampla, capitulis pedicellatis, invol. squamis 1-2-seriatis linearibus, acuminatis dorso pubescentibus v. glabris.—*Conyza albida*, Willd. ex Spreng. Syst. vol. iii. p. 514. *C. erigeroides*, DC. Prodr. vol. v. p. 378. *C. floribunda*,

H. B. K. Nov. Gen. Am. vol. iv. p. 73.—Nomina vernac. Vitiensia, “Wavuwavu” et “Co ni papalagi.”—Common in cultivated ground throughout Viti (Seemann! n. 261). Also collected in the Society Islands (Barclay!). Common in South America.

Judging from one of the vernacular names, “Co ni papalagi” (*i. e.* foreign weed), this plant has been introduced, probably from South America by way of Tahiti, where Barclay in 1840 collected it. It does not occur in the older collections. The dried stems tied in a bundle make capital torches. We used them when one night we descended Buke Levu, in Kadavu.

V. **Blumea**, DC. in Guill. Arch. Bot. vol. ii. p. 514; Endl. Gen. n. 2413. Capitulum ∞ -florum, heterogamum, floribus omnibus tubulosis, marginalibus ∞ -seriatis, femineis, centralibus paucis masculis. Involucri pauciserialis squamæ subimbricatæ, lineares, acuminatæ. Receptaculum planum, omnino nudum v. interdum tenuissime fimbriiferum, hirsutum. Corollæ tubulosæ, femineæ tenuissime filiformes, truncatæ v. obsolete 2–3-dentatæ, masculæ cylindricæ, fauce æquali v. vix dilatata, limbo 5-dentato. Antheræ basi tenuissime caudatæ. Achenia teretiuscula. Pappus 1-serialis, setis capillaribus, vix subscabris.—Herbæ v. suffrutices; foliis alternis caulibusque sæpissime villosis, capitulis paniculatis v. laxe corymbosis, floribus flavis v. purpurascensibus.

1. **B.** (§ **Apteræ**) **virens**, DC. in Wight, Contrib. p. 14; Prodr. vol. v. p. 439; caule herbaceo erecto tereti glabro ramoso; foliis rigidulis sessilibus utrinque sparsis puberulis, caulinis elongatis basi cuneatis sessilibus 3-fidis, lobis lanceolatis mucronatis regulariter serratis, terminali longiore, rameis obovatis basi cuneatis parce serratis; panicula laxa, pedicellis axillaribus folio longioribus 1–5-cephalis, capitulis pedicellatis; involucris squamis inter. linearibus disco longioribus mucronatis.—Viti Levu (Seemann! n. 272).

2. **B.** (§ **Apteræ**) **Milnei**, (sp. nov.) (Tab. XXVII.); Seem. in Bonplandia, vol. ix. p. 257; pube minime conferta vestita; caule suffruticoso erecto tereti ramoso; foliis ovalibus v. obovatis acuminatis in petiolum attenuatis serratis; panicula divaricata laxa ramis nudis apice subracemosis; involucris squamis linearibus acuminatis subrecurvis dorso puberulis, exterioribus brevibus, interioribus floribus paulo brevioribus, receptaculo fimbriifero; floribus fem. 3-dentatis, ovario hirsuto.—Interior of Viti Levu, on the road from Navua to Namosi (Milne! Seemann! n. 273).

A half-shrubby plant, about 4 feet high, allied to *B. aromatica*, DC., from which it differs principally in its dentated leaves. The lower leaves, one of which is figured at the back of our plate (Fig. 1), are often more than a foot long; towards the top of the plant the leaves gradually decrease in size. Flowers yellow. Pappus very light brown.

EXPLANATION OF PLATE XXVII.—Fig. 1, one of the lower leaves; 2, a capitulum; 3, scales of involucre and receptacle; 4, a male flower; 5, one of the setæ of the pappus; 6, a female flower; 7, top of the corolla of female flower:—*all magnified* with exception of Fig. 1.

VI. **Eclipta**, Linn. Mant. 157; Endl. Gen. n. 2446. Capitulum ∞ -florum, heterogamum, floribus radii 1-seriatis, ligulatis femineis, disci tubulosis, hermaphroditis. Involucris 2-seriatis squamæ ovato-lanceolatæ, acuminatæ. Receptaculum e plano convexum, paleis lineari-filiformibus, apice ciliatis, achenia æquantibus. Corollæ radii ligulatæ, ligula brevissima, angusta, disci tubulosæ, limbo 4-dentato. Antheræ ecaudatæ. Achenia radii 3-quetra, disci compressa, ad latera muricato-tuberculosa, apice mutica v. brevissime 1–3-denticulata, juniora ad apicem puberula. Pappus nullus.—Herbæ ramosæ, erectæ v. prostratæ, plus minus scabræ aut hirsutæ; foliis oppositis, penninerviis, integerrimis v. serratis, pedunculis axillaribus, solitariis geminis v. ternis, 1-cephalis, floribus albis.

1. **E. prostrata**, Linn. Mant. 286; DC. Prodr. vol. v. p. 490; Forst. Prodr. n. 302 et Icon. (ined.) t. 224; caule annuo prostrato aut adscendente adpresse strigoso ramulis subhirsutis; foliis ovali- aut oblongo-lanceolatis basi attenuatis subserratis subundulatis scabris; pedunculis 1–2 capitulo duplo triplove longioribus.—*Verbesina prostrata*, Linn. Sp. vol. ii. p. 1272. *Colula prostrata*,

Linn. Syst. vol. ii. p. 564.—Nomen vernac. Vitiense, "Tumadu."—Common throughout Viti (Seemann! n. 269). Also collected in Tana (Forster!).

VII. **Siegesbeckia**, Linn. Hort. Cliff. 412; Endl. Gen. n. 2451. Capitulum ∞ -florum, heterogamum, floribus radii 1-seriatis, ligulatis v. difformibus fœmineis, disci tubulosis, hermaphroditis. Involucri 2-seriati squamæ exteriores 5, lineari-spathulatae, patentes, pilis capitatis glandulosæ, interiores achenia radii semi-involventes, erectæ, dorso piloso-glandulosæ. Receptaculi plani paleæ ovali-oblongæ, achenia involventes. Antheræ ecaudatæ. Corollæ radii ligulatae, ligula plana v. irregulari, 2-3-dentata, disci tubulosæ, 5-fidæ, 5-andræ, v. 3-fidæ, 3-andræ. Achenia conformia, obovato-oblonga, subtetragona, introrsum subarcuata. Pappus nullus.—Herbæ erectæ, dichotomæ, superne glanduloso-pilosæ; foliis oppositis, sæpius in petiolum angustatis, ovato-triangularibus, grosse dentatis, subvillosis v. pilosis, pedunculis ex alis ramorum 1-cephalis subcorymbosis, floribus luteis.

1. **S. orientalis**, Linn. Sp. 1269; foliis ovatis basi cuneatis apice acuminatis grosse dentatis, summis oblongo-lanceolatis, involucri exter. squamis interiore duplo longioribus. Linn. Hort. Cliff. t. 23.—Common throughout Viti (Seemann! n. 263). Also collected in New Caledonia (M'Gillivray!), Tana (Barclay!), Society Islands (Banks and Solander! Forster! Barclay!), and Marquesas group (Barclay!). Diffused over the East Indies, China, and Australia.

VIII. **Wollastonia**, DC. ex Decaisne in Nouv. Ann. Mus. vol. iii. p. 414; Endl. Gen. n. 2502. Capitulum ∞ -florum, heterogamum, floribus radii 1-seriatis, ligulatis, femineis, disci tubulosis, hermaphroditis. Involucri 2-3-seriati squamæ exteriores oblongæ, foliaceæ, internæ minores, membranaceæ. Receptaculum planum v. convexum, paleatum. Corollæ supra ovarium articulatae, radii ligulatae, disci tubulosæ, limbo 5-dentato. Stigmata disci cono superata. Achenia crassa, obovata, turbinata v. compressa, apice umbilicata. Pappus nullus v. aristæformis, aristis 1 v. 5 tenuibus, rigidulis, deciduis.—Suffrutices v. rarius herbæ, *Wedeliæ* facie, sæpius hispidæ; foliis oppositis, breviter petiolatis, ovatis, acutis, triplinerviis, dentatis, pedicellis ad apices ramorum sæpius ternis 1-cephalis.

1. **W. strigulosa**, DC. in Decaisne, Nouv. Ann. Mus. vol. iii. p. 414; foliis longe petiolatis 3-nerviis aut prope basin 3-plinerviis ovatis acuminatis grosse serratis, supra sparse, subtus in nervis et petiolis striguloso-pubescentibus; pedunculis ad apices ramorum 2-3 subalternis, involucri squamis 2-serialibus ovato-lanceolatis acuminatis dorso striatulis puberulis.—*Verbesina strigulosa*, Gaud. in Freyc. Voy. Bot. p. 463. *Wedelia aristata*, Less. in Linnæa, 1831, p. 160. *Bupthalmum helianthoides*, Forst. Prodr. n. 304, non L'Hérit. Nomen vernac. Vitiense, "Kovekove."—Common on all the seabeaches of the Vitian Islands (Seemann! n. 268). Also collected in New Caledonia (M'Gillivray!), Medioburg and other Polynesian Islands (Forster!), Tongan Islands (Sir E. Home!), Wallis Island (Sir E. Home!), Tana (Barclay!), and Eromanga (M'Gillivray!).

There must exist some confusion in A. Gray's herbarium, or else that excellent botanist could not refer my n. 268, which is certainly identical with the authentic specimen of Forster's *Bupthalmum helianthoides*, and hence with *W. strigulosa*, DC., to *W. Forsteriana* (*Bupthalmum uniflorum*, Forst. Prodr. n. 541; *Wedelia Forsteriana*, Endl. Fl. Norf. p. 51), of which authentic specimens exist at the British Museum. Of *W. Forsteriana* I have not seen any specimens from Viti, but as it is a common seabeach plant in Norfolk Island (Forster!), the Isle of Pines (Sir E. Home!), and New Caledonia (M'Gillivray!), it may be expected to occur there. *W. strigulosa* is evidently a rather variable plant.

IX. **Bidens**, Linn. Gen. n. 932; Endl. Gen. n. 2541. Capitulum homogamum, discoideum, nunc heterogamum, floribus radii 1-seriatis, ligulatis, neutris, disci tubulosis, hermaphroditis. Involucri 2-seriati squamæ exteriores interioribus conformes v. dissimiles. Receptaculum planiusculum, paleatum. Corollæ radii ligulatae, disci tubulosæ, limbo 5-dentato. Stigmata cono brevi superata. Achenia plus minus obcompressa, aculeata, rostro ab achenio vix diverso superata, in aristas 2-5 re-

trorsum piloso-scabras producta.—Herbæ ut plurimum annuæ; caule 4-gono v. tereti, sæpius opposite ramoso, foliis oppositis, supremis interdum alternis, indivisis, partitis v. sectis, lobis incisus v. serratis, capitulis plerumque flavis rarius radio albo, rarissime corollis omnibus purpureis.

Bidens paniculata, Hook. et Arn. Bot. Beech. p. 66, from Tahiti, is probably identical with *Bidens lantanoides*, A. Gray in Proceed. Amer. Acad. vol. v., and certainly identical with *B. fruticosa*, DC. Prodr. vol. v. p. 596. n. 12; and *Coreopsis fruticosa*, Sol. Prim. Fl. Ins. Pacif. p. 296, from Tahiti, of which authentic specimens, agreeing with his description, are preserved at the British Museum. I subjoin Solander's detailed description:—

“COREOPSIS FRUTICOSA, Solander, Fl. Ins. Pacif. p. 296. Tahiti in collibus (Banks et Solander!), ‘Alha alha wau,’ Tahitensibus. Caules lignosi, sæpe humanæ altitudinis, ramosissimi, glabri, obtuse tetragoni. Rami axillares, divaricati, subherbacei; medulla copiosa, spongiosa. Folia opposita, petiolata, lanceolata, acuminata, serrata, serraturis æqualibus acuminatis, glabra, plana, alte viridia, digitum longa. Petioli foliis triplo vel quadruplo breviores. Flores parvi, toti lutei, paniculati. Paniculæ ramosissimæ, divaricatæ, multifloræ, terminales et ex apicibus ramulorum breviorum lateralium. Pedicelli filiformes, glabri, nudiusculi, raro foliolo subulato minuto instructi. Calyx communis oblongus, imbricatus: foliola lanceolata, numerosa, erecta exteriora quæ breviora apice parum dilatata. Corolla composita radiata: corollulæ hermaphroditæ numerosæ in disco; femineæ paucæ in radio. Propria hermaphrodita infundibuliformis, quinquentata, dentato-ovata. Propria feminea ligulata, calyce parum longior, late oblonga, obtuse emarginata; sinu dentibus duobus minutis prædito. Stamina, pistilla, et pericarpium generis. Semina hermaphroditis oblongo-linearibus, punctulata, subancipitia margine ciliis rigidis sursum versus exasperata, longitudine calycis (bilinearibus). Pappus, aristæ duæ, subulatae, breves, retrorsum ciliatæ; ciliis duriusculis. Receptaculum convexum, parvum, paleaceum. Paleæ oblongo-lineares, seminibus paulo breviores.” Forster's *Coreopsis fruticosa* I have not seen.

1. **B. pilosa**, Linn. Spec. 1166; caule annuo erecto subtetragono glabriusculo; foliis inferis impari-pinnatisectis, superis 3-sectis, omnium lobis glabriusculis ovatis acutis serratis vix decurrentibus, petiolis basi ciliatis, capitulis pedicellatis subcorymbosis discoideis, rarius radiatis, involucri squamis inter se et disco subæqualibus; acheniis lineari-angulatis glabriusculis 2-3-aristatis, exterioribus brevioribus aristis divergentibus, centralibus longioribus aristis rectis.—Common in cultivated and waste places all over Viti (Seemann! n. 270). Also collected in the Tongan Islands (Forster!), Kermadec Islands (M'Gillivray!), New Zealand, America, and Asia.

B. leucantha, Willd., is regarded by most authors, following Schultz-Bip., as a variety.

X. **Lagenophora**, Cass. in Bull. Soc. Phil. 1818, p. 34; Endl. Gen. n. 2351. Capitulum ∞ -florum, heterogamum, floribus radii 1-seriatis, ligulatis, fœmineis, disci tubulosis, hermaphroditis v. masculis. Involucri subbiseriati discum æquantis squamæ acutæ, basi coriaceæ, adpressæ, apice submembranacæ. Receptaculum planum, nudum. Corollæ radii ligulatæ, disci tubulosæ, limbo 5-fido. Antheræ ecaudatæ, subliberæ. Achenia radii plano-compressa, oblonga, rostro colliformi, disci abortiva. Pappus nullus.—Herbæ perennes, graciles; foliis radicalibus obovatis, in petiolum angustatis, dentatis; scapo squamato 1-cephalo, capitulorum disco luteo, radio albo v. purpureo. *Lagenifera*, Cass. in Bull. Soc. Philomat. 1816, p. 199.

1. **L. Pickeringii**, A. Gray in Proceed. Amer. Acad. vol. v.; foliis hirsutis primum villosolanatis oblongis ovalibusque in petiolum attenuatis repando-dentatis; scapo gracili nudo; involucri squamis linearibus fere glabris; acheniis radii oblongo-lanceolatis erostratis insigniter costatis glaberimis, disci sterilibus.—Mountains of the Macuata coast of Vanua Levu (U. S. Expl. Exped.).

“Amongst the largest species of the genus, the scape is 6-8 inches high, but the head is proportionally rather small, in fruit only 3 lines in diameter. The achenia are coarsely striated by 8 or 10 strong and salient ribs (in a manner unknown in other species), not beaked, but terminated by an epigynous disk about the size of the basal callus.”—A. Gray.

XI. **Dichrocephala**, DC. in Guill. Arch. Bot. vol. ii. p. 517; Endl. Gen. n. 2396. Capitulum ∞ -florum, heterogamum, floribus omnibus tubulosis, marginalibus ∞ -serialibus, femineis, centralibus

paucis abortu masculis. Involucris subuniserialis expansi squamæ ovatae, subæquales. Receptaculum conicum, nudum. Corollæ tubulosæ, marginis cylindricæ, obsolete 3-4-dentatæ, centrales fauce campanulata, limbo 4-dentato. Antheræ ecaudatæ. Stylus inclusus. Achenia compressa, erostria; marginalia pappo nullo, centralia abortiva; pappo 1-2-seto, brevissimo.—Herbæ annuæ, hirsutiusculæ v. subglabræ, ramosæ, adscendentes v. erectæ; foliis alternis, dentatis, cuneatis aut petiolatis, petiolo nudo v. appendiculato, capitulis globosis, parvis, in racemos v. paniculas dispositis, pedicellis propriis nudis brevioribus.

1. **D. latifolia**, DC. Prodr. vol. v. p. 372; caule annuo erecto sparse piloso; foliis obovatis in petiolum attenuatis grosse dentatis sæpe basi inciso-subpinnatifidis; ramis floridis ramosis subnudis; pedicellis rigidis divaricatis capitulo globoso longioribus.—*Cotula bicolor*, Sol. in Forst. Prodr. n. 540; Sol. Prim. Fl. Ins. Pacif. p. 295 (ined.), et in Parkins. Drawings of Tahit. Plants, t. 78 (ined.). *Grangea latifolia*, Lam. Ill. t. 699. f. 1. *Hippia bicolor*, Smith in Rees' Cycl. 18. n. 2.—Common all over Viti (Seemann! n. 264). Also collected in Tana (Forster!), and the Tongan (Captain Cook!), Society (Banks and Solander!), Marquesas (Barclay!), and Hawaiian Islands (Nelson!).

XII. **Glossogyne**, Cass. in Dict. Sc. Nat. vol. li. p. 475; Endl. Gen. n. 2566. Capitulum ∞ -florum, heterogamum, floribus radii 1-seriatis, ligulatis, femineis, disci tubulosi hermaphroditis. Involucris 2-seriatis squamæ breves, adpressæ. Receptaculum planum, demum convexum, paleolatum. Corollæ radii ligulatæ, disci tubulosæ, limbo 5-dentato. Stigmata disci elongata, hirta. Achenia linearia, angulata, aristis duabus retrorsum setosis.—Herbæ erectæ, basi interdum suffruticosæ, dichotomæ, nunc fruticosæ, pedunculis plurimis, nudis simplicibus; foliis alternis, ad collum confertis, brevibus, pinnatipartitis, lobis linearibus, acutis, integerrimis, summis paucis, parvis, linearibus, indivisis, capitulis erectis, ebracteatis, floribus luteis.

1. **G. tenuifolia**, Cass. DC. Prodr. vol. v. p. 632; radice subscapiformi perenni; caulibus dichotomis, achenii aristis erectis.—*Bidens tenuifolia*, Labill. Sert. Austr. Caled. p. 44. t. 45. *Bidens* sp., Forst. Herb. *Cosmos multicaulis*, D. Don in Herb. Mus. Brit.—Mountains of Vanua Levu (Seemann!). Also collected in New Caledonia (Forster!), and in the Marianne Islands (Gaudichaud).

XIII. **Myriogyne**, Less. in Linnæa, vol. iv. p. 219; Endl. Gen. n. 2702. Capitulum ∞ -florum, heterogamum, discoideum, floribus marginalibus 1-seriatis, femineis, centralibus paucis hermaphroditis. Involucrum expansum, subcampanulatum, floribus brevius, squamis subbiseriatis, ovatis æqualibus. Corollæ tubulosæ, femineæ limbo subintegerrimo, hermaphroditæ tubo brevissimo, limbo campanulato, 4-dentato. Antheræ ecaudatæ. Stigmata exappendiculata. Achenia conformia, angulata, exalata. Pappus nullus.—Herbæ ramosissimæ, acres, sternutatoriæ; foliis alternis, confertis, oblongo-ovatis, apice dentatis, capitulis globosis, parvis primum terminalibus, demum lateralibus, oppositifoliis, floribus luteis.

1. **M. minuta**, Less. in Linnæa, vol. vi. p. 219. Decumbens aut adscendens, glabriuscula aut apice subvelutina; foliis oblongis basi cuneatis apice serratis obtusiusculis aut subacutis.—*Cotula minuta*, Forst. Prodr. n. 301 et Icon. (ined.) t. 223. *Grangea minuta* et *cuneifolia*, Poir. Suppl. vol. ii. p. 825. *Cotula cuneifolia*, Willd. Sp. vol. iii. p. 2169. *Artemisia minima*, Thunb. Fl. Jap. p. 311, non Linn. *Grangea decumbens*, Desf. Hort. Par. 1804. *Dichrocephala minuta*, L'Hérit. mss. *Grangea*, Lam. Ill. t. 699; DC. Prodr. vol. vi. p. 139.—Island of Bau in Viti Levu (Seemann! n. 265). Also collected in New Caledonia (W. Anderson!), Society Islands, New Holland (Dallachy! Goodwin!). Common in India, China, Japan, New Zealand, and Mauritius.

XIV. **Sonchus**, Linn. Gen. n. 908, excl. sp.; Endl. Gen. n. 3003. Capitulum ∞ -florum, homocarpum. Involucris squamæ ∞ -seriatim imbricatæ. Receptaculum planum, epaleatum, foveo-

latum. Corollæ ligulatæ. Achenia uniformia, erostria, plano-compressa, transversim rugulosa, apice truncata. Pappus uniformis, ∞ -serialis, pilosus, setis basi fasciculatim connatis.—Herbæ polymorphæ, sæpius hirsutæ; foliis alternis, pinnatifidis; capitulis aggregatis, luteis.

1. **S. asper**, Vill. Delph. vol. iii. p. 158; radice fusiformi; caule ramoso; ramis umbellato-corymbosis; involucris glabris; foliis ovali-oblongis integris v. subruncinatis, caulinis basi cordatis, auriculis rotundatis; acheniis lævibus marginatis disci utrinque triaristatis.—Koch, Synop. Fl. Germ. ed. i. p. 433. *S. oleraceus*, var. γ et δ , Linn. Spec. 1117.—In cultivated and waste places throughout Viti (Seemann! n. 266). Also collected in the Tongan Islands (Barclay! G. Forster!) and New Zealand.

ORDO LIII. GOODENIACEÆ.

I. **Scævola**, Linn. Gen. n. 224; Endl. Gen. n. 3038. Calyx tubo ovato v. subgloboso, limbi 5-fidi laciniis æqualibus, interdum obsolete. Corolla supera, tubo hinc longitudinaliter fisso, genitalia exserente, limbi inde secundi 5-partiti laciniis alatis, conformibus, æstivatione induplicatis. Stamina 5, corollæ inserta; filamenta et antheræ apice interdum barbatae, liberae. Ovarium inferum, 2-loculare, rarius 4-loculare v. 1-loculare. Ovula in loculis solitaria, in ovario 1-loculari interdum bina, collateralia, e basi erecta, anatropa. Stylus simplex; stigmatis indusium imberbe. Drupa baccata v. exsucca, calycis limbo coronata v. nuda, umbilicata, 1-4-locularis. Semina in loculis solitaria, erecta. Embryo intra albumen tenue carnosum rectus; cotyledonibus carnosus, radícula brevissima, infera.—Suffrutices v. herbæ; foliis alternis v. rarissime oppositis, integris, sæpissime dentatis, pubescentibus adest simplicibus, floribus axillaribus v. in spicam foliatam dispositis, calycibus basi bibracteolatis, corollis albis cæruleis v. rarissime lutescentibus, alis laciniarum basi, rarius juxta totam longitudinem fimbriatis, fimbriis apice floccoso-ramosis, tubo intus villosus, ad faucem sæpe ramentifero.

In the British Museum herbarium are authentic specimens of *S. saligna*, Forst. Prodr. n. 505, from New Caledonia (Forster! W. Anderson!), which show that species, of which Forster published merely the name and native country, to be identical with *S. montana*, Labill. t. 42, non Gaud. This reduces the *Scævolas* of tropical Polynesia to nine, there being, besides those described below, (1) *S. gracilis*, Hook. fil. Linn. Proceed. vol. i. p. 129, from the Kermadec group (M'Gillivray!); (2) *S. coriacea*, Nutt., from the Hawaiian Islands (Dav. Nelson!); (3) *S. Gaudichaudi*, Hook. et Arn. (non *Gaudichaudiana*, Cham.), from the same group; (4) *S. Chamissoniana*, Gaud. Freyc. t. 82 (*S. Menziesiana*, Cham.), also from the Sandwich Islands (Menzies! Nelson! Barclay! Seemann!); and (5) *S. mollis*, Hook. et Arn., and (6) *S. glabra*, Hook. et Arn., both from the same native country.

1. **S. Koenigii**, Vahl, Symb. vol. iii. p. 36; fruticosa; axillis barbatis; foliis obovatis subrepandis utrinque ramisque glabris; pedunculis axillaribus dichotomis; calycis limbo 5-partito ovarii longitudinem æquante.—*S. Lobelia*, Linn. Herb., Ham. Trans. Linn. Soc. vol. xvii. p. 250. *S. lativaga*, Hance in Wlprs. Ann. ii. p. 1055. *Cerbera salutaris*, Lour. Cochin. vol. i. p. 168.—Common on the sea-beach of most of the Vitian Islands (Seemann! n. 275; Barclay!). Also collected in the Tongan (Forster! Capt. Cook!), Society (Banks and Solander!), and Sandwich Islands (Nelson! Barclay!). Common in tropical Australia, India, the Archipelago, and S. China (Seemann!).

2. **S. sericea**, Forst. Prodr. n. 504; fruticosa; axillis barbatis; foliis obovatis, repandis v. grosse crenatis, utrinque ramisque tomento molli vestitis; pedunculis dichotomis; floribus in dichotomiis pedicellatis; cymis corollisque tomentosus; calycis limbo 5-partito ovarii longitudinem æquante.—On the sea-beach. Also collected in the Tongan (U. S. Expl. Exped.), Samoan (U. S. Expl.

Exped.), and Sandwich Islands (Macrae!), and in Savage Island (Forster!), Kanala, New Caledonia (M'Gillivray!), and east coast of New Holland (R. Brown!).

Forster's original specimens have deeply-crenate or repand leaves, which, besides the hairy covering, at once distinguishes this species from the allied *S. Kœnigii*. Brown's and M'Gillivray's specimens also have this character pre-eminently; and it seems hardly safe to follow Bentham (Fl. Hongk. p. 198), in uniting *S. sericea* with the first six species of De Candolle's 'Prodromus.'

3. *S. floribunda*, A. Gray in Proceed. Amer. Acad. vol. v.; fruticosa, orgyalis; ramis puberulis mox glabratis, axillis vix barbatis; foliis lanceolato-oblongis, subspathulatis, submembranaceis, repando-dentatis, obscure penninerviis, glabris, basi attenuatis, sessilibus v. subpetiolatis; cymis ∞-floris ex axillis supremis et terminali thyrsum amplum efficientibus; calycis lobis ovatis oblongisve ovario brevioribus; corolla extus incana, lobis interne glabris oblongis; stylo glabro; indusio ciliato externe piloso.—Viti Levu, on the sea-beaches of the Southern coast (Seemann! n. 274; Storck! n. 896; Græffe! n. 41). Also collected in Viti by Harvey! and U. S. Expl. Exped.

ORDO LIV. ERICACEÆ.

This Order, including *Epacrideæ* as a suborder, is represented in tropical Polynesia by the genera *Vaccinium*, *Paphia*, *Cyathodes*, and *Leucopogon*. *Vaccinium* may be expected to occur in the Viti Islands, as we know of one species (*V. Macgillivrayi*, Seem.,*) from the New Hebrides, one (*V. cereum*, Forst. = *V. alaternoides*, Sol.)† from the Society Islands (Banks and Solander! Wiles and Smith! Nelson! Forster!), and two (*V. reticulatum*, Smith, = *V. cereum*, Cham. et Schlecht. et Hook. Icon. t. 87, and *V. penduliflorum*, Gaud. Freyc. t. 68) from the Hawaiian Islands (Nelson! Macrae! Menzies!). *Paphia* is confined to Viti. *Cyathodes* has been met with in the Society (*C. Pomaræ*, A. Gray, and *C. Tameiamehæ*, Cham., var. *Societatis*, A. Gray) and the Hawaiian Islands (*V. Douglasii*, A. Gray, and *C. Tameiamehæ*, Cham., and its numerous varieties). *Leucopogon* has as yet been found only in the western islands.

I. *Paphia*, (gen. nov.) Seem. in Journ. of Bot. 1864, p. 77. Calyx adnatus, tubo urceolato lævi, limbo 5-partito. Corolla infundibuliformis, 5 costata, laciniis 5 acutis. Stamina 10, distincta;

* *V. Macgillivrayi*, (sp. nov.) Seem. Journ. of Bot., 1864, p. 77; fruticosum, erectum; ramulis foliis pedunculis bracteis calycibus baccisque pruinosis demum viridibus; ramulis angulatis; foliis obovatis v. ellipticis acutis in petiolum brevem angustatis acute serratis; pedunculis axillaribus solitariis medio bibracteatis; bracteis linearibus acutis; calycis laciniis obtusis; corolla (alba) campanulata apice paulo constricta; bacca globosa.—Island of Aneitum, New Hebrides (M'Gillivray! in Mus. Brit.), collected in 1854. Differs from *V. cereum*, Forst., which it resembles in general look, in the glaucous bloom of the young parts of the plant, the shape of the leaves, the obtuse calyx-lobes, and the corolla less constricted at the mouth. Leaves thick, coriaceous, evergreen, $1\frac{1}{4}$ inch long, and $\frac{1}{4}$ of an inch broad, acute, but never acuminate.

† "*V. alaternoides*, Soland. Prim. Fl. Ins. Pacif. p. 250, et in Park. Drawings of Tahit. Plants, t. 43. Hab. in Tahiti locis montosis. Frutex altus, ramosissimus, erectus, totus glaber. Rami teretes. Ramuli secundum petiolos semidecurrentes angulati. Folia alterna, petiolata, ovata, acuta, serrata, serraturis glandulosis, glaberrima, supra saturate viridia, pulchre venulosa, subcoriacea, plana, sesquiuncialia, raro 2-uncialia. Petioli brevissimi, lineares. Pedunculi axillares, solitarii, teretes, 1-flori, foliis duplo breviores. Bracteæ 2, foliaceæ, paulo supra basin in singulo pedunculo, interdum lineari-lanceolatæ, vix bilineares, interdum multo majores, semper integerrimæ. Calyx 1-phyllus, subcampanulatus, 5-partitus; laciniæ ovatæ, acutæ, erectæ. Corolla 1-petala, alba, ovata, ventricosa, obsolete 5-gona, vix semiuuncialis, apice 5-fida; laciniæ oblongæ, obtusiusculæ, revolutæ, tubo triplo breviores. Filamenta 10, receptaculo ad basin corollæ inserta, subulata, corolla triplo breviora, simplicia. Antheræ erectæ, flavæ, lineari-oblongæ, longitudine filamentorum, bicornes seu apice bifidæ ibique dehiscentes, infra apicem exserentes aristas duas subulatas, breves, nunc erectas, nunc reflexas. Germen inferum, subrotundum, depressum, umbilicatum. Stylus filiformis, erectus, longitudine corollæ. Stigma simplex, crassiusculum. Bacca globosa, umbilicata, calyce coronata, lævis, 5-ocularis, matura obscure rubra vel forte cærulea. Semina ∞, circa conceptacula singuli loculamenti nidulantia. Quis expectat speciem genuinam hujus familiæ intra tropicos legere?"

filamenta subulata; antheræ 2-loculares, muticæ, in tubos duos apice liberos productæ, antice ad apicem foraminibus dehiscentibus, basi sursum curvatæ. Ovarium inferum, 5-loculare, ∞ -ovulatum, disco 10-gibbo limboque calycino coronatum. Stylus elongatus; stigma Bacca pulposa, ovato-oblonga, lævis, 5-locularis, ∞ -sperma.—Frutex 4–6-pedalis, ramis angulatis junioribus puberulis, foliis alternis ovato-ellipticis acuminatis in petiolum angustatis integerrimis v. denticulatis, pedunculis axillaribus solitariis pendulis medio bibracteatis, bracteis alternis ovato-lanceolatis ciliatis, floribus pulchris magnis (2 unc. long.), baccis purpurascensibus.

The corolla of this new and beautiful genus is somewhat like that of *Pentapterygium*, Klotzsch, but it is more decidedly funnel-shaped, and in this respect it also differs from *Epigynium*, to which I provisionally referred the plant from the fruiting specimens I collected. The fruit of *Paphia* differs from that of *Pentapterygium*, in being smooth, not 5-angular, and the anthers of my plant have at the base an appendix bent upwards. In the flowering specimen at my disposal, collected by Dr. Græffe, the stigma has been broken off.

1. **P. Vitiensis**, Seem. l. c. (Tab. XXVIII.)—*Epigynium* (?) *Vitiense*, Seem. in Bonplandia, vol. ix. p. 257; Viti App. p. 438.—Voma Peak, Viti Levu, 4000 feet above the sea (Seemann! n. 284). Viti Levu (Dr. Græffe! n. 45).

The first leaves of the growing branches are disproportionately small, linear-lanceolate, and toothed.

EXPLANATION OF PLATE XXVIII., representing *Paphia Vitiensis*, from specimens collected by Dr. Græffe and myself. Fig. 1, calyx and stamens; 2, 3, and 4, different views of stamens; 5, ovary and style; 6, cross-section of ovary:—all magnified.

II. **Leucopogon**, R. Brown, Prodr. 541; Endl. Gen. n. 42, 43. Calyx 5-partitus, 2-bracteolatus. Corolla hypogyna, infundibuliformis, limbi 5-partiti laciniis patentibus, plumoso-harbatis. Stamina 5, medio v. summo corollæ tubo inserta, inclusa; filamenta filiformia; antheræ dorso supra medium insertæ, ovatæ v. oblongæ, simplices. Discus hypogynus, cyathiformis, integer v. lobatus, interdum obsoletus. Ovarium 2–5-loculare, loculis 1-ovulatis; ovulis pendulis. Stylus simplex; stigma subcapitatum, sulcatum. Drupa baccata v. exsucca, nunc crustacea, 2–5-locularis. Semina in loculis solitaria, inversa.—Frutices; foliis sparsis v. interrupte confertis, spicis axillaribus v. terminalibus, rarius pedunculis axillaribus solitariis, 2- aut abortu 1-floris.

1. **L. Cymbulæ**, Labill. Austr. Caled. p. 36. t. 39; foliis oblongo-lanceolatis acuminatis obtusisve; spicis erectis, subterminalibus, folio brevioribus; bracteis ciliatis; drupis obovatis, 5-locularibus.—DC. Prodr. vol. vii. p. 745.—*Styphelia Cymbulæ*, Spreng. Cur. Post. p. 67.—Mountains of Kadavu (Seemann! n. 285), Aneitum, New Hebrides (M'Gillivray!). Also collected in New Caledonia (Labillardière).

Asa Gray thought the Vitian species distinct from the New Caledonian, but without comparing Labillardière's authentic specimens it is difficult to decide the point.

ORDO LV. MYRSINEÆ.

The typical *Primulaceæ*, of which this is merely a suborder distinguished by its baccate fruit,—for there are several shrubby *Primulaceæ*,—have not yet been met with in Viti, though we have in tropical Polynesia *Lysimachia decurrens*, Forst. Prodr. n. 65, Icon. (ined.) t. 56, from Tana (Forster!) and the Isle of Pines (M'Gillivray!); *Lysimachia Hillebrandi*, Hook. fil., from the Sandwich Islands; *Samolus litoralis*, R. Brown, from the Isle of Pines (M'Gillivray!); and *Lubinia pacifica*, Seem. sp. nov. in Herb. Mus. Brit., from the Isle of Pines (M'Gillivray!). The latter has quite the habit of *L. spathulata*, Vent.; spathulate, entire, dotted and membranaceous leaves, axillary solitary flowers, and calyx segments densely covered with black dots. The flowers seem to be white. Calyx segments ovate-oblong, acute.

I. **Mæsa**, Forsk. Plant. Arab. p. 66; DC. Prodr. vol. viii. p. 77. Calyx basi 2-bracteolatus, 5-lobus, lobis æstivatione 5-cunciali, 2 exterioribus, 3 interioribus. Corolla 5-fida, subcampanulata;

lobis obtusis, æstivatione lobo unico exteriori, altero interiori, tribus mediis margine imbricato convolutis omnibus obtusis apice inflexis. Stamina 5, inclusa, libera; filamentis filiformibus; antheris ovoideo-sphæricis, cordatis, 2-ocularibus, filamentis brevioribus. Pollen (siccum) ellipsoideum. Ovarium calyci adnatum, nunc in flore semisuperum, placentâ basilari intra tubum calycis. Stylus brevis. Stigma capitatum, sæpius obsolete 3-4-5-lobum, lobis nunc 5 distinctis, lobis calycinis oppositis. Ovula ∞ . Bacca calyce obtecta, ovoidea. Semina ∞ , turbinato-angulosa, superne complanata, areolis per maturationem excepta materia resinosa ellipsoidea evanidis. Frutices v. arbores sæpius hermaphroditæ; foliis alternis, venis sæpe creberrimis reticulatis, parenchymate nunc pellucide punctato; racemis axillaribus v. rarius terminalibus, simplicibus v. basi compositis, ∞ -floris; floribus parvis albidis; bracteis basi pedicellorum persistentibus minimis, bracteolis flori adpressis angustioribus.—*Bæobotrys*, Forst. Gen. t. 11. *Siburatia*, Pet. Thou. Gen. nov. Madag. p. 12.

1. **M. Pickeringii**, A. Gray in Proceed. Amer. Acad. vol. v.; foliis lato-lanceolatis oblongisve subintegerrimis mox glabris, nascentibus ramulisque pilosulis; racemis axillaribus simplicibus rariusve compositis gracilibus; calyce bracteisque ovato-subulatis hirsutis, lobis ovatis acutis corollæ tubum subæquantibus; drupis ovoideis.—Viti Levu (U. S. Expl. Exped.).

Differs from *M. nemoralis* in the hairy pubescence of the inflorescence, especially of the calyx, narrower leaves, smaller flowers, and narrower and acute bracts and bractlets. The latter species is completely glabrous, with the bracts, bractlets, and calyx-lobes (especially the latter) broadly ovate and obtuse.

2. **M. nemoralis**, DC. Prodr. vol. viii. p. 79; foliis obovatis obtusis membranaceis margine revolutis undulatis remote subdenticulatis; racemis compositis petiolo sublongioribus glabriusculis; bracteis ovato-acutis pedicello brevioribus bracteolisque late ovatis flori adpressis subciliatis, lobis calycinis ovatis erectis; corolla tubulosa calyce vix duplo longior 5-fida lobis ovatis.—*Bæobotrys nemoralis*, Forst. Gen. t. 11; Prodr. n. 97. Icon. (ined.) t. 53. *Coccoloboides*, Sol. mss. Nomen vernaculum Vitiense, "Vorovorokuro."—Narai (Milne!), Taviuni (Seemann!) and Viti Levu (Seemann! n. 286; Milne!). Also collected in the Tongan Islands (Capt. Cook! U. S. Expl. Exped. Harvey!), Tana (Forster! W. Anderson!), Aneitum (M'Gillivray!), Eromanga (M'Gillivray!), Solomon group (Milne!), and New Caledonia (Sir E. Home!). The United States Exploring Expedition found it in the Samoan group.

3. **M. Vitiensis**, (sp. nov.) Seem.; glabra; foliis ellipticis integerrimis acutis, venis primariis 4-5; racemis axillaribus simplicibus folio multo brevioribus, fere ad rectangulum exeuntibus, floribus parvis; bracteis bracteolis calycisque lobis ovato-acutis; corollæ tubo calyce paullo longiori; drupis ovatis longiuscule pedicellatis.—Macuata coast of Vanua Levu (Seemann! n. 287; Harvey!).

This is very near *M. persicæfolia*, A. Gray, but the leaves are longer (3-3½ inches long, about 1 inch broad), and of thicker texture, the primary veins much more ascending, and the pedicels are longer (*i. e.* as long as the calyx-tube).

4. **M. persicæfolia**, A. Gray in Proceed. Amer. Acad. vol. v.; glabra; foliis lato-lanceolatis integerrimis, venis transversis; paniculis axillaribus folio sub-brevioribus; floribus parvis; bracteis bracteolis calycisque lobis ovato-acutis; corollæ tubo campanulato calyce paullo longiori; drupis ovoideo-globosis brevissime pedicellatis.—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.).

5. **M. corylifolia**, A. Gray in Proceed. Amer. Acad. vol. v.; foliis ovatis cordatis repandodentatis cum ramis paniculisque (terminalibus et axillaribus folium adæquantibus) dense mollissime pubescentibus superne mox glabratis; pedicellis flore haud longioribus; bracteis bracteolisque ovato-subulatis parvis; calycis lobis triangulari-ovatis villosis tubum corollæ brevi-campanulatæ fere æquantibus; drupis ovoideis puberis.—Mountains of the Macuata coast of Vanua Levu (Seemann! n. 288; U. S. Expl. Exped.), Gau and Ovalau (Milne!).

II. **Myrsine**, Linn. Gen. n. 269; DC. Prodr. vol. viii. p. 92. Flores polygami-dioici, 4-5-meri. Calyx-4-5-fidus. Corolla 4-5-partita; lobis æstivatione imbricato-subquincunciali, 2 exterioribus, 2-3 interioribus, aut rarius valvari. Stamina libera, corollâ nunc longiora. Filamenta brevissima, basi corollæ inserta. Antheræ 2-loculares, erectæ, lanceolatæ, glanduloso-acutæ, basi subbilobæ, filamentis multo longiores, loculis longitudinaliter a basi versus apicem dehiscentibus. Pollen (siccum) sphæricum. Ovarium globosum. Stylus cylindricus, brevis, caducus. Stigma capitatum, papillosum, irregulariter lobatum v. fimbriatum. Placenta sphærica, apice frequenter depressa. Ovula 4-5 circa verticem placentæ, peltatim amphitropa. Drupa pisiformis, putamine crustaceo, abortu 1-sperma.—Frutices v. arbusculæ; foliis alternis, coriaceis, integris v. rarius dentatis; fasciculis florum axillaribus; bracteis imbricatis, caducis; floribus breviter pedicellatis, sæpe in eadem plantâ 4-5-andris, parvis, masculis majoribus; lobis calycinis minimis, sæpe inæqualibus; laciniis corollæ alabastro inflexis; stigmatibus in fl. fœmineis nonnunquam magno colorato.—*Rapanea*, Aubl. Guian. vol. i. p. 121. *Manglilla*, Juss. Gen. p. 151. *Caballeria*, Ruiz et Pav. Prodr. p. 32. *Athruphyllum*, Lour. Fl. Cochinch. p. 148. *Suttonia*, A. Rich. Fl. Nov. Zel. p. 349. t. 38.

Besides the species enumerated below, there are in tropical Polynesia *M. Gaudichaudii*, DC., from the Sandwich Islands; *M. Lessertiana*, DC., from the Sandwich Islands (Capt. Cook! Hillebrand!); *M. Sandwicensis*, DC., from the same group of islands (Capt. Cook! Macrae! Hillebrand!); and *M. Taitensis*, A. Gray, from the Society Islands.

1. **M. crassifolia**, R. Brown, Prodr. p. 534; DC. Prodr. vol. viii. p. 96; glabra; foliis obovatis ovalibusve coriaceis petiolatis; fasciculis 4-5-floris, floribus subsessilibus 4-andris, dentibus calycinis ovatis subciliatis; corollæ lobis obtusis recurvis dentibus calycinis duplo majoribus, antheris erectis corollæ brevioribus.—Viti Levu and western side of Vanua Levu (Seemann! n. 289). Also collected in Norfolk Island and east coast of New Holland (R. Brown!).

As far as my specimens go, they agree perfectly with the Norfolk Island and Australian plant.

2. **M. myricæfolia**, A. Gray in Proceed. Amer. Acad. vol. v.; glaberrima; foliis subspathulatis seu oblongis basi cuneatis in petiolum attenuatis integerrimis apice sæpius retusis utrinque crebre punctulatis, venis vix perspicuis; floribus tetrameris sessilibus; calycis lobis lato-ovatis obtusissimis; corolla 4-partita; drupis globosis.—Kadavu (Seemann! n. 290). Also collected in the Society Islands.

Drupe sessile or nearly so, by which this species may be distinguished from any form of *M. capitellata* (including *neriifolia*, *Korthalsii*, etc.), but the discrimination of some forms of this from *M. crassifolia* may be more difficult.

3. **M. (?) Brackenridgei**, A. Gray, l. c.; glabra; foliis petiolatis membranaceis oblongis utrinque acutis vel acuminatis margine integerrimis vel undulatis; pedicellis filiformibus fructu globoso 3-5-plo longioribus; calyce 5-lobo, lobis rotundis ciliatis.—Mountains of Ovalau (U. S. Expl. Exped.).

III. **Ardisia**, Swartz, Prodr. p. 48; Fl. Ind. Occ. vol. i. p. 467. t. 10; DC. Prodr. vol. viii. p. 120. Calyx 5-partitus v. rarius 5-fidus, lobis æstivatione sinistrorsum convolutis, plerumque subciliatis. Corolla 5-partita v. rarius 5-fida; lobis patentibus v. reflexis, æstivatione sæpius sinistrorsum, in unicâ specie dextrorsum, convolutâ, lobo 1 exteriori, rarius valvari. Stamina 5, basi v. tubo corollæ inserta. Filamenta libera, plerumque brevissima. Antheræ liberæ, erectæ, basi emarginatæ v. 2-fidæ, sæpius 3-angulari-acuminatæ, plerumque filamentis longiores. Loculi rimâ longitudinali ab apice versus basim dehiscentes, interne non subdivisi, marginibus rarissime extus revolutis. Pollen (siccum) plerumque sphæricum. Ovarium rotundatum, 1-loculare. Stylus filiformis, apice subulatus. Placenta centralis, sphærica. Ovula ∞ , sæpius 6-12, peltatim amphitropa. Drupa globosa, externe subcarnosa, plerumque glabra, interne coriacea dura. Semen unicum.—Arbores, frutices

v. suffrutices; foliis alternis, rarissime oppositis v. ternatis, punctatis, breviter petiolatis, integris v. serratis; floribus paniculatis aut rarissime racemosis, pedunculis terminalibus v. axillaribus, pedicellis apice pedunculorum sæpius umbellulatis, corollis albis v. roseis, frequenter punctatis; drupis sæpius purpureis.—*Anguillaria*, Gærtn. Fruct. vol. i. p. 372. t. 77. f. 1 (excl. spec. prim.). *Bladhia*, Thunb. Nov. Gen. pars i. p. 6. *Pyrgus*, Lour. Fl. Cochinch. p. 148.

The British Museum collections contain a fine new species of this genus, discovered by M'Gillivray in Captain Denham's Expedition. In leaf it resembles my *A. grandis*, but is at once distinguished by its scrobiculato-asperous branches, etc. I have named it *Ardisia scrobiculata* (sp. nov.) Seem. mss. in Herb. Mus. Brit.; ramis paniculis calycibusque scrobiculato-asperis; foliis ad apicem ramorum crassorum congestis obovato-spathulatis ultra pedalibus crasse coriaceis integerrimis supra nigro-punctatis; paniculis amplis, bracteis spathulatis membranaceis deciduis, calycis laciniis ovatis acutis, corollæ lobis ovato-oblongis æstivatione imbricatis.—Aneitum (M'Gillivray!), and New Caledonia (Vieillard! n. 397). Deplanche's, n. 29, also from N. Caledonia, is very close to this species.

1. **A. grandis**, (sp. nov.) Seem. in Bonplandia, vol. ix. p. 259 (Tab. XXIX.); glabra; foliis ad apicem ramorum crassorum congestis oblongo-linearibus obtusis v. acutis, ultra-pedalibus v. 3-pedalibus, crasse coriaceis integerrimis basi in petiolum crassum angustatis; paniculis axillaribus ∞-floris; calycis lobis ovatis acutis ciliatis; corollæ lobis ovatis v. obovatis obtusis æstivatione imbricatis; drupis globosis apiculatis.—Ovalau (Seemann! n. 293).

A very fine species, the largest leaves sometimes 3 feet long, and 4-6 inches broad. Flowers white.

EXPLANATION OF PLATE XXIX., representing *Ardisia grandis* from specimens collected by me. Fig. 1, an entire flower; 2, corolla laid open; 3, pistil; 4 and 5, sections of ovary; 6, ripe fruit; 7, a drupe; 8, cross-section of fruit:—all, with exception of Fig. 6, magnified.

2. **A. (?) capitata**, A. Gray in Proceed. Amer. Acad. vol. v.; arborea? glabra; foliis ad apicem ramorum crassorum congestis obovato-spathulatis ultrapedalibus subcoriaceis integerrimis reticulato-venulosis basi in petiolum brevem crassum angustatis; pedunculis axillaribus compressis simplicissimis capitulum strobilaceum gerentibus; bracteis magnis squamaceis persistentibus.—Ovalau (U. S. Expl. Exped.).

A. grandis, Seemann, considerably resembles this in foliage, but has thyrsoid panicles.

3. **A. Storckii**, (sp. nov.) Seem.; glabra (v. ramulis nascentibus ferrugineo-tomentellis?); foliis oblongo-lanceolatis acuminatis integerrimis, basi acutis inæquilateris; cymis axillaribus petiolo brevioribus, pedicellis filiformibus; calycis lobis ovatis obtusissimis; corollæ lobis ovatis acuminatis æstivatione imbricatis.—Viti Levu and Ovalau (Seemann! n. 292; Storck! n. 897).

Blade of leaf 5-6 inches long, 1-1½ inches broad. Petiole ½-1 inch long.

4. **A. Vitiensis**, (sp. nov.) Seem.; glabra; foliis brevipetiolatis ovalibus acuminatis basi acutis submembranaceis dentatis; cymis axillaribus paucifloris petiolo longioribus; calycis lobis ovatis obtusis; corollæ lobis ovatis longe acuminatis æstivatione imbricatis.—Viti Levu (Seemann! n. 291).

Petioles 6 lines long. Blade of leaf 3½-4 inches long, 1-1½ inches broad.

ORDO LVI. SAPOTACEÆ.

This Order is represented in tropical Polynesia by the genera *Sapota* (with five species), *Mimusops* with one species (i. e. *M. dissecta*, R. Brown, Forst. Icon. (ined.) t. 105) from the Tongan Islands (Forster!), and *Bassia* with two species, viz. *B. Amicorum*, A. Gray, from the Tongan Islands (Forster! D. Nelson!), and *B. obovata*, Forst., from the New Hebrides (Forster!). There are, besides the doubtful *Isonandra* (?) *Richii*, A. Gray, from the Tongan Islands (U. S. Expl. Exped.), which may perhaps prove identical with *Mimusops dissecta*, and three undescribed species, preserved at the British Museum, one from New Caledonia (W. Anderson!), one from the Isle of Pines (Sir E. Home!), and one from the Tongan Islands (Capt. Cook!).

I. **Sapota**, Plum. Gen. p. 43. t. 5; DC. Prodr. vol. viii. p. 173. Sepala 6-5, ovata, obtuse imbricata, in præfloratione juniore 1 exterius 2-3 intermedia, postea 2 exteriora et 3-4 interiora. Corolla tubuloso-campanulata, a medio v. supra 6-5-loba, lobis in æstivatione 1 exteriori, 1 interiori. Appendices (stamina sterilia e pluribus) lanceolatae v. lineari-lanceolatae, tubo corollae insertae, cum lobis alternantes. Appendices interiores nullae. Stamina fertilia 6-5, lobis corollae opposita, tubo infra appendices inserta, inclusa; filamentis complanato-subulatis; antheris extrorsis, erectis, 2-locularibus, longitudinaliter dehiscentibus. Pollen late ellipsoideum v. elliptico-tetragonum. Ovarium ovoideum, pilosum, loculis 12 v. 6 v. rarius 5-4? Stylus cylindraceus, glaber. Stigma indivisum, obtusiusculum, inclusum. Ovula in loculis solitaria, adscendentim anatropa, ad basim angulo interiore sita. Bacca abortu pauci- v. 1-locularis. Semina nucamentacea, suberecta, a latere compressa, elongata, angulo interno v. basi usque ad mediam partem sulcato. Testa nitida. Endopleura tenuis. Albumen carnosum. Embryo centralis, rectus; radiculâ inferâ; cotyledonibus planis, subfoliaceis, ovatis, radiculâ multo majoribus.—Arbores lactescentes, ramis nonnunquam spinosis; foliis alternis, integerrimis, coriaceis, petiolis limbo brevioribus; floribus axillaribus v. apice ramorum subumbellatis; pedicellis petiolo non longioribus; baccâ sæpius maximâ, carnosâ, sub finem maturationis eduli.—*Achras*, P. Browne, Jam. p. 200.

This genus is represented in Norfolk Island (Backhouse! Cunningham! Bauer!) by *S. costata*, DC. (*Achras costata*, Endl.), in the Hawaiian Islands (Hillebrand!) by *S. Sandwichensis*, A. Gray, and in Wallis Island by a species collected by Dr. Græffe (his n. 40), which may prove identical with the Vitian *S. (?) pyrulifera*, A. Gray; but as the Wallis Island plant wants the fruit, and the Fijian the flowers, identification must be postponed. Græffe's specimen has pentamerous flowers, obovate apiculate corolla-lobes, linear staminodia, almost sessile ovate anthers, and a villose ovary. In leaf it agrees tolerably well with the description of the Fijian plant.

1. **S. (?) pyrulifera**, A. Gray in Proceed. Amer. Acad. vol. v.; glabra; foliis oblongo-lanceolatis utrinque subacuminatis pallidis subcoriaceis tenuiter transversim venosis (3-5 poll. longis); calyce 5-partito; fructu pyriformi parvo (semipollicari) pedunculo paullo longiori semine 1 obovato turgido repleto.—Ovalau (U. S. Expl. Exped.).

2. **S. (?) Vitiensis**, A. Gray in Proceed. Amer. Acad. vol. v.; glabra; foliis oblongis seu obovato-oblongis obtusis v. retusis subcoriaceis reticulatis (6 poll. longis) basi in petiolum longiusculum attenuatis; fructu sessili globoso 3-4-spermo (pollicem diametro).—Ovalau, on the coast (U. S. Expl. Exped.).

3. **S. sp.**; species indescripta a cl. A. Gray indicata.—Vanua Levu (U. S. Expl. Exped.).

The materials at A. Gray's disposal were wholly insufficient for determination.

ORDO LVII. EBENACEÆ.

Represented in tropical Polynesia by two genera, *Diospyros* (*D. Samoënsis*, A. Gray, from the Samoan Islands, where it was collected by the United States Exploring Expedition), and *Maba*, with at least four species, two of which (*M. Sandwichensis*, DC., and *M. Hillebrandii*, Seem.), are confined to the Hawaiian Islands. *M. Sandwichensis* was collected by Hillebrand! Seemann! Nuttall! Lay and Collie! *M. Hillebrandii* was discovered by Dr. Hillebrand in Oahu (his n. 274), and is a well-marked new species (glabra; foliis brevissime petiolatis ovato-oblongis v. oblongis obtusis basi subcordatis v. rotundatis, supra crebre reticulatis; lobis calycinis triangularibus acutis; baccis oblongis sessilibus).

I. **Maba**, Forst. Gen. p. 121. t. 61; DC. Prodr. vol. viii. p. 240. Flores dioici. Calyx semitridus v. 3-fidus, cupuliformis. Corolla urceolata v. campanulata, 3-fida; lobis æstivatione sinistrorsum convolutis. Masc.: Stamina 3 v. 6, interdum 9 (alternis tunc basi filamentorum connexis) v.

12 per paria basi connata, hypogyna, pistilli rudimento piloso basi accreta; filamentis gracilibus, antheris linearibus, sæpius apiculatis, lateraliter dehiscentibus, polline late ellipsoideo. Femin.: Stamina 0. Ovarium 3-loculare, hirsutum, loculis 2-spermis. Stigma 3-partitum. Bacca ellipsoidea, raro globosa, lævis, 3-2-locularis, carne parcâ. Semina abortiente ovulo altero sæpius in loculis solitaria, pendentia, oblonga, prope basim transversim sulcata, nigricantia.—Arbores v. frutices; foliis alternis, parvis, integris; floribus solitariis geminisve, axillaribus, parvis, subsessilibus; corollâ extus plerumque pilosa, pilis longis albidis medio loborum præcipue densis; filamentis antheras longitudine subæquantibus.—*Ferreola*, Roxb. Cor. vol. i. p. 35. t. 45.

1. **M. foliosa**, Rich, mss. ex A. Gray in Proceed. Amer. Acad. vol. v.; foliis confertis lato-ellipticis utrinque rotundatis basi cordatis brevissime petiolatis glabratis (pollicaribus v. sesquipollicaribus), novellis cum ramulis fructibusque olivæformibus ferrugineo-tomentulosis; pedunculis fructiferis brevibus 1-3-floris; calyce 3-lobo.—Mountains of Ovalau, and Macuata coast of Vanua Levu (U. S. Expl. Exped.).

2. **M. elliptica**, Forst. Char. Gen. 61; Prodr. n. 366.; Icon. (ined.) t. 267; DC. Prodr. vol. viii. p. 240; ramulis foliisque recentissimis hirsutis demum glabratis fuscis; foliis ellipticis obtusis basi acutis coriaceis margine revolutis; pedunculis 3-5-floris petiolo duplo triplove longioribus; calyce piloso, lobis ovato-rotundatis, staminibus 3; bacca (rubra) ellipsoidea.—*M. rufa*, Labill. Sert. Austr. Caled. p. 33. t. 36?—Kandavu, Vanua Levu, and other Islands of Viti (Seemann! n. 295, 296, 297, Storck! n. 298). Also collected in the Tongan Islands (Forster! Capt. Cook! Harvey! Matthews!), Isle of Pines, and New Caledonia (Labillardière!).

I suspect that *M. rufa* of Labillardière is merely a form of Forster's *M. elliptica*. I have seen specimens which have the foliage of the common form of *M. elliptica*, together with the shape of the fruit deemed peculiar to *M. rufa*, and *vice versâ*. Whether *M. major*, Forst. Plant. Escul. p. 21, is a synonym of *M. elliptica* cannot be determined from the materials at hand. There are no authentic specimens of it at the British Museum, unless what is marked "*Maba Andersonii*—Arbor—Tongan Islands (Capt. Cook!)," and has very large leaves, should prove to be that plant. My nos. 295, 296, and 297, and Storck's n. 898, might be distinguished as a variety *glabrescens* of *M. elliptica*, as the nascent branches very quickly become glabrous.

ORDO LVIII. STYRACEÆ.

I. **Symplocos**, Jacq. Amer. p. 166. t. 175. fig. 68; DC. Prodr. vol. viii. p. 246. Calyx 5-fidus, lobis æstivatione quincunciali, post anthesin erectis, sæpius ciliatis. Corolla vix gamopetala, petalis 5 1-serialibus vel rarius 10 2-serialibus, basi parum connatis, ex staminibus interne adnatis potius coalitis, tubo brevissimo vel lobos æquante, lobis patentibus æstivatione 5-unciali. Stamina imo corollæ inserta, 15-∞; nunc pentadelpa, adelphiis cum lobis corollæ alternantibus; nunc polyadelpa; nunc 1-serialia, sublibera, ubi lobis corollæ alterna majora; sæpius monadelpa, 3-4-serialia, exterioribus nempe in monadelpa longioribus, tubo staminum plus minus longo corollæque accreto. Filamenta filiformia vel ligulata et apice constricta. Antheræ ovoideo-globosæ, filamentis multo minores, 2-loculares, longitudinaliter dehiscentes, loculis pariete subdivisis. Pollen late ellipticum, subglobosum, in aqua globosum, læve, exsiccatione corrugatum. Ovarium inferum vel semi-inferum, 5-2-loculare, loculis lobis calycinis (ubi isomeri) oppositis. Ovula 2-4 ex angulo superiore cujusque loculi pendentia, anatropa. Glandulæ interdum ovario insidentes. Stylus filiformis, glaber vel pilosus. Stigma capitellatum, simplex et trigonum, vel 5-3-partitum. Bacca calycis limbo coronata, ellipsoidea, raro subglobosa, 5-3-locularis, 4-2 loculis sæpe abortientibus,

pericarpio intra calycem carnosulum indurato incrassato, axi centrali perforato. Semina in loculis persistentibus solitaria, elongata, plerumque pendentia, nunc (in *S. spicata*) pressione pericarpium et brevitate fructus obliqua, imo circa axim horizontaliter convoluta. Spermodermium tenue. Albumen copiosum. Embryo axilis, orthotropus, cylindræus, longitudine albuminis. Radicula elongata, umbilicum spectans. Cotyledones brevissimæ.—Arbores vel frutices; foliis alternis, nunc serratis vel crenulatis, in herbario frequenter lutescentibus; racemis axillaribus, sæpius multifloris, bracteatis, nunc brevissimis; floribus sessilibus vel pedicellatis, articulo insertis, bracteolatis; corollæ sæpius lutea, nunc alba vel rubra.—*Eugenioides*, Linn. Fl. Zeyl. p. 192. *Bobu*, Adans. Fam. vol. ii. p. 11, *Bobua*, DC. Prodr. p. 23. *Alstonia*, Linn. Suppl. p. 264, non R. Brown, nec Scop. *Hopea*, Linn. Mant. p. 105, non Roxb. *Ciponia* v. *Siponima*, Aubl. Guy. vol. i. p. 567. t. 226. *Decadia*, Lour. Fl. Cochinch. p. 385? *Barberina*, Vell. Fl. Flum. vol. iv. t. 117. *Stemmatosiphum*, Pohl, Bras. vol. ii. p. 87. t. 157-159.

1. **S. (*Hopea*) *spicata***, Roxb. Fl. Ind. ed. 1832. vol. ii. p. 541; foliis oblongo-lanceolatis, acutis serratis v. subintegerrimis glaberrimis; racemis axillaribus compositis glabriusculis; bracteis ovatis obtusis brevissimis; floribus sessilibus; calyce patente 5-fido, lobis ovatis obtusis glabris; drupa urceolata.—DC. Prodr. vol. viii. p. 254.—Nomen vernac. Vitiense, "Ravu levu."—On the coast of Viti Levu (Seemann! n. 294). Also collected in Aneitum, New Hebrides (M'Gillivray!). Common in the East Indies and Ceylon.

In the Fijian and New Hebrides form the foliage turns yellowish in drying.

ORDO LIX. JASMINEÆ.

The allied Order, or rather suborder of *Jasmineæ*, *Oleaceæ*, is represented in tropical Polynesia by *Olea Vitiensis*, Seem., *O. apetala*, Vahl, a native of Norfolk Island, and *O. Sandwichensis*, A. Gray, from the Hawaiian group. I may add that the genus *Schrebera*, Roxb., which De Candolle, Prodr. p. 674, refers to *Jasmineæ* (having nothing to rely upon except Roxburgh's figure and description), I hold to be identical with *Nathusia*, which that same author correctly places in *Oleaceæ*, as pointed out by me, 'Journal of Botany' (1864, p. 357). There are in Africa species with single and compound leaves.

1. **Jasminum**, Tournef. Inst. p. 597. t. 368; Linn. Gen. n. 17; DC. Prodr. vol. viii. p. 301. Calyx campanulatus, 5-8-lobus, dentibus nunc brevibus, nunc subulatis. Corolla hypocraterimorpha; tubo tereti; limbo plano, 5-8-partito; lobis obliquis, per æstivationem contortis. Stamina 2, tubo adnata, inclusa. Ovarium 2-lobum. Stylus simplex, apice 2-lobus. Bacca didyma, loculis 1-spermis (in *J. dispermo* solum dispermis). Semina erecta, exalbuminosa.—Frutices, dumosi aut scandentes; foliis oppositis, rarius alternis, omnibus compositis; petiolo nunc medio articulato et foliolum unicum gerente, nunc foliola plura numero imparia 3-7 gerentia et tunc ideo folium trifoliolatum aut imparipinnatum; paniculis pauci- aut multifloris; corollis flavis aut albis, sæpe extus rubentibus.—*Nyctanthes*, Lour. Fl. Cochinch. vol. i. p. 25.

1. **J. tetraquetrum**, A. Gray in Proceed. of the Amer. Acad. vol. v.; glabrum, erectum; foliis oppositis 1-foliolatis, articulo petioli obscuro, foliolo ovato-lanceolato seu ovato-acuminato basi acutiuscula 3-nervi; pedunculis brevibus paucifloris; calyce fructifero 4-ptero, alis angustis deorsum in pedicellum longe clavatum decurrentibus sursum in dentes lineari-subulatos verticales tubum 2-3-plo superantes productis.—Mountains of the Macuata coast of Vanua Levu (U. S. Expl. Exped.).

2. **J. australe**, Pers. Ench. vol. i. p. 8; glabrum, læve, ramis teretibus scandentibus; foliis

oppositis 1-foliolatis, articulo petioli manifesto; foliolo ovato-elliptico v. ovato-acuminato; panicula terminali trichotoma-∞-flora; calycis lobis 5 acutis brevibus; corollæ (albæ) lobis 5-8 oblongis tubo brevioribus; bacca ovata (atro-cærulea). *J. simplicifolium*, Forst. Prodr. n. 7; Sims, Bot. Mag. t. 980, non Roxb. *J. gracile*, Andr. Rep. t. 127; Ker, Bot. Reg. t. 606. *J. geniculatum*, Vent. Choix, t. 8. *J. volubile*, Jacq. Hort. Schönob. t. 321; Fragm. t. 44. fig. 2.—Nomen vernac. Vitiense, “Wa Vatu.”—Viti Levu, Vanua Levu, and Ovalau (Seemann! n. 298); Totoga and Moala (Milne!). Also collected in the Tongan Islands (Forster! D. Nelson! Sir E. Home! Harvey!), Norfolk Island (King! Bauer! Cunningham!), and Aneitum, New Hebrides (M’Gillivray!) East coast of Australia (Bidwill! M’Gillivray! F. Mueller!).

After carefully comparing the Norfolk Island specimens upon which *J. gracile* was founded with the authentic specimens of *J. simplicifolium*, Forst., and finding that the leaves vary in shape and the calyx-teeth are not as different in the two as they are described in books, I have united the two supposed species.

3. **J. didymum**, Forst. Prodr. n. 8; Soland. Prim. Fl. Ins. Pacif. p. 200 (ined.), et in Parkins. Drawings of Tahitian Plants (ined.), t. 2; glabrum v. glabriusculum; ramis teretibus scandentibus; foliis suboppositis 3-foliolatis, foliolis subovatis ovato-lanceolatisve obtusis acuminatisve, lateralibus sæpius minoribus; racemis axillaribus et terminalibus; calycis dentibus minutis; corollæ (albæ) limbo 4-6-lobo; seminis integumento imperforato.—*Jasminum*, e Nov. Caled. Forst. Prodr. n. 490 (fide spec. *Forsteriano* in Herb. Mus. Brit.). *J. divaricatum*, R. Brown, Prodr. p. 521; Labill. Sert. Austr. Caled. t. 27. *J. parviflorum*, Decaisne, Herb. Timor. p. 77. *J. Azoricum*, Hook. et Arn. Bot. Beech. p. 66! non Linn.—Nomen vernac. Tahitiense, teste Soland., “Tia tia mana.”—Viti Levu (Seemann! n. 299), Gau (Milne!). Also collected in Tahiti (Herb. Mus. Brit.! Bidwill! Lay and Collie!), New Caledonia (Forster! Nelson!), and east coast of New Holland (R. Brown!).

The New Caledonian plant, figured by Labillardière and collected by Forster and Nelson, represents the narrow-leaved form, which often occurs together with the broad-leaved on the same individual. I have followed Asa Gray in referring here Decaisne’s *J. parviflorum*, from Timor, as a synonym; and I subjoin Solander’s detailed description of the Tahitian plant above quoted. “*Caules* lignosi, flexuoso-volubiles (omnino uti *Clematidem*), longi, teretes, glabri, ramosi. *Rami* villosiusculi, breves, ad angulum rectum divaricati. *Folia* sæpius opposita, interdum tamen alterna, petiolata, ternata. *Foliola* oblongo-ovata, acuta, integerrima, glabra, brevia, compacta, plana, petiolata; terminale lateralibus duplo majus (sæpe 2½ unciam longum), longiusque petiolatum. *Petioli* ad rectangulum divergentes, teretes, supra canaliculati, filiformes, glabri, unciales; *petiolellis* figura et consistentia petiolorum.—*Obs.* Interdum foliola æqualia, tum petiolelli etiam longitudine æquales. *Flores* albi, suaveolentes, odore florum *Jasmini officinalis*, Linn. Sp. Pl. 9, illisque parum minores, cymosi. *Cyma* pedunculata, composita, subtrichotoma; *pedicellis* 3-floris. *Petioli* axillares, solitarii, foliis breviores, teretes, villosiusculi. *Stipulæ* minutæ, subulata, oppositæ, ad singulam subdivisionem cymæ. *Cal. perianthium* monophyllum, urceolato-cylindraceum, breve (vix lineare), 5-dentatum (variat dentibus 4 et 6), persistens, fructu maturescente, latere rumpens. *Dentes* a lata basi subulati, brevissimi, sæpe inæquales. *Corolla* monopetala, hypocrateriformis. *Tubus* cylindraceus, crassitie pennæ passerinæ, calyce 6-tuplo longior (longitudine semiunciam parum excedens), parum incurvus ex albido-virescens. *Limbus* planus, patens, 5-partitus. *Lacinie* oblongæ, acutæ, albæ. *Stam. filamenta* 2, medio tubi inserta, subulata, brevia. *Antheræ* lineares, acutæ, erectæ, infra faucem occultatæ. *Pist. germen* superum, subrotundum, supra planiusculum. *Stylus* subulatus, tubo paulo brevior. *Stigma* simplex. *Pericarp. bacca* 2, receptaculo elevato bracteato latere affixæ, divaricatæ, globosæ, magnitudine Cerasi minoris, glaberrimæ, lævigatæ, dum virides e pulpa subpellucida uvis viridibus similimæ, dum maturæ nigro-purpureæ, uvas nigras non absimiles. *Cutis* tenuis, pellucida, membranacea. *Pulpa* mollis. *Semina* solitaria, globosa, magna, alba, arillata; *arillo* duriusculo.”

II. **Olea**, Tournef. Inst. t. 370; Linn. Gen. n. 20; DC. Prodr. vol. viii. p. 283. Calyx brevis, campanulatus, 4-dentatus, rarius truncatus. Corollæ tubo brevi, limbo 4-partito plano patente, rarius nulla. Stamina 2, in corollatis imo tubo inserta opposita exserta, in apetalis hypogyna. Ovarium 2-loculare. Ovula in loculis 2, ex apice septi pendula. Stigma 2-fidum aut subcapitatum, sessile v. stylo brevi impositum. Drupa baccata, carne oleosa, putamine osseo, abortu 2- et sæpius 1-spermo. Semina inversa. Albumen carnosum. Embryo inversus, rectus, cotyledonibus folia-

ccis.—Arbores v. frutices; foliis oppositis, coriaceis, integerrimis v. dentatis; floribus sæpius fragrantibus, albis, racemosis paniculatis v. subcorymbosis.

1. **O. Vitiensis**, (sp. nov.) Seem.; arborea, glabra; foliis ovalibus utrinque acuminatis integerrimis, supra lucidis, subtus petioloque rubentibus; racemis axillaribus paucifloris, floribus pedicellatis, pedicellis fructiferis incrassatis; calyce 4-dentato; corolla staminibusque ignotis; drupa clavata, obtusa, stigmate 2-fido sessili coronata, 1-sperma.—*Fagraea Vitiensis*, Seem. in Bonplandia, vol. ix. p. 259, sine descriptione.—Viti Levu (Seemann! n. 307).

This is very near *O* (?) *pauciflora*, Wall. Cat. n. 2812, from Pulo Penang, of which I have seen an imperfect specimen, and it is just possible that the two are identical. But my specimens have young fruit only, and differ in having leaves shining above, and simple racemes. The leaves of my plant, exclusive of petiole, are 6 inches long, and $2\frac{1}{2}$ to 3 inches broad; and the lower bracts are ovate and the upper subspathulate.

ORDO LX. APOCYNÆÆ.

The only genus of Polynesian *Apocynææ* not as yet found in Viti is *Bicorona phyllireoides*, DC. (*Melodinus phyllireoides*, Labill. Sert. Aust. Cal. t. 33), which Labillardière discovered in New Caledonia, and which has since been found in Aneitum, New Hebrides (M'Gillivray!).

I. **Melodinus**, Forst. Gen. t. 19; DC. Prodr. vol. viii. p. 329. Calyx 5-partitus, eglandulosus, lobis ovatis, 2 exterioribus. Corolla hypocraterimorpha; tubo cylindrico, fauce coronatâ, laciniis coronæ decem, 1-serialibus (ex *M. Cumingii*), ante sinus geminatim approximatae seu potius basi loborum ex utroque latere insertæ, lobis 5, æstivatione dextrorsum imbricato-contortis. Genitalia tubo corollæ duplo circiter breviora. Stamina 5, infra mediam partem tubi inserta; antheris subsessilibus, oblongis, acutis. Ovarium ovoideo-conicum, glabrum, 2-loculare. Stylus filiformis. Stigma incrassato-conicum, lateraliter 10-costatum, 2-lobum v. integrum? Bacca carnosâ, globosa, intus pulposa. Semina ∞ , nidulantia, compressa, umbilico ventrali. Embryo in axi albuminis carnosî rectus; cotyledonibus oblongis subfoliaceis.—Frutices scandentes; foliis oppositis, ovato-oblongis, basi obtusis aut subcordatis, brevissime petiolatis, apice angustatis obtusis, coriaceis, margine revolutis, nervosis, integerrimis, glabris; cymis folio multo brevioribus, pedunculo glabro, apice trichotomo, pedicellis puberulis calyce brevioribus; bracteis ovatis, pedicello brevioribus, pubescentibus; floribus albis.

This genus is represented in Polynesia by *M. Baueri*, Endl., from Norfolk Island (Bauer! Cunningham!) and the following species.

1. **M. scandens**, Forst. Prodr. n. 125; Icon. (ined.) t. 72 et 73; glaberrimus; caule scandente; foliis oblongo-ovatis venosis integerrimis glaberrimis; calycis lobis ovatis obtusiusculis, extus et margine puberulis; corollæ (albæ) laciniis ovato-acutis falcatis undulatis.—Ovalau (Seemann! n. 311). Also collected in New Caledonia (Forster! W. Anderson! M'Gillivray! Deplanche! n. 81).

II. **Carruthersia**, (gen. nov.) Seem. in Herb. Mus. Brit. Calyx 5-partitus, glandulosus, lobis ovato-obtusis, 2 exterioribus. Corolla hypocraterimorpha, tubo cylindrico ad originem staminum inflato, fauce exappendiculata, lobis 5 oblique obovatis patentibus, æstivatione dextrorsum convolutis. Stamina 5, ad inferam partem tubi corollæ inserta; filamentis brevissimis; antheris lanceolatis, basi subcordatis, apice pugioniformibus. Nectarium 2-partitum, cum ovariis alternans. Ovaria 2, ∞ -ovulata. Stylus 1; stigma 2-fidum. Bacca globosa, pulposa, ∞ -sperma. Semina oblonga, sulcata. Testa brunnea, albumen corneum penetrans. Embryo in axi solida albuminis, rectus,

radicula infera, cotyledonibus oblongis obtusis.—Frutex scandens, glaber; foliis oppositis petiolatis ovato-oblongis brevi-acuminatis basi subcordatis coriaceis; cymis axillaribus terminalibusque compositis, floribus speciosis.

I have named this new genus in honour of my esteemed friend William Carruthers, Esq., F.L.S., of the Botanical Department, British Museum, to whom I am indebted for much kind assistance in working up the South Sea Flora. It is related to *Alyxia* in the ruminata albumen.

1. **C. scandens**, (sp. nov.) Seem. (Tab. XXX.).—*Rejoua scandens*, Seem. in *Bonplandia*, vol. x. p. 296. Nomen vernac. Vitiense, "Wa rerega," fide Storck.—At Port Kinnaird, Island of Ovalau (Storck! n. 901).

A climbing plant, which would prove a desirable acquisition to our gardens, and flowers in Viti from December to March. The leaves are used medicinally by the natives. Mr. Storck, on transmitting the dried specimens, enclosed a coloured drawing by the late lamented Miss Mary Pritchard, and from these materials our plate has been made. The plant is glabrous in all parts except the calyx lobes, which are ciliate, the interior of the corolla tube, and the filaments. Leaves 5 inches long, $2\frac{1}{2}$ –3 inches broad. Tube of corolla crimson, lobes of corolla more or less white. Drupe nearly 3 inches in diameter.

EXPLANATION OF PLATE XXX., representing *Carruthersia scandens*. Fig. 1, an entire flower; 2, the same with corolla removed; 3, the same with calyx and portion of corolla removed; 4, a stamen; 5, calyx glands, pistil and nectary; 6, ripe fruit; 7, seeds; 8 and 9, sections of seed; 10, embryo:—all, with exception of Fig. 7, magnified.

III. **Alyxia**, R. Brown, Prodr. p. 469; DC. Prodr. vol. viii. p. 345. Calyx 5-partitus, eglandulosus. Corolla hypocraterimorpha; tubo sæpius a medio inflato, apice constricto, interne piloso; fauce esquamatâ, nunc subgibba; lobis æstivatione dextrorsum superpositis. Stamina 5, medio v. supra mediam partem tubi inserta, filamentis brevibus, antheris lanceolatis. Annulus pilosus (an semper?) e basi ovariorum. Ovaria 2, facie adpressa, ovoideo-fusiformia. Stylus 1. Stigma capitatum v. oblongum, glabrum v. barbatum. Ovula ad suturam ventralem introflexam inserta, pauca, utrinque superposita, adscendentia (ex *A. scandenti* et *A. brevifoliâ*). Drupæ 2 (alterâ sæpius abortiente), stipitatae, sæpius 1-spermæ et ellipsoideæ, nunc 2-spermæ et medio constrictæ, carne parvâ, endocarpio chartaceo sæpius transversim costato suturâque ventrali prominente. Semen 1 v. rarius semina superposita, ellipsoidea, obtusa, facie internâ compressâ, suturam ventralem ambientia ideoque longitudinaliter sulcata. Testa brunnea, albumen corneum penetrans. Embryo in axi solido albuminis, rectus v. (ex Endl.) curvatus, radiculâ inferâ, cotyledonibus oblongis obtusis.—Arbusculæ v. frutices, sempervirentes; ramis nunc scandentibus; foliis sæpius ternatis v. 4-natis, nunc oppositis, integris, glabris, breviter petiolatis; floribus axillaribus v. terminalibus, solitariis v. in cymas spiciformes aut umbelliformes dispositis, sæpe fragantibus, albis v. luteis.—*Gynopogon*, Forst. Gen. n. 18.

Besides the species found in Viti, there are, in tropical Polynesia, the following species of this genus:—1, *A. Gynopogon*, Rœm. et Schult. (*Gynopogon Alyxia*, Forst. Prodr. n. 118; *A. daphnoides*, A. Cunn. Bot. Mag. t. 3313), from Norfolk Island (Forster! W. Anderson! A. Cunningham! Milne!); 2, *A. olivæformis*, Gaud. in Freyc. Voy. p. 451 (*A. sulcata*, Hook. et Arn. Bot. Beech. p. 90), from the Hawaiian Islands (Macrae! Barclay! Seemann!); and 3, *A. obovata* (sp. nov.) Seem. mss. in Herb. Mus. Brit. (erecta, glabra, ramulis angulatis; foliis oppositis v. ternis obovato-oblongis obtusis basi attenuatis; pedunculis axillaribus compressis medio 3-floris; pedicellis angulatis; calycis lobis ovatis acuminatis v. acutis; drupis ignotis), from the Isle of Pines off New Caledonia (W. Anderson!).

1. **A. bracteolosa**, Rich, mss. ex A. Gray in Proceed. Amer. Acad. vol. v.; scandens, glaberrima; foliis plerumque ternis oblongis v. sublanceolatis nunc obtusis nunc acumine obtuso apiculatis caudatisve basi acutis v. rotundatis supra nitidis transversim lineatis sublonge petiolatis; cymis axillaribus ∞ -floris brevissime pedunculatis petiolum vix superantibus; pedicellis brevibus arcte imbricato-bracteolatis; bracteolis ovato-triangularibus dorso carinatis intus concavis ciliolatis sepalis consimilibus; corolla (pallide lutea) longius tubulosa; stigmatibus imberbi; ovariiis glaberrimis; drupis

subglobosis breviter stipitatis.—Nomen vernac. Vitiense, “Vono.”—On the outskirts of woods, Viti Levu, and Ovalau (Seemann! n. 310; Storck! n. 900; Barclay! Milne!). Also collected in the Tongan (Nelson! U. S. Expl. Exped.) and Samoan Islands (U. S. Expl. Exped.).

Asa Gray distinguishes three varieties of this plant, viz. :—

a. macrocarpa; fructu olivæformi maximo (sesquipollicari) e drupellis 2–3 conflatis. From the Vitian Islands.

β. angustifolia; alte scandens; foliis minoribus angustioribus etiam sublinearibus. From the Tongan and Vitian Islands.

γ. parvifolia; foliis minoribus ellipticis (1½–2 poll.); pedunculis paucifloris nunc elongatis, fructiferis petiolo bis longioribus. From the Vitian Islands.

2. **A. stellata**, Rœm. et Schult. Syst. vol. iv. p. 439; DC. Prodr. vol. viii. p. 346; foliis ternatis ellipticis utrinque attenuatis apice obtusis basi acutis undulatis superne nitidis; pedunculis axillaribus petiolo triplo longioribus apice 3–4-floris; pedicellis floribus subbrevioribus, bracteis lobisque calycinis puberulis ovato-acutis; stigmatibus oblongo piloso.—*Gynopogon stellatum*, Forst. Prodr. n. 117; Icon. (ined.) t. 67 et 68; Labill. Sert. Austr. Caled. t. 34.—Viti, exact locality not specified (U. S. Expl. Exped.), Totoga, rare (Milne!). Also collected in the Tongan Islands (Forster! Nelson! Capt. Cook!), New Caledonia (Herb. Webb!), and Isle of Pines (Milne!).

3. **A. scandens**, Rœm. et Schult. Syst. vol. iv. p. 440; DC. l. c.; scandens; foliis oppositis petiolatis obtusis, pedunculis axillaribus 3-floris petiolo longioribus pedicellisque compressis; bracteis ovato-acutis; lobis calycinis lanceolatis externe subpubescentibus.—*Gynopogon scandens*, Forst. Prodr. n. 119, et Icon. (ined.) t. 69; Parkins. Drawings of Tahit. Plants (ined.) t. 34.—Woody places, Ovalau (Milne!). Also collected in the Society Islands (Forster! Nelson! Wiles and Smith!).

IV. **Cerbera**, Linn. Gen. ed. i. n. 178; DC. Prodr. vol. viii. p. 352, excl. syn. Calyx 5-partitus, eglandulosus. Corolla hypocraterimorpha; tubo cylindrico, ad faucem 5-costato, costis longitudinalibus cum lobis alternantibus, nunc pilosis; lobis 5, ovato-acutis, æstivatione dextrorsum contortis. Stamina 5, versus medium tubi inserta, antheris lineari-lanceolatis, cuspidatis, filamentis multoties longioribus. Ovaria 2, facie internâ plana, ovata, placentâ prominente, subbilocularia. Ovula 4 in ovario, 2 nempe superposita in utraque parte ovarii, medio inserta, erecta, amphitropa. Stylus filiformis. Stigma conicum, margine basi 10-sulcatum, apice 2-lobum. Drupa (ex Gærtner. cujus descr. perfecta ex Roxb.) abortu ovarii sæpius unica, elliptico-globosa, hinc valde convexa, illinc planiuscula, e viridi flavescens; epicarpium membranaceum; mesocarpium fibrosum; endocarpium lignosum, semibivalve, semibiloculare. Semina 2, nempe 1 in utroque loculo imperfecto, aut solitaria (1 abortiente), parieti adhærentia, apice libera, ovato-acuminata. Albumen nullum. Embryo inversus. Cotyledones ovato-oblongæ, carnosæ. Radicula brevissima, supera.—*Arbusculæ foliis alternis, integris; cymis terminalibus di-trichotomis, paniculæformibus; floribus albis.*—*Odollam*, Rheed. Mal. vol. i. p. 71. t. 39.

Strictly speaking, the genus *Cerbera*, Linn., is synonymous with *Thevetia*, and what we now consider as *Cerbera* ought to be named *Odollam*, Rheede. Linnæus enumerated three species of *Cerbera*; one of them (*C. Manghas*), belongs to the Tournefortian genus *Tabernæmontana*, being identical with *T. dichotoma*, Roxb., as I have ascertained from the authentic specimens of Hermann, preserved at the British Museum; and the two others (*C. Ahouai*, L., and *C. Thevetia*), have been referred to *Thevetia*. The species which modern authors have placed under *Cerbera*, are in reality no *Cerberas* at all, having nothing in common with the two typical species (*C. Ahouai* and *Thevetia*) of the genus. As I am not able at present to clear up all the doubtful species now referred to *Cerbera*, I shall not meddle with the generic nomenclature in this place. But I may add that the Tahitian plant considered by Forster and others as *C. Manghas* is a very distinct new species, which has large white flowers with a yellow centre, erect calyx lobes, and much larger leaves. I have named it *C. Forsteri*, (sp. nov.) Seem. in Herb. Mus. Brit. (*C. Manghas*, Forst. Prodr. n. 120, excl. syn., non Linn.; Sol. Prim. Fl. Ins. Pacif. p. 238; Parkins. Drawings of Tahit. Plants, t. 32 et 33).—Nomen vernac. Tahitense, “Reva.”—Tahiti (Wiles and Smith!); Pitcairn Island, (Cuming! n. 1379). Solander has the following description of it under the name of *C. Manghas*:—“Arbor 50-pedalis, lactescens.

Ramuli plerumque terminales, cicatricibus concavis petiolorum variolati, alias glabri, teretes. *Folia* in ultimis ramis undique sparsa, ∞ , lanceolata, sæpe paulo ante medium latiora, acuta, integerrima, glabra, nitida, plana, pedalia, venosa; *venis* parallelis, remotis, fere ad rectangulum exeuntibus venulisque numerosis reticulata, basi attenuata in *petiolos* longos, 2- v. 3-unciales, glabros, supra planos. *Flores* candidissimi, paniculati. *Panicula* pedunculata, ∞ -flora. *Pedunculi* terminales (e centro ramulorum) longitudine foliorum, teretes, glabri. *Pedicelli* unciales. *Calyx* 5-phyllus. *Foliola* oblonga, acutiuscula, erecta, crassiuscula, ex albido viridia, $\frac{2}{3}$ -unciae longa; caduca; 2 exteriora latiora. *Corolla* 1-petala, hypocrateriformis. *Tubus* calyce longior, obtuse pentagonus, cylindræus, supra calycem ampliatus, uncia paulo longior. *Faux* clausa nectariis. *Limbus* patens, maximus, diametro 3-unciali, 5-partitus. *Laciniis* obliquis, extus latioribus, obtusissimis. *Nectaria* 5, in fauce corollæ ad sinus limbi sita, flava, compressa, intus protuberantia ibique terminata villis longiusculis niveis. *Filamenta* 5, brevissima, tubo corollæ supra medium inserta. *Antheræ* ovato-cordatæ, didymæ, erectæ, cuspidè brevi terminatæ.—*Obs.* ipsa anthera sub nectario occulta cuspidè tantum modo supra faucem emicante. *Germina* 2 supera, subrotunda, obtusa, intus plana. *Styli* 2, filiformes, tubo corollæ breviores. *Stigma* crassissimum, 10-angulare, conicum, acuminatum; ipso apice obsolete 2-fido. *Drupæ* geminatæ (uti folliculi in reliquis contortis), sessiles, maximæ, ovo anserino paulo majores, ovales, parum compressæ, introrsum lacuna lata subobsoleta notatæ, ad angulum obtusum divergentes, basi ubi conjunguntur intus planæ, totæ glabræ, læves, virides, punctis rubris inæqualibus ∞ irroratæ, bene maturæ fere purpurascens punctis tantum modo viridibus adpersæ. Substantia *drupæ* crassa, stuposa-spongiosa, fibris multis crassis validis intertexta, lactescens. *Nux* oblonga, compressa, lateribus acutis, tenuis sed tenax et duriuscula, tres uncias longa, unilocularis. *Nucleus* ovatus seu potius figura amygdali, duas uncias longus, niveus."

1. **C. lactaria**, Hamilt. ex DC. Prodr. vol. viii. p. 353; foliis alternis sparsis patentibus v. reflexis oblongis glabris utrinque subacutis nervis lateralibus obliquis; cymis terminalibus et axillaribus folio subbrevioribus, pedicellis longitudine calycis, lobis calycinis ovato-acutis erectis; drupa ellipsoidea v. globosa.—Arbor lactaria, Manga Brava, Rumph. Amb. vol. ii. p. 243. t. 81.—Nomina vernac. Vitiensia, "Rewa" et "Vasa."—Common on the seaside of Lakeba, Ovalau and Viti Levu (Seemann! n. 309; Barclay!). Also collected in the Tongan Islands (Forster!), New Hebrides (Barclay!), Isle of Pines (M'Gillivray!), and Java (Horsfield!).

A middle-sized tree. Wood soft. Root a powerful purgative. Flowers used for necklaces.

V. **Ochrosia**, Juss. Gen. p. 145; DC. Prodr. vol. viii. p. 356. Calyx 5-partitus, lobis obtusis imbricatis, eglandulosus. Corolla hypocraterimorpha, tubo cylindrico, intus pilosiusculo, fauce nudâ, lobis æstivatione sinistrorsum contortis. Stamina 5, medio tubi corollæ inserta, inclusa; antheris lanceolatis, filamentis gracilibus longioribus. Nectarium nullum. Ovaria 2 (in *O. parviflorâ* initio coalita, demum libera, ex cl. Hensl.), in aliis semper distincta, glabra. Stylus filiformis, ovario parum longior. Stigma conicum, 2-fidum. Ovula 3-6 in utroque ovario. Drupæ exsuccæ, ellipsoideo-trigonæ, facie internâ planiusculæ, utrinque acutæ, divergentes, nunc dehiscentes?, mesocarpio coriaceo, endocarpio lignoso. Semina 2, obovata, compressa, pendentia?, intra endocarpium transversa. Cotyledones planæ, albumine carnosio cinctæ.—Frutices v. arbusculæ; foliis verticillatis aut subsparis, crebris, integerrimis, nervis lateralibus, centrali fere perpendicularibus; cymis terminalibus, 3-chotomis, folio subæqualibus; pedunculis apice ∞ -floris; pedicellis brevissimis.

There is, in tropical Polynesia, only one more *Ochrosia*, *O. Sandwichensis*, DC., from the Hawaiian islands (Macrae! Barclay! Hillebrand!), besides the following species.

1. **O. parviflora**, Hensl. Ann. of Bot. vol. i. p. 345; A. Gray in Proceed. Amer. Acad. vol. v.; arbuscula; foliis ternis quaternisve ellipticis, oblongis v. obovato-oblongis, apice rotundatis v. subacuminatis, basi parum attenuatis, glabris; lobis calycinis ellipticis obtusis; drupis ellipsoideis.—*O. elliptica*, Labill. Sert. Austr. Caled. t. 30. *Cerbera parviflora*, Forst. Prodr. n. 121. et Icon. (ined.) t. 70. *Alyxia*, sp. Soland. Prim. Fl. Ins. Pacif. (ined.) p. 241.—Nomen vernac. Vitiense, "Vaoko," teste Williams.—Viti Levu (Barclay!), Vanua Levu (Seemann! n. 316). Also collected in Savage Island (Forster!), Society Islands (Banks and Solander! Nelson!), Tongan Islands (Nelson! Harvey!), and New Caledonia (Labillardière).

In look not unlike *O. Borbonica*, but distinct. Leaves very variable in size, the largest, figured by Forster, 8–12 inches long and from 4 to 5 inches broad; the smallest, figured by Labillardière, 2 inches long and about an inch broad. I cannot distinguish Labillardière's *O. elliptica* from Forster's *Cerbera parviflora*, and have therefore no hesitation in uniting them. Asa Gray remarks, "To the lamented Prof. Henslow's account may be added, that the ovaries are not really united except at their apices, that the ovules are eight, four on each margin of the suture, amphitropous; the micropyle superior." And of *A. Sandwichensis*, DC., with which Forster's plant has been confounded, he writes, "Flowerbuds almost an inch long; the narrow lobes of the corolla rather longer than the tube, which is glabrous within. Ovules 3 or 4 in each ovary. Seeds peltate on each face of the nearly complete false partition, exalbuminous? Radicle inferior." I add Solander's detailed description of his *Alyxia* sp., taken from his mss. Flora:—"Frutex v. arbor parva, tota glabra lactescens. Rami teretes, læte virides, læves. Folia 3- et 4-terna, lineari-lanceolata, acuminata, basi in petiolum brevem attenuata, glaberrima: nitida, plana, compacta, venosa; venis tenuissimis, parallelis, ∞ , fere ad rectangulum e rachi exeuntibus venulisque obsolete reticulata, spithamæa et dodrantalia, unam unciam lata. Petioli breves, vix semiunciales. Flores cymosi; cyma composita, subdichotoma, pedunculata. Pedunculi axillares (e supremis axillis), foliis 2- et 3-plo breviores. Stipula [Bractea] oppositæ, ovatæ, acutæ, brevissimæ, ad basin pedicellorum. Calyx 1-phyllus, persistens, cyathiformis, brevis (vix sesquilinearis), angulatus, 5-dentatus: dentibus ovatis, obtusis, conniventibus; unde basis tubi corollæ valde angustata. Corolla 1-petala, hypocrateriformibus. Tubus cylindræus, rectus, paulo supra medium pro antheris parum ventricosus, interne glaber, crassitie pennæ columbinæ, semuncialis, e virescenti-albidus. Faux nuda. Limbus patens, 5-partitus. Laciniæ obliquæ, oblongo-lineares, obtusiusculæ, albæ, longitudine tubi. Filamenta 5, brevia, paulo infra medium tubo inserta. Antheræ oblongæ, acuminatæ, erectæ, intra fauceem corollæ inclusæ. Germina 2, supera, oblonga, obtusa, intus plana, extus convexa. Styli 2, filiformes, tubo breviores. Stigma 1, incrassatum, ovato-oblongum, apice subulatum, non nisi vi bipartibile. Drupæ 2 (omnino uti folliculi in reliquis contortis), sessiles, ovali-oblongæ, parum compressæ, glabræ, magnitudine articuli digiti intermedii, horizontaliter divaricatæ. Substantia fungosa, sicca. Nux oblonga, dura, crassissima, 2-ocularis; dissepimento membranaceo; loculo altero sæpe crasso. Nuclei solitarii, ovati, compressi, intus plani, extus convexi."

VI. **Tabernæmontana**, Plum. Nov. Gen. p. 18; DC. Prodr. vol. viii. p. 361. Calyx 5-partitus v. -fidus, lobis æstivatione 5-cunciali, 2 exterioribus; glandulis linearibus, 4–7, basi cujusque lobi v. paulo supra basim adfixis, verticillatis. Corolla hypocraterimorpha, tubo inferne medio v. superne, inflato, sæpius medio angustiore, exappendiculato, fauce nuda, raro glandulosa, lobis obtusis, æstivatione marginibus dextrorsum convolutis apiceque replicatis. Stamina parte inflata tubi corollæ inserta; filamentis brevissimis aut nullis; antheris sæpius sagittatis, longe acuminatis, rarius linearibus plerumque inclusis. Nectarium nullum. Ovaria 2, adpressa, glabra. Stylus 1, basi interdum prope ovaria duplex, glaber. Stigma antheris proximum, basi plerumque annulatum, medio cylindræum v. tuberculis auctum, apice 2-lobum (an raro simplex?). Fructus 2 v. abortu solitarii, lineari-oblongi, oblongi, v. subglobosi, plus minus carnosus, pulposus, divaricati, nervis longitudinalibus paucis. Ovula ∞ , amphitropa. Semina pauca v. plurima, intra pulpam celluloseam nidulantia, quasi arillo colorato tecta? obovoidea, pressione mutua angulata; hilo depresso sulcato longitudinali; testa longitudinaliter striata; albumine carnosus, cotyledonibus foliaceis apice curvatis, radiculam rectam æquantibus, hilo parallelis, radícula supera, cylindræa.—Arbores v. frutices, intertropicales, ramis sæpius dichotomis; foliis oppositis, altero sæpe minore, integris, plerumque glabris, petiolis brevibus in stipulas falsas intrapetiolares, basi expansis v. connatis, glandulis præterea axillaribus, et nunc lateralibus; cymis axillaribus, plerumque geminis apice ramulorum; floribus albis v. luteis.—*Pandaca*, Pet. Thouars, Gen. Nov. Mad. n. 33. *Rejoua*, Gaud. Freyc. p. 450. t. 61. *Reichardia*, Deunst. zum Hart. Mal. 6. n. 47.

1. **T. orientalis**, R. Brown, Prodr. p. 468, non Don; DC. Prodr. vol. viii. p. 371; glabra; foliis oppositis, inæqualibus, elliptico-lanceolatis, utrinque acuminatis; pedunculis ex dichotomiis ramorum geminis erectis; dichotomiis 3–5-floris; pedicellis erectis calyce duplo triplove longioribus, lobis calycinis ovato-acutis; tubo corollæ (albæ) angusto cylindræo, laciniis oblongis obtusis sublongiore; folliculis ellipticis, obtusis.—*T. Cumingiana*, DC. Prodr. l. c. p. 373. *T. Vitiensis*, Seem. in Bonpl. vol. ix. p. 257. *T. citrifolia*, Forst. Prodr. n. 124; non Linn.; Parkinson, Drawings of

Tahitian Plants, (ined.) t. 36.—Viti Levu (Seemann! n. 312), Wataki (Milne!). Also collected in Namoka (Forster!), Tana (W. Anderson!), Tonga (Nelson!), Eromanga (M'Gillivray!), Aneitum (Milne!), Tahiti (Banks!), Philippine Islands (Cuming!), and east coast of New Holland (M'Gillivray! Stuart! Cunningham!).

2. **T. (Rejoua) pacifica**, (sp. nov.) Seem.; arborea, glabra; foliis longe petiolatis obovato-oblongis abrupte acuminatis integerrimis, basi in petiolum attenuatis; paniculis terminalibus trichotomo-ramosis; pedicellis calyce multo longioribus; lobis calycinis ovatis-acuminatis; tubo corollæ (albæ) angusto cylindræo, laciniis linearibus sublongiore; antheris inclusis; fructu subgloboso, ∞ -sperma.—Island of Taviuni (Seemann! n. 314).

A tree 25 feet high. Petiole, 2 inches long; blade of leaf, 6–8 inches long, 3–4 inches broad. Panicle spreading. Flowers small. Tube of corolla, 6 lines long.

VII. **Lyonsia**, R. Brown in Trans. Wern. Soc. vol. i. p. 66; DC. Prodr. vol. viii. p. 400. Calyx 5-partitus; lobis basi intus glanduliferis. Corolla profunde 5-fida, externe pubescens; tubo cylindrico-infundibuliformi, esquamato; lobis lanceolatis, apice recurvis, interne retrorsum barbatis; æstivatione subvalvari v. sinistrorsum subimbricata. Stamina medio tubo corollæ v. paulo infra medium inserta; filamentis in tubum approximatis, puberulis; antheris medio stigmati adhærentibus, hastato-oblongis, apice acutiusculis, inferne in caudas approximatas lineares a medio fissis. Nectarium cupuliforme, 5-fidum, glabrum; lobis rotundatis. Ovarium nectario brevius, ovoideum, glabrum, 2-loculare. Ovula ∞ . Stylus 1. Stigma basi annulo horizontali cinctum, supra ovoideum, apice subbilobum. Fructus (ex Br.) capsularis, cylindræus, 2-ocularis, valvis folliculiformibus, dissepimento parallelo libero utrinque seminifero; placentis adnatis; seminibus ad umbilicum comosis, obovatis compressis; albumine parco; cotyledonibus planis, oblongis, radícula duplo longioribus.—Frutices volubiles; foliis oppositis, integris, ellipticis, basi obtusis, apice acutis v. acuminatis, junioribus membranaceis ramulis cymisque subpubescentibus, vetustioribus coriaceis, glabris; cymis axillaribus et terminalibus, folio subbrevioribus, apice trichotomis; floribus breviter pedicellatis, externe pubescentibus.

L. scabra, DC. (*Echites scabra*, Labill. Sert. Austr. Cal. t. 31; *Thenardia scabra*, Spr.), is confined to New Caledonia (Labillardière) and Eromanga, New Hebrides (M'Gillivray!), and is the only species besides the following one as yet found in tropical Polynesia, unless a twining plant, of which I collected the leaves only, and distributed under n. 315, should prove a congener. It is a hairy plant, and certainly is not, as Asa Gray at one time suspected, identical with *L. lævis*.

1. **L. lævis**, A. Gray in Proceed. Amer. Acad. vol. v.; glabra; foliis ovatis, subcordatis, acutato-acuminatis; calycis lobis triangularibus, acutis, brevibus; corolla fere glabra, fauce tantum annulatim barbata; squamis nectarii discretis, glaberrimis, ovarium subæquantibus; capsula cylindrica, leviter bisulca.—Viti, exact locality not specified (U. S. Expl. Exped.!).

VIII. **Alstonia**, R. Brown, Trans. Wern. Soc. vol. i. p. 75; DC. Prod. vol. viii. p. 408. Calyx 5-partitus, eglandulosus. Corolla hypocraterimorpha, extus plerumque pubescens; tubo cylindrico, intus ad superiorem partem pubescens esquamato; lobis tubo brevioribus, æstivatione dextrorsum v. sinistrorsum imbricato-convolutis. Stamina medio v. supra mediam partem tubi inserta; filamentis brevissimis; antheris oblongo-lanceolatis, basi cordatis, filamentis longioribus. Nectarium nullum v. ovariis toro basi immersis, rudimento fere nectarii annularii. Ovaria 2. Ovula ∞ , compressa. Stylus 1. Stigma ovoideum, apice 2-lobum (aut interdum simplex?). Folliculi 2, elongati, ventre dehiscentes. Semina oblonga, compressa, mediâ facie adfixa, utrinque comosa; spermodermio scabro. Albumen parcum. Radícula supera. Cotyledones oblongæ, planæ, radícula longiores.—Arbores v. rarius frutices; foliis verticillatis aut oppositis, internodiis multo longioribus, integris,

nervis lateralibus prope peripheriam connexis; pedunculis apice ramorum oppositis, 3- aut 4-natis, superne dichotomis; floribus sæpius albis.—*Pala*, Juss. Ann. Mus. vol. xv. p. 346.

Subgen. **Dissuraspermum**, A. Gray in Proceed. Amer. Acad. vol. v. Semina undique æqualiter et creberrime ciliato-plumosa, haud vero comosa, basi apiceque in acumen vel caudam producta, cauda superiori apice bifida; albumen tenuissimum. Corollæ lobi lineari-lanceolati, æstivatione sinistrorsum (sensu Candollii) convoluti. Faux barbata.—Frutices vel arbusculæ Insularum Pacificæ; foliis oppositis, petiolis angustissime marginatis, basi plus minus dilatatis; cymis patentibus.

To this subgenus belongs *A. costata*, R. Brown, l. c. (*Echites costata*, Forst. Prodr. n. 123 excl. syn., et Icon. (ined.) t. 71; Sol. Prim. Fl. Ins. Pacif. (ined.) p. 343; Parkinson, Drawings of Tahitian Plants (ined.) t. 35.) from the Society Islands (Banks and Solander! Wiles and Smith! Forster! Barclay! Bidwill!). "Brown's doubt," says A. Gray, l. c., "whether the cilia which fringe the seeds were elongated at the base and apex into a coma, evinced his usual caution. In fact, the seeds are not properly comose at all, but equably ciliate-fringed all round, the tails short, flat, and equally fringed with the rest of the margin, the lower one entire and rather blunt, the upper notched or bifid. The rudiments of one or both of these tails are to be seen in *A. ophioxylodes*, F. Müll., in which the hairs extend both ways into a coma. Forster's description of the seeds '*marginè cylindrica*' is, I presume, a lapsus for '*marginè ciliata*.'"

1. **A. plumosa**, Labill. Sert. Austr. Cal. p. 28. t. 32; DC. l. c.; foliis elliptico-oblongis, basi acuminatis, apice obtusis, glabris; cymis floriferis longitudine foliorum, fructiferis multo longioribus; calycis 5-fidi lobis obtusis; corollæ fauce hispida, lobis lineari-oblongis, interne pubescentibus, tubo sublongioribus, obtusis; folliculis longissimis.—Viti Levu and Vanua Levu (Milne!). Also collected in New Caledonia by Labillardière, and in the Samoan islands by the U. S. Expl. Exped.

"*A. plumosa*, Labill.," remarks A. Gray, l. c., "to which must belong our specimens from the Samoan and Fiji Islands, is more closely related to the foregoing than would be inferred from Labillardière's plate, as that does not well represent the stigma (indusiate-appendaged below, and with sharper lobes above,) nor the calyx, which is five-parted to the base. But the seeds are not badly figured, except that the long tails are flat in our specimens rather than exactly filiform. These two species might be wholly detached from *Alstonia* with better reason than *Blaberopus* has been."

2. **A. villosa**, (sp. nov.) Seem.; foliis oppositis longe petiolatis ovalibus utrinque acutis, supra glabris, subtus villosis; floribus ignotis; folliculis longissimis cylindricis glabris.—Viti Levu (Seemann! n. 318).

Possibly Deplanche's n. 66, from New Caledonia, may be identical with this species, which I collected in fruit only, and distributed under the erroneous name of *A. plumosa*, Labill. Petiole $1\frac{1}{2}$ –2 inches long. Blade of leaf 6–8 inches long, 3–4 inches broad. Follicles 1 foot long.

3. **A. (?) sp.**; arbor 30 ped.; glaber; foliis obovato-oblongis obtusis in petiolum attenuatis crasse coriaceis; fl. fructibusque ignotis.—Viti Levu (Seemann! n. 317).

Specimens neither in flower nor fruit; in leaf resembling some undescribed Bornean species contained in Hooker's Herbarium. Petioles, $1\frac{1}{2}$ inches long; blade, 5–6 inches long, 2–3 inches broad.

ORDO LXI. ASCLEPIADEÆ.

We have, besides the plants mentioned below, the following members of this Natural Order in tropical Polynesia:—1. *Sarcostemma australe*, R. Brown (*Cynanchum viminale*, Forst. Prodr. n. 127, non Linn.), from the Botanist Island (Forster!), Isle of Pines (Sir E. Home!), and New Caledonia (Capt. Cook!); 2. *Asclepias Curassavica*, Linn., from Eromanga, New Hebrides (M^r Gillivray!) and the Tongan (Harvey!) and Society Islands (Lay and Collie!), probably introduced, as not known to the older botanists; and 3. *Hybanthera biglandulosa*, Endl., from Norfolk Island, and thought by Asa Gray to belong to the genus *Tylophora*.

I. **Tylophora**, R. Brown in Trans. Wern. Soc. vol. i. p. 28; DC. Prodr. vol. viii. p. 606.

Calyx 5-fidus, sepalis ovatis v. ovato-lanceolatis. Corolla rotata, 5-partita. Corona staminea 5-phylla; foliolis simplicibus, acuminatis, carnosis, gynostegio prominente plus minusve adnatis perraro stigma superantibus. Antheræ membrana terminatæ. Massæ pollinis transversæ v. subascendentes v. processu tereti flexuoso erectæ, minutæ, ventricosæ. Stigma muticum, prominulum, obscure emarginatum. Folliculi læves, apice attenuati, compressi, hinc subangulati. Semina comosa.—Herbæ aut frutices volubiles; pedunculi interpetiolares graciles, haud raro flexuoso-geniculati; umbellulis secus pedunculum alternatim dispositis; floribus sæpissime parvis.

The United States Exploring Expedition found two new Polynesian species of this genus, one in the Samoan Islands (*T. Samoensis*, A. Gray) and the other in Viti.

1. **T. Brackenridgei**, A. Gray in Proceed. of the Amer. Acad. vol. v.; volubilis, glabra; foliis ovatis subcordatis mucronatis; pedunculis petiolum apice haud glanduliferum subæquantibus; umbellulis ∞ -floris; floribus carneis undique glabris; corona staminea e glandulis seu gibberibus carnosis lateraliter compressis usque ad apicem acutum adnatis (in sicco subulatis) anthera brevioribus; polliniis ovalibus juxta medium stipiti brevi flexuoso affixis adscendentibus.—Ovalau (U. S. Expl. Exped.).

“Stigma depressed. Immature follicle smooth, short, acuminate-rostrate. Probably this is a congener of Endlicher’s *Hybanthera biglandulosa*, the pollen-masses of which are probably not so pendulous as represented. The structure of the andrœcium is very similar, but the coronal appendages are transversely dilated at the base, thence gradually tapering to an acute summit, the whole perfectly adnate to the back of the anther. In Dr. Wight’s *Iphisia* (*T. Iphisia* and *T. Giovanni*, Decaisne) I find the same structure, the fleshy appendages equally adnate and laterally compressed.”—A. Gray, l. c.

II. **Gymnema**, R. Brown in Trans. Wern. Soc. vol. i. p. 33; Decaisne in DC. Prod. vol. viii. p. 621. Calyx 5-partitus, sepalis erectis, ovatis, parvulis, puberulis, marginibus scariosis. Corolla rotata 5-fida, laciniis calycem vix superantibus sæpius 3-angularibus, parvis, crassiusculis, æstivatione contortis, fauce squamulis dentibusve crassiusculis sinibus oppositis in lineas duplices pilosas tubo introrsum desinentibus. Corona staminea nulla. Antheræ membrana truncata terminatæ. Massæ pollinis erectæ, basi affixæ, ovoideæ. Folliculi læves. Semina plana, margine tenuiori cincta, comosa.—Frutices volubiles v. erectæ; foliis oppositis, coriaceis, subtus tomentosus; umbellis interpetiolaribus, sæpius geminis, cymæformibus, subsessilibus, parvis, multifloris; floribus parvis, congestis, flavescenti-viridibus.

A. Gray thinks that to “*Gymnema* both *Gongronema* and *Bidaria* must doubtless be restored. The æstivation of the corolla, said by Blume to be valvate, is convolute, as described by Decaisne, in all the species I have examined, but in most of them the margins so slightly overlap that the æstivation might readily be taken for valvate.”

1. **G. subnudum**, A. Gray in Proceed. Amer. Acad. vol. v.; volubile, undique glabellum; foliis membraneis ovato-lanceolatis seu ovato-oblongis basi rotundatis v. subcordatis; pedunculis petiolum adæquantibus; umbella sæpius bifida; corolla rotata 5-partita imberbi squamulis fere obsoletis sinibus instructa; gynostegio brevissimo.—Mountains of Macuata (U. S. Expl. Exped.).

2. **G. stenophyllum**, A. Gray in Proceed. Amer. Acad. vol. v. (Tab. XXXI.); fruticosum, erectum (3–6 ped.), ramosissimum, fere glabrum; foliis coriaceis linearibus basi attenuatis marginibus revolutis, costa subtus pilosula; pedunculis axillaribus brevissimis; corolla rotata alte 5-fida inappendiculata, lobis extus glabris intus tenuiter barbatis; gynostegio brevissimo; polliniarum stipitibus gracilibus spiraliter contortis.—Nomen vernac. Vitiense, “Yauyau.”—On the barren hills of Macuata, Vanua Levu (Seemann! n. 322, U. S. Expl. Exped.).

In habit resembling *G. erecta*, F. Muell., from New Holland, with which it may prove identical. “The follicles are slender, almost as much so as the leaves, and smooth. The pollinia accord with the

character of *Sarcolobus*, R. Br., but they are not 'apice lateraliter pellucidæ,' as Miquel has it. Dr. Seemann takes this for a new genus, and, indeed, as the genera are arranged by Decaisne, it does not accord throughout with either *Bidaria*, *Gongronema*, or *Gymnema* proper, while the erect habit is also peculiar. But if the two former genera be restored to *Gymnema*, the present plant could not well be excluded."—A. Gray.

EXPLANATION OF PLATE XXXI., representing *Gymnema stenophyllum*, A. Gray.—1, an entire flower; 2, the same, without the corolla; 3, styles; 4, staminal apparatus; 5, pollen masses; 6, follicles; 7, seed,—all, with the exception of 6, magnified.

III. **Hoya**, R. Brown in Trans. Wern. Soc. vol. i. p. 26; Decaisne in DC. Prod. vol. viii. p. 634. Calyx brevis, 5-phyllus. Corolla rotata, plus minusve alte 5-fida, laciniis planis v. reflexis, æstivatione valvata. Corona staminea 5-phylla, foliolis depressis patentibus v. plus minusve gynostegio verticaliter adnatis carnosis angulo interiore in dentem antheræ incumbentem producto. Gynostegium breve. Antheræ membrana terminatæ. Massæ pollinis basi affixæ, oblongæ, compressæ, conniventes, sæpius margine pellucidæ. Stigma muticum, cum papilla media obtusa v. subapiculatum. Folliculi læves v. appendiculis instructi, subpolypteri. Semina comosa.—Frutices v. suffrutices volubiles, scandentes aut decumbentes; foliis carnosis v. coriaceis v. membranaceis; floribus umbellatis; umbellis extra-axillaribus sæpius ∞ -floris.—*Sperlingia*, Vahl in Act. Soc. Hafn. vol. vi. p. 112.

A very distinct-looking *Hoya* has recently been discovered in the Samoan group, viz. *H. Samoënsis* (sp. nov.), Seem.; scandens, glabra; foliis ovato-ellipticis acuminatis 5-tuplinerviis, nervis utrinque prominulis; corollæ lobis extus glabris, intus puberulis. Nomen vernaculum Samoense, "O-le-Fua-dele-la."—Samoa Islands (Powell! in Herb. Hook.).

1. **H. bicarinata**, A. Gray in Proceed. Amer. Acad. vol. v.; scandens; foliis glabellis subcarnosis planis obscure penninerviis ovalibus obovatis seu ovatis brevissime abrupteque acuminatis basi rotundatis subcordatisve, lamina supra petiolum hirtellum glandulosa; pedunculo pedicellis haud longiori; sepalis lineari-oblongis; corollæ albæ extus glabræ intus puberulæ lobis ovatis acutis planis; coronæ stamineæ foliolis incrassatis, disco obovato concavo angulo interno longiuscule acuminato, marginibus haud revolutis, dorso eximie bicarinato.—*Asclepias volubilis*, Forst. Prodr. n. 128, et Icon. (ined.) t. 75 et 76, excl. syn.—Viti Levu and Ovalau (Seemann! n. 319). Also collected in Tana (Forster!), and the Samoan Islands (U. S. Expl. Exped.).

What I distributed under the name *H. pilosa* (n. 321) is probably only a young state of this species, having the leaves more hairy below.

2. **H. diptera**, (sp. nov.) Seem. in Bonplandia, vol. ix. p. 257; scandens, glabra; ramulis 4-angulatis; foliis ovato-ellipticis acuminatis basi ovatis carnosis penninerviis; pedunculis compressis subalatis, petiolo longioribus; floribus flavis.—Viti Levu and Taviuni, on trees (Seemann! n. 320). Also collected by U. S. Expl. Exped.

Perhaps a specimen, without flower, collected in the Isle of Pines (M'Gillivray), which has leaves twice as large as those of my specimens, may belong to this species, of which there are also imperfect specimens only.

ORDO LXII. LOGANIACEÆ.

All the genera of *Loganiaceæ* of tropical Polynesia are represented in Viti, with the exception of *Labordia*. That genus, which according to recent researches, ranks next to *Geniostoma*, is confined to the Hawaiian Islands. Three species of it are known, viz. 1, *L. tinifolia*, A. Gray, 2, *L. fagræoides*, Gaud., and 3, *L. sessilis*, A. Gray.

I. **Geniostoma**, Forst. Gen. p. 24. t. 12. Calyx parvus, acute 5-fidus. Corolla subinfundibu-

liformis, tubo calyce paulo longiore sensim ampliato in limbum 5-partitum patentem, lobis ovatis acutis, æstivatione dextrorsum convolutis, fauce barbata. Stamina 5, tubo inserta, filamentis brevissimis. Stylus filiformis; stigma crassiusculum, didymum aut subbilobum. Capsula oblonga aut ovata, valvis 2 coriaceo-lignosis, margine introflexis arcte junctis et constituentibus dissepimentum demum utrinque seminiferum et a valvulis demum divaricatis distinctum. Semina ∞ , ovato-angulata, aptera. Embryo (ex *G. ovato*) in medio albuminis carnosus, erectus, long. seminis; radícula cylindrica, cotyledonibus oblongis sublongiore.—Frutices sæpius glabræ, habitu fere Rubiacearum frutescentium, fructus fere *Bursariæ*, ramis teretibus; foliis oppositis, ovatis, integerrimis, persistentibus; stipulis intrapetiolaribus in vaginam concretis; floribus albis, in umbellas corymbos paniculasve dispositis, pedicellatis.—DC. Prodr. vol. ix. p. 26. *Anasser et Geniostoma*, Juss. Gen. pp. 150 et 420. *Anassera*, Pers. Ench. n. 602. *Aspilotum*, Banks et Soland. ms. ex Cunn. *Hæmospermum*, Blume, Bijdr. p. 1018; Benth. in Linn. Journ. vol. i.

Asa Gray has referred *G. crassifolia*, Benth., to *G. rupestre*, Forst., as a variety, so that the number of species of this genus indigenous to tropical Polynesia amounts to three, viz. *G. astylum*, A. Gray, from the Society Islands, and the two following.

1. **G. rupestre**, Forst. Prodr. n. 103, et Icon. (ined.) t. 58; foliis ovatis oblongis v. oblongo-lanceolatis acuminatis v. obtusis, basi attenuatis, vagina stipulari truncata brevissima; cymis axillaribus 3–7-floris petiolo demum longioribus; pedicellis medio 2-bracteolatis; calyce breviter 5-fido lobis ovato-acutis ciliolatis; corollæ lobis medio et basi intus villosiusculis; stylo basi villoso; stigmate indiviso; ovario glabro; capsula obovoidea 2-mucronulata lævi.—*G. Hæmosperma*, Steudl. Nom. *Hæmospermum arboreum*, Blume, Bijdr. p. 1018.—Common throughout Viti (Seemann! n. 300 et 301). Also collected in Tana (Forster! W. Anderson!), Tonga (Nelson! Capt. Cook! Barclay! Harvey!), Tahiti (Capt. Cook!), Wallis Island (Græffe! n. 42), New Caledonia (Anderson!), and Isle of Pines (Sir E. Home! M'Gillivray!).

Asa Gray is inclined to arrange all the forms of this species under the varieties *ellipticum*, *macrophyllum*, and *puberulum*.

2. **G. (?) microphyllum**, (sp. nov.) Seem. in Bonplandia, vol. x. p. 37; ramulis subfiliformibus sarmentosis glabris; foliis breviter petiolatis ovatis longe acuminatis subtus albido-punctatis; vagina stipulari truncata; floribus ignotis.—Woods of the southern parts of Viti Levu (Seemann! n. 304).

I can find nothing like this in our herbaria. The leaves are about $\frac{3}{4}$ of an inch long and 2–3 lines broad,—the thin rooting branches adhering to the trunks of trees, like *Ficus stipulata* and *Hedera Helix*.

II. **Fagræa**, Thunb. Nov. Gen. vol. ii. p. 34; DC. Prodr. vol. ix. p. 28. Calyx basi 2-bracteolatus, 5-partitus, lobis imbricatis obtusis. Corolla infundibuliformis, tubo superne subampliato, lobis obliquis per æstivationem contortis, demum patentibus. Stamina 5, medio tubo inserta, filamentis subulatis subexsertis, antheris 2-ocularibus subincumbentibus. Ovarium 2- v. marginibus carpellorum axim non attingentibus fere 1-loculare. Stylus filiformis; stigma peltato-depressum. Bacca corticata ovalis, 2-ocularis, septo e valvis induplicatis duplici. Placentæ pulposæ. Semina ∞ , pulpa immersa, parva, crustacea. Albumen corneum. Embryo minutus, in dimidia inferiore parte seminis; radícula infera v. subobliqua, cotyledonibus obtusis longiore.—Frutices v. arbores, glabri; ramulis sæpius tetragonis; foliis petiolatis oppositis, ovalibus, integris coriaceis; stipulis intrapetiolaribus; floribus albis, in corymbum racemumve trichotomum terminalem dispositis.—*Kuhlia*, Reinw. (non Kunth) et ipso monente Blume, Bijdr. 777.

1. "**F. Berteriana**, A. Gray, ms., ex Benth. in Linn. Journ. vol. i. p. 98; arborea; foliis longiuscule petiolatis obovato-oblongis obtusissimis v. breviter acuminatis coriaceis crassis obsolete

venosis, petiolorum basi stipulacea brevi rotundata; corymbo terminali brevi, trifido vel trichotomo; corollæ tubo elongato supra medium ampliato calyce triplo longiore.—Arbor 30-pedalis, affinis *F. Zeylanicæ*, corollæ tubi parte tenui longe exserta, brevior tamen est, corolla tota $2\frac{1}{2}$ –3 pollicaris nec 4–5 pollicaris, antheræ angustiores videntur.—*Carrissa grandis*, Berter. *Besleria laurifolia*, Soland. Prim. Fl. Ins. Pacif. p. 267, et in Parkins. Drawings of Tahit. Plants, t. 58 (ined.).—Nomen vernac. Tahitense, “Pua,” Vitiense “Bua.”—Bua or Sandalwood Bay of Vanua Levu, and Viti Levu (Seemann! n. 308; Harvey!). Also collected in the Marquesas (Barclay!), Loyalty Islands (Sir G. Grey!), Society Islands (Banks and Solander! Bidwill!), and New Caledonia (Forster! Sir E. Home!).

A middle-sized tree, which is very much esteemed by all Polynesian natives on account of its sweet-scented flowers, which on opening are pure white and gradually turn cream-coloured. In Viti the *Bua* blossoms in September and October, and one of the months of the Fijian calendar is occasionally called the Vulai Bua, or Bua month. The flowers, or rather corollas, are gathered after they have dropped on the ground, and brought home in baskets. They are tubular, white, and fleshy, and are either strung into necklaces, which retain their delicious and powerful perfume long after they are dry, or they are placed while still fresh in cocoa-nut oil, in order to impart scent to it. Sandalwood and Bua flowers are often put into the same vessel of oil. The abundance of the tree (which yields a hard, white wood) at Sandalwood Bay may have given rise to its native name “Bua,”—a form of “Pua,” (literally “THE flower”), by which the plant is known in the Society Islands.

2. **F. gracilipes**, A. Gray, l. c.; scandens; foliis lato-ovatis subcoriaceis obtusis v. apiculato-acutis basi in petiolum longum abrupte decurrentibus; cyma terminali sessili ∞ -flora, foliis multo brevioribus; calyce parvo; corolla (viridiuscula) e tubo angusto superne late obconico-ampliata; staminibus subexsertis; stigmatibus capitellatis; ovario prorsus 1-loculari, placentis arcte parietalibus.—*F. viridiflora*, Seem. in Bonplandia, vol. ix. p. 259.—Ovalau, on the outskirts of woods (Seemann! n. 306).

Flowers greenish-white; filaments curved, green; anthers yellow.

III. **Couthovia**, Gray in Proceed. Amer. Acad. vol. iv. p. 324, et vol. v. p. 320. Calyx 5-partitus, segmentis imbricatis rotundatis crassis, marginibus tenuibus. Corolla brevis, 5-fida, æstivatione valvata. Stamina 5, tubo v. faucibus inserta; filamenta brevia v. brevissima; antheræ oblongæ. Ovarium 2-loculare, ovatum, stylo apiculatum. Stigma subcapitatum, 2-lobum. Ovula in placentis medio dissepimento adnatis ∞ , amphitropa. Fructus clavatus, drupaceus, basi attenuatus, sarcocarpio tenui, putamine lignoso percrasso, 2-1-loculari, 2-1-sperma. Semina subcylindracea.—Arbores glabræ, stipulis *Labordeæ*, foliis subcoriaceis penninerviis, ovatis v. obovatis, cyma terminali e radiis 2–4 apice ∞ -floris, floribus parvis haud pedicellatis, corolla (alba) fere *Strychnorum* breviflorarum.

“The materials collected by Dr. Seemann,” says Asa Gray, l. c., “comprising flowers and fruit, confirm the genus *Couthovia* and fix its position in the vicinity of *Strychnos*, calling, however, for some extension of the character of Bentham’s third tribe. There are indications of dimorphism or incipient difference in sex in the flowers examined. Some corollas of *C. corynocarpa* are beardless or nearly so, and have the anthers almost sessile in the throat, while others of the same cyme are conspicuously bearded in the throat, and their equally subexserted anthers are borne on filaments of their own length, inserted some way down on the tube. The style is sometimes slender and exserted, sometimes shorter or very short; the ovary in the latter is certainly fertile.”

1. **C. corynocarpa**, A. Gray, l. c. vol. v. p. 320 (Tab. XXXII.); ramis fastigiatis; calycis segmentis ciliolatis; antheris oblongis, basi emarginatis, apice apiculatis. *Gærtnera pyramidalis*, Seem. in Bonplandia, vol. ix. p. 257, et vol. x. p. 37.—Nomen vernac. Vitiense, “Boloa.”—Interior of Viti Levu, in the Namosi Valley (Seemann! n. 303).

Drupe eaten by the wild pigeons.

EXPLANATION OF PLATE XXXII., representing *Couthovia corynocarpa*, A. Gray, from specimens collected by me.—1, an entire flower; 2, flower, laid open and the calyx removed; 3, a stamen; 4, cross section of ovary; 5, ripe fruit; 6 and 7, cross and longitudinal section of ripe fruit,—all, with the exception of 5, 6, and 7, magnified.

2. **C. Seemanni**, A. Gray, l. c., p. 320; ramis divaricatis; calyce segmentis margine glaberrimis; antheris subsagittatis; corolla fauce eximie albo-lanata, an semper?—*Gærtnera barbata*, Seem. in Bouplandia, vol. ix. p. 257, et vol. x. p. 37.—Ovalau, in forests (Seemann! n. 305).

The habit of these two species is very different; *C. corynocarpa* forming pyramidal trees, with dark-green foliage (made rather too light by our colourist), and they constitute a peculiar feature in the landscape of the Namosi Valley of Viti Levu; moreover they grow quite in the open country. *C. Seemanni*, on the contrary, inhabits the virgin forests of Ovalau, and has a light-green foliage, and spreading, not tapering, mode of branching.

IV. **Strychnos**, Linn. Gen. n. 253; DC. Prodr. vol. ix. p. 12. Calyx 5-lobus. Corolla tubulosa, hypocraterimorpha v. tubo abbreviato infundibuliformis, fauce nuda aut barbata, limbi 5-partiti lobis per æstivationem valvatis, sub anthesin patētibus. Stam. 5, fauci inserta, filamentis brevissimis, antheris subexsertis. Ovarium 2-loculare. Stylus filiformis. Stigma capitatum, indivisum v. obscure subbilobum. Ovula ∞ , in placentis carnosis dissepimento utrinque adnatis inserta, amphitropa, micropyle (ex Endl.) infera. Bacca corticata, 1-locularis, ∞ -sperma v. abortu 1-sperma. Semina in pulpa nidulantia, discoideo-compressa, umbilico ventrali. Embryo in basi albuminis cartilaginei subbilamellati, excentricus, rectus, brevis, cotyledonibus sessilibus foliaceis, radícula tereti vaga.—Arbores fruticesve, sæpius scandentes; foliis oppositis, brevipetiolatis, integerrimis, basi 3-5-nerviis; petiolis basi connatis; folium alterum sæpe abortivum et ex axilla ramulum simplicem cirrhiformem exserens; axillis in aliis speciebus spinam rectam gerentibus; corymbis axillaribus aut terminalibus; floribus albis seu albido-virescentibus sæpius odoratis.—*Ignatia*, Linn. fl. Suppl. p. 20. *Ignatiana*, Lour. Fl. Cochinch. vol. i. p. 155. *Brehmia*, Harvey in Hook. Journ. of Bot. 1842, p. 25, non Schrank; Benth. in Journ. Linn. Soc. vol. i.

1. **S. colubrina**, Linn.? DC. Prodr. vol. ix. p. 14; glabra, scandens; cirrhis plerisque bifurcatis; foliis ovatis ellipticisve obtusis v. vix acuminatis; cymis laxis axillaribus terminalibusque; floribus plerisque 5-meris; corollæ tubo calyce brevior.—*S. bicirrhosa*, Lesch. DC. Prodr. vol. ix. p. 16; Benth. l. c. *Modira Caniram*, Rheed. Mal. t. 24.—Viti Levu (Seemann! n. 302; Milne!).

V. **Canthiopsis**, (gen. nov. *Gærtnerearum*) Seem. Calyx cupuliformis, irregulariter 5-dentatus. Corolla tubo abbreviato, limbo patente 5-fido, lobis obovatis obtusis, æstivatione contortis. Stamina 5; corollæ tubo inserta; filamentis brevissimis; antheris linearibus longitudinaliter dehiscentibus, introrsis, exsertis. Ovarium 2-loculare, loculis 1-ovulatis, ovulis pendulis. Stylus elongatus; stigma bilobum. Drupa 2-locularis. Semina . . .—Frutex erectus, glaber; foliis oppositis petiolatis ellipticis v. ovato-oblongis acuminatis, basi attenuatis; integerrimis, penninerviis; stipulis intra-axillaribus ovatis acuminatis; cymis axillaribus terminalibusque paucifloris folio brevioribus, floribus pallide flavidis odoratis.

This new genus supplies the exact Loganiaceous parallel to the Rubiaceous subtribe *Canthiæ*, for which Bentham was searching when he wrote his valuable paper on this Order. *Canthiopsis* has solitary pendulous ovules, and forms a new tribe of *Loganiaceæ*. If at a future time that ill-defined Natural Order should be broken up, *Canthiopsis* would have to be referred to *Myoporineæ*, with which it agrees in the solitary pendulous ovules and other particulars, though the stipules would be against that arrangement, unless we look upon some of the verticillate-leaved *Myoporineæ* as having foliaceous stipules.

1. **C. odorata**, (sp. nov.) Seem. (Plate XLVI).—Korovono, Vanua Levu (Seemann! n. 260).

A shrub 6 feet high. Petioles about 1 inch long. Blade of leaf 4-5 inches long, 1½-2 inches broad. Corolla occasionally 6-merous, pale yellow. Tube villose inside.

EXPLANATION OF PLATE XLVI., representing *Canthiopsis odorata*.—1, a flower-bud; 2, an expanded flower; 3, corolla, laid open; 4, a stamen; 5, pistil; 6 and 7, sections of ovary,—all magnified.

ORDO LXIII. GENTIANEÆ.

I. **Erythræa**, Ren. Spec. 77; Griseb. in DC. Prodr. vol. ix. p. 57. Calyx 5-4-partitus; segmentis planiusculis exalatis. Corolla infundibuliformis, nuda, supra capsulam marcescens; tubo cylindrico; limbo 5-4-partito. Stamina 5-4, corollæ tubo superne inserta. Antheræ erectæ, spiralliter tortæ, exsertæ. Ovarium 1-loculare v. valvis parum introflexis semibiloculare; ovulis ad suturam insertis. Stylus distinctus, deciduus; stigmatе bilamellato aut indiviso capitulato. Capsula 2-valvis, septicida, 1-semibilocularis, placentis spongiosis suturalibus. Semina placentæ immersa, subglobosa, lævia, minuta.—Herbæ annuæ; caule subangulato; foliis basi connatis; cymis sæpius terminalibus dichotomis; floribus roseis v. albis aut flavis.—*Schenkia*, Griseb. in Seem. Bonplandia, vol. i. p. 226. *Hippocentaurea*, Schult. Estr. vol. i. p. 389.

Besides the species enumerated below, there is, in tropical Polynesia, a second species of this genus, which I discovered in Oahu, Hawaiian Islands, and which was held to be the type of a new genus, until A. Gray reduced it to *Erythræa*. "This plant," says the great American botanist, "was not met with by the naturalists of Wilkes's expedition. But having examined Seemann's n. 2272 and Remy's n. 375 from Oahu, I cannot regard the plant as other than a close congener of the plant which it most resembles, viz. *Erythræa spicata*. The leaves are broader and rounder, being broadly-oval; the tube of the corolla proportionally shorter, and its lobes broader; the sepals are less narrow and more carinate, or, if you please, winged on the back. But this varies somewhat, even in the sepals of the same flower, and, at most, is only a matter of degree, the sepals being carinate, at the base sharply so, in *E. spicata*. So other American species affect a transition in this respect to *Gyandra*, Griseb. (*Erythræa chironioides*, Torr.). Grisebach describes the stigma of his *Schenkia* as "capitulatum" or "crassiusculum;" but there must be some mistake or confusion here, for in Seemann's own specimens, which I have examined, as also in those of Remy, the stigma is very large and just as in *E. spicata*, that is, appearing as this organ is characterized by Grisebach in the section *Spicaria*, but upon maceration separating completely into two nearly orbicular flat divisions. In *Erythræa* generally I cannot verify the character "corolla supra capsulam contorto-marcescens."

1. **E. (Spicaria) australis**, R. Brown, Prodr. p. 451; caule stricto superne ramoso; foliis elliptico-oblongis obtusis; cyma basi dichotoma spiciformi, flore centrali brevissime pedicellato; corollæ 4-5-fidæ tubo sub anthesi calycem paulum excedente, lobis anguste oblongis obtusis.—Viti, locality not specified (Sir E. Home!). Also collected in New Caledonia (M'Gillivray), Isle of Pines (M'Gillivray!), and New Holland.

II. **Limnanthemum**, Gmel. in Act. Petrop. 1769. p. 527; Griseb. in DC. Prodr. vol. ix. p. 138. Calyx 5-partitus, segmentis basi in tubum connexis. Corolla decidua, rotata, submembranacea et siccata fugitiva, 5-partita, segmentis varie fimbriatis glandulis hinc epipetalis instructa. Stamina 5, corollæ tubo inserta, filamentis basi æqualibus. Antheræ erectæ, immutatae. Ovarium glandulis 5 hypogynis cinctum, 1-loculare, ovulis suturæ insertis. Stylus nunc abbreviatus, cum stigmatе 2-lobo persistens. Capsula 1-locularis, evalvis, demum maceratione aperiunda; placentis suturalibus. Semina 2-∞; testa lævi aut muricata.—Herbæ perennes, in aquis natantes, inflorescentia axillari aut petiolari; foliis longe petiolatis natantibus peltatis v. cordatis, orbiculatis, integerrimis v. integris; umbellis inæqualibus sessilibus emersis. Ludunt quædam flore 5-8-mero.

1. **L. Kleinianum**, Griseb. Gent. p. 344, et in DC. Prodr. vol. ix. p. 139 (Tab. XXXIII.); foliis cordato-orbiculatis, supra lævibus v. asperiusculis, subtus glanduliferis demum lacunoso-asperis, 3-nerviis, nervis subtus prominentibus; calycis segmentis ovato-lanceolatis corolla subduplo brevioribus capsulam subæquantibus; corollæ albæ fundo luteæ segmentis margine et intus inordinate fimbriatis eglandulosis; stylo abbreviato crasso; stigmatе 2-lobo; capsula ∞-sperma, seminibus nitidis lævibus obtuse carinatis.—*Villarsia Indica*, Wall. Cat. n. 4352. *Menyanthes*, e Nov. Caled. Forst. Prodr. n. 502 excl. syn. Rheed. (fide spec. in Mus. Brit.). Nomen vernac. Vitiense "Beka-

bekakairaga."—Viti Levu, in ponds (Seemann! n. 323). Also collected in New Caledonia (Forster!) and the East Indies.

The plant distributed by Hooker and Thomson under the provisional name of *L. Kleinianum* cannot be Grisebach's plant, as the seeds are muricate. The plant figured by me agrees in every essential point with *L. Kleinianum*, and I have therefore referred it to that species. If future investigations should bring to light any distinction between this Polynesian species and *L. Kleinianum*, let it be named *L. Forsteri*, as it was first discovered, during the last century, by Forster in New Caledonia, and referred by him to *Menyanthes*. It is, therefore, not a recent introduction, as Pickering supposes. M'Gillivray collected a *Limnanthemum* in Aneitum, New Hebrides, which may possibly belong to this species, but it wants ripe fruit.

EXPLANATION OF PLATE XXXIII. representing *Limnanthemum Kleinianum*, Griseb.—Fig. 1, a flower-bud; 2, an expanded flower; 3, stamen; 4, calyx and nearly ripe fruit; 5, cross-section of fruit; 6, a seed:—all magnified.

ORDO LXIV. BORAGINEÆ.

Besides the species described or alluded to below, there is, in tropical Polynesia, *Heliotropium Curassavicum*, Linn., from the Sandwich Islands (D. Nelson! Macrae!), *Heliotropium anomalum*, Hook. et Arn. (*Lithospermum incanum*, Forst. Prodr. n. 63; Icon. (ined.) t. 35; *Pentacarya heliotropioides*, DC.), from Savage Island (Forster!). Keou or George Island (W. Anderson!), and Modoo and Palmerston Islands (D. Nelson!), as well as the variety *argenteum*, A. Gray, from the Sandwich Islands (D. Nelson!), and *Tournefortia gnaphalioides*, R. Brown, (*Heliotropium gnaphalioides*, Linn.), from the Society Islands (Lay and Collie!).

I. **Cordia**, Plum. Gen. 13. t. 14. Calyx tubulosus obovatus campanulatusve, 4–5-dentatus, rarius 3- seu 6–8-dentatus, regulariter aut irregulariter, nunquam circumscisse dehiscens. Corolla infundibuliformis vel hypocaterimorpha; limbo 4–5-partito, rarius 6–12-lobo. Stamina tot quot lobi, corollæ tubo inserta. Stylus bis bifidus, sæpius exsertus. Drupa ovata aut globosa, pulposa, calyce persistente sæpius cincta, nunc in ovario 4-locul. post anthesin abortu ad loculos 1–3 sæpe reducta; loculis 1-spermis.—Arbores aut frutices, foliis alternis aut rarissime suboppositis, petiolatis, forma varia, integerrimis aut dentatis; floribus dispositione variis, interdum abortu polygamis aut monoicis; corolla fere omnium alba.—DC. Prodr. vol. ix. p. 471. *Cordia* et *Varronia*, Linn. Gen. n. 256 et 258. *Sebestena*, Bank. Dill.

Besides the two species enumerated below, there is in tropical Polynesia *C. dichotoma*, Forst. Prodr. n. 110; R. Brown, Prodr. p. 498, from New Caledonia (Herb. Mus. Brit.! probably collected by Forster) and the east coast of New Holland (R. Brown!). The leaves are crenate and lepidote underneath, whilst the calyx is smooth. It is altogether different from the plant regarded by Sprengel as Forster's *C. dichotoma*.

I. **C. (Sebestenoides) subcordata**, Lam. Ill. n. 1899 (Tab. XXXIV.); arborea, glabra; ramis teretibus; foliis longis petiolatis ovatis aut subcordatis subacuminatis integerrimis subundulatis subtus ad nervorum lateralium axillas barbatis; paniculis lateralibus subracemosis; calyce cylindraceo exsucco glabriusculo coriaceo late irregulariter 3–5-dentato; corolla (aurantiaca) infundibuliformi tubo calyce paulo longiore ore patente limbo rotundo 6–7-lobo; drupa ovata submucronata.—*C. Sebestena*, Forst. Prodr. n. 108, non Linn.; Sol. Prim. Fl. Ins. Pacif. p. 235 (ined.); Parkins. Drawings of Tahit. Plants. t. 29 (ined.). *C. campanulata*, Roxb. Fl. Ind. ed. i. vol. ii. p. 336. ed. ii. vol. ii. p. 593. *C. Rumphii*, Blum. Bijdr. p. 843. *C. hexandra*, Willd. Herb. *C. orientalis*, Rœm. et Schult. Syst. vol. iv. p. 449. *Novella nigra*, Rumph. Amb. vol. ii. p. 226. t. 75.—Nomen vernac. Vitiense, "Nawanawa," teste Seemann; Tahitiense, teste Solander, "Tou."—Island of Tavuni, about Somosomo, and Vanua Levu (Seemann! n. 337), Viti Levu (Barclay!). Also collected in Wallis Island (Græffe!), and in the Hawaiian (Macrae! Barclay! Seemann!), Marquesas (Barclay!), and Society Islands (Banks and Solander!). Diffused over the East Indies, the Moluccas, tropical New Holland, and the islands of Eastern Africa.

The seeds of this tree are eaten by the natives, but there is not much taste in them. The flowers somewhat resemble those of *C. speciosa*, but they are neither so bright nor so numerous as in that species. The older botanists always confounded *C. subcordata* with *C. speciosa* (*Sebestena*), and Solander gives of it, in his manuscript Flora of the Society Islands, under that name, the following detailed description:—"Arbor procera, interdum præcipue locis humidis 80-pedalis et ultra. Rami teretes, glabri. Folia alterna, petiolata, ovata, acuta (sæpe acuminata), integerrima, obsolete undulata, glabra, superne pilis raris brevissimis decumbentibus adspersa, subtus lævia, spithamæa et sæpe pedalia, venosa; venis paucis remotis, prope quas in foliis junioribus lanugine rivulosa. Petioli foliis duplo breviores, glabriusculi. Paniculæ florum oppositifoliæ, solitariæ, bis vel ter dichotomæ, petiolis breviores. Calyx cylindræus, teres, lævis, semuncialis, 3-, 4- vel 5-dentatus. Dentibus ovatis, inæqualibus, unicus plerumque cæteris duplo major. Corolla infundibuliformis, fulva. Tubus calyce paulo longior, vix uncialis. Limbus campanulatus, 5-fidus. Filamenta 5, tubo corollæ adnata, superne tantum libera, longitudine tubi. Antheræ oblongo-lineares, erectæ, flavæ. Stylus staminibus longior sed corolla brevior, superne bis 2-fidus. Stigmata obtusiuscula. Drupa ovata, acutiuscula, calyce persistenti excreto erecto circumvoluta. Nux sulcato-sinuosa, dura, crassa, 4-ocularis. Nuclei solitarii, ovati, compressi, nivei.

"Authores arborem Indiæ Orientalis describentes flores dicunt aurantiacos seu fulvos uti nostri fuere, illi autem qui occidentalem arborem describunt flores aiunt escarlatinos seu miniatos et folia aspera; forte specie distinguendæ, quod conferentibus appareat."

"Obs.—Collibus glareosis saxosisque fere vix 30-pedalis, in locis humilioribus luxurians, alta evadit arbor, ubi frequens plantata, præcipue prope ædes, ob usum foliorum in tingendo rubro cum fructu *Fici tinctoriæ*, ms. 1514. Folia vel guttatim adsparguntur succo ficuum, aquaque nucum cocos, vel immerguntur liquore ex aqua cocos et succo ficuum præparata, deinde assidue manibus premantur conterunturque; color tunc emicat ruber et tinctura ex inde colligitur quæ per fibras *Cyperii elati* colati linteis conciliat elegantem colorem amœne rubrum. Loco foliorum *Cordiæ Sebestenæ*, folia juniora *Convolvuli Brasiliensis*, Linn. Sp. Pl., adhibentur, minus tamen expetita nec in usu vocatur ubi *Sebestena* occurrit."

EXPLANATION OF PLATE XXXIV., representing *Cordia subcordata*, Lam. Fig. 1, an entire flower; 2, corolla laid open; 3, pistil; 4 and 5, longitudinal and cross-sections of ovary; 6, ripe fruit:—Figs. 3, 4, and 5, slightly magnified. Fig. 6, copied from Parkinson's Drawing at the British Museum, which has also served as a pattern to the colourist for the whole plate.

2. **C. (Gerascanthus) aspera**, Forst. Prodr. n. 109 (Tab. XXXV.); arborea, pube ferruginea hirsuta demum glabrescens; foliis membranaceis ovatis acuminatis asperulis supra glabratis, serratis, serraturis subulatis; floribus parvis cymoso-glomeratis; calyce ovato-cylindræo ferrugineo-villoso 10-striato, dentibus 5 minimis subulatis; corollæ (albæ) tubo calycem vix superante lobis æstivatione inflexis et corrugatis longiore; drupa ovata acuta nuda, putamine 1-2-spermo. A. Gray in Proceed. Amer. Acad.—*C. Sprengelii*, DC. Prodr. vol. ix. p. 473. *C. dichotoma*, Sprengl. Pug. p. 19. n. 34. non Forst. Nomen vernac. Vitiense, "Tou."—On the banks of streams, Taviuni, and most of the other islands (Seemann! n. 336). Also collected in the Tongan (Forster! D. Nelson!), and Samoan islands (U. S. Expl. Exped.).

A tree about 20 feet high, the fruit of which is used for glueing native cloth together.

EXPLANATION OF PLATE XXXV., representing *Cordia aspera*, Forst. Fig. 1, a flower-bud; 2, an open flower; 3, corolla laid open; 4, a pistil; 5, an anther; 6, petal; 7 and 8, longitudinal and cross-sections of ovary:—all magnified. One of the larger leaves is represented in outline in the background of the plate.

II. **Tournefortia**, Linn. Gen. n. 192. Calyx 5- rarius 4-partitus. Corolla hypocraterimorpha, rarius tubo abbreviato 5-fida, fauce nuda. Stamina 5 rarius 4 inclusa, plerumque medio aut supra mediam partem tubi inserta; filamentis tubo adnatis; antheris linearibus aut lanceolatis, plerumque acutis submucronatis. Stylus sæpius brevis, nunc elongatus aut deficiens. Stigma indivisum v. 2-lobum, peltatum v. subconicum. Ovarium 4-loculare, ovulis in loculo solitariis, pendulis, anatropis. Fructus 2-carpellaris, carpellis nunc indivisis pyreniformibus 2-spermis 2-3-ocularibus, nunc 2-partitis et ideo fructus 4-dymus seu 4-gaster evadens. Semina in loculis solitaria; radícula supera, brevi, cotyledonibus ovatis planis.—Frutices erecti aut scandentes, rarius aut arborescentes aut herbæ, foliis sæpissime alternis petiolatis integerrimis, rarissime aut partim oppositis aut sessilibus aut sinuatis; spicis secundifloris bracteatis sæpius cymosis, corollis albis v. flavidis.—DC. Prodr. vol. ix. p. 513.—*Messerschmidia*, Linn. Mant.

1. **T. (Mallota) argentea**, Linn. fil. Suppl. 133; fruticosa, erecta, tota dense sericeo-tomentosa; foliis ad apices ramorum confertis ovalibus obovatisve sessilibus integerrimis; cyma subpaniculata, spicis confertis abbreviatis; corolla breviter tubulosa, lobis rotundatis; stigmatibus subsessilibus 2-fido; baccis ovatis glabris.—Common on the seabeach of nearly all the Viti Islands (Seemann! n. 335). Also collected in the Society Islands (Banks and Solander!), Otakoo-taea (Nelson!), Savage Island (Capt. Cook!), Chesterfield group (Mus. Brit.), and Tongan Islands (Forster!). Diffused over tropical New Holland, the Moluccas, East Indies, and Mauritius.

ORDO LXV. CONVULVULACEÆ.

This Order is represented in tropical Polynesia by ten genera, including, besides those described below, *Jacquemontia*, *Convolvulus*, *Calystegia*, *Bonamia*, and *Evolvulus*. We have of *Jacquemontia* one species, viz. *J. Sandwichensis*, A. Gray (*Convolvulus ovalifolius*, Hook. et Arn. Bot. Beech. non Vahl; *Ipomœa ovalifolia*, Choisy. pro parte), from the Hawaiian Islands (Menzius! Nelson!); of *Convolvulus* one species, viz. *C. parviflorus*, Vahl, Symb. vol. iii. p. 29 (*C. corymbosus*, Forst. Prodr. n. 80), from New Caledonia and the Isle of Pines (W. Anderson! M'Gillivray!); of *Calystegia* three Norfolk Island species, viz. *C. affinis*, Endl., *C. Soldanella*, R. Brown, and *C. marginata*, R. Brown; of *Bonamia* one species, viz. *B. Menziesii*, A. Gray, from the Sandwich Islands (Menzius! in Mus. Brit.); and of *Evolvulus* one species, viz. *E. linifolius*, Linn. (*E. heterophyllus*, Labill. Sert. Austr. Caled. t. 29), from New Caledonia (. . .).

I have succeeded in identifying all Forster's and Solander's *Convolvulaceæ*, with the exception of *Convolvulus grandiflorus*, Forst. Prodr. n. 76, from Tana, and *Ipomœa carnea*, Forst. Prodr. n. 83, from the Society Islands. The former, according to Choisy, is identical with *Calonyction speciosum*; the latter may be either *Ipomœa denticulata* or *I. campanulata*. But at the British Museum there are no authentic specimens, figures, or description of these two, and Forster's brief diagnoses are insufficient for identification.

I. **Batatas**, Rumph. Amb. vol. v. p. 367; Choisy. in DC. Prodr. vol. ix. p. 337. Sepala 5. Corolla campanulata. Stamina inclusa. Stylus 1. Stigma capitatum, 2-lobum. Ovarium 4-loculare aut abortu 3-2-loculare. Capsula dehiscens.—Herbæ aut suffrutices.—*Bombycospermum*, Presl, Rel. Hænk.

Besides the following two species there is in tropical Polynesia *B. pentaphylla*, Choisy., collected in the Hawaiian Islands (Nelson!).

1. **B. edulis**, Choisy. Convol. Or. p. 53; DC. Prodr. vol. ix. p. 338; radice tuberosa; caule repente raro volubili; foliis variis sæpius angulatis etiam lobatis 2-6 pollices longis acutis cordatis petiolatis; pedunculis petiolum æquantibus aut superantibus 3-4-fidis; sepalis acuminato-mucronatis raro subtruncatis exterioribus paulo brevioribus; corolla campanulata (?) purpurea.—*Batatas*, Rumph. Amb. vol. v. p. 967. t. 130. *Kappa Kalengu*, Rheed. Mal. vol. vii. p. 95. t. 50. *Convolvulus Batatas*, Linn. Am. Ac. vol. vi. p. 121. *C. esculentus*, Sal. Prodr. 123. *C. chrysorrhizus*, Sol. in Forst. Plant. Escul. 24; Forst. Prodr. n. 503; Soland. Prim. Fl. Ins. Pacif. p. 224, et in Parkins. Drawings of Tahit. Plants, t. 19 (ined.). *Ipomœa mammosa*, Choisy. Convol. Or. p. 93, ex parte?—Nomen vernac. Vitiense, "Kumara" v. "Kawai ni papalagi."—Cultivated throughout Viti (Seemann!).

The Sweet Potato succeeds well under cultivation, but is not much valued by the natives. It is probably an introduction from New Zealand, as one of its native names (Kumara) is identical with that used by the Maories, and as the other vernacular name (Kawai ni papalagi, or foreign *Dioscorea*), points to its importation from abroad. It is singular that the Quichua name for sweet potato, which I found in the highlands of Ecuador, is "Cumar," identical with the Polynesian Kumara or Umara, and perhaps pointing to the country whence the South Sea Islanders originally obtained this esculent. I directed the attention of Mr. Markham to this fact, and he has incorporated it in his 'Dictionary of the Quichua Language.'

2. **B. paniculata**, Choisy. in DC. Prodr. vol. ix. p. 339; caule volubili glabro crasso; foliis petiolatis amplis palmatis 5-7-fidis glabris, lobis ovato-lanceolatis obtusiusculis raro acuminatis; pedun-

culis petiolos multo superantibus ∞ -floris dichotomis; sepalis ovato-rotundatis concavis obtusissimis æqualibus 3–4 lineas longis; corolla (purpurea) basi coarctata speciosa; seminibus longe pilosis.—*C. paniculatus*, Linn. Spec. 223. *C. insignis*, Spreng. Syst. vol. i. p. 592. *Ipomœa paniculata*, R. Brown, Prodr. p. 486 (non Burm.), Bot. Reg. t. 62. *I. Mauritianæ*, Jacq. Hort. Schœnb. vol. xi. p. 39. t. 200. *I. gossypifolia*, Willd. Enum. p. 208. *I. eriosperma*, Beauv. Fl. Owar. vol. ii. p. 73. t. 105. *I. insignis*, Andr. Bot. Rep. 635; Ker, Bot. Reg. 75; Sims, Bot. Mag. 1790. Nomina vernac. Vitiens. “Wa Uvi” et “Dabici.”—Ovalau and Viti Levu (Seemann! n. 330; Storek! n. 902).

II. **Pharbitis**, Choisy. Convol. Or. p. 56, et in DC. Prodr. vol. ix. p. 341. Calyx 5-sepalus. Corolla campanulata aut campanulato-infundibuliformis. Stylus 1; stigma capitato-granulatum. Ovarium 3- rarius 4-loculare, loculis 2-spermis.—Herbæ volubiles, elongatæ, speciosæ, per plurimæ ornamentum gratiâ in hortis cultæ; pleræque retrorsum pilosæ.—*Convolvuloides*, Mœnch. *Ornithospermum*, Raf.

1. **P. insularis**, Choisy. Convol. l. c.; DC. Prodr. vol. ix. p. 341; caule molliter et retrorsum pubescente; foliis petiolatis cordato-acuminatis cinereo-pubescentibus; pedunculis petiolo longioribus 2– ∞ -floris; bracteis lineari-lanceolatis semipollicaribus; sepalis cuneato-lanceolatis acutissimis pubescentibus semipollicaribus, circa fructum elongatis apice acuminato-subfalcatis; corolla cærulea demum purpurea.—*Convolvulus cælestis*, Forst. Prodr. n. 77, et Icon. (ined.) t. 44. *Ipomœa insularis*, Steudl. Nom. Nomen vernac. Vitiense, “Wa Wuti.”—Common on the seabeach of Taviuni and most other Vitian islands (Seemann! n. 331; Barclay!). Also collected in Tana (Forster!) Norfolk Island, and the Sandwich (Barclay! Nelson!) and Tongan Islands (Nelson!). Is found also on the east coast of New Holland.

Choisy refers Forster's *Convolvulus cælestis* to *Pharbitis Nil*, but if *P. Nil* and *insularum* are distinct, which I very much doubt, it belongs certainly to the latter. The flowers are blue in the morning, but turn purple towards sunset; and they are used by the natives for decorating their persons.

III. **Calonyction**, Choisy. Convol. Or. p. 59, et in DC. Prodr. vol. ix. p. 345. Sepala 5. Corolla infundibuliformis, speciosissima. Stamina exserta. Stylus 1. Stigma capitatum, 2-lobum. Ovarium 2-loculare aut alterius dissepimenti rudimento sub-4-loculare 4-ovulatum.—Herbæ volubiles, speciosæ, corollâ *Daturas* mentientes. Pedicelli carnosii.—*Bona-nox*, Rafin.

1. **C. speciosum**, Choisy. Convol. Or. p. 59; caule altissimo scandente lævi v. muricato; foliis amplis glaberrimis integerrimis v. angulatis; pedunculis longissimis; sepalis aristatis v. rarius obtusis æqualibus.—*Ipomœa Bona-nox*, Linn. Sp. 228; Forst. Prodr. n. 82; Cav. Icon. vol. iii. p. 52. t. 300; Bot. Mag. t. 752. *I. grandiflora*, Roxb. et Wall. *I. latiflora*, Bot. Reg. 889, excl. syn. non R. et Sch. *I. noctiluca*, Bot. Reg. not. 917. *I. ambigua*, Endl. Fl. Norf. n. 108. *I. carinata*, Endl. Fl. Norf. n. 107. *Quamoclit longiflora*, Don. *Convolvulus muricatus*, Linn. *C. grandiflorus*, Linn. Suppl. (et Forst. Prodr. n. 76?). *C. longiflorus*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 222, et in Parkins. Drawings of Tahit. Plants (ined.) t. 16. Nomen vernac. Vitiense, “Wa ia.”—Taviuni and most other Vitian Islands, common (Seemann! n. 332). Also collected in Tana (Forster!), and the Society (Banks and Solander!) and Tongan Islands (Nelson!). Common in tropical America and Asia.

2. **C. comosperma**, Boj. Hort. Maurit. p. 228; DC. l. c.; caule glabro lævi; foliis integris cordato-acuminatis; pedunculo petiolum paulo superante 1-floro; sepalis obtusis non acuminatis; seminibus nigris margine et apice sericeo-villosis.—Nomen vernac. Vitiense, “Tobici.”—Seabeach of Taviuni (Seemann! n. 333). Also found on the east coast of tropical Africa.

IV. **Ipomœa**, Linn. Spec. 227; Choisy. in DC. Prodr. vol. ix. p. 348. Calyx 5-sepalus. Corolla campanulata. Stamina inclusa. Stylus 1. Stigma capitatum, sæpius 2-lobum. Ovarium 2-loculare, loculis 2-spermis. Capsula 2-locularis.—Herbæ, suffrutices aut etiam arbores.—*Piptostegia*, Hoffm. *Leptocallis*, Don, Gen. Syst.

Besides the species described below, there are in tropical Polynesia (1) *I. fimbriosepala*, Chois., from Aneitum, New Hebrides (M'Gillivray!); (2) *I. campanulata*, Linn. (*Convolvulus grandiflorus*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 221, et in Parkins. Drawings of Tahitian Plants, t. 14 et 15 (ined.) from Tahiti (Banks and Solander! Wiles and Smith!); (3) *I. cataractæ*, Endl., from Norfolk Island (distinct from *Pharbitis insularis?*); and (4) *I. pendula*, R. Brown, Prodr. n. 486 (*Convolvulus mucronatus*, Forst. Prodr. n. 79), from New Caledonia (W. Anderson! M'Gillivray!).

1. **I. Pes-Capræ**, Swartz, H. Sub. 2 ed. p. 289; caule repente radicante; foliis petiolatis subrotundatis emarginatis bilobisve venosis crassiusculis glaberrimis, venis omnibus parallelis; pedunculis 1- aut ∞ -floris petiolos paulo superantibus; sepalis ovato-lanceolatis; corolla purpurea speciosa.—*Convolvulus Pes-Capræ*, Linn. Spec. 226. *C. Brasilianus*, Linn. l. c.; Forst. Prodr. n. 81. *C. marinus*, Rumph. Amb. vol. v. p. 433. t. 159. fig. 1. *Ipomœa maritima*, R. Brown, Prodr. p. 486; Bot. Mag. t. 319. *I. carnosâ*, R. Brown, l. c. Nomen vernac. Vitiense, "Lawere."—Common on the sandy seabeach of all the Viti Islands (Seemann! n. 326; Barclay!). Also collected in the Marquesas (Barclay!), Society (Banks and Solander!), and Sandwich Islands (Barclay!); also in New South Wales (R. Brown!). Common throughout the tropics of the eastern and western hemisphere.

The leaves are roasted and used for caulking canoes by the natives.

2. **I. peltata**, Chois. Convol. Or. p. 70; DC. Prodr. vol. ix. p. 359; caule tereti glabro; foliis longe petiolatis peltatis cordato-umbilicatis glabris, petiolo in axilla rufo-piloso; pedunculis folia æquantibus spicatum ∞ -floris; sepalis semipollicaribus ovato-ellipticis obtusis glabris; corolla ampla (alba) campanulata; antheris lanatis; seminibus villosis.—*Convolvulus peltatus*, Linn. Sp. 221; Forst. Prodr. n. 78; Parkins. Drawings of Tahit. Plants (ined.) t. 17. *Ipomœa nymphæfolia*, Blume, Bijdr. p. 719. Rumph. Amb. vol. v. p. 428. t. 157. Nomen vernac. Vitiense, "Wa bula."—Climbing over rocks and small shrubs and trees, island of Taviuni (Seemann! n. 325). Also collected in the Society Islands (Banks and Solander!). Found in the islands of the east coast of tropical Africa, and in Java and Amboina.

Stem and branches containing a milky juice. Young branches and leaves glutinous. Blade of the largest leaf I measured 10 inches long and 10 broad.

3. **I. Turpethum**, R. Brown, Prodr. p. 485; caule angulato glabro v. subpubescenti; foliis petiolatis variantibus cordatis nunc integris nunc angulato-sinuatis aut crenatis, apice nunc obtusis mucronatis nunc acuminatis, utrinque semper velutino-pubescentibus; pedunculis crassis 1-4-floris bracteatis; bracteis deciduis velutinis ovato-lanceolatis; sepalis exterioribus usque ad 15 lineas longis majoribus ovato-rotundatis sæpe nigro-maculatis velutino-tomentosis, interioribus glabris, omnibus mucronatis; capsulæ epicarpio separabili; seminibus glabris.—Ker, Bot. Reg. 279.—*Convolvulus Turpethum*, Linn. Sp. 221; Blackw. t. 397; Bot. Mag. 2093; Wight, Ill. Suppl. t. 38. *C. alatus*, Sol. Prim. Fl. Ins. Pac. p. 222, et in Parkins. Drawings of Tahit. Plants, t. 16 (ined.). *Operculina Turpethum*, Silv. Man. En. Pl. Bras. pp. 16, 49. *Spiranthus Turpethum*, Boj. Hort. Maurit. p. 226. *Argyreia alatula*, Miq. Fl. Nerl. Ind. vol. ii. p. 687. Nomen vernac. Vitiense, "Wa buco."—Running along the ground, and creeping over rocks and low brushwood, Taviuni, Viti Levu and Vanua Levu (Seemann! n. 327 et 328; Barclay!). Also collected in the Society (Banks and Solander! Nelson!) and Tongan Islands (Nelson! Forster), as well as in Tana (Barclay!), Eromanga, and Aneitum, New Hebrides (M'Gillivray!). Brown found it on the Endeavour River, New Holland. It is also common in the East Indies.

The blade of the largest leaves I measured was 1 foot 5 inches long, and 1 foot 4 inches broad, with a petiole of 18 inches. It begins to flower in June.

4. **I. denticulata**, Chois. in DC. Prodr. vol. ix. p. 379; caule glaberrimo nigricante; foliis cordato-hastatis v. cordatis glaberrimis apice obtusis mucronatis 1-2 pollices longis, auriculis obtusis v. sæpe lateraliter unidentatis; petiolis longis; pedunculis 1-floris petiolo brevioribus bracteolatis;

sepalis ovatis obtusis quandoque mucronulatis 2-3 lineas longis glabris nigrescentibus, exterioribus angustioribus acutiusculis; corolla 4-5 calycem superante glabra.—*Convolvulus denticulatus*, Desr. Enc. vol. iii. p. 540, non R. et Schult. *Ipomœa lævigata*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 220, et in Parkins. Drawings of Tahit. Plants (ined.) t. 12 et 13. Nomen vernac. Vitiense, "Sovivi."—Seabeach of Taviuni (Seemann! n. 304). Also collected in Aneitum (M'Gillivray!) and the Society (Banks and Solander! Barclay!) and Tongan Islands (Barclay!).

V. **Aniseia**, Chois. Convol. Or. p. 99, et in DC. Prodr. vol. ix. p. 429. Sepala 5, 2- aut 3-seriatim disposita, nempe 2 exteriora majora inferius inserta et in pedunculum decurrentia, tertium intermedium, et 2 interiora minora altius inserta. Corolla campanulata. Stylus 1. Stigma 2-lobum, capitatum aut sæpe complanatum. Ovarium 2-loculare, 4-ovulatum. Capsula 2-locularis.—Herbæ aut suffrutices.

1. **A. uniflora**, Chois. Convol. Or. p. 101; caule volubili; pedunculis calycibusque pubescentibus; foliis longe petiolatis oblongis integerrimis, basi attenuatis, apice obtusis mucronatis, supra glabris, subtus petiolisque puberulis; pedunculis petiolos superantibus unifloris, bibracteatis, bracteis linearibus acutis; sepalis exterioribus ovatis obtusis basi oblique subcordatis; corolla (alba) calycem paulo superante extus pilosa; filamentis glabris; capsula intus glabra, 2-loculari, loculis 2-spermis; seminibus glabris.—In swamps, Ovalau, twining around reeds (Seemann! n. 329).

Perhaps this may be different from *A. uniflora*, Chois.; the chief discrepancy between the living specimens here described and Choisy's diagnosis being in the shape and size of the leaves, the length of the petiole, and the smoothness of the inside of the capsule. In the Fijian plant the blade of the leaf is $2\frac{1}{2}$ inches long, and 10-12 lines broad; the petiole 1 inch long.

ORDO LXVI. SOLANACEÆ.

Wherever the Polynesian language is spoken, including New Zealand, there is a general term for the plants of this Natural Order, viz. Boro, Poro, or Poroporo, as the different dialects have it. Besides those *Solanaceæ* described or alluded to below, there are in the Hawaiian islands, *Lycium Sandwichense*, A. Gray, *Nothocestrum latifolium*, A. Gray, *N. longifolium*, A. Gray, and *N. breviflorum*, A. Gray. *Lycopersicum esculentum*, Mill., the Tomato, is cultivated in the Society and Sandwich Islands, where it is a recent introduction.

I. **Solanum**, Tournef. Inst. p. 148. t. 62; Dunal in DC. Prodr. vol. xiii. sect. 1. p. 27. Calyx 5-(rarius 4-6-10-)partitus -fidus -dentatus -crenatusve, atque etiam integer, regularis v. rarius subirregularis. Corolla rotata, cupularis v. patellaris, tubo brevi, limbo plicato, 5-(rarius 4- v. 6-)fido -partito v. -angulari. Stamina 5, rarius 4 v. 6, corollæ fauci adnata, plerumque exserta; filamenta brevissima, æqualia v. rarius inæqualia. Antheræ liberæ, apice poris 2 dehiscentes, conniventes, rarissime connatæ, æquales v. interdum inæquales, loculis lateralibus connectivo non conspicuo adnatis. Ovarium 2-(rarius 3-4-)loculare, placentis dissepimento insertis adnatis ∞-ovulatis. Stylus simplex. Stigma obtusum. Bacca 2-(rarius 3-4-)locularis. Semina ∞, subreniformia, compressa. Embryo periphericus, spiralis, albumen carnosum includens.—Herbæ annuæ aut perennes, suffrutices frutices v. arbores, inermes v. aculeatæ aut rarius spinosæ, glabræ v. pilosæ, pilis simplicibus glanduliferis v. stellatis. Stirps epigæa, sobolibus non raro tuberiferis subterraneis; truncus lignosus v. caulis ramosus, erectus, strictus v. flexuosus, scandens aut subvolubilis, ramis plus minus patentibus, interdum spinescentibus. Perulæ (foliorum prima rudimenta) in tuberibus sobolibusque. Folia exstipulata, sed interdum auriculata (auriculæ sic dictæ sunt folia ramulorum juniorum axillarium), alterna, solitaria gemina aut ternave, raro sessilia, sæpius petiolata, petiolo hinc inde alato, in nonnullis cirrhoso, penninervia v. palmatinervia, integra v. varie

divisa. Gemmæ nudæ, foliis induplicatis. Inflorescentiæ normaliter terminales, sed per recaulescentiam et concaulescentiam alares, axillares, extra-axillares, cymosæ, cymis nunc simplicibus nunc dichotomis, nunc e ramulis compluribus indefinite ordinatis compositis, faciem corymbi racemi umbellæ v. paniculæ simulantes. Flores hermaphroditi, rarius polygami, sæpe pistillo abortivo steriles, interdum solitarii.—*Melongoena*, Tournef. Inst. p. 151. t. 65.

The *Solana* inhabiting tropical Polynesia, and preserved in the herbaria of the British Museum, Hooker, and Bentham, amount to fifteen species, only seven of which were given in Professor A. Gray's list of Polynesian *Solanaceæ*. The species as yet not found in Viti are—

1. *S. incompletum*, Dunal in DC. Prodr. vol. xiii. sect. 1. p. 311.—Hawaii (Nelson! in Mus. Brit.; Remy, n. 451, fide A. Gray). There are two specimens of this, without flower and fruit, at the British Museum, which Dunal provisionally named *S. Sandwichianum*, a name afterwards cancelled.

2. *S. xanthocarpum*, Schrad. et Wendl. Sert. Hanov. i. p. 8. t. 2.—Oahu, Sandwich Islands (Barclay! in Mus. Brit., Seemann, n. 1721).—Native Hawaiian name, "Kikania." Probably introduced from India. The plant is about two feet high, and in my notes I call the berries scarlet. The calyx is clad with large straw-coloured spines.

3. *S.* (§ *Morellæ veræ*) *Forsteri*, Seem. in Journ. of Bot. 1863, p. 207; herbaceum, annuum, breviter villosotomentosum demum glabrescens; caule inermi vix angulato geniculato-flexuoso; foliis ovatis acuminatis integerrimis v. sinuato-dentatis basi cordatis v. in petiolum attenuatis; cymis extra-axillaribus 3-6-floris; pedicellis cernuis; calycis laciniis ovatis acutis; corolla extus tomentella; bacca globosa glabra pisi magnitudine.—*S. nigrum*, Forst. Prodr. n. 106, non Linn.—Easter Island (Forster! in Herb. Mus. Brit.), Tahiti (Nelson!, Sir J. Banks!), Vavao, Friendly Islands (Barclay!). This species is much nearer to *S. villosum*, Lam., than *S. nigrum*, Linn.; but the leaves are generally less deeply cut than they are in *S. villosum*, and in only one specimen, collected by Sir J. Banks in Tahiti, do there occur any deep indentations. Forster's specimen, from Easter Island, is much more hairy than the Tahitian or Tongan specimens. The flowers and berries are much smaller than in the true *S. nigrum*. Solander, in his MS. volume, included the Tahitian specimens under the name of *S. rubrum*, but he describes the berry as black.

4. *S. amicorum*, Benth. in Lond. Journ. of Bot. vol. ii. p. 227; DC. Prodr. xiii. sect. 1. p. 269.—Tongan Islands (Forster! Nelson! Barclay! in Mus. Brit., U. S. Expl. Exped.! in Herb. Benth.).

5. *S. puberulum*, Nutt. mss. in Seem. Journ. of Bot. 1863, p. 207; fruticosum, ramis junioribus furfuraceo-tomentosis demum glabratis, foliis geminis, altero multo minore, ovato-oblongis acuminatis integerrimis vel sinuato-lobatis; lobis acutis, basi obliquis, utrinque furfuraceo-puberulis, ante evolutionem ochraceo-tomentosis; floribus extra-axillaribus simpliciter racemosis; pedicellis gracilibus; calycis lobis subulatis corolla tomentosa fere 5-partita 3-4-plo brevioribus; baccis globosis glabris nitidis ($\frac{3}{4}$ unc. diametro).—*S. puberulum* et *pulverulentum*, Nutt. mss. in Herb. Mus. Brit.—Oahu, in silvis montosis (Nuttall!), Sandwich Islands (Menziess! in Herb. Mus. Brit.). This is very near *S. Sandwichense*, Hook. and Arn., and *S. tetrandrum*, R. Brown, but differs from both in not having divaricate cymes but simple racemes. It is far less tomentose than *S. Sandwichense*, the leaves, when fully developed, being quite glabrous on both sides, as are also the fruiting peduncles and pedicels. Larger leaves, including petiole, 4-5 inches long, 2 inches broad; fruiting pedicels 1 inch long.

6. *S. Bauerianum*, Endl. Fl. Norf. p. 54.—Norfolk Island (Herb. Hook.). Very near *S. anthropogorum* and *S. viride*, R. Br., but corymbs generally terminal and corolla glabrous.

7. *S. Nelsoni*, Dunal in DC. Prodr. vol. xiii. sect. 1. p. 123.—*S. rotundifolium*, Nutt. mss. in Mus. Brit. et Herb. Hook.! *S. argenteum*, Hook. et Arn. Bot. Beech. p. 92?—Kauai (Nuttall! in Herb. Hook. et Mus. Brit.), Oahu (Remy, n. 442, fide A. Gray). I have compared Nuttall's specimen of *S. rotundifolium* with the original one of Nelson, at the British Museum, and there can be no doubt that they are identical. But I do not find in Hooker's herbarium the specimen, mistaken by the authors of Beechey's Botany for *S. argenteum*, which A. Gray hesitatingly refers to *S. Nelsoni*. Nor has Prof. Arnott, as he informs me, a specimen of it.

Var. *thomasiæfolium*, Seem. in Journ. of Bot. 1863, p. 209; foliis cordato-ovatis sinuato-lobatis, lobis (5-7) obtusis vel cordatis integris; fructu globoso glabro pisi magnitudine.—*S. vestitum*, Nutt. mss. in Herb. Mus. Brit.—Atoi (Nuttall! in Herb. Mus. Brit. et Hook.). This has quite the look of *Thomasia solanacea*, Gay, and would probably be described as a new species by any one not having seen the evident transition there is in some specimens of what Nuttall has called *S. rotundifolium* and A. Gray justly considers identical with the original *S. Nelsoni*, Dun., preserved at the British Museum. In these specimens some of the leaves have a tendency to become sinuato-lobate, whilst again several leaves of my var. *thomasiæfolium* are cordate and entire. The resemblance between *S. Nelsoni* var. *thomasiæfolium* and *Thomasia solanacea* is quite as striking as that between the Amazonian moth and the humming-bird figured in Mr. Bates's Travels on the Amazon.

8. *S. Austro-Caledonicum*, Seem. in Journ. of Bot. 1863, p. 209; fruticosum, erectum, inerme; foliis

ovato-oblongis acuminatis integerrimis, basi obliquis, supra pubescentibus, demum glabris, subtus ramulis pedunculis calycibusque dense tomentosis; corymbis extra-axillaribus bifidis ∞ -floris; calycis 5-fidi laciniis triangularibus acutis; corollæ laciniis lineari-lanceolatis extus dense tomentosis; stylo stamina superante; bacca globosa lævi glabra pisi magnitudine.—Loyalty Islands (Sir G. Grey!), New Caledonia (Sir E. Home!), Isle of Pines (Milne! M'Gillivray!). A shrub, from 12–14 feet high. Leaves from 4–5 inches long, 1–1½ inches broad. Corolla longer than the calyx. Fruiting peduncle swollen towards the apex. The nearest ally of this species is *S. Sandwichense*, Hook. et Arn., but the lobes of the corolla are linear-lanceolate almost subulate, whilst those of *S. Sandwichense* are ovate-acuminate.

9. *S. Sandwichense*, Hook. et Arn. Bot. Beech. p. 92.—*S. Woahense*, Dun. in DC. Prodr. vol. xiii. sect. 1, p. 268.—Oahu (Beechey! Seemann! n. 2273, Macrae!, Hinds!, Nuttall!, Barclay!). Var. (?) β . *Kavaiense*, A. Gray, Proceed. Amer. Acad. vol. vi. p. 43.—Kauai (U. S. Expl. Exped.), Oahu (Barclay! in Mus. Brit.).

10. *S. Milnei*, Seem. Journ. of Bot. 1863, p. 210; fruticosum, erectum, inerme; ramis pedunculis pedicellisque cano-tomentosis; foliis solitariis elliptico-lanceolatis utrinque longe acuminatis v. ovato-acuminatis, irregulariter et minute undulato-crenatis, basi inæquilateralibus, supra adperso-pilosis demum glabris, subtus cano-tomentosis; floribus dichotomo-cymosis extra-axillaribus vel terminalibus; cymis divaricatis ∞ -floris; calycis laciniis cuspidatis; corollæ 5-fidæ tomentosæ laciniis lanceolatis; antheris apice 2-porosis; stylo stamina superante, basi pilosa; bacca globosa glabra.—Isle of Futuna, New Hebrides (Milne! in Herb. Hook.), Aneitum (Milne!, M'Gillivray!). “A shrub, 5 feet high” (Milne), and “generally growing in clumps in waste places” (M'Gillivray). Leaves with long petioles, and 6–7 inches long and 2 inches broad. Flowers apparently white. The fruit on the specimens I have seen not quite ripe.

The following is a clavis to the Vitian species:—

Flowers terminal	<i>S. tuberosum.</i>
Flowers axillary	<i>S. Vitiense.</i>
Flowers extra-axillary.	
Stem herbaceous	<i>S. oleraceum.</i>
Stem woody.	
Fruit very hairy	<i>S. repandum.</i>
Fruit glabrous.	
Leaves glabrous	<i>S. anthropophagorum.</i>
Leaves with stellate hair below	<i>S. tetrandrum.</i>

1. ***S. tuberosum***, Linn. Spec. p. 282; Dun. l. c.; rhizomate tubera gerente, caule herbaceo; foliis impari-pinnatisectis, segmentis inæqualibus majoribus 3–5-jugis basi inæqualibus subcordatis subtus villosis albescentibus, alternis minutissimis; pedicellis articulatis; corollis plicatis 5-angulatis.—“Potato” of the English colonists. Cultivated by some of the European colonists.

I have eaten Potatoes grown at Rewa, Viti Levu, but they had a rather soapy taste, the climate being probably too warm for them; they would grow well in the mountains of Viti Levu and Kadavu.

2. ***S. oleraceum***, Dun. in DC. Prodr. vol. xiii. sect. 1. p. 50; caule herbaceo annuo leviter angulato-dentato; foliis longe petiolatis ovato-oblongis acuminatis membranaceis integerrimis v. angulato-dentatis glabriusculis; pedicellis cymoso-umbellatis; corollæ (albæ) laciniis acutis; bacca globosa (nigra) glabra.—Nomen vernac. Vitiense, “Boro ni yaloka ni gata.”—Common throughout Viti (Seemann! n. 344). Also collected in the Sandwich Islands (Nuttall! in Mus. Brit.), Norfolk Island (Milne! in Herb. Hook.), and Society Islands (Banks and Solander!). I have also seen it wild about Sydney, New South Wales.

This *Solanum* is much larger than *S. nigrum*, and the branches are more divaricate, the pedicels more filiform, and the flowers more minute than those of the species just named. Still, until somebody has carefully worked out the limits of all the species comprised in Dunal's section *Morellæ vera*, it is very difficult to assign satisfactory limits to a weedy and quick-growing plant like this. *S. astroites*, Forst., from the Society Islands, may possibly be a synonym of *S. oleraceum*. Forster has left no description, drawing, or specimen of it; but when it is borne in mind that there are only four species of *Solanum* from the Society Islands, viz. *S. anthropophagorum*, *S. repandum*, *S. Forsteri*, and *S. oleraceum*, and that Forster could not mean the first three, having previously described them, there is little doubt that his *S. astroites* is identical with *S. oleraceum*. I have seen both *S. oleraceum* and the genuine *S. nigrum*, brought to market at Port Louis, Mauritius, where, as in Viti, the leaves are used as a pot-herb by all classes of the inhabitants.

3. ***S. anthropophagorum***, Seem. in Bonpl. vol. x. p. 274. t. 11. (Tab. XXXVII.); Bot. Mag.

t. 5424; fruticosum, erectum, inerme; foliis solitariis geminisve ovatis acuminatis repando-dentatis v. subintegerrimis membranaceis, glabris; floribus cymosis, cymis lateralibus 4-6-floris, 5-meris; calyce 5-glanduloso; corolla rotata (alba) pubescente, laciniis ovatis acuminatis; antheris lineari-oblongis (luteis) stylo multo longioribus; bacca (rubra v. lutea) globosa compressa v. subovata sulcata glabra 2-3-loculari.—*S. Uporo*, Dun. in DC. Prodr. l. c. p. 138. *S. viride*, Sol. (non R. Brown!) mss. in Forst. Plant. Escul. n. 42! et Forst. Prodr. p. 89, n. 507 (sine descript.); Parkinson's Drawings of Tahitian Plants, t. 27 (ined.). *S. aviculare*, Guill. Zeph. Tait. p. 45 (non Forst.).—Nomen vernac. Vitiense "Boro dina, i. e. Solanum verum v. genuinum," Tahitense "Poroporo."—Viti Levu and nearly all the other Vitian islands (Seemann! n. 341, Milne!). Also collected in the Society (Banks and Solander! Nelson!) Tongan (Barclay!) and Samoan Islands (Sir E. Hcme!); also New Caledonia or Friendly Islands (Forster! in Mus. Brit.).

The Boro dina, being one of the plants which, in Fijian estimation, ought to accompany a cannibal feast is cultivated, and there are generally several large bushes of it near every Bure-ni-sa (or stranger's house), where the bodies of those slain in battle are always taken. It is a bushy shrub, seldom higher than six feet, with a dark glossy foliage, and berries of the shape, size, and colour of tomatoes. The fruit has a faint aromatic smell, and is occasionally prepared like tomato sauce. The leaves are wrapped around the bokola, as those of the taro are around pork, and baked with it on heated stones. Salt is not forgotten. Even the white settlers use the leaves of this plant as a pot-herb. R. Brown's *S. viride* has styles longer than the stamens, and berries not larger than a good-sized pea, whilst *S. anthropophagorum* has styles shorter than the stamens, and berries having the dimensions of tomatoes and the larger olives. Solander's being merely a name, unaccompanied by a description, that of R. Brown, free from this defect, naturally has the preference. Dunal's *S. Uporo*, described from insufficient materials, was at first not recognised by me, or else I should not have added the name *anthropophagorum* to its synonymy; but I now retain my name because *Uporo* is but a corruption, "Poroporo" being the correct Tahitian name of the plant. *S. aviculare*, Forst., (with which Hook. fil. very properly unites *S. laciniatum*, Ait.) is very different from *S. anthropophagorum*, and does not occur in the Society Islands; Guillemin meant *S. anthropophagorum* by his *S. aviculare*.

EXPLANATION OF PLATE XXXVII. representing *Solanum anthropophagorum*, Seem.—Fig. 1, an entire flower; 2, calyx; 3, corolla laid open; 4, cross section of fruit:—all, with the exception of Fig. 4, magnified.

4. **S. Vitiense**, Seem. (sp. nov.) (Tab. XXXVI.); arborea, inermis, glabra; foliis integerrimis geminis, majore ovato-oblongo v. ovali-acuminato, altero minore subrotundato; cymis axillaribus 3-4-floris, floribus 5-meris; calyce cupuliformi truncato; corollæ laciniis ovatis acutis, apice tomentosis; stylo staminibus longiore; bacca ovata obtusa lævi pisi majoris magnitudine.—Viti Levu (Seemann! n. 340, ex parte).

Distributed by me as *S. viride*. It differs from both species going under that name by its arboreous habit (being a tree from 24-30 feet high, with a dense large crown) and axillary cymes. Leaves green, a little paler below, about 4 inches long, 2 inches broad. Peduncles nearly twice as long as the petioles. Corolla whitish. Berry not much larger than a good-sized pea. Its nearest ally is *S. membranaceum*, Wall., (*S. subtruncatum*, Wall.) from which it is at once distinguished by its absolutely truncate calyx. Even the youngest buds show no sign of the subulate teeth found on the cup-shaped calyx of the true *S. membranaceum*, Wall. (*S. subtruncatum*, Wall.). There is both in Bentham's and Hooker's herbarium, a specimen collected by Cuming (n. 83) which seems to belong to my *S. Vitiense*, but its leaves are more acuminate, and there are no good flowers. By some mishap specimens of an *Ardisia* were mixed with my n. 340.

EXPLANATION OF PLATE XXXVI., representing *Solanum Vitiense*, Seem.—Fig. 1, an entire flower, just opening; 2, the same quite open; 3, corolla laid open; 4, a stamen; 5, cross section of ovary; 6 and 7, ripe fruit; 8 (by a misprint 3), cross section of ripe fruit:—all slightly magnified.

5. **S. tetrandrum**, R. Brown, Prodr. p. 445; fruticosum, inerme, erectum; ramis teretibus, junioribus stellato-tomentosis; foliis geminis oblique oblongo-ovatis acuminatis integerrimis v. sinuato-dentatis v. lobatis, supra glabris v. pube rara conspersis, subtus ubique molliter stellato-pubescentibus v. tomentosis; racemis extra-axillaribus corymbosis; floribus 4-5-meris; calycibus angulatis, sinibus interdum dentibus accessoriis acutis, fructiferis parum acutis; corollæ tomentosæ, profunde 4-5-fidæ laciniis oblongis; baccis subglobosis glabris pisi majoris magnitudine.—*S. inamœnum*, Benth. in Lond. Journ. Bot. vol. ii. p. 228.—Totoya (Milne!), Narai (Milne!), Gau

(Milne!), Vanua Levu and Viti Levu (Seemann, n. 343 et 345, Hinds!, U. S. Expl. Exped. in Herb. Benth., Barclay! in Herb. Brit. Mus.), Ovalau (Capt. Denham! in Herb. Brit. Mus.), East coast of Australia (R. Brown!).

I cannot detect any difference between R. Brown's *S. tetrandrum* and Bentham's *S. inamœnum*. Most of the flowers attached to Brown's original specimen have 4-merous flowers, but there are several with 5-merous ones. Mr. Bentham relied perhaps too implicitly on the constancy of the tetramerous character when establishing his *S. inamœnum*, for he was well aware of how close his supposed new species was to *S. tetrandrum*. When growing luxuriantly the leaves become more or less deeply lobed. Indications of it are seen in Brown's specimens, and they are alluded to in Bentham's description of those of Hinds. In some of Milne's specimens, and in my n. 345 this feature is very prominent, making them look somewhat like those of *S. repandum*, Forst.

6. *S. repandum*, Forst. Prodr. n. 105, et Icon. (ined.) t. 59 et 60 (Tab. XXXVIII.); fruticosum, inerme, tomentosum; foliis geminis ovatis sinuato-lobatis; cymis extra-axillaribus; calyce profunde 5-fido, laciniis ovato-lanceolatis acutis; corolla (alba) extus tomentosa, sub-5-partita, laciniis oblongis; stylo staminum longitudine; bacca ovato-mucronata, 3-loculari, tomentoso-hirsuta, demum glabrescente, 2-3-loculari.—*S. latifolium*, Parkinson's Drawings of Tahitian Plants, t. 28 (ined.), *S. Quitense*, Hook. et Arn. Bot. Beech. p. 67 (non Lam.).—Nomina vernac. Vitiensia, "Sou," "Sousou," v. "Boro sou."—Viti Levu and Rabi (Seemann! n. 342, Harvey!). Also collected in Tahiti (Sir J. Banks!, Wiles and Smith!, Hinds!, Barclay! in Herb. Hook., U. S. Expl. Exped.!). Marquesas (Matthews! n. 93), Pitcairn Island (Cuming! n. 1382).

EXPLANATION OF PLATE XXXVIII., representing *Solanum repandum*, Forst.—Fig. 1 and 2, different views of an entire flower; 3, corolla laid open; 4, a stamen; 5, pistil; 6, cross section of ovary; 7, ripe fruit; 8, cross section of ripe fruit:—all, with exception of Figs. 7 and 8, slightly magnified. Figs. 7 and 8 copied from Parkinson's drawings above-quoted; the colouring of the whole plate also taken from Parkinson.

The fruit of this species is eaten by the natives either in soups or with yam.

S. Californicum, Dun. in DC. Prodr. vol. xiii. sect. 1, p. 86, collected by Nuttall at Monterey, California, is identical with *S. Menziesii*, Dun. l. c. p. 159, collected in the same locality by Menzies. Both specimens being preserved at the British Museum.

II. *Capsicum*, Tournef. Inst. p. 152. t. 66; Linn. Gen. n. 252; Dun. in DC. Prodr. vol. xiii. sect. 1, p. 411. Calyx subcycathiformis, 5-6-dentatus, persistens, 5-6-gonus, angulis rotundatis, dentibus acutis v. truncatis. Corolla rotata, tubo brevissimo; limbo plicato, 5-6-fido; laciniis ovatis v. ovato-oblongis acutiusculis. Stamina 5-6, corollæ tubo inserta, subexserta. Filamenta filiformia, superne attenuata, antheris longiora. Antheræ cordatæ, conniventes, longitudinaliter dehiscentes. Ovarium 2-3-4-loculare, placentis dissepimenti v. anguli centralis basi adnatis, ∞-ovulatis. Stylus simplex, apice incrassatus, staminibus longior. Stigma subclavatum, obtusum, obsolete 3-lobulatum v. difforme. Bacca parum succosa, inflata, oblonga, conoidea, ovata v. subglobosa, incomplete 2-3-locularis, rarissime 1-locularis, placentis septisque superne deliquescentibus. Semina subreniformia, ∞, compressa. Embryo intra albumen carnosum periphericus, teres, hemicyclius.—Herbæ annuæ aut perennes, v. frutices, ob baccas acriter aromáticas ubique cultæ; caulibus dichotomis ramosissimis; foliis inferioribus solitariis, superioribus geminis ternisque, petiolatis integris v. subrepandis utrinque attenuatis; pedunculis alaribus extra-axillaribusque, 1-floris, solitariis, geminis, ternisque, nunc erectis, nunc varie curvatis; corollis sordide albis, ochroleucis v. violaceis; baccis erectiusculis v. pendulis aurantiacis, coccineis v. purpureis.

1. *C. frutescens*, Linn. Spec. vol. i. p. 271, excl. syn. Clus. Dun. l. c.; frutescens; caule erecto glabro, ramis flexuosis teretibus cum ramulis subangulatis glabriusculis; foliis solitariis geminisve ovatis acuminatis integris glabris; calyce suberecto fere 5-gono subtruncato glabro, dentibus brevissimis acutis; fructibus ovatis oblongis obtusis lævibus basi calyce cinctis 2-locularibus dissepimentis æqualibus.—Rheede, Hort. Malab. vol. ii. t. 56.—Nomen vernac. Vitiense, "Boro ni

papalagi" (i. e. *Solanum exoticum*). "Bird's-eye pepper" of the European colonists. Naturalized in most parts of the Viti group (Seemann! n. 346).

The bird's-eye pepper is one of the most common plants in those parts of the group longest frequented by Europeans, who use the fruit on account of its pungent properties. The natives do not seem to take to it.

III. **Physalis**, Linn. Gen. 250; Dun. in DC. Prodr. vol. xiii. sect. i. p. 434. Calyx 5-fidus seu 5-dentatus, post anthesin increscens, vesiculoso-inflatus. Corolla rotato-campanulata, plicata, limbo 5-sinuato, angulis totidem acutis. Stamina 5, inclusa; filamenta libera, filiformia; antheræ erectæ, filamentis dimidio breviores v. ea subæquantes, conniventes, longitudinaliter dehiscentes. Ovarium 2-loculare; placentis subglobosis, dissepimento adnatis, ∞ -ovulatis. Stylus simplex; stigma capitatum. Bacca calyce inflato connivente recondita, globosa, 2-locularis, placentis crassis. Semina ∞ , reniformia, compressa. Embryo intra albumen carnosum, subperiphericus, spiralis.—Herbæ annuæ v. perennes; foliis alternis v. geminatis, integris v. lobatis; floribus solitariis, extra-alaribus.—*Herschelia*, Bowdich, Madeira, 252. *Alkekengi*, spec. Tourn. Inst. 150. t. 64. *Pentaphiltrum*, Rchb. Nom. n. 4571.

1. **P. Peruviana**, Linn. Spec. vol. ii. 1670; DC. Prodr. l. c.; herbacea, perennis, pilis simplicibus dense pubescenti-villosis; caule erecto subramoso; foliis cordatis acuminatis integris v. dentato-sinuatis subtomentosis; corolla maculata; antheris violaceis; calycibus fructus ovatis pallidis.—*P. esculenta*, Willd. in Act. Nat. Cur. Berol. vol. iv. p. 197. *P. tomentosa*, Medic. Act. Pal. vol. iv. p. 181. t. 4 e. *P. edulis*, Sims, Bot. Mag. t. 1068. "Cape Gooseberry," of the white settlers.—On roadsides, common throughout Viti (Seemann! n. 338). Also collected in the Sandwich Islands (Barclay! Seemann!). Abounding in most parts of the tropics, and New Holland.

The fruit of the Cape Gooseberry is eaten by the colonists.

2. **P. angulata**, Linn. Hort. Cliffort. p. 62; DC. l. c.; herbacea, ramosissima, glabra; foliis ovatis oblongisve acutis inæqualiter dentato-serratis; corollis immaculatis; antheris pallide cærulescentibus; calycibus fructus 4-angulatis basi truncatis laciniis sub anthesi 3-angularibus subulatis tubum suum æquantibus.—*P. flaccida*, Soland. in Forst. Prodr. n. 506, et Prim. Fl. Ins. Pacif. (ined.) p. 233. Rumph. Amb. vol. vi. p. 60. Rheede, Mal. vol. x. p. 139. t. 70.—In waste places, common in Viti (Seemann! n. 339). Also collected in Tahiti (Banks and Solander! Barclay!). Diffused over the East and West Indies, Mauritius, and Brazil.

IV. **Datura**, Linn. Gen. 246; Dun. in DC. Prodr. vol. xiii. sect. i. p. 538. Calyx tubulosus, sæpe angulatus, apice 5-fidus v. hinc longitudinaliter fissus, supra basim peltatam persistentem circumscissus, parte circumscissâ deciduâ. Corolla infundibuliformis, limbo amplo patente plicato, 5-dentato, æstivatione contortuplicata. Stamina 5, corollæ tubo inserta, inclusa v. subexserta; antheræ longitudinaliter dehiscentes. Ovarium incomplete 4-loculare, dissepimento altero supra medium deliquescente, altero completo medio utrinque placentifero, placentis porrectis ∞ -ovulatis. Stylus simplex; stigma 2-lamellatum. Capsula ovata v. subglobosa, muricata v. aculeata, rarius brevis, semi-4-locularis, incomplete ad septa 4-valvis. Semina ∞ , reniformia, in nonnullis subtriangularia; testa modo crustacea dura, modo suberosa, crassissima. Embryo intra albumen carnosum subperiphericus, arcuatus.—Herbæ virosæ, fœtidæ, annuæ v. perennes, nunc suffrutescentes v. arborescentes; foliis petiolatis oblongis v. ovatis, sæpius angulato-dentatis; floribus alaribus, solitariis, sæpius magnis, albis violaceis v. coccineis.—*Brugmansia*, Pers. Ench. vol. i. p. 216. *Stramonium*, Tournef. Inst. p. 118. t. 33 et 34.

1. **D. Stramonium**, Linn. Spec. vol. i. p. 179; DC. l. c.; caule lævi crasso erecto tereti basi simplici apice dichotomo; foliis petiolatis ovato-acuminatis inæqualiter sinuato-dentatis acutis;

corolla (alba) calyce 5-gono 5-dentato duplo longiore; capsulis erectis æqualiter aculeatis. Smith, Engl. Bot. t. 1288.—*Stramonium vulgatum*, Gært. Fruct. vol. ii. p. 243. t. 132. fig. 4. *S. fœtidum*, Scop. Carn. ed. ii. vol. i. p. 157. *S. spinosum*, Lam. Fl. Fr. vol. ii. p. 256.—In waste places about Levuka, island of Ovalau, probably a recent introduction (Seemann! n. 348).

The blue-flowering variety *Tatula*, Dun. (*D. Tatula*, Linn.), was collected in the Hawaiian Islands (Barclay! in Herb. Mus. Brit.).

V. **Nicotiana**, Tournef. Inst. t. 41; Dun. in DC. Prodr. vol. xiii. sect. i. p. 556. Calyx tubuloso-campanulatus, semi-5-fidus. Corolla infundibuliformis v. hypocraterimorpha, limbo plicato-5-lobo, lobis per æstivationem plicatis et conniventi-contortis. Stamina 5, corollæ tubo inserta, inclusa, sæpe subæquilonga, nonnunquam inæqualia; antheræ longitudinaliter dehiscentes, brevissime ovatae v. globosæ; pollen oblongum, longitudinaliter 3-sulcatum. Ovarium 2-loculare, placentis lineâ dorsali dissepimento adnatis, ∞-ovulatis, nectario crasso annulari obsolete lobato basi circumdatum. Stylus simplex; stigma capitatum, patelliforme, intus glandulis 2 magnis instructum. Capsula calyce persistente tecta, 2-locularis, apice septicido 2-valvis v. 4-∞-valvis, valvis demum 2-fidis, placentas discretas retinentibus. Semina ∞, minima, oblonga, subreniformia, rugosa. Embryo in axi albuminis carnosus, leviter arcuatus.—Herbæ, interdum suffrutescentes, sæpissime glutinoso-pilosæ; foliis alternis, integerrimis; floribus terminalibus racemosis aut paniculatis, albidis virescentibus v. purpurascensibus, pedicellis axillaribus, calyces subæquantibus.—*Nyctagella*, *Tabacum*, et *Tabacina*, Reichb. Handb. 201. *Codylis*, Raf. in Am. Month. Magaz. 1819. *Sairanthus*, Don, Syst. vol. iv. p. 467.

The only indigenous Polynesian species of *Nicotiana* hitherto known was discovered by Forster in Botanists' Island, off New Caledonia, and referred by him with a mark of doubt to *N. fruticosa*, Linn. Rømer and Schultes, who had seen Forster's specimens, finding that the plant was not that of Linnæus, renamed it *N. Forsteri*, and under that name it is enumerated amongst the doubtful species in De Candolle's 'Prodromus.' Forster's authentic specimens at the British Museum leave, however, no doubt that it is identical with Lehmann's *N. suaveolens*, and as the name of *suaveolens* was published two years before that of Rømer and Schultes, it enjoys the right of priority. The synonymy of the plant would thus be as follows:—*N. suaveolens*, Lehm. Nic. p. 43. n. 18; *N. fruticosa*, Forst. Prodr. n. 104, non Linn.; *N. Forsteri*, Rømer et Schult. Syst. vol. iv. p. 323; *N. undulata*, Vent. Malm. t. 10; Jacq. Fragm. 45. t. 56; Sims, Bot. Mag. t. 673 nec Ruiz et Pav.; *N. Australasica*, R. Brown, Bot. Congo, p. 53.—Small islands off New Caledonia (Forster! W. Anderson!), Port Jackson (R. Brown!), and Snowy River, Australia (F. Mueller! in Brit. Mus.).

A second and very distinct indigenous Polynesian species is *N. Macgillivrayi*, Seem. mss. in Herb. Mus. Brit. (sp. nov.); tota planta capsula excepta villosa; foliis omnibus radicalibus spathulatis in petiolum longum alatum decurrentibus apice obtusis v. acutis; paniculis terminalibus ∞-floris; calycis lobis linearibus; corolla (alba) hypocraterimorpha, tubo elongato curvato, limbi patentis lobis obovatis obtusis; capsula 2-valvi glabra calyce inclusa.—Isle of Pines, off New Caledonia (Macgillivray! in Herb. Mus. Brit.). The whole plant about a foot and a half high. Leaves about 6 inches long. Corolla about 4 inches long.

1. **N. Tabacum**, Linn. Spec. vol. i. p. 258; DC. Prodr. l. c. p. 557; herbacea, pubescens, glutinosa; caule erecto tereti superne ramoso; foliis oblongo-lanceolatis acuminatis sessilibus, inferioribus decurrentibus semiamplexicaulibus; floribus pedicellatis bracteatis, calycis oblongi segmentis lanceolatis acutis inæqualibus; corolla extus lanuginosa fauce subinflata, limbi patentissimi laciniis acutis; capsula calycis longitudine v. parum longiore.—Cultivated throughout the Viti Islands by the natives, but only in small patches (Seemann! n. 347).

My principal reason for believing this plant to be introduced is, that it has not been found wild, and has no indigenous native name, "Topako" or "Tavako" being evidently corruptions of our word Tobacco. The Fijians do not know how to cure this weed properly, and much prefer foreign tobacco to their own. They do not smoke pipes very often, but generally cigarettes, like the Spaniards, using dried Banana leaves instead of paper. It is possible that they may have acquired the habit from the Spaniards, who may have also introduced the tobacco-plant itself. The Spaniards (Manila men) were amongst the first whites who visited these islands.

ORDO LXVII. SCROPHULARINEÆ.

Only four species of this Order are known from tropical Polynesia; the two enumerated below, *Scoparia dulcis*, Linn., which has been found in the Sandwich (Macrae!), and the Society Islands (Lay and Collie!) and *Herpestis Moniera*, H. B. K. (*Gratiola Moniera*, Linn. et Forst. Prodr. n. 16), which was collected in the Marquesas (Forster! Barclay!) and the Hawaiian Islands (Nelson! Macrae!). *Scrophularioides arborea*, Forst. Prodr. n. 528, is a Verbenacea,—*Premna Taitensis*, Schauer.

I. **Limnophila**, R. Brown, Prodr. p. 442; Benth. in DC. Prodr. vol. x. p. 386. Calyx profunde 5-fidus v. 5-partitus, subæqualis v. laciniâ posticâ majore. Corollæ labium superius emarginatum v. 2-lobum, inferius 3-lobum, fauce non plicatâ. Stamina 4, inclusa, antherarum loculis disjunctis oblongis sæpissime stipitatis. Stylus apice deflexus, spathulato-dilatatus, integer v. breviter 2-lamellatus, ad flexuram sæpius auriculato-bialatus. Capsula ovata, globosa v. compressa, loculicide 2-valvis, valvulis demum 2-partitis, carpellorum marginibus leviter inflexis dissepimentum latum placentiferum nudantibus.—Herbæ uliginosæ v. aquaticæ, sæpe glandulis pellucidis punctatæ; foliis oppositis v. 3-4-natis verticillatis, infimis in speciebus aquaticis in aquâ submersa sæpius capillaceo-multisectis; floribus solitariis, axillaribus v. superioribus in racemum foliatum dispositis, in calyce ipso sæpius 2-bractcolatis.—*Ambulia*, Lam. Dict. vol. i. p. 128. *Cybbanthera*, Ham. in Don, Prodr. Fl. Nepal. p. 87.

1. **L. fragrans**, Seem.; procumbens, glabra; foliis sessilibus oblongis lanceolatisve serratis basi rotundatis subamplexicaulibusve, floralibus conformibus; floribus axillaribus solitariis subsessilibus; calycis glabri 5-partiti segmentis lanceolato-subulatis strictis; corolla calyce vix longiore.—*Ruellia fragrans*, Forst. Prodr. n. 243, et Icon. (ined.) t. 182; Parkins. Drawings of Tahit. Plants (ined.) t. 59. *Limnophila serrata*, Gaud. in Freyc. Voy. p. 448. t. 57. fig. 2; Benth. in DC. Prodr. l. c. *Stemodia tenuifolia*, Benth. Scroph. Ind. p. 23.—In swamps, common in Viti Levu (Seemann! n. 350). Also collected in Tahiti (Forster! Barclay!).

II. **Vandellia**, Linn. Mant. p. 89; Benth. in DC. Prodr. vol. x. p. 412. Calycis segmenta subæqualia, æstivatione vix imbricata, fere a basi soluta v. in calycem 5-dentatum non plicatum plus minus coalita. Corollæ labium superius erectum, breviter 2-fidum, inferius majus, patens, 3-fidum. Stamina 4 fertilia, anticorum filamenta basi appendiculâ dentiformi v. filiformi aucta, arcuata, antheris sub labio superiore inter se cohærentibus. Stylus apice dilatatus, sæpius 2-lamellatus. Capsula globosa, oblonga, v. linearis.—Herbæ; foliis oppositis dentatis; floribus oppositis v. abortu solitariis, axillaribus v. ad apices ramorum racemosis, racemis sæpe in falsas umbellas contractis.—*Tittmannia*, Reichb. Icon. Exot. vol. i. p. 226. *Iliogeton*, Endl. Gen. p. 684. *Vriesia*, Hassk. in Flora, 1842, Beiblatt.

1. **V. crustacea**, Benth. Scroph. Ind. p. 35; DC. Prodr. l. c.; diffusa, glabra v. pilis raris hirtella; foliis breviter petiolatis ovatis; pedunculis axillaribus subracemosisve rarius subfasciculatis calyce 2-5-plo longioribus; capsulis ovato-oblongis calyce brevioribus. Wight, Icon. t. 863.—*Capraria crustacea*, Linn. Mant. p. 87. *Torenia crustacea*, Cham. et Schlecht. Linnæa, vol. ii. p. 570. *Gratiola lucida*, Vahl, Enum. vol. i. p. 95; Roxb. Plant. Corom. vol. ii. p. 2. t. 202. *Morgania lucida*, Spreng. Syst. vol. ii. p. 802. *Torenia lucida*, Ham. in Wall. Cat. n. 3962. *Torenia flaccida*, R. Brown, Prodr. p. 440. *Torenia varians*, Roxb. Fl. Ind. vol. iii. p. 96? *Vandellia varians*, Don, Gen. Syst. vol. iv. p. 549. *Gratiola aspera*, Roth, Nov. Plant. sp. p. 11. *Morgania aspera*, Spreng. Syst. vol. ii. p. 803. *Hornemannia ovata*, Lk. et Otto, Abbild. vol. i. p. 9. t. 3. *Tittmannia ovata*, Reichb. Icon. Exot. vol. i. p. 27. *Torenia alba*, Hamilt. in Wall. Cat. n. 3961. *Vandellia*

alba, Benth. Scroph. Ind. p. 35. *Antirrhinum hexandrum*, Forst. Prodr. n. 230, et Icon. (ined.) t. 176. *Vandellia petiolata*, Soland. Prim. Fl. Ins. Pacif. (ined.) p. 268.—Ovalau (Seemann! n. 349; M'Gillivray!). Also collected in Tahiti (Forster! Capt. Cook! Barclay!). Common in the tropics of both hemispheres.

ORDO LXVIII. CYRTANDREÆ.

I. **Cyrtandra**, Forst. Gen. t. 3; DC. Prodr. vol. ix. p. 280. Calyx tubulosus, 5-dentatus, 5-fidus v. 5-partitus, subæqualis aut subbilabiatus. Corolla infundibiliformis tubo subincurvo ad faucem ampliato, limbo obtuse 5-lobo irregulari subbilabiato. Stamina 4–5, inclusa, 2–3 sterilia, minima, 2 fertilia, antheris crassis loculis parallelis. Pollen ellipticum. Stigma obtusum aut emarginatum. Bacca oblonga aut ovata, corticata, 2-locularis, septi lobis in margine revoluto seminiferis. Semina ∞ , nuda, sæpe foveata aut punctata.—Frutices, suffrutices aut herbæ, caule erecto aut procumbente; foliis oppositis nunc æqualibus nunc altero abortivo pseudo-alternis; floribus fasciculatis aut capitatis aut solitariis, axillaribus, bracteatis, purpureis albis rarius flavescentibus imo luteis.

A large genus, which has its geographical focus in the Polynesian Islands, but also extends to the Indian Archipelago. All the species are extremely local, and considering how much of Polynesia still remains to be explored, there is reason to expect that *Cyrtandra* will yet be greatly augmented by subsequent discoveries. Asa Gray has done good service in revising the Polynesian species, but there are still a good many undescribed ones in Herbaria. We now know 10 species from the Sandwich Islands (viz. *C. cordifolia*, Gaud.; *C. platyphylla*, A. Gray; *C. Pickeringii*, A. Gray; *C. triflora*, Gaud.; *C. grandiflora*, Gaud. (*C. Endlicheriana*, Nees et *C. Ruckiana*, Mey.); *C. paludosa*, Gaud.; *C. Lessoniana*, Gaud.; *C. Garnotiana*, Gaud.; *C. Macraei*, A. Gray; and *C. Menziesii*, Hook. et Arn.). From the Society Islands we have three species (viz. *C. biflora*, Forst., *C. induta*, A. Gray, and *C. Taitensis*, Rich). From the Samoan group five species (viz. *C. pulchella*, Rich; *C. Samoënsis*, A. Gray; *C. Richii*, A. Gray; *C. labiosa*, A. Gray; and *C. pogonantha*, A. Gray). And from the New Hebrides *C. calycina*, Benth., *C. latifolia*, Benth., and *C. cymosa*, Forst. (*Besleria cymosa*, Forst. Prodr. n. 237). By some mistake Bentham's two species are put in De Candolle's 'Prodromus' as from the Fijis instead of New Hebrides, as stated by their author (Hook. Lond. Journ. Bot. vol. ii. p. 228).

1. **C. Pritchardii**, (sp. nov.) Seem. in Bonplandia, vol. ix. p. 257, et vol. x. p. 364 (Tab. XXXIX.); glaberrima; caule fruticoso erecto (6–10 ped.), ramulis subtetragonis; foliis oppositis longe petiolatis obovato-oblongis v. ovalibus dentatis acuminatis, basi attenuatis, supra viridibus, subtus pallidioribus; pedunculis axillaribus v. ex trunco ramisque ortis, solitariis v. aggregatis 3-floris, pedicellis involucre nullo basi bracteolis linearibus acutis instructis; calycis obconici lobis linearibus; corollæ (albidæ) tubo subincurvo, lobis oblongis obtusis patentibus, 3 inferioribus majoribus; ovario glabro disco glanduloso cincto; stylo glanduloso-pubescente; stigmati elliptico, acuto; bacca (alba) oblonga 2-loculari apiculata.—Woods of Ovalau (Seemann! n. 283).

I have named this species in honour of Mr. W. T. Pritchard, at the time of my visit to Viti H.B.M. Consul. It is remarkable on account of its general glabrousness, with the exception of the style, which is glandulose-pubescent (not shown in Fig. 4 of our plate, where the stigma also is not correctly rendered).

EXPLANATION OF PLATE XXXIX., representing *Cyrtandra Pritchardii*, Seem. Fig. 1, an entire flower; 2, corolla laid open; 3, stamens; 4, pistil; 5, cross-section of ovary; 6 and 7, ripe fruit,—all, with exception of Fig. 6, slightly magnified.

2. **C. coleoides**, (sp. nov.) Seem. (Tab. XI.); fruticosa, erecta, glabra; foliis oppositis longe petiolatis ovalibus v. obovato-oblongis brevi-acuminatis v. acutis basi in petiolum attenuatis integerrimis v. obscure dentatis; floribus aggregatis ex trunco ramisque ortis; pedunculis 1–3-floris; pedicellis involucre nullo; calyce tubuloso irregulariter rumpente; corollæ tubo curvato, laciniis ovato-triangularibus acutis, 3 inferioribus majoribus; staminibus fertilibus 2, sterilibus rudimentariis nullis; stylo glabro; fruct. ign.—Woods near Namosi, interior of Viti Levu (Seemann! n. 280).

A shrub, 12 feet high. Petiole, $\frac{1}{2}$ –1 inch long. Blade of leaf, 2–6 inches long, $1\frac{1}{4}$ –2 inches broad. Flowers greenish-white, from the old wood in the manner of some *Coleas*.

EXPLANATION OF PLATE XL., representing *Cyrtandra coleoides*, Seem. Fig. 1 and 2, views of an entire flower; 3, corolla laid open; 4 and 5, stamens; 6, pistil,—all magnified.

3. **C. Harveyi**, (sp. nov.) Seem.; erecta, fruticosa; ramulis petiolis pedunculisque ferrugineo-tomentellis; foliis oppositis longe petiolatis late ovato-oblongis v. obovatis breviter acuminatis basi acutis serratis, supra glaberrimis, subtus ad costas venasque ferrugineo-tomentellis; floribus axillaribus v. e trunco ramisque ortis; pedunculis 1–6-floris; calyce 5-fido, laciniis 3-angularibus acutis; corollæ tubo curvato.—Nady, Vanua Levu (Harvey!).

4. **C. ciliata**, (sp. nov.) Seem. (Tab. XLI.); fruticosa, erecta; foliis oppositis v. ternis longe petiolatis ovalibus longe acuminatis in petiolum attenuatis grosse serratis inter serraturas ciliatis; floribus ex trunco ramisque ortis cymosis, cymis ∞ -floris; calyce usque ad basin in laciniis 5 linearibus acutis diviso; corollæ (albæ) tubo curvato, lobis obovatis obtusis, 3 inferioribus majoribus; pistillo glabro; bacca oblonga (alba).—Taviuni (Seemann! n. 282).

Petiole more than an inch long. Blade of leaf, 4–6 inches long, 2–2 $\frac{1}{2}$ inches broad. Flowers from the old wood, whitish.

EXPLANATION OF PLATE XLI., representing *Cyrtandra ciliata*. Fig. 1, a flower cyme; 2, an entire flower; 3, corolla laid open; 4, a stamen; 5, pistil; 6, cross-section of ovary,—all, except Fig. 1, slightly magnified.

5. **C. Denhami**, (sp. nov.) Seem.; ramulis petiolis pedunculisque hirsutis; foliis oppositis ovatis v. ovali-oblongis acuminatis basi acutis dentatis, supra glaberrimis, subtus ad costas venasque hirsutis; pedunculis axillaribus elongatis bis trifidis; calycis glabri laciniis ovatis breviter acuminatis patentibus; corolla ignota; ovario glabro.—Island of Gau, in woods (Milne! in Capt. Denham's Expedition).

Two imperfect specimens collected by Milne, and in leaf not unlike *C. Pritchardi*. Petiole $\frac{1}{2}$ –1 in. long. Blade of leaf 5–7 inches long, 2 $\frac{1}{2}$ –3 $\frac{1}{2}$ inches broad. Peduncle much longer than petiole.

6. **C. acutangula**, (sp. nov.) Seem.; fruticosa, erecta, glabra; ramis acutis tetragonis; foliis oppositis ovalibus v. ovali-oblongis acuminatis basi acutis minute glanduloso-dentatis; pedunculis axillaribus solitariis 1-floris; calyce 5-fido extus glabro intus piloso laciniis ovatis acutis; corolla ignota; bacca oblonga apiculata.—Mountains of Namosi, interior of Viti Levu (Seemann! n. 276).

Petioles 1 inch long. Blade of leaf 6–7 inches long, 2–3 inches broad.

7. **C. Vitiensis**, (sp. nov.) Seem.; caule suffruticoso, crasso, erecto, simplici; foliis oppositis obovato-cuneatis acuminatis in petiolum alatum decurrentibus, subintegerrimis, junioribus subtus rufo-villosissimis, demum glabratis; cymis axillaribus subsessilibus paucifloris; calycis glabri laciniis ovatis acuminatis; corolla ignota; bacca ovata acuminata.—Nomen vernac. Vitiense, "Betabiabi."—Woods near Namosi, interior of Viti Levu (Seemann! n. 277).

Leaves 1–1 $\frac{1}{2}$ feet long, 5–7 inches broad. Petiole 4–5 inches long.

8. **C. anthropophagorum**, (sp. nov.) Seem.; A. Gray in Proceed. Amer. Acad. vol. vi.; frutescens, minutim fusco-pubescens; foliis oppositis oblongis acuminatis subserratis (3–5-poll.); pedunculis petiolo brevioribus paucifloris, pedicellis flore longioribus; calyce ad medium 5-fido, lobis subulato-lanceolatis; corolla (semipollicari) dimidio brevioribus; fructo ovato-oblongo.—Ovalau (U. S. Expl. Exped., Milne!), Viti Levu (Seemann! n. 278).

9. **C. Milnei**, Seem. in Bonplandia, vol. ix. p. 257; A. Gray, l. c.; caule crasso; ramis petiolis costaque foliorum rufo-villosissimis, pilis longis multiseptatis superne attenuatis; foliis oppositis (5–8-pollicaribus) ovalibus utrinque acutis vel acuminatis serratis pilosis; pedunculis brevissimis

∞ -floris; bracteis amplis; calyce pedicello longiori tubuloso fere æqualiter 5-dentato persistente fructum ovatum includente.—Taviuni (Seemann! n. 281).

A remarkable species, of which the corollas are unknown. The very shaggy petioles, 3 or 4 inches long; the blade of the leaf conspicuously veiny. Fructiferous calyx 7 to 10 lines long, cylindraceous or tubular-cyathiform, glabrate, longer than the included even full-grown fruit.

10. **C. dolichocarpa**, A. Gray, l. c.; frutescens; ramis gracilibus junioribus cum petiolis pedunculis calycibusque pilis longis rufescentibus multiseptatis (modo *C. Milnei*) barbatis; foliis oppositis subæqualibus lanceolato-oblongis acuminatis denticulatis supra hispidulis subtus breviter fulvo-pubescentibus; pedunculis axillaribus 1-floris; calyce longe tubuloso fructu cylindrico siliquæformi ($1\frac{1}{2}$ –2-pollicari) acuto $\frac{1}{3}$ brevior, sero deciduo.—Woods of Sandal-wood or Bua Bay and Nady, Vanua Levu (U. S. Expl. Exped., Milne!).

“Evidently allied to *C. Milnei*, by the pubescence, tubular calyx, etc. The latter is made out from vestiges which remain upon one side of one of the fruits, showing that it attains fully an inch in length. Yet it is exceeded by the singularly elongated fruit, which, except in form, resembles that of other species of *Cyrtandra*, i. e. is corticate, probably fleshy when fresh, but juiceless and indehiscent. The stamens must determine whether its relationship is with *Fieldia* or *Whitia* (the latter probably no good genus); but other Polynesian species exhibit a similar, only less elongated fruit.”—*Asa Gray*.

11. **C. involucrata**, Seem. (sp. nov.); erecta, fruticosa; ramulis petiolis pedunculisque ferrugineo-subsericeo-tomentosis; foliis oppositis ovato-lanceolatis acuminatis basi obtusis dentatis, supra demum glabris, subtus ferrugineo-subsericeo-tomentosis; pedunculis axillaribus 3-floris; pedicellis basi bracteis 2 foliaceis connatis involucratim suffultis; calycis tubo ovoideo-campanulato, lobis ovato-subulatis; bacca oblonga (alba).—Woods of Namosi, interior of Viti Levu (Seemann! n. 279).

An erect shrub, 6 feet high. Branches obscurely 4-angular. Petioles about an inch long. Blade of leaf 4–6 inches long, 2–2 $\frac{1}{2}$ inches broad.

ORDO LXIX. ACANTHACEÆ.

Besides the species enumerated or alluded to below, this Natural Order is represented in tropical Polynesia by:—

1. *Dilivaria ilicifolia*, Juss. (*Acanthus ilicifolius*, Linn.), which has been found in New Caledonia (W. Anderson!) and Tana (Forster!).

2. *Ruellia reptans*, Forst. Prodr. n. 242, and Icon. (ined.) t. 181,—a plant with white flowers, apparently different from *Dipteracanthus lanceolatus*, to which the Linnæan *Ruellia reptans* is referred by Nees, and collected in Tana, Eromanga, and Aneitum, New Hebrides (Forster!, W. Anderson!, Barclay!, M’Gillivray!).

3. *Dicliptera pubescens*, Juss. (*Dianthera cærulea*, Forst. Prodr. n. 14, et Icon. (ined.) t. 9), from the Isle of Pines and Botanist’s Island off New Caledonia (Forster!, W. Anderson!, M’Gillivray!).

4. *Dicliptera clavata*, Juss. (*Dianthera clavata*, Forst. Prodr. n. 15. t. 10), from the Society Islands (Banks and Solander!, Nelson!), and having white flowers, subulate bracts, and spatulate involueral bracts.

5. *Dicliptera frondosa*, Juss. (*Dianthera floribunda*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 203), from Tahiti (Forster!, Wiles and Smith!), and of which Solander says: “Suffrutex *Diantheræ bracteata*, Sol., simillimus quoad caulem, ramos, folia, et modum florendi, immo flores et fructum; differt autem bracteis angulatis, cuneiformibus, stipulis subdivisionum pedunculi subulatis. A *Dianthera velata* differt pedunculis numerosis seu pluries subdivisis et angustia bractearum. Stipulæ sub singula divisura pedunculorum binæ, oppositæ, subulatæ. Bracteæ cuneiformes, obtusæ, basi attenuatæ, integræ, altera minore. Capsulæ obcordatæ, basi attenuatæ. *Dianthera velata*, *bracteata*, *floribunda*, et *læta* valde affines.”

6. *Dicliptera velata*, Seem. (*Dianthera velata*, Sol. Prim. Fl. Ins. Pacif. p. 201; Parkins. Drawings of Tahit. Plants t. 3 (ined.)), Society Islands (Banks and Solander!). Suffrutex 3-pedalis, ramosus. Caules erecti, glabri, obtuse tetragoni; lateralibus alternis sulcatis, alteris carinatis; carina obtusa. Rami brachiati, supra genicula tumidi seu substantia molli farcti, unde in speciminibus exsiccatis ibidem coarctati. Folia caulina et ramea, opposita, petiolata, patentia, ovato-elliptica, acuminata, obsolete crenata, sinibus crenarum puncto glandulaceo albido notatis, glabra, tenuia, venosa; venis remotis apicem versus flexis;

venulis inæqualiter reticulatis (vix spithamæa, sæpius triuncialia). *Petioli* foliis duplo vel triplo breviores. *Pedunculi* axillares, oppositi, solitarii, filiformes, striati, foliis paulo breviores, patentés, (altero brevior), subumbelliferi seu terminati *pedicellis* 3 vel 5 subæqualibus, superne parum crassioribus, levissime pubescentibus, circiter tres lineas longis ad quorum basin *stipulæ* 2, oppositæ, subulatæ, pedicellis triplo breviores. *Bracteæ* 2, singulum pedicellum terminantes, ex orbiculato dilatatæ, et latiores quam longiores (diametro transversali semunciali), obtusissimæ, cum acumine minutissimo, integerrimæ, planæ, conniventes; altera multo minore et basi angustiore. *Flores* tres intra singulum par bractearum sessiles, unico tantum fructifero, lateralibus diminutis, abortientibus, ad basin singuli floris. *Stipulæ* 2, subulatæ, calyce parum breviores. *Calyx* profunde 5-partitus, vix 2 lineas longus. *Lacinia* lanceolata, acutæ, erectæ, æquales. *Corolla* monopetala, alba, bilabiata. *Tubus* cylindricus, crassitie pennæ passerinæ leviter tortus, parum villosiusculus, bractea longior (sæpe 7 lineas longus). *Labium superius* ovatum, extus concavum, tubo duplo brevius, revolutum; marginibus membranaceis subundulatis; apice emarginato. *Labium inferius* oblongum, longitudine labii superioris, revolutum, apice tridentatum. *Denticulus* obtusiusculus, intermedio paulo majore. *Stam. filamenta* 2, filiformia, tubo superius inserta, extra tubum exserta, sed laciniis corollæ multo breviora. *Antheræ* 2, in singulo filamento erectæ, lineares, unica terminalis, altera latere filamentum affixa. *Pist. Germen* superum, ovatum, acutum, parum compressum. *Stylus* filiformis, staminibus paulo longior. *Stigma* parvum, obsolete bifidum. *Pericarpium* omnino uti in *Dianthera bracteata*."

7. *Dicliptera bracteata*, Seem. (*Dianthera bracteata*, Sol. Prim. Fl. Ins. Pacif. p. 202; Parkins. Drawings of Tahit. Plants, t. 4.—"Ava-thura-thura"?, "Pao-arha"?, *Tahitensibus*. Tahiti (Banks and Solander!). "*Suffrutex* ramosissimus. *Caules* teretes, glabriusculi, sæpe villis brevissimis canescentes. *Rami* brachiati, obsolete tetragoni, supra genicula incrassati. *Folia* caulina et ramea, opposita, petiolata, patentia, ovata, acuminata, obsolete crenata, glabra, tenuia, venosa; venis tenuibus remotis antrorsum flexis; venulis remote et inæqualiter anastomosantibus (tri- et quadriuncialia). *Obs.*—Ex oppositis alterum plerumque minus. *Petioli* foliis duplo vel triplo breviores. *Pedunculi* longitudine foliorum et sæpe longiores, axillares, oppositi, bis et ter subdivisi. *Pedicelli* 3-ni, 4-ni, vel 5-ni, inæquales, præcipue ultimi. *Stipulæ* 2, oppositæ, oblongo-ovatæ, basi attenuatæ, foliaceæ, bracteiformes, sub singula divisura; si florescentia uti umbella proponitur, hæc involucri nomine insigniendæ. *Bracteæ* 2, pedicellos ultimos terminantes, ovato-subrotundæ vel interdum latiores, integerrimæ, obtusæ, interdum leviter emarginatæ, planæ, conniventes, diametro semunciali; altera minore. *Flores* 2 vel 3, sessiles, in sinu bractearum, unicus tantummodo fructifer. *Stipulæ* 2, subulatæ, intra bracteas sub singulo flore. *Calyx* ad basin usque 5-partitus. *Lacinia* subulatæ, erectæ (sesqui-lineares). *Corolla* alba, monopetala, bilabiata. *Tubus* cylindræus, crassitie pennæ passerinæ, extus villosiusculus, bracteis paulo longior ($\frac{3}{4}$ -unciali). *Limbus* bipartitus. *Labium superius* oblongum, planiusculum, longitudine tubi, revolutum, apice tridentatam; dentibus obtusiusculis, intermedio brevior. *Labium inferius* paulo brevius, apice leviter incisum seu immarginatum. *Stam. filamentum* 2 filiformia, inferno dorso tubi adnata, labio superiore paulo breviora, sed extra faucem longe exserta. *Antheræ* 2 in singulo filamento, ovatæ, mediocres, unica terminalis, alta inferior lateralis, subsessilis. *Obs.*—Singulum filamentum terminat arcus utrinque antherifer, altero latere brevior. *Pist. Germen* superum, ovatum, compressum. *Stylus* capillaris, longitudine staminum. *Stigma* breve, 2-fidum, laciniis acutis. *Capsula* obovata, acuta, compressa, 2-ocularis. *Dissepimentum* in medio apertum. *Valvula* naviculares. *Semina* solitaria, lentiformi-ovata, arillata; arillo tumido, atomis ferrugineis adperso. Difficillime dignoscitur a *Dianthera velata*, a qua tamen differt caule solidiore, tereti; foliis basi magis rotundatis; pedunculis pluries subdivisis; stipulis involucriaceis bracteiformibus planis; bracteis basi rotundatis et parum attenuatis, nec tam dilatatis ac in *Dianthera velata*, modo hæc pro specie distinguenda sufficient."

8. *Dicliptera Samoënsis*, Seem. (sp. nov.), foliis ovalibus utrinque attenuatis, pedunculis axillaribus 2-nis, uno brevior 5-7-floris, involucri proprii foliolis 2 exterioribus ellipticis acuminatis, pedunculis pedicellisque puberulis.—Upola, Samoan Islands (Sir E. Home! in Mus. Brit.)." Corolla would seem to be purple or reddish.

I. **Adenosma**, Nees ab Esenb. in Wall. Plant. Asiat. Rar. vol. iii. p. 75 et 79; DC. Prodr. vol. xi. p. 67. Calyx 5-partitus, æqualis v. superiori laciniâ majori. Corolla ringens. Stamina 4, didynama, antheris 2-loculatis, loculis parallelis. Capsula angustata, rostrata, ∞-sperma. Retinacula nulla.—Herbæ v. suffrutices, in uliginosis littoribusque crescentes, erectæ v. diffusæ; foliis serratis v. crenatis, pubescentibus glabrisve, subinde glandulosis; floribus mediocribus, purpurascens, in axillis foliorum superiorum minorum sessilibus, singulis v. ternis, oppositis, spicam foliosam formantibus.—*Cardanthera*, Hamilt. in Herb. Benth.

1. **A.tiflora**, Nees ab Esenb. l. c.; caule ascendente foliisque ovatis crenato-serratis glanduloso-pubescentibus; floribus axillaribus verticillatis ternis; calyce æquali; corollæ laciniis omnibus

retusis.—*Ruellia triflora*, Roxb. Fl. Ind. vol. iii. p. 52. Nomen vernac. Vitiense, "Tamola."—In swamps and banks of rivulets, Viti Levu (Seemann! n. 352.) Widely diffused in the East Indies.

This aromatic herb is used by the native physicians for coughs and colds.

II. **Chaetacanthus**, Nees ab Esenb. in Lindl. Introd. ed. ii. p. 445, et in DC. Prodr. vol. xi. p. 462. Calyx profunde 5-fidus, laciniis longis setaceis rigidis. Corolla infundibuliformis, tubo angusto, limbo subæquali. Stamina 2, a basi ad os usque faucium tubo adnata, subexserta. Antheræ cordatæ, loculis subparallelis basi muticis. Capsula oblonga, depresso-4-gona, rigidula, in medio 4-sperma. Flores, axillares sessiles, basi bracteolis duabus subulatis.—Fruticuli myrtilloides, ramosissimi; foliis parvis, floribus parvis roseis (v. albis?).

1. **C. repandus**, A. Gray in Proceed. Amer. Acad. vol. v. p. 349; fruticosus, elatus, glaber; foliis ovato-lanceolatis seu oblongis, acumine obtuso, repandis sinuatisve, membranaceis; pedunculis cymoso-paucifloris; corolla extus calyceque minutim pubescentibus.—Mountain woods, Ovalau (M'Gillivray! in Herb. Mus. Brit.; U. S. Expl. Exped.).

"The small flowers, anthers, etc., correspond with the Cape species, upon which Nees founded his *Chaetacanthus*" (A. Gray). The synonyms which A. Gray thought might be referred to this species must be excluded, as Forster's *Justicia repanda* is a genuine *Eranthemum*, with large, white corollas dotted with red.

III. **Eranthemum**, Linn. Fl. Zeyl.; Nees ab Esenb. in DC. Prodr. vol. xi. p. 445. Calyx 5-fidus, æqualis. Corolla hypocraterimorpha v. elongato-infundibuliformis, tubo longo gracili, limbo subæquali. Stamina 2 fertilia circa os tubi adnata, longe decurrentia, 2 sterilia brevissima, filamentis longiorum basi connexa. Antheræ exsertæ, 2-loculares, muticæ, loculis parallelis contiguis, texturæ densioris. Capsula inferne depressa, valvulis contiguis, asperma; superius 2-locularis, 4-sperma. Dissepimentum adnatum. Semina discoidea, retinaculis suffulta.—Frutices v. suffrutices calidizonæ et tropicæ, plerique monticolæ, speciosis floribus insignes, cæruleis roseis albis varie pictis; foliis v. integerrimis v. serratis; floribus spicatis; bracteis communibus majoribus v. minoribus, bracteolis omnium parvis oppositis.

This genus is represented in tropical Polynesia by the following species:—

1. *E. repandum*, Rœm. et Schult. Syst. vol. i. p. 175. *Justicia repanda*, Forst. Prodr. n. 12, et Icon. (ined.) t. 7.—Tana, New Hebrides (Forster!). Flowers white, with red dots.

2. *E. pelagicum*, (sp. nov.) Seem.; foliis linearibus v. lanceolato-linearibus integerrimis v. subrepandis obtusis in petiolum attenuatis utrinque nigro-punctatis; pedunculis axillaribus 1-3-floris; laciniis calycis subulato-filiformibus; corollæ lobis oblongis obtusis.—Aneitum, New Hebrides (M'Gillivray!). "A small shrub" (M'Gill.).

3. *E. longifolium*, Seem.—*Justicia longifolia*, Forst. Prodr. n. 13 et Icon. (ined.) t. 8. *Justicia sinuata*, Banks et Soland. in Vahl, Symb. vol. iii. p. 11; Enum. vol. i. p. 166. *Eranthemum sinuatum*, Rœm. et Schult. Syst. vol. i. p. 175. *Eranthemum Cooperi*, Hook. Bot. Mag. t. 4467. *Anthacanthus sinuatus*, Nees ab Esenb. in DC. Prodr. vol. xi. p. 462.—Tana (G. Forster! W. Anderson!), Aneitum (M'Gillivray! Milne!), New Caledonia (Cooper!).*

4. *E. Carruthersii*, (sp. nov.) Seem.; foliis brevipetiolatis ellipticis v. ovato-lanceolatis, apice acuminatis attenuatis v. obtusis, integerrimis; paniculis terminalibus ∞-floris; calycis laciniis ovato-lanceolatis; corollæ lobis ovatis obtusis.—Aneitum and Eromanga, New Hebrides (M'Gillivray!).

5. *E. tuberculatum*, Hook. Bot. Mag. t. 5405. From the Loyalty Islands (Sir G. Grey!), Isle of Pines (Milne!).

1. **E. laxiflorum**, A. Gray in Proceed. Amer. Acad. vol. v. (Tab. XLII.); glaberrimum; foliis ovato- seu lanceolato-oblongis sæpius acuminatis acumine obtuso v. acuto; pedunculis axillaribus petiolo longioribus cymoso-tri-∞-floris; bracteis oblongis parvis herbaceis; pedicellis calyce longiori-

* In rectifying the synonymy of these Acanthaceous plants, I must point out a mistake of which I have been guilty, in naming (Bonplandia, vol. vii. p. 246) a new genus of *Acanthaceæ* from Brazil, of which the fruit is unknown, *Spathodea ilicifolia*. Whilst leaving Dr. Anderson to deal with this plant in his forthcoming revision of the whole Order, I will only add that it is identical, as I have since found, with *Digitalis dracocephaloides*, Vellozo, Fl. Fluminensis, vol. vi. t. 101.

bus; laciniis calycis setaceo-subulatis tubo brevissimo pluries longioribus; corolla hypocraterimorpha (purpureo-cærulea), lobis ovalibus.—Bua Bay, Vanua Levu (U. S. Expl. Exped.), Ovalau (Seemann! n. 351, ex parte).

Frequently cultivated as an ornamental plant, together with the following, by the European settlers in Fiji. The colour of the flowers of all I have seen is, as represented in the Plate, a purplish-blue,—not pure blue, as stated in Pickering's notes. I am inclined to think that this species gradually passes into *E. insularum*; indeed, both were distributed by me as one species, and under n. 351. *E. laxiflorum* is a half-shrub, 3–4 feet high, the lower leaves (one of which is represented (Fig. 1) in the background of the Plate) are sometimes 8–9 inches long, and 4–5 inches broad, whilst the leaves of the flowering branches are very much smaller, and more lanceolate in shape.

EXPLANATION OF PLATE XLII., representing *Eranthemum laxiflorum*, A. Gray, from specimens collected by me. Fig. 1, one of the lower leaves; 2, an entire flower; 3, a corolla laid open; 4, a stamen; 5, pistil,—Figs. 2, 3, 4, and 5, slightly magnified.

2. **E. insularum**, A. Gray, l. c.; glabrum; foliis ovatis lanceolatisve obtuse acuminatis; pedunculis axillaribus seu ramos terminantibus brevibus 1–3-floris; bracteolis minutis; calycis laciniis subulatis tubo duplo triplove longioribus; corolla infundibuliformi (purpureo-cærulea), lobis oblongis.—Ovalau, both wild and cultivated (Seemann! n. 351, ex parte; U. S. Expl. Exped.), Tongan Islands (Harvey!).

ORDO LXX. VERBENACEÆ.

The most singular genera of *Verbenaceæ* occurring in tropical Polynesia are *Faradaya* and *Oxera* (both represented by several species), and the monotypic *Nesogenes* (*N. euphrasioides*, DC.; *Myoporum euphrasioides*, Hook. et Arn.). In the Hawaiian Islands we have three introduced species, viz. *Verbena Bonariensis*, Linn., collected in Oahu (Seemann! n. 1719! Barclay!); *Stachytarpheta dichotoma*, Vahl. (Macrae!), and some *Lantana*, which, from the scrap collected by Lay and Collie, was referred, with a mark of doubt, to *L. annua*, Linn. *Lippia nodiflora*, Rich (*Zapania nodiflora*, Lam.), has been found by Milne and M'Gillivray in the Isle of Pines, off New Caledonia, by Forster in Tana, and by M'Gillivray in Aneitum; and there can be little doubt that this common tropical weed occurs in Viti also.

I. **Premna**, Linn. Gen. n. 1316; Schauer in DC. Prodr. vol. xi. p. 630. Calyx cupuliformis, cyathimorphus vel subcampanulatus, subbilabiato-4–5-fidus vel dentatus aut bilabiatus, labio utroque vel altero saltem integro, persistens demumque auctus. Corolla tubulosa, tubo subinfundibuliformi brevi; limbus nunc bilabiato-4-fidus, patens, labio superiore semibifido emarginatove, inferiore 3-fido 3-partitove, lobis subæqualibus vel medio nonnihil producto, nunc subregularis reflexus; fauces villosæ, sæpius longæ barbatae. Stamina 4, didynama vel subæqualia, corollam subæquantia vel exserta, æquidistantia; antheræ subrotundæ, dorso insertæ, loculi basi divergentes. Ovarium 4-loculare loculis 1-ovulatis. Stylus filiformis, stamina subæquans. Stigma 2-fidum, cruribus divaricatis. Drupa pisiformis, carnosa, monopyrena, putamine axi perforato duro rugoso vel verrucoso-tuberculato 4-loculari vel abortu bi-triloculari. Semen radícula infera, erectum.—Frutices vel suffrutices aut arbores, glabri aut pube simplici stellatave induti, rarius glanduloso-punctati, odore herbæ et florum plerumque gravi sambucino vel hircino pollentes; foliis oppositis simplicibus integerrimis aut dentatis penninerviis, citra basin sæpius multiplinerviis; floribus parvis, in paniculas terminales trichotomo-cymosas corymbiformes brachiato-pyramidatas aut anthuroideas collocatis, sæpius polygamis solis alaribus primariis fertilibus.—*Cornutia*, Burm. Fl. Ind. t. 41, non Plum. *Gumira littorea* et *Folium hircinum*, Rumph. Amb. vol. iii. p. 208. t. 133 et 134. *Gumira*, Hassk. in Flora Ratisb. 25 (1842), vol. ii. Beibl. p. 26. *Holochiloma*, Hochst. in Flora, 1841, p. 371. *Lomatia*, Sol. Prim. Fl. Ins. Pacif. p. 273 (ined.). *Scrophularioides*, Forst. Prodr. n. 528.

1. **P. Taitensis**, Schauer in DC. Prodr. vol. xi. p. 638 (Tab. XLIII.); arborea, inermis; ramulis petiolis pedunculisque glabriusculis v. rufo-subvelutinis; foliis petiolatis ovatis brevi-acumi-

natis basi rotundatis v. cordatis integerrimis margine reflexis bullato-rugosis utrinque glabris supra nitidis subtus pallidis; petiolo canaliculato, panicula terminali corymbosa ∞ -flora; calyce brevi cupuliformi subbilabiato obsolete 4-dentato; drupa subglobosa glabra (nigro-violacea).—*P. integrifolia*, Hook. et Arn. Bot. Beech. p. 67, non Linn. *Scrophularioides arborea*, Forst. Prodr. n. 528. *Scrophularioides (?) Pacifica*, Forst. Herb. et Icon. (ined.) t. 178. *Lomatia cymosa*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 271, et in Parkins. Drawings of Tahit. Plants, t. 60.—Nomen vernac. Vitiense, teste Seemann, “Yaro,” Tahitiense, teste Solander, “Awalho.”—Common in woods of Ovalau, Nairai, Moala, and Viti Levu (Seemann, n. 355, 356, Milne! Harvey! M’Gillivray!). Also collected in Eromanga (M’Gillivray!), Uvea (Hume!), and in the Society (Cook!), Marquesas (Forster! Matthews!), Tongan (Harvey!), and Coral Islands (Lay and Collie!).

There are two forms, perhaps species, combined under the above name; the one is more or less glabrous, the other more or less covered with a velvety down, and only the latter has as yet been met with in the Viti Islands. Forster (Prodr. n. 528) combined both under the name of *Scrophularioides arborea*, and does not give a description of the plant. In his herbarium and drawings it occurs under the name *Scrophularioides (?) Pacifica*. The glabrous state was known to Solander, and named by him *Lomatia cymosa*.* An examination of more complete specimens than are now at hand, may perhaps bring to light more important characters than I have been able to find between these two forms, and establish their claims to specific distinction. It may therefore not be out of place to group here the information now accessible.

1. Glabrous state=*Premna Tahitensis*, Schauer.—*Scrophularioides Pacifica*, Forst. ex parte. *Scrophularioides (?) arborea*, Forst. ex parte. *Lomatia cymosa*, Soland.—Collected in Tahiti (Cook!), Marquesas (Forster!), Wallis Island (Home!), and Tonga (Harvey!).

2. Plant with sub-velvety branchlets, petioles, and peduncles,=*Scrophularioides Pacifica* and *S. (?) arborea*, Forst.—*Premna integrifolia*, Hook. et Arn., non Linn.—Viti (Seemann! Milne! Harvey! Barclay!), Marquesas (Cook!), Tahiti (Herb. Kew.), Coral Islands (Beechey!). Also collected by Forster (locally not specified).

The natives of Fiji, who call the tree “Yaro,” employ the wood for house-building.

EXPLANATION OF PLATE XLIII., representing *Premna Taitensis*, Schauer.—Fig. 1, a flower; 2, calyx and pistil; 3, corolla laid open; 4, stamen; 5, ovary:—all magnified.

II. **Clerodendron**, Linn. Gen. n. 798; Schauer in DC. Prodr. vol. xi. p. 658. Calyx campanulatus, rarius tubulosus, interdum 5-gonus et subinflatus, 5-fidus vel 5-dentatus, rarissime truncatus. Corolla infundibularis vel subhypocraterimorpha; tubo sæpissime calycem conspicue excedente, interdum longissimo; limbo 5-partito, laciniis superioribus paulo magis approximatis subinæquali vel laciniis inferioribus magis minusve adscendentibus, obliquo immo subsecundo. Stamina 4, corollæ tubo inserta, longe exserta, subdidynama. Antheræ supra basin insertæ, basi fissæ, 2-loculares, loculis parallelis rima longitudinali dehiscentibus. Ovarium 4-loculare, loculis 1-ovulatis; ovulo in spermophoro angulo centrali adnato pendulo. Stylus filiformis, exsertus; stigmatibus 2-fido acuto.

* “*LOMATIA cymosa*, Sol. Prim. Fl. Ins. Pacif. p. 271. Vulgo dicitur ‘Awalho.’ Hab. in Tahiti et Huahine. *Arbor* parva, tota glabra. *Rami* teretes, læves. *Folia* opposita, petiolata, ovata, acuta, integerrima, lævia; *venis* paucis obliquis pluribus tenuissimis subtransversalibus cancellata, venulisque numerosissimis obsolete reticulata, plana, tri- et quadriuncialia. *Petioli* foliis duplo et triplo breviores, circiter sesquiunciales; altero brevior, cujus folium etiam paulo minus est. *Cymæ* terminales, ramosissimæ, dichotomæ, divaricatissimæ, foliis longiores, ∞ -floræ. *Stipulæ* lineari-subulatæ, breves, oppositæ ad singulam dichotomiam cymarum. *Calyx* 1-phyllus, cylindræo-urceolatus, persistens (lin. longus), subbilabiatus, 5-dentatus; dentibus 2 superioribus longioribus remotioribus, 3 inferioribus minoribus. *Corolla* inæqualis; tubus subdentibus 2 superioribus longioribus remotioribus, 3 inferioribus minoribus. *Corolla* inæqualis; tubus subdentibus 2 superioribus longioribus remotioribus, 3 inferioribus minoribus. *Faux* villosa. *Limbus* plerumque 4-partitus, cylindræus, in medio parum gibbus, calyce vix longior. *Lævis* villosa. *Limbus* plerumque 4-partitus. *Lobi* obtusiusculi; *supremus* reliquis longior, ut *infimus* brevior; *laterales* medioeres. *Obs.*—Si corollæ *limbus* 5-fidus, 2-labiatus est. *Labium superius* 2 fidum; *lobis* ovatis obtusis planis porrectis. *Labium inferius* patens, 3-fidum; *lobis* subrotundis obtusissimis, intermedio paulo majore. *Filamenta* 4, tubo corollæ superne imposita, duo paulo inferiora. *Antheræ* subrotundæ, parvæ, didymæ, faucem claudentes. *Germen* superum, subrotundum, depressum. *Stylus* filiformis, staminibus paulo brevior. *Stigma* 2-fidum; laciniis superum, subrotundum, depressum. *Stylus* filiformis, staminibus paulo brevior. *Stigma* 2-fidum; laciniis superum, subrotundum, depressum. *Stylus* filiformis, staminibus paulo brevior. *Stigma* 2-fidum; laciniis superum, subrotundum, depressum. *Drupa* subglobosa, glabra, nigro-violacea, magnitudine Pisi, 1-ocularis, 1-subulatis parvis divaricatis. *Drupa* subglobosa, glabra, nigro-violacea, magnitudine Pisi, 1-ocularis, 1-subulatis parvis divaricatis. *Nux* 4-ocularis, crassa subrotunda, profunde sulcata, porcis inæqualibus interruptis. *Nuclei* solitarii, oblongi, albi.”

Drupa calyci ampliato insidens vel inclusa, baccata vel carnosâ, 4- vel sæpius abortu 1-2-3-pyrena, sæpius 2-4-loba; pyrenis maturitate distinctis, 1-ocularibus; putamine lignoso lævi. Semen solitarium, erectum. Cotyledones oleosæ, applicitæ; radícula brevis, infera.—Frutices vel arbores; foliis oppositis vel ternis, simplicibus integris vel rarius lobatis, phyllopodio interdum prominenti persistenti insidentibus; cymis trichotomis vel axillaribus vel in paniculam terminalem collectis.—*Volkameriæ* sp., Linn. *Volkmannia*, Jacq. Hort. Schœnb. t. 338. *Agricolæa*, Schrank in Regenb. Denkschrift. 1808, p. 98. *Siphonanthus*, Linn. Gen. 129. *Ovieda*, Linn. Gen. n. 787. *Valdia*, Plum. Gen. 14; Icon. t. 267. *Torreya*, Spreng. Neue Entdeck. vol. ii. p. 121. *Cornacchinia*, Savi in Mem. Sc. Ital. Mod. 21. p. 187, cum icon.

Several Polynesian species previously referred to *Clerodendron* turn out to be members of the new genus *Faradaya*, so that *Clerodendron* is represented only by the widely-diffused *C. inerme*. I may here remark of a Chinese species (*C. fortunatum*, Linn.) that I was wrong in referring, from description, Loureiro's *Volkameria pumila* (*Clerodendron pumilum*, Spreng.) to it as a synonym. I have since seen the original specimens of *Volkameria pumila*, Loureiro, at the British Museum, and find it to be entirely different from *C. fortunatum*. *C. fortunatum* would therefore include only two of the synonyms which (Bonplandia, vol. x. p. 249) I referred to it, viz. *C. lividum*, Lindl. Bot. Reg. t. 945, and *C. pentagonum*, Hance in Wlprs. Ann. vol. iii. p. 238.

1. **C. inerme**, R. Brown, in Ait. Hort. Kew. ed. 2. vol. iv. p. 65; Schauer in DC. Prodr. vol. xi. p. 660; ramulis virgatis, novellis cum cymis adpresse pubescentibus, adultis foliisque glabris, foliis ovalibus vel ellipticis in petiolum brevem attenuatis, brevissime acuminatis, apice obtuso integerrimis opacis subtus pallidis; cymis axillaribus folium æquantibus 3-floris, in paniculam corymbosam terminalem collectis; calyce campanulato 5-dentato; tubo corollæ glabro filiformi elongato.—*Volkameria inermis*, Linn. Fl. Zeyl. p. 231; Jacq. Coll. Suppl. p. 117. t. 4. fig. 1. Rumph. Herb. Amb. vol. v. p. 86. t. 46. Rheede Hort. Malab. vol. v. p. 97. t. 49. *C. buxifolium*, Spreng. Syst. Veg. vol. ii. p. 758. *C. Commersonii*, Spreng. Syst. Veg. vol. ii. p. 758?—Common on the seaside of all the Vitian Islands (Seemann! n. 353, Barclay!). Also collected in the Isle of Pines (Milne!), Tongan Islands (Matthews! Sir E. Home! Harvey!), New Caledonia (Forster! Capt. Cook!), and Samoan Islands (U. S. Expl. Exped.). Common in the East Indies and China.

Asa Gray distinguishes the broad-leaved form of this species under the name of *Oceanicum*, and thinks it restricted to Polynesia, but I have seen specimens of it from Malacca (Griffith!), Java (Horsfield!) East Indies (Gouan! Thomson!). The small-leaved form I have seen from Mangalor (Hohenacker!), China (Amhurst!), Hongkong (Urquhart! Hance! Champion!), Rangoon (M'Cleland!)

III. **Faradaya**, F. Muell. Fragm. Phytogr. Austr. vol. v. p. 21 (1865); Seem. Journ of Bot. 1865, p. 258. Calyx ante anthesin clausus, demum irregulariter in lobos 2-3-4 rumpens. Corolla hypocraterimorpha v. subinfundibuliformis, limbo 4-lobo subregulari. Stamina 4, exserta; antheræ 2-loculares, loculis parallelis longitudinaliter dehiscentibus. Stylus elongatus. Stigma 2-lamellatum. Ovarium 4-loculare, loculis 1-ovulatis, ovulis pendulis. Drupa crustaceo-lignescens, 1-sperma.—Frutices erecti; foliis oppositis v. verticillatis ovalibus v. oblongis integerrimis; cymis simplicibus v. paniculatis, axillaribus v. terminalibus; floribus albis.—*Clerodendron* sp., auct. *Clerodendron* (§ *Tetrathyranthus*), A. Gray in Proceed. Amer. Acad. vol. vi.

In the thirty-first number of his 'Fragmenta Phytographiæ Australiæ,' Dr. F. Mueller defines a new genus, which, in honour of the illustrious Faraday, he names *Faradaya*, and of which only one species (*F. splendida*), discovered by Dallachy in woods at Rockingham Bay, was known to him. Dr. Mueller referred the genus to *Bignoniaceæ*, and, on sending his printed description, accompanied by a specimen of the plant, he was pleased to ask my opinion with regard to the stability of the genus. An examination convinced me that *Faradaya* was identical with a genus which for some time had engaged my attention, and about which I had previously entered into correspondence with Professor Asa Gray, as one of those specially interested in it. The genus I hold to be a sound one; but Dr. Mueller, usually so correct, was, in this instance, certainly wrong in referring it to *Bignoniaceæ*, with which the plant has nothing to do, it being a genuine member of the

Natural Order *Verbenaceæ*, and closely related to *Clerodendron* and *Oxera*. Let me state the history of the genus. In 1862, I described, in the tenth volume of the 'Bonplandia,' p. 249, a *Clerodendron*, from the Tongan or Friendly Islands, under the name of *C. Amicorum*. Shortly afterwards, Asa Gray, travelling over the same ground, also came across this species, and had already given it exactly the same name when the 'Bonplandia' reached him. On describing it in the Proceedings of the American Academy, vol. vi. p. 50, he added another species (*C. ovalifolium*), from the Viti Islands, and pointed out that both agreed in their 4-lobed, almost regular calyx and corolla, and 4 stamens, at the same time proposing the sectional name *Tetrathyranthus* for these two *Clerodendrons*. At the beginning of the year 1865, an allied third species, collected by Mr. J. Storck in Viti, reached me, which also had a 4-lobed corolla and 4 stamens, but the calyx was almost invariably 2-lobed, the lower lobe frequently splitting into 2. This led to renewed examination. The calyx I found to be closed before anthesis and splitting, or rather tearing irregularly into 4, 3, or 2 lobes, when the corolla is forcibly pushed through a very narrow aperture at the apex, indicated by four very minute points,—one would hardly call them teeth, though they are in reality the teeth of the calyx. The splitting of the calyx is analogous to what we find in the genus *Tecoma* (as now circumscribed) and several genera of *Eubignoniæ*; we have nothing like it in the genuine *Clerodendron*, and I think there can be no doubt that this set of plants must constitute a separate genus. I meant to have taken this view of the case in dealing with them in this place, and to have adopted A. Gray's sectional name for the genus; but, as I find the species from Rockingham Bay to be a congener, and as a new name has actually been published, I adopted (Journ. of Bot. 1865, p. 258), Mueller's name.

In looking over the herbarium of the British Museum for congeners, I met with a plant having a calyx similar to my *Faradaya Vitiensis*, and provisionally named by R. Brown *Vitex (?) macrophylla* (foliis simplicibus integerrimis ovato-oblongis glabris costatis basi 2-glandulosis; caule arboreo), and discovered by Banks and Solander at Cape Grafton, east coast of New Holland. There is only one specimen extant, and an examination showed that the ovary is 5-celled, and that the carpellary leaves are involute, as in *Clerodendron* and *Faradaya*. Solander gave to this plant the manuscript name *Ephiëlis simplicifolia*, coupling it with another Verbenaceous plant (*Vitex littoralis*, A. Cunningh.), from New Zealand. As the former represents an entirely new generic type, Solander's name might be adopted, since Schreber's *Ephiëlis* does not stand, being synonymous with Aublet's *Matayba*, and now regarded as a section of *Ratonia*. I should add that the only flower which could be examined had only four equal lobes of the corolla, whilst Solander mentions five; in æstivation the external lobe overlaps the two placed next it, and these again overlapping the internal one.

EPHIELIS, Solander, mss. in Herb. Mus. Brit. excl. sp. Calyx ante anthesin clausus, demum irregulariter 2-fidus, "glaber, persistens, 3 lineas longus." Corolla "irregularis (extus sericea); tubus cylindraceus, deorsum incurvus, longitudine calycis; faux magna, ventricosa, tubo duplo longior; limbus 5-partitus; lacinia oblongæ, obtusæ, patulæ, longitudine tubi, 2 superiores erectiusculæ (intus nivæ), 2 laterales divaricatæ (colore superiorum); infima lacinia dependens, cæteris paulo longior (intus rubicunda, macula baseos magna lutea)." Stamina 4, "tubo longiora; antheræ 2-lobæ." Ovarium 5-loculare, ovulis solitariis. "Stylus filiformis, subulatis, inclinatus, corolla paulo longior. Stigma subulatum, acutum, reflexum. Drupa oblongo-obovata, subtus 2-nata, obtusissima, (non penitus matura magnitudine nucis Avelanæ,) nux ovalis, 5-locularis, loculo centrali majore, nuclei oblongi solitarii."—Arbor Novæ Hollandiæ orientalis, foliis oppositis ovato-oblongis integerrimis costatis glabris, basi 2-glandulosis; floribus cymoso-paniculatis axillaribus et terminalibus, albidis.—Seem. in 'Journal of Botany,' 1865, p. 258.

Species unica:—

1. *E. simplicifolia*, Soland. mss. l. c.; Seem. in Journ. of Bot. l. c.—*Vitex (?) macrophylla*, R. Brown, Prodr. p. 512.—Cape Grafton (Banks et Solander!). Dr. Mueller (Fragm. Phytogr. vol. v. p. 72) observes with regard to this plant:—"Ephiëlis, quam cl. Seemann sub generis dignitate adumbravit, fortassis *Viticis* genere haud removenda est, quia etiam *Vitex Dalrymliana* (eadem apparens ac *V. macrophylla*) passim putamen 5-loculatum offert." Yet the calyx of *Vitex macrophylla* differs from that of all other species of *Vitex*, and seems to point to a generic difference.

1. **F. ovalifolia**, Seem. Journ. of Bot. 1865, p. 258; foliis ovalibus obtuse acuminatis basi subangustatis (cum petiolo ramisque teretibus) glabris; cymis ∞-floris corymboso-paniculatis canescenti-puberulis; corolla hypocraterimorpha, tubo (ultra pollicari) calycem obtuse 4-lobum pluries excedente, lobis rotundatis inter se æqualibus stamina adæquantibus.—*Clerodendron (Tetrathyranthus) ovalifolium*, A. Gray, l. c.—Viti Islands, exact locality not specified (U. S. Expl. Exped.!).

Differs from *F. Amicorum** somewhat in the foliage, but strikingly in the shape of the corolla.

* *F. Amicorum*, Seem. Journ. of Bot. 1865, p. 258; foliis ovali- seu cuneato-obovatis (9-10-pollicaribus) in petiolum brevem attenuatis integerrimis cum ramis subteretibus glabris; cymis ∞-floris corymboso-paniculatis canescenti-puberulis; corollæ tubo subinfundibuliformi calyce 4-lobo quadruplo lobis ipsis duplo

2. **F. Vitiensis**, Seem. Journ. of Bot. 1865, p. 258 (Tab. XLIV.); glabra; foliis oppositis v. verticillatis ovali-oblongis v. obovato-oblongis acuminatis in petiolum attenuatis; cymis axillaribus corymbosis ∞ -floris; corollæ tubo subinfundibuliformi calyce subbilabiato duplo triplove longiori; lobis oblongis obtusis, staminibus longe exsertis, ovario 4-lobo; drupa . . .—Viti Levu (Storck!).

A robust-growing shrub, with thick branches, glabrous in all its parts, and in foliage not unlike *F. splendida*, F. Muell.* Largest leaves from 8–10 inches long (including petiole), and from 4–5 inches broad. Cymes corymbose, flowers cream-coloured. In æstivation the lower lobe of the corolla is innermost and the upper is the outer, and overlapping the two lateral ones.

EXPLANATION OF PLATE XLIV., representing *Faradaya Vitiensis*, from specimens collected by Mr. J. Storck. Fig. 1, a flower-bud; 2, a flower open; 3, calyx and pistil; 4, corolla laid open; 5, ovary; 6, cross-section of ovary,—all slightly magnified.

IV. **Vitex**, Linn. Gen. n. 790; Schauer in DC. Prodr. vol. xi. p. 682. Calyx cyathimorphus, campanulatus aut tubuloso-infundibuliformis, 5-dentatus aut 5-fidus, dentibus laciniisve paulo inæqualibus. Corolla 2-labiata, labio superiore 2-fido, inferioris 3-fidi laciniis lateralibus quam superiores paulo majoribus, laciniâ intermediâ vero reliquis ampliore atque porrectâ; faucibus sæpius campanulato-inflatis. Stamina 4, didynama, corollæ tubo inserta, adscendentia, exserta; antheræ obcordatæ, loculis basi discretis, rimâ longitudinali dehiscentibus. Ovarium 4-loculare, loculis 1-ovulatis. Stylus terminalis, filiformis, apice 2-fidus, cruribus acutis. Drupa calyci aucto et plerumque dirupto insidens, succosa, 1-pyrena, 4-ocularis, putamine lignoso. Seminis erecti cotyledones applicitæ; radícula brevis, intera.—Arbores aut frutices, ramulis foliisque novellis cum inflorescentiâ pube sæpius evanescente indutis; foliis oppositis, plerumque digitatis, rarissime abortu foliolorum lateralium simplicibus, cymis trichotomis vel simplicibus axillaribus vel paniculatis.—*Wallrothia*, Roth, Nov. Plant. Sp. p. 317. *Limia*, Vandelli in Rœm. Script. Hisp. p. 126. t. 7. fig. 21. *Nephandra*, Cothen. Disp. 8. *Psilogyne*, DC. Rev. Bign. p. 16. *Chrysomallum*, Thou. Gen. Madag. n. 25. *Pyrostoma*, F. W. Meyer, Prim. Flor. EsseQUIB. 119. *Casarettoa*, Wlprs. Rep. vol. iv. p. 91.

1. **V. (Euagnus) trifolia**, Linn. Suppl. 293; ramulis foliorumque facie pube pulveracea exili subevanescente canescentibus, foliorum dorso paniculaque tomento alphitoideo raro candicantibus; foliis petiolatis 3-foliolatis simplicibusve, foliolis obovato-oblongis obovatisve acutis obtusisque basi plerumque longe attenuata sessilibus integerrimis supra demum subglabratis; panicula terminali cymis pedunculatis erectis angusta; calyce cyathimorpho breviter et acute repando-dentato.—*V. integerrima*, Mill. Dict. n. 3. *V. ovata*, Thunb. Fl. Jap. 257; Hook. et Arn. Bot. Beech. t. 47. *V. repens*, Blanco, Fl. de Filipinas, p. 513. *Lagondium vulgare*, Rumph. Amb. vol. iv. p. 48. t. 18. *Caranosi*, Rheede, Hort. Malab. vol. ii. p. 13. t. 10.—Common on the seabeach of all the Viti Islands (Seemann! n. 354; Barclay! Sir E. Home!). Also collected in Tonga (Forster!), New Caledonia (Anderson! M'Gillivray!), Aneitum, New Hebrides (M'Gillivray!), and Sandwich Islands (Macrae!). Common in tropical New Holland, China, the East Indies, and islands of Eastern Africa.

We have in Polynesia both the trifoliolate and the unifoliolate form of this species.

2. **V. (Euagnus) Vitiensis**, (sp. nov.) Seem. (Tab. XLV.); foliis omnibus simplicibus longe petiolatis ovatis v. ovato-oblongis acuminatis glabrescentibus, panicula; terminali cymis pedunculatis

triplove longiori; staminibus modice exsertis.—*Clerodendron Amicorum*, Seem. in Bonplandia, vol. x. p. 249. *Clerodendron (Tetrathyranthus) Amicorum*, A. Gray, l. c. *Terminalioides*, Soland. mss. in Herb. Mus. Brit.—Tongan (Banks and Solander! Barclay! Harvey! U. S. Expl. Exped.!) and Samoan Islands (U. S. Expl. Exped. in Herb. Benth.).

* *F. splendida*, F. Muell. Fragm. l. c.; Seem. l. c.; fere glabra; foliis oppositis; floribus paniculatis.—Rockingham Bay (Dallachy!).

erectis angusta; calyce cyathimorpho breviter et acute repando 5-dentato; calyce corollaque puberulis; stigmatis cruribus inæqualibus acutis.—*Gmelina Vitiensis*, Seem., Mission to Viti, p. 440.—Viti, locality not specified (Milne!).

Milne collected only one specimen of this singular plant, all the leaves of which are truly simple; but it may be that the species has also compound leaves, like most of its congeners. The unequal lobes of the stigma point to a certain relationship with *Gmelina*, but all the other characters are those of a genuine *Vitex*. Petioles 6–12 lines long. Blade of leaf from 3–5 inches long, and $1\frac{1}{2}$ – $2\frac{1}{2}$ inches broad. Corolla 2-labiate, the upper lip 2-lobed, the lower 3-lobed. Calyx, corolla, and filaments covered with down. Anthers ovate. Ovary 4-celled. Ripe fruit unknown.

EXPLANATION OF PLATE XLV., representing *Vitex Vitiensis*, from specimens collected by Milne and a drawing made by M'Donald, both at Kew. Fig. 1, a flower-bud; 2, an expanded flower; 3, corolla laid open; 4, stamen; 5, calyx and pistil; 6, pistil; 7, cross-section of ovary,—all magnified.

ORDO LXXI. LABIATÆ.

Four genera of Polynesian *Labiata* have as yet not been met with in Viti, viz. *Sphacele*, *Coleus*, *Phyllostegia*, and *Stenogyne*. *Sphacele* is represented by *S. hastata*, A. Gray, in the Sandwich Islands (U. S. Expl. Exped.); *Coleus* by *C. scutellarioides*, Benth. (*Ocimum scutellarioides*, Linn.) in Tana (Forster! M'Gillivray!) and Eromanga (M'Gillivray!); the two other genera are confined to the Hawaiian Islands, and they have recently been revised by Asa Gray. Of *Phyllostegia* we have, 1, *P. vestita*, Benth. (*P. dentata*, Benth.), 2, *P. grandiflora*, Benth. (*Prasium macrophyllum*, Gaud. ?); 3, *P. brevidens*, A. Gray, et var. (?) *ambigua*; 4, *P. glabra*, Benth. (*P. Macraei* et *Chamissonis* of Benth., *Prasium glabrum*, Gaud.); 5, *P. hirsuta*, Benth.; 6, *P. parviflora*, Benth., var. *a. Gaudichaudi* (*P. parviflora*, Benth.), var. *β. glabriuscula* (*P. macrophylla*, Benth. præsertim pl. *Macraei*), and var. *γ. mollis* (*P. mollis*, Benth.); 7, *P. stachyoides*, A. Gray; 8, *P. clavata*, Benth.; 9, *P. racemosa*, Benth.; 10, *P. haplostachya*, A. Gray, and var. *β. leptostachya*; 11, *P. truncata*, A. Gray; and 12, *P. floribunda*, Benth. Of *Stenogyne* we have, 1, *S. macrantha*, Benth.; 2, *S. rotundifolia*, A. Gray; 3, *S. cordata*, Benth.; 4, *S. sessilis*, Benth.; 5, *S. calaminthoides*, A. Gray; 6, *S. scrophularioides*, Benth., and var. *β* (*S. Nelsoni*, Benth., *Phæopsis montana*, Nutt.); 7, *S. rugosa*, Benth.; 8, *S. angustifolia*, A. Gray; 9, *S. microphylla*, Benth.; 10, *S. crenata*, A. Gray; and 11, *S. diffusa*, A. Gray.

1. **Ocimum**, Linn. Gen. p. 173, excl. sp. Benth. in DC. Prodr. vol. xii. p. 31. Calyx ovatus v. campanulatus, 5-dentatus, dentis superioris orbiculati v. obovati membranacei marginibus decurrentibus alatus, post anthesin deflexus; fauce intus nuda v. rarius pilosa. Corolla tubo calyce subbreviore rarissime exserto, intus exannulato, fauce sæpius campanulata; limbo 2-labiato; labio superiore 4-fido, inferiore vix longiore declinato integerrimo, plano v. leviter concavo. Stamina 4. Filamenta libera, superiora basi sæpe dente v. pilorum fasciculo appendiculata. Stylus apice breviter 2-fidus; lobis subæqualibus subulatis v. complanatis. Discus hypogynus, tumens in glandulas 1–4, quarum antica v. interdum omnes ovarii lobos æquant v. superant. Nuculæ ovoideæ v. subglobosæ, læves v. sub lente punctulate rugulosæ, maturæ humectatæ sæpius dense mucilaginosæ.—Herbæ suffrutices v. frutices; foliis floralibus bracteiformibus sæpius petiolatis integerrimis, flores rarius excedentibus, vulgo deciduis; verticillastris 6-floris, rarissime sub-10-floris, in racemos terminales dispositis, pedunculo communi subnullo; pedicellis erectis apice recurvis; glandulis foliorum et calycis vulgo crebris; genitalibus sæpius exsertis.

1. **O. gratissimum**, Linn. Sp. p. 832; caule glabriusculo; foliis petiolatis ovatis acutis crenatis v. grosse dentatis basi angustatis glabris v. secus costas pubescentibus; floralibus bractæformibus lanceolatis acuminatis basi hastatis; racemis simplicibus v. basi subramosis pubescentibus; calycibus pedicellatis, dentibus lateralibus minimis, infimis alte connatis in labium 2-mucronatum; corollis calycem vix superantibus; staminibus exsertis.—Benth. l. c.; Jacq. Icon. Rar. vol. iii. p. 495. Rheede, Mal. vol. x. p. 171. t. 86. *O. Zeylanicum*, Burm. Thes. Zeyl. p. 174. et t. 80. fig. 1, quoad folia. *O. frutescens*, Mill. Dict. n. 6. *O. petiolare*, Lam. Dict. vol. i. p. 385. A common weed in

Viti (Seemann! n. 358). Also collected in the Samoan (Sir E. Home!), and Marquesas Islands (Barclay!). Widely diffused in the East Indies and South America.

II. **Plectranthus**, L'Hérit. Stirp. vol. i. p. 85; Benth. in DC. Prod. vol. xii. p. 55. Calyx per anthesin campanulatus, 5-dentatus, dentibus æqualibus v. supremo majore, fructifer auctus, nunc declinatus, rectus, incurvus v. inflatus, dentibus æqualibus v. varie 2-labiatis, nunc erectus, tubulosus v. campanulatus, æqualiter 5-dentatus. Corollæ tubo exserto basi supra gibbo v. calcarato dein declinato defracto v. subrecto; fauce æquali v. rarius inflata; labio superiore 3-4-fido, inferiore integro sæpius longiore concavo. Stamina 4, declinata, didynama, inferiora longiora. Filamenta libera, edentula. Antheræ ovato-reniformes; loculis confluentibus v. rarius subdistinctis divaricatis. Stylus apice breviter 2-fidus; lobis subæqualibus subulatis, stigmatibus minutis terminalibus.—Herbæ suffrutices fruticesve; racemis terminalibus simplicibus v. ramosis; verticillastris laxis, ∞-floris, cymis utrinque sæpius evolutis, rarius in verticillastos densos contractis.—*Germania*, Lam. Dict. vol. ii. p. 682. *Dentidia*, Lour. Cochinch. p. 369. *Isodon*, Schrad.

Besides the following species we have in tropical Polynesia *P. parviflorus*, Willd. (*P. australis*, Hook. et Arn. Bot. Beech. non R. Brown) from the Sandwich Islands (Macrae! Barclay!).

1. **P. Forsteri**, Benth. Lab. p. 38; DC. Prodr. l. c. p. 68 (Tab. XLVII.); caule herbaceo ascendente glabriusculo; foliis petiolatis ovatis obtusiusculis basi cuneatis remote crenulatis glabriusculis, floralibus minutissimis subnullis; racemis laxis simplicibus, verticillastris laxe 6-10-floris; calycibus glabris, fructiferis declinatis pedicello brevioribus, dente supremo ovato acuto vix decurrente, lateralibus lanceolatis acutis, infimis setaceis; corollis minutis calyce florifero vix duplo longioribus.—*Ocimum pusillum*, Forst. Prodr. n. 527, sine descriptione. Nomen vernac. Vitiense, "Laca."—Viti Levu (Barclay! Hinds!), Taviuni (Seemann! n. 359). Also collected in Tana, Eromanga, and Aneitum, New Hebrides (Forster! M'Gillivray!).

A weed abounding in cultivated places, and having purple bracts supporting pale-blue flowers. The leaves are aromatic and in repute amongst the natives as a cure for "bad eyes" and headache; they are also recommended for coughs and colds.

EXPLANATION OF PLATE XLVII., representing *Plectranthus Forsteri*.—Fig. 1, an entire flower; 2, calyx; 3, calyx and pistil; 4, corolla laid open; 5 and 6, ovary:—all magnified.

III. **Leucas**, Benth. Lab. p. 602; DC. Prodr. vol. xii. p. 523. Calyx tubulosus v. tubuloso-campanulatus, striatus, apice rectus v. incurvus, ore æquali aut oblique supra v. infra producto, 8-10-dentato. Corolla tubo incluso, intus annulato v. nudo; limbo 2-labiato; labio superiore concavo, erecto, integro v. rarius emarginato, extus hirsutissimo; inferiore longiore patente 3-fido, lacinia media maxima. Stamina sub galea adscendentia. Filamenta basi nuda. Antheræ sub labio superiore per paria approximatae, subbiloculares; loculis divaricatis confluentibus. Styli lobus superior brevissimus, inferior subulatus. Nuculæ 3-quetræ, apice obtusæ.—Herbæ suffruticesve; foliis integerrimis v. sæpius dentatis; floralibus subconformibus; verticillastris nunc paucifloris, nunc dense ∞-floris; corollis sæpius albis, rarius purpurascens.

1. **L. decemdentata**, Smith in Rees Cyclop.; Benth. l. c.; annua?; pubescens; foliis ovatis crenatis, tenuiter tomentosus utrinque viridibus v. subtus subcanescentibus; verticillastris ∞-floris, inferioribus v. omnibus petiolo brevioribus; bracteis minutis; calycibus pubescentibus striatis, ore æquali, dentibus brevibus setaceis.—*Stachys decemdentata*, Forst. Prodr. n. 526; Parkins. Drawings of Tahit. Plants, t. 57. *Phlomis decemdentata*, Willd. Spec. vol. iii. p. 124. *Leucas stachyoides*, Spreng. Syst. vol. ii. p. 743. On roadsides, common in Viti (Seemann! n. 357). Also collected in Tahiti (Banks and Solander! Barclay! Cuming! n. 1409).

Flowers white.

IV. **Teucrium**, Linn. et Auct.; Benth. in DC. Prodr. vol. xii. p. 574. Calyx tubulosus v. campanulatus, rarius inflatus, 5-dentatus; dentibus æqualibus v. supremo sæpius latiore. Corolla tubo brevi intus exannulato; limbi laciniis 4 superioribus subæqualibus v. supremis latioribus longioribusve, nunc oblongis declinatis, nunc brevissimis subrectis, infima maxima rotundata v. oblonga sæpius concava. Stamina 4, inter lacinias supremas exserta, didynama, inferioribus longioribus. Antherarum loculi confluentes. Stylus apice subæqualiter 2-fidus. Nuculæ in speciebus plerisque more tribus grosse reticulato-rugosæ, in paucis tamen Scorodoniis rete vix elevatum, in omnibus latere interiore baseos oblique affixæ.—Herbæ fruticesve, habitu et inflorescentia varia.

1. **T. inflatum**, Swartz, Prodr. Fl. Ind. Occ. p. 88; Benth l. c.; herbaceum, erectum, pubescens v. villosum; foliis ovatis v. ovato-lanceolatis basi rotundato-truncatis v. subcordatis, subtus subcanescentibus; spica subsimplici, bracteis lanceolatis; calycibus declinatis inflatis pubescentibus villosisve, ore contracto, dente supremo latiore.—*T. villosum*, Forst. Prodr. n. 232 et Icon. (ined.) t. 171. *T. palustre*, Kth. in Humb. et Bonpl. Nov. Gen. vol. ii. p. 306. *T. vesicarium*, Mill.; Steud. Nom. Bot. p. 830.—Common in most Vitian Islands (Seemann! n. 360). Also collected in the Tongan Islands (Forster! Barclay!), New Caledonia (Sir E. Home!), Aneitum (M'Gillivray!), and Isle of Pines (M'Gillivray!).

ORDO LXXII. PLANTAGINEÆ.

I. **Plantago**, Linn. Gen. 142; Dcne. in DC. Prodr. vol. xiii. sect. i. p. 694. Flores hermaphroditi, spicati v. capitati, singuli bracteati. Calyx 4-phyllus, foliolis subæqualibus. Corolla tubulosa, 4-loba, scariosa, persistens, interdum fructu adnata. Stamina 4, exserta v. inclusa; filamenta flaccida; antheræ cordatæ. Ovarium 2-4-loculare, loculis 1-8-ovulatis. Stylus simplex. Capsula membranacea, ad basin circumscisse dehiscens, pyxidata, dissepimento demum libero, faciebus seminifero. Semina hilo ventrali in capsulis ∞ -spermis parva, angulosa, in 2-spermis cymbiformia, testâ mucilaginoso-pallidâ, olivaceâ v. fuscâ.—Herbæ acaules v. caulescentes rarissime suffruticentes, glabræ v. pubescentes aut lanatæ; foliis in acaulibus confertis rosulatis, in caulescentibus alternis v. oppositis, integris v. dentatis aut pinnatifido-incisis, nunc planis et nervosis, nunc semiteretibus; pedunculis axillaribus; floribus dense spicatis, spicis cylindricis v. globosis.—*Plantago*, *Coronopus*, et *Psyllium*, Tournef. Inst. 127 et 128.

In Viti there is only the cosmopolitan *P. major*, Linn.; but in the Hawaiian Islands there are two remarkable endemic species, viz. 1, *P. princeps*, Cham. et Schlecht. (*P. Queleniana*, Gaud.), with var. β . *laxifolia*, A. Gray, and γ . *hirtella*, A. Gray; and 2, *P. pachyphylla*, A. Gray, with three varieties; α . *Maviensis*, A. Gray; β . *Hawaiensis*, A. Gray; and γ . *Kavaiensis*, A. Gray.

1. **P. major**, Linn. Spec. 163; Dcne. l. c.; foliis ovato-cordatis v. lato ovatis v. ovato-oblongis integris v. sæpius irregulariter grosse et repando-dentatis 3-5-7-nerviis in petiolum canaliculatum inferne membranaceum attenuatis glabratis interdum crassiusculis sublucidis v. violaceo-tinctis; pedunculis teretibus glabris v. puberulis sæpius erectis v. ascendentibus; spicis cylindricis v. rarius ovatis; bracteis calyci subæqualibus subdeltoideis anguste marginatis; foliolis calycis subæqualibus subobovatis v. ovato-rotundis, anticis carinatis glabris; corollæ lobis ovatis obtusis fuscescentibus; capsula conoidea sæpius violaceo-tincta 2-loculari 2-10-sperma; seminibus angulatis parvis olivaceis Engl. Bot. t. 1558.—Common on roadsides, in waste places, etc., probably introduced (Seemann! n. 362). Found in nearly every part of the tropical and temperate regions.

ORDO LXXIII. PLUMBAGINEÆ.

Represented in tropical Polynesia by *Statice australis*, Spr., from New Caledonia and the Isle of Pines, and the following genus.

I. **Plumbago**, Tournef. Inst. p. 140. t. 58; Linn. Gen. n. 213; Boissier in DC. Prodr. vol. xii. p. 693. Calyx insertione rectus, tubulosus, post anthesin sæpe conicus, inter 5 costas latas herbaceas totâ longitudine v. superne stipitato-glandulosas ad basin usque hyalino-membranaceus, apice 5-dentatus. Corolla hypocraterimorpha, tubo calycem superante, limbo rotato 5-partito. Stamina 5, hypogyna, filamenta basi subdilatatâ carnosulâ concaviusculâ in discum lobatum sub ovario conniventia. Antheræ lineares, basi 2-fidæ. Ovarium ovatum v. oblongum, stylo filiformi superatum. Stigmata 5, filiformia, latere interiori glandulis pluriseriatis dense obsita. Utriculus membranaceus, styli basi persistente mucronatus, imâ basi teneriori irregulariter et circumscisse ruptus, dein a basi ad medium aut a parte mediâ jam fenestratâ basin versus secus angulos valvatim fissus, valvis apice cohærentibus. Semen ovatum v. oblongum.—Herbæ perennes; floribus subsessilibus in spicas plus minus elongatas dispositis, singulo 3-bracteato, bracteis planis.—*Plumbagidium*, Spach, Veg. Phan. vol. x. pp. 336, 338.

1. **P. Zeylanica**, Linn. Spec. vol. i. p. 215; Bois. l. c.; caulibus fruticosis subscandentibus angulato-striatis ramosissimis; foliis ovatis oblongisve acutiusculis basi brevissime et abrupte in petiolum amplexicaulem brevem sæpe basi minute auriculato-dilatatum attenuatis; floribus in spicas elongatas densiusculas dispositis, spicæ rachide glandulosa; bracteis oblongis acuminatis calyce triplo brevioribus inferiori majori; calyce longe cylindrico post anthesin refracto apice vix constricto tota longitudine ad costas subsulcatas plurifariam glandulis longe stipitatis inæqualibus obsito inter eas glabro v. minute glanduloso apice uncinatim et breviter 5-dentato; corollæ tubo calyce duplo longiori, limbi portionibus cuneato-retusis breviter mucronulatis; utriculo elongato-oblongo utrinque attenuato superne 5-sulcato.—Common on roadsides and waste places, all over Viti (Seemann! n. 361). Also collected in Norfolk Island and the Hawaiian group. Widely diffused in tropical Australia, Asia, and Africa.

ORDO LXXIV. NYCTAGINEÆ.

I. **Pisonia**, Plum. Amer. vol. vii. t. 11; Choisy in DC. Prodr. vol. xiii.; sec. ii. p. 440. Bracteolæ 1-3, minutæ, deciduæ aut rarius persistentes. Perigonium minimum, campanulatum aut cylindricum, limbo breviter 5-dentato. Flores raro hermaphroditi, sæpius abortu dioici. ♂: Perigonium campanulatum. Stamina 6-8, raro 8-10, exserta, inæqualia, basi vix coalita; antheræ 2-loculares, loculis ovatis sejunctis. ♀: Perigonium cylindricum. Staminum brevium sterilium rudimenta inclusa circa ovarium. Ovarium elongatum; stylus sæpius lateralis, plus minus exsertus; stigma divisum raro in acumina pauca, sæpius in permulta, penicilli-fimbriatum. Fructus perigonio indurato circumdatus, nunc cylindrico-elongatus apice limbo patulo, nunc ovato-ellipticus apice clauso, nunc integer nunc costatus, nunc læves nunc serrato-glandulosus et viscosus, siccus aut subcarnosus. Embryo rectus; radícula infera; cotyledones albumen involventes.—Arbores aut frutices, cortice sæpe spongioso; foliis verticillatis, sparsis aut oppositis; floribus sæpius roseis, cymoso-corymbosis, raro umbellatis.—*Calpidia*, Pet. Thou. Afr. Austr. 37. t. 10. *Ceodes*, Forst. Gen. Char. t. 71; Seem. Journ. of Bot. 1863, p. 244.

Ceodes, though first made known by Forster in his Char. Gen. p. 71. t. 71, in the year 1776, having been discovered on the 12th of August, 1774, on the island of Tana, during Captain Cook's second voyage, has been entirely overlooked by Endlicher, Lindley, and even Choisy. I have already stated ('Bonplandia,' vol. x. p. 154, 1862), that I regard *Ceodes umbellifera*, as Forster first (Char. Gen.), and *C. umbellata* as his son afterwards ('Prodr. Prodromus') called it, as a species of *Pisonia*, which I have named *P. umbellifera*. It will be seen from the description and plate in the Char. Gen. p. and t. 71, that the specimens at Forster's disposal had only male flowers, and could therefore give but an imperfect generic character, which has not allowed botanists who had no access to the original specimens to guess even the position of *Ceodes* in the natural system. Fortunately, there is a good set of the original specimens at the British Museum, and also a characteristic drawing of the whole plant made by G. Forster on the spot. These materials leave no doubt what Forster's genus, placed by him in the Linnæan Class *Polygamia*, really is.

1. ***P. inermis***, Forst. Prodr. p. 75. n. 397 (1786), non Jacq. Forst. Icon. (ined.) t. 285; foliis omnibus oppositis ovatis v. oblongis obtusis vel acuminatis; perianthiis fructiferis spinulosis.—*P. grandis*, Parkins. Drawings of Tahit. Plants, t. 117 (ined.). *P. grandis*, R. Brown, Prodr. Nov. Holl. p. 422 (1810). *P. procera*, Bertero, mss. in Guill. Zeph. Tait. p. 39 (1837); Deless. Icon. Select. vol. iii. t. 87. *P. Brunoniana*, Endl. Fl. Norf. p. 43. n. 88 (1833); F. Bauer, Illust. Pl. Norf. t. 145. Nomen vernac. Tahitense, "Buatea," teste Guillemain.—Rather common throughout Viti (Seemann! n. 363). Ranging from the Society Islands to the east coast of New Holland, and from the Sandwich Islands to Ceylon, viz. Tahiti (Banks and Solander! Forster! Bertero! Moerenhout! Bidwill! Barclay!), Norfolk Island (Ferd. Bauer!), Tongan Islands (Harvey!), Sandwich Islands (Herb. Hook.!), Bow Islands, Dangerous Archipelago (Barclay!), Ceylon (Thwaites!), Prata Islands (Wilford!), tropical parts of eastern Australia (R. Brown! in Mus. Brit.).

The synonym demands some explanation. *P. Brunoniana* is undoubtedly identical with *P. inermis*, Forst. Prodr. p. 75. n. 397 (non Jacq.), collected in Tahiti. There are no specimens of Forster's plant at the British Museum, but there is a very good drawing of it by his own hand; and we have besides his manuscript notes, published by Guillemain in his 'Zephyrites Taitensis.' Amongst Parkinson's coloured drawings of Tahitian plants, preserved at the British Museum, there is an excellent figure of this plant under the name of *P. grandis*, a name which R. Brown has adopted for the New Holland species, with which the Tahitian is perfectly identical. As Jacquin's *P. inermis* is a mere synonym of *P. mitis*, Linn.* (*P. nigricans*, Swartz), there is no reason why Forster's name, the oldest, should be set aside.

2. ***P. umbellifera***, Seem. in Bonplandia, vol. x. p. 154 (1862); foliis inferioribus oppositis superioribus plerumque verticillatis, elliptico-oblongis v. oblongis acuminatis v. obtusis basi in petiolum angustatis, perianthiis fructiferis inermibus.—*Ceodes umbellifera*, Forst. Char. Gen. p. 71. t. 71 (1776). *C. umbellata*, Forst. Prodr. n. 569 (1786); Forst. Icon. (ined.) t. 300. *Pisonia excelsa*, Blume, Bijdr. p. 735 (1825); Choisy in DC. Prodr. vol. xiii. sect. ii. p. 441 (1849). *P. macrocarpa*, Presl, Symb. t. 56 (1833). *P. Forsteriana*, Endl. in Herb. Meyen, ex Schauer et Walp. Nova Acta Nat. Cur. vol. xix., Suppl. p. 403. t. 51 (1843). *P. Sinclairi*, Hook. f. Fl. New Zeal. vol. i. p. 209. t. 50 (1853). *P. Mooreana*, F. Mueller, Fragm. vol. i. p. 20 (1858-59). Nomen vernac. Javanicum, teste Blume, "Kitjauro," Novo-Zelandicum, teste Hook. f., "Parapara."—Ovalau (Seemann! n. 364). Also collected in Java (Horsfield! in Mus. Brit.! Teijsmann! Lobb! n. 29), Philippine Islands (Cuming! n. 523), Timor (Spanoghe!), Tana (J. R. and G. Forster! W. Anderson! in Mus. Brit.), New

* *P. mitis*, of Linnæus, has hitherto been looked upon as a very doubtful species, the doubt being increased by Sir J. Smith adding, in the Linnæan Herbarium, to some specimens of the Indian form of *P. aculeata* the name of *P. mitis*, though Linnæus distinctly states his *mitis* to be *unarmed*. Some MSS. corrections, which Linnæus himself made in a copy of his second edition of the 'Species Plantarum,' p. 1511, preserved at the Linnean Society, corrections adopted by Murray, make it clear that Linnæus's *P. mitis* is quite identical with Jacquin's *P. inermis* and Swartz's *P. nigricans*. Linnæus adds in that place to his *P. mitis* "Jacq. Amer. 275," strikes out the words "*Pisonia Malabarica non spinosa*, Amm. Herb. 582. *Katu Kava Walli*, Rheed. Mal. 7. p. 33. t. 17?" substitutes for "*Habitat in India*" "*Habitat in America*," and finally adds, "*Arbor alia hermaph. sterilis, alia hermaphr. fertilis.*" Hence the synonymy of *P. mitis* would be:—*P. mitis*, Linn. Sp. Plant. ed. ii. p. 1511, excl. syn. omnib. *P. nigricans*, Swartz, Prodr. p. 60; Fl. Ind. Occ. p. 643; DC. Prodr. vol. xiii. p. 442. *P. inermis*, Jacq. Amer. p. 275, non Forst.

South Wales (Cunningham! F. Mueller! Macarthur! Harvey! Bidwill!), Norfolk Island (Cunningham!), Oahu, Sandwich Islands (Seemann! n. 2295, Beechey!); and Northern Island of New Zealand (Sinclair! Colenso! Bauer!). No locality is quoted for Meyen's specimens; they were probably picked up in the Philippine Islands.

Choisy says that this species is easily distinguished from *P. Brunoniana*, Endl., by the leaves always being acute, not rounded at the base, which is certainly correct; but a much better distinction is, that in *P. Brunoniana* the fruit is covered with spines, and all the leaves are opposite, whilst in *P. umbellifera* the fruit is without spines, and the upper leaves of the branches are generally in whorls. The specimens from Viti distributed by me under n. 364, and provisionally named *P. viscida*, on account of the viscid nature of their *utriculus*, must be referred here. What has been figured and described in Meyen's plants (Nov. Act. Nat. Cur. vol. xix., Suppl. p. 403. t. 51), under the name of *P. Forsteriana*, exactly represents the state of my specimens. Choisy erroneously referred *P. Forsteriana* to *P. inermis*. *P. excelsa*, Blume, from Java, is also a synonym. The same applies to *P. macrocarpa*, Presl, already referred to *P. excelsa* by Choisy, and *P. Mooreana*, F. Mueller. Nor does *P. Sinclairi*, Hook. f., from New Zealand, Norfolk Island, and New South Wales, of which a branch with hermaphrodite flowers is figured in the 'Flora of New Zealand,' prove different; but in his 'Handbook of the New Zealand Flora,' Dr. Hooker confounds it with *P. inermis*.

II. **Boerhaavia**, Linn. Hort. Cliff. p. 17; Gen. ed. i. n. 22; Choisy in DC. Prodr. vol. xiii. sect. ii. p. 449. Bracteolæ sæpius deciduæ. Perigonium medio 2-partitum, parte inferiore cylindricâ aut obconicâ nigrâ persistente, parte superiore infundibuliformi aut campanulatâ coloratâ deciduâ apice 5-lobatâ. Stamina 1, 2, 3, aut rarius 4 (verosimiliter in typo 5 abortu deficientia) basi sub ovario nascentia, in annulum coalita, perigonium sæpius paulo superantia; antheræ minutæ, rotundatæ, 2-loculares. Ovarium minimum, acutum, basi perigonii et staminum circumdatum, et inclusum; stylus stamina æquans; stigma obtusum. Fructus basi perigonii induratâ sæpius 5-costatâ circumdatus, cylindrico-obconicus, apice truncatus, rotundatus aut acutus, clausus. Semen unicum; embryo conduplicatus; albumen farinaceum.—Herbæ annuæ aut ad radicem fruticantes, caulibus glabris, rarius villosis aut glutinosis, scandentibus, diffusis aut repentibus; foliis oppositis, sæpius petiolatis; floribus in glomerulis irregularibus dispositis, nunc pedunculos axillares singulos terminantibus, nunc in paniculas extensas diffusis, rarius umbellam regularem aut verticillos aut spicas efformantibus, minimis, indecoris, perigonio aut fructu sæpe viscoso-glutinoso.—*Antanisophyllum*, Vaill. Act. Par. 1792, p. 190.

This genus is represented in tropical Polynesia by the following species, and *B. tetrandra*, Forst., from the Society Islands.

1. **B. diffusa**, Linn. Spec. p. 4; glabra aut raro pubescens; foliis integerrimis v. undulatis lanceolatis aut ovatis acutis aut obtusis utrinque viridibus; pedunculis aut ramulis floriferis gracillimis, junioribus solitariis apice capitulum gerentibus, demum expansis et luxuriose paniculatis; fructibus gracilibus acutis striatis subclavatis. Choisy, l. c.—*B. procumbens*, Roxb. Fl. Ind. ed. i. p. 148; Wight, Icon. t. 874. *B. diandra*, Burm. Ind. t. 3. f. 2. *B. erecta*, Gærtner. Fruct. vol. ii. p. 209. t. 127; Forst. Prodr. n. 4. Rheede, Malab. vol. vii. p. 105. t. 56.—Common in cultivated places, etc., throughout Viti (Seemann! n. 365). Also collected in the Society and Hawaiian Islands. Diffused over Australia, the East Indies, and Eastern Africa.

ORDO LXXV. AMARANTACEÆ.

I. **Amaranthus**, Kunth, Fl. Berol. vol. ii. p. 144; Linn. Gen. n. 1063; Moquin in DC. Prodr. vol. xiii. sect. ii. p. 255. Flores polygamo-monoici, 3-bracteati. Calyx 5- raro 3-sepalus; sepalis æqualibus erectis glabris. Stamina 5, raro 3, libera; filamenta subulata; staminodia 0; antheræ 2-loculares, oblongæ. Ovarium 1-loculare, 1-ovulatum. Stylus 0; stigmata 2-3, subulato-fili-

formia, patula. Fructus (utriculus) ovatus, apice 2-3-rostris, transverse circumscissus, 1-spermus, calyce imperfecte involutus; pericarpio sæpius membranaceo-capsulari. Semen verticale, lenticulari-reniforme, testa crustacea. Arillus 0. Albumen centrale, farinaceum. Embryo cyclicus, periphericus; radícula infera.—Herbæ erectæ v. diffusæ, glabriusculæ; foliis alternis, in petiolum decurrentibus, mucrone parvulo incurvo aut recto apiculatis; floribus minutis, purpurascensibus, fusco-rubris aut viridibus, in spicas paniculatas terminales aut glomerulos axillares digestis; bracteis carinatis, concavis, persistentibus.

A. Gangeticus, Linn. Spec. p. 1403. n. 5, was collected by Forster and Solander in Tahiti, where, according to Solander's mss., it is called "Tubomaitetoe" by the natives; but the specimens of these two botanists do not exist at the British Museum. Solander (Prim. Fl. Ins. Pacif. p. 328) describes the flowers as triandrous, so that a confusion of this species with the now widely-diffused *A. paniculatus* is not likely to have taken place. *A. Blitum*, Linn., was collected in Tikopia by Lesson, but I have not seen any specimens from that island.

1. ***A. paniculatus***, Moquin in DC. Prodr. vol. xiii. p. 257; annua; caule erecto obsolete sulcato striatulo pubescente viridulo; foliis petiolatis ovalibus aut ovato-lanceolatis utrinque attenuatis acuminatis scabriusculis pallide viridibus interdum margine purpurascensibus; paniculis valde ramosis; spicis erectis aut patulis cylindricis acutiusculis, terminali mediocri rigidiuscula, lateralibus conformibus approximatis; floribus subdensis rubro-viridibus aut sanguineis; calyce bracteis subbrevisiore; utriculis calycem superantibus, apice 2-3-dentatis subrugosis.

Var. *β. cruentus*, Moquin, l. c.; spicis lateralibus patulo-nutantibus; floribus rubris.—*A. cruentus*, Linn. Spec. p. 1406. n. 17.—Nomen vernac. Vitiense, "Driti."—In Ovalau and Viti Levu (Seemann! n. 367). Also collected in the Tongan Islands (Barclay!), and the East Indies, China, and North America.

Most probably an escaped weed from the gardens of the white settlers.

2. ***A. melancholicus***, Moquin, l. c. p. 262; annua; caule erecto obsolete angulato-striato glabro viridi aut atropurpureo; foliis longe petiolatis ovato- aut oblongo-lanceolatis obtusis emarginatis glabris, inferioribus superne hepatico-rufis inferne purpureis, summis viridibus, glomerulis petiolo multo brevioribus subpedunculatis subgeminatis subrotundis distinctis; floribus confertissimis viridibus aut atropurpureis; calyce bracteis subæquante; utriculis calycis longitudine apice 3-fidis læviusculis.

Var. *tricolor*, Lam. Ill. t. 767. f. 1; Moquin, l. c.; foliis oblongo-lanceolatis v. lanceolato-ovatis, junioribus rubris apice luteis, adultis basi corollino-rubris medio violaceis apice viridibus, antiquis viridibus basi violaceis.—*A. tricolor*, Linn. Spec. p. 1043. n. 3. *A. bicolor*, Nocca in Willd. Spec. vol. iv. p. 384. *Glomeraria bicolor*, Cav. in Herb. Matrit.—Nomen vernac. Vitiense, "Driti damudamu."—Vanua Levu (Seemann! n. 366). Also collected in the Society Islands (Forster!) and Tana, New Hebrides (Anderson!). Common in India, China, and Japan.

This is one of the plants which, on account of its beautiful foliage, the Polynesians love to disseminate about their dwellings. Having been found in the early voyages of Captain Cook, both in Tahiti and Tana, it must be regarded as truly indigenous.

II. ***Euxolus***, Rafin., Flor. Tell. 1838, p. 42. n. 556; Moquin in DC. Prodr. vol. xiii. p. 272. Flores monoici, raro hermaphroditi, 3-bracteati. Calyx 3-(rarissime 5-)sepalus, sepalis æqualibus, erectis, glabris. Stamina 3, rarissime 5 aut 2, libera. Filamenta subulata. Staminodia 0. Antheræ 2-loculares, oblongæ. Ovarium 1-loculare, 1-ovulatum. Stylus brevissimus. Stigmata 3, filiformia. Fructus (utriculus) ovatus, evalvis, sæpius subcarnosus, 1-spermus, calyce inferne plus minus involutus. Semen verticale, lenticulari-reniforme; testa crustacea. Arillus 0. Albumen centrale, farinaceum. Embryo annularis, periphericus; radícula descendente.—Herbæ erectæ aut

diffusæ, sæpius glabriusculæ; foliis alternis aut sparsis, in petiolum decurrentibus, mucrone minutissimo recto v. subincurvo apiculatis; floribus in glomerulos axillares v. spicas axillares et terminales interdum paniculatas congestis; bracteis carinatis, concavis, persistentibus.—*Albersia*, Kunth, Flor. Berol. vol. ii. 1838. p. 144. *Amaranti* sp. auct.

E. lineatus, Moq., has been cultivated in the Sandwich Islands by Gaudichaud and others.

1. ***E. caudatus***, Moquin, l. c.; annua; caule erecto angulato striatulo glabro viridi; foliis longe petiolatis ovatis v. rhombéo-ovatis utrinque attenuatis obtusiusculis emarginatis glabris viridibus; spicis ascendentibus gracilibus obtusiusculis subflexuosis; floribus brevissime pedicellatis subdensis viridibus; calyce bracteis fere triplo longiore; utriculis subglobosis apice acutiusculis valde rugosis.—*Chenopodium caudatum*, Jacq. Coll. vol. ii. p. 235, et Icon. Rar. t. 344. *Amarantus oleraceus*, Lam. Dict. vol. i. p. 116, non Linn. *A. gracilis*, Desf. Cat. Hort. Paris. ed. i. p. 43. *Albersia gracilis*, Webb. et Berth. Phyt. Canar. vol. iii. p. 287.—Nomina vernac. Vitiensia, “Driti” et “Gasau ni vuaka.”—A common roadside weed throughout Viti (Seemann! n. 368). Also collected in Tahiti (Banks and Solander!), the Tongan Islands (Capt. Cook!), and Oahu, Hawaiian group (Barclay!). Moquin-Tandon saw it also from New Caledonia (Labillardière). It is common in Australia, India, and tropical America; and I expect that, in determining the Tahitian collections, it has been confounded by several authors with the allied, perhaps identical, *E. viridis*.

III. ***Achyranthes***, Linn. Gen. p. 113. n. 288; Moquin in DC. Prodr. vol. xiii. p. 309. Flores hermaphroditi, 3-bracteati. Calyx 5-, raro 4-sepalus, sepalis subinæqualibus erectis, sæpius glabris, demum induratis. Stamina 5, raro 4, basi in cupulam coalita. Filamenta angusta. Staminodia 5 interjecta, plana v. subfornicata, apice denticulata v. sublacinata, raro integra, interdum dorso apicem versus in appendiculam erectam dentatam aut fimbriatam producta. Antheræ 2-loculares, oblongiusculæ. Ovarium 1-loculare, 1-ovulatum. Stylus elongatulus. Stigma simplex, capitatum. Fructus (utriculus) ovato-oblongus v. suborbicularis, evalvis, 1-spermus, calyce inclusus. Semen verticale, subcylindrico-oblongum aut sublenticulare; testa tenui, subcrustacea. Arillus 0. Albumen parvum, centrale, farinaceum. Embryo annularis, periphericus, crassus; radícula ascendente.—Herbæ v. suffrutices, erectæ v. procumbentes raro scandentes, caule articulato aut subarticulato, ramis oppositis subtrichotomis; foliis oppositis; floribus patentibus, horizontalibus, glabris, subpaleaceis, in spicas angustas virgatas v. ovatas, rarius in capitula hemisphærica dispositis; bracteis subulatis, acutissimis, sæpius glabris, inferiore persistente, lateralibus plerumque longioribus et spinescentibus, postice approximatis.

This genus is represented in tropical Polynesia by, 1, *A. arborescens*, R. Brown, from Norfolk Island (Bauer); 2, *A. canescens*, R. Brown, from Tahiti (Lépine) and Norfolk Island; 3, *A. splendens*, Mart., from the Hawaiian Islands (Menzies!); 4, *A. velutina*, Hook. et Arn., from Bow Island (Lay and Collie) and a Hawaiian Island (Nelson!); 5, *A. argentea*, Lam., var. *virgata* (*A. virgata*, Poir.), from the Tongan Islands (Lesson); 6, *A. aspera*, Linn.; 7, *A. bidentata*, Blume, from the Sandwich Islands; and 8, a recently described species, from the Hawaiian Islands, viz. *A. (Achrysopsis) mutica*, A. Gray. mss. in Mann, Enumeration of Hawaiian Plants, p. 200; herbacea, hirsuta, demum glabrata, caule ramisque tetragonis; foliis oppositis cuneato-obovatis obtusis integerrimis; spicis axillaribus terminalibusque subglobosis v. oblongis.—Hawaiian Islands (D. Nelson! collected in Capt. Cook's 2nd Voyage). Leaves, including petiole, 1 inch long, $\frac{3}{4}$ of an inch broad, of a fleshy consistency. One of the bracts surrounding the flowers nearly as long as the sepals. Staminodia bifid, white.*

* Another recently described *Amarantacea* was also collected by Nelson in Cook's 2nd Voyage, viz. *Psilotrichum Sandwichense* (sp. nov.), Seem. mss. in Herb. Mus. Brit. (*Psilotum Sandwichense*, A. Gray, in Mann, Enumeration of Hawaiian Plants, p. 200); fruticosum, erectum, canescenti-velutino-pubescentis; foliis oppositis ellipticis acutis in petiolum longiusculum decurrentibus; spiculis ovatis acutis axillaribus et terminalibus folio brevioribus; calyce bracteis villosis 3-plo longiore; sepalis æqualibus extus villosis.—

1. **A. aspera**, Linn. Spec. p. 295. n. 3, exclud. *a*; Moq. l. c. p. 314; caule suffruticoso erecto striatulo pubescente subfusco-cinerascente; ramis patulis obsolete 4-gonis pubescentibus; foliis breviter petiolatis obovato-rotundis interdum subrhombico-rotundis, basi abrupte attenuatis, obtusissimis brevissime acuminatis pubescentibus pallide viridibus; spicis longis tenuibus virgatis acutis sublaxifloris; floribus nitidulis viridescentibus, bractearum lateralium arista limbum subæquante; calyce bracteis vix duplo longiore, sepalis obsolete 3-nerviis glabris.—Nomen vernac. Tahitense, teste Solander, “Arhowhai.”—Common in waste and cultivated places in many parts of Viti (Seemann!). Also collected in the Society (Banks and Solander! Barclay!), Samoan (Sir E. Home!), Tongan (Barclay!), and Chesterfield group (Mus. Brit.!), and in New Caledonia and Isle of Pines (M’Gillivray!). Common in India, China, and tropical Africa.

IV. **Cyathula**, Lour. Fl. Cochinch. vol. i. p. 101; Moq. in DC. Prodr. vol. xiii. p. 325. Flores hermaphroditi, 3-bracteati, subternati; intermedius fertilis, laterales steriles demum in aristas uncinatas (glochides) mutati. Calyx 5-sepalus, sepalis subinaequalibus erectis hispidis. Stamina 5, basi in cupulam connata. Filamenta subulato-lineararia. Staminodia interjecta, plana, apice denticulata v. laciniata, interdum subbifida, simplicia v. dorso in appendiculam erectam gracilem biligulatamque producta. Antheræ 2-loculares, rotundo-ovatae. Ovarium 1-loculare, 1-ovulatum. Stylus elongatus, filiformis. Stigma capitatum. Fructus (utriculus) oblongus, evalvis, 1-spermus, calyce inclusus. Semen verticale, oblongo-ovatum; testa subcrustacea. Albumen centrale, farinaceum. Embryo subannularis, periphericus; radiculâ descendente.—Herbæ v. suffrutices erectæ v. prostratæ; foliis oppositis, raro fasciculatis; floribus terminalibus, demum subreflexis, in spicas angustas aut in capitula contracta digestis; bracteis carinatis, concavis, inferiore persistente, lateralibus interdum uncinatis.—*Desmochæta*, Kunth in Humb. et Bonpl., Nov. Gen. et Spec. Am. vol. ii. p. 210, non DC. *Syama*, Jones in Asiatic Researches, vol. iv. p. 161?

1. **C. prostrata**, Blum. Bijdr. p. 549; Moq., l. c.; caule herbaceo prostrato v. ascendente angulato glabriusculo; ramis subtetragonis pilosiusculis; foliis brevissime petiolatis obovatis rhombico-ovato-lanceolatis acuminatis pilosiusculo-pubescentibus, supra viridibus, subtus glaucis; spicis virgatis obtusiusculis gracilibus laxifloris; floribus haud nitidis albo-violaceis; sepalis 3-nerviis hispidis, glochidibus 15–20 calycis longitudine flavescentibus.—*Achyranthes prostrata*, Linn. Spec. p. 296. *Cyathula geniculata*, Lour. Fl. Cochinch., l. c. p. 102. *Desmochæta prostrata*, DC. Cat. Hort. Monsp. 1813, p. 102; Wight, Icon. t. 733. *Pupalia prostrata*, Mart. Beitr. Amarant., p. 113.

Var. *debilis*, Moq., l. c.; caulibus erectis; foliis minoribus; spicis gracillimis.—*Achyranthes debilis*, Poir. Dict. Suppl. vol. ii. p. 10. n. 27. *Desmochæta micrantha*, DC., l. c. n. 4.—Island of Gau (M’Gillivray!). Also collected in Nukahiva, Marquesas (Barclay!), Society Islands (Banks and Solander!), and Tana, New Hebrides (Barclay!). Common in the tropical parts of Asia and in the islands of Eastern Africa.

Gomphrena globosa, Linn., is cultivated in Viti, and almost naturalized in some parts; it was also collected in Tahiti (Lay and Collie!), Tonga (Barclay!), and Eromanga (M’Gillivray!).

Charpentiera ovata and *C. obovata*, Gaud., (probably identical,) are confined to the Hawaiian Islands, where they were gathered by Menzies and Barclay.

Ærva sericea, Moq., has been collected in the Sandwich Islands by Gaudichaud.

Hawaiian Islands (D. Nelson! collected in Capt. Cook’s 2nd Voyage). Leaves, including petiole, $1\frac{1}{2}$ inches long, $\frac{3}{4}$ of an inch broad. Spikes about 6 lines long. Staminodia none. Anthers 2-celled. The genus *Psilotrichum* will probably be merged in *Ptilotus*, which, however, has alternate leaves, whilst the former has opposite ones.

ORDO LXXVI. MOLLUGINACEÆ.

I. **Mollugo**, Linn. Gen. n. 139; Endl. Gen. n. 5186. Calyx 5-partitus, persistens, laciniis muticis herbaceis v. albo-marginatis, æstivatione imbricatis. Corolla 0. Stamina 3-5, rarissime 6-10, hypogyna, exteriora calycis laciniis alterna; filamenta brevia, subulata; antheræ 2-loculares, globosæ, minimæ, longitudinaliter dehiscentes. Discus hypogynus 0. Ovarium liberum, ovato-3-gonum, 3-loculare. Ovula ∞ , loculorum angulo centrali funiculis brevibus inserta, amphitropa. Stigmata 3, lineari-teretiuscula v. subcuneata. Capsula tenuiter membranacea, seminibus torosa, rotundato-3-gona, 3-sulca, 3-ocularis, loculicide 3-valvis, valvis medio septiferis. Semina ∞ , globulosa, testa crustacea granulata v. costata, umbilico estrophiolato. Embryo annularis, albumen farinaceum includens.—Herbæ annuæ, humiles, plerumque humifusæ, dichotome ramosæ, in locis potissimum cultis obviæ; foliis planis linearibus, lanceolatis v. obovato-spathulatis, integerrimis, ad nodos pseudo-verticillatis; stipulis obsoletis, fugacissimis; floribus per cymas axillares dichotomas racemiforme dispositis, v. in umbellulas ad nodos sessiles aut pedunculatas aggregatis.—*Cerviana*, Minuart. Monogr. p. 1. *Trichlis*, Haller, Hort. Gött., 26 part.

1. **M. stricta**, Linn. Spec. p. 131; DC. Prodr. vol. i. p. 391; caule erecto anguloso; foliis subquaternis lanceolatis, ramis paniculatis nutantibus.—*M. triphylla*, Lour. Fl. Cochinch. p. 79, non Link.—Ovalau, in yam grounds (M'Gillivray! Seemann! n. 230), Vanua Levu (U. S. Expl. Exped.). Common in China and many parts of tropical Asia.

ORDO LXXVII. POLYGONACEÆ.

This Order is represented in tropical Polynesia by, 1, *Rumex giganteus*, Ait., a native of the Hawaiian Islands (Nelson! Menzies! Macrae!), where, according to Menzies, it attains twenty feet in height; 2, *Muhlenbeckia australis*, Meisn. (*Polygonum Forsteri*, Endl. in Ann. Wien. Mus. vol. i. p. 166; *Coccoloba australis*, Forst. Prodr. n. 176), of Norfolk Island (Bauer!); 3, *Polygonum imberbe*, Soland. in Forst. Prodr. n. 517, et Prim. Fl. Ins. Pacif. (ined.) p. 253 (*P. Persicaria*, Hook. et Arn. non Linn.), a native of Tahiti (Banks and Solander!), where it is vernacularly named "Tamole"; 4, *P. attenuatum*, R. Brown, Prodr. p. 420, of Eromanga (M'Gillivray!) and New Caledonia (M'Gillivray!), and thence extending to Endeavour River and the North Coast of New Holland (Banks! R. Brown!); 5, *P. Cochinchinense*, Meisn. (*Lagunea Cochinchinensis*, Lour. Fl. Cochinch., found in New Caledonia (M'Gillivray!), Cochinchina (Loureiro! in Mus. Brit.), Java (Banks! Horsfield!), Port Jackson (R. Brown!), and S. China (Robertson! Fortune! Hance!), in my opinion perfectly distinct from the well-known garden annual, *P. orientale*, Linn.; and 6, *P. glabrum*, Willd.

I. **Polygonum**, Linn. Syst. Nat. ed. i. n. 640; Meisn. in DC. Prodr. vol. xiv. p. 83. Flores hermaphroditi. Calyx corollinus v. semiherbaceus, 5-rarissime 4-3-partitus, lobis subæqualibus integerrimis 5-cunclatim imbricatis, omnibus conformibus planis vel exterioribus 2-3-carinatis concavis vel dorso alatis, patentibus vel conniventibus demum fructui adpressis parum auctis marcescentibus. Stamina 8, rarius 7-4, libera, imo calyci inserta, sæpius cum squamulis annuli perigyni (sæpe obsoletis) alternantia, calycis lobis alterna et, si iisdem plura adsunt, 2 vel 3 (seriei interioris) lobis interioribus et ovarii faciebus anteposita, filamentis subulatis persistentibus, antheris medio dorso affixis versatilibus ovalibus introrsis (vel seriei interioris extrorsis), polline sphæroideo. Ovarium liberum, compressum vel trigonum, ovulo basilari erecto. Styli 2 vel 3, liberi, filiformes v. plus minus connati, plerumque decidui, basin relinquentes, sæpe brevissimi v. subnulli. Stigmata capi-

tata, rarius agariciformia, integra. Achænium calyce sicco inclusum (rarissime semi-exsertum), lenticulare aut pyramidato-triquetrum, sæpius stylorum basi acuminatum, angulis obtusis acutisve apteris integerrimis, pericarpio tenui crustaceo. Semen sessile, achænio conforme; hilo basilari latiusculo; testâ tenui membranaceâ. Embryo lateralis, angulo albuminis cornei vel rarius farinosi accumbens vel semi-immersus, arcuatus; cotyledonibus foliaceis angustis; radiculâ superâ brevi.—Stirpes multiformes, herbacæ v. perennes, raro suffruticosæ, prostratæ erectæ vel volubiles; ecirrhosæ, caulibus sæpe nodosis v. fistulosis; ocreis membranaceis decoloribus vel rarius herbaceis cylindricis, ciliatis nudisve v. bipartitis v. demum lacero-multifidis, floralibus (bracteis) plerumque aphyllis; foliis herbaceis (raro subcoriaceis vel subcarnosis), sparsis (dispositione spirali $\frac{2}{5}$ vel rarius $\frac{5}{3}$), penninerviis, nonnunquam cordatis vel sagittatis, rarissime pinnatisectis, rarissime glaucis, sæpe glanduloso-punctatis quandoque maculatis; floribus axillaribus solitariis v. aggregatis v. racemosis spicatis capitatis paniculatisve, parvis, albis v. rubris; pedicellis articulatis plerumque fasciculatis.—*Lagunea*, Lour. Fl. Cochinch. vol. i. p. 271. *Ampelygonum*, Lindl. in Bot. Reg. 1838; Misc. 118. *Echinocaulus*, Hassk. Hort. Bogor. p. 85.

1. **P. glabrum**, Willd. Spec. vol. ii. p. 447; DC. Prodr. vol. xiv. p. 114; glaberrimum; ocreis longis infra medium foliigeris bracteisque eciliatis; foliis elongato-lanceolatis acuminatis attenuato-petiolatis glanduloso-punctulatis etiam in margine nervoque glaberrimis; spicis geminatis v. paniculatis anguste cylindricis; bracteis subimbricatis breve turbinatis oblique truncatis subacutis 2-4-floris; calyce eglanduloso fructifero ovato; staminibus 6 (raro 7-8) inclusis; stylo semi-bifido subexserto; achænio biconvexo (raro trigono) nitido.—In swampy places, Viti Levu (Seemann! n. 370). Also collected in the Hawaiian Islands (Macrae! Barclay! Seemann!). Common in India, China (Hance!), Brazil, and the La Plata States.

ORDO LXXVIII. LAURACEÆ.

I. **Cinnamomum**, Burm. Fl. Zeyl. p. 62; Meisn. in DC. Prodr. vol. xv. pars i. p. 9. Flores hermaphroditi v. polygami, paniculati, nudi. Calyx infundibuliformis, 6-(v. passim 4- v. 8-)fidus, subcorollinus, demum coriaceis; lobis basi v. supra basin transverse rumpentibus et a tubo cupuliformi deciduis, rarius persistentibus. Stamina perfecta 9 (raro passim pauciora v. ∞), exteriora 6 basi eglandulosa, interiora 3 extrorsa supra basin glandulis 2 stipitatis v. sessilibus munita. Antheræ filamento tenui subæquilongæ, ovatæ v. oblongæ, superposite 4-locellatæ (interiores passim 2-loc.), locellis superioribus minoribus. Staminodia 3, ovata v. oblonga; stipite brevi nudo v. rarius 2-glandulifero. Stylus ovarium æquans, tenuis; stigmatibus obtusis v. discoideo interdum subtridentato. Bacca calycis basi cupuliformi incrassata truncato-6-fida v. integerrima suffulta.—Arbores v. frutices sempervirentes, fere omnes cortice foliisque aromaticis insignes; gemmis phyllogenis subnudis v. squamatis; foliis oppositis v. suboppositis v. passim alternis 3- v. 3-pli-(rarius 5-)nerviis; paniculis axillaribus, sæpius in corymbum terminalem congestis; ramis cymoso-3- ∞ -floris; floribus mediocribus parvisve albis v. flavis, omnibus quidem 2-sexualibus et plerumque ex parte sterilibus iisque minoribus magisque globosis.—*Cinnamomum*, *Camphora*, et *Cecidodaphne*, Nees ab Esenb. Laur. pp. 19, 21, 87, 292, 102. *Parthenoxylon*, Blume, Mus. Lugd. Bat. vol. i. p. 916. *Lauri* et *Perseæ* sp. auct.

1. **C. pedatinervium**, (sp. nov.) Meisn. in DC. Prodr. l. c. p. 15 (Tab. XLVIII.); foliis op-

positis alternisve chartaceo-coriaceis e basi rotundata v. emarginata in petiolum longum planum breviter producta ovatis obtusis 3- v. 5-nerviis, subtus v. utrinque subtiliter reticulatis ramulisque glabris nitidis; fl. ign.—Nomen vernac. Vitiense, “Macou.”—Buke Levu, island of Kadavu and Voma Peak, Viti Levu, about 1500 feet above the sea (Seemann! n. 376); also on the island of Gau (Berwick!).

The bark of the Macou, as it is termed in the Bau dialect, “Mou” in that of Kadavu, and “Maiu” in that of Namosi, is a kind of Cassia Bark, which may prove of commercial importance, and is used by the Fijians for scenting cocoa-nut oil. The tree yielding it is about thirty feet high, four to five inches in diameter, and is met with above an elevation of 1500 feet, in dense virgin forests. I found it on Buke Levu, island of Kadavu, and on Voma peak, Viti Levu; and Mr. Pritchard received fine specimens from the island of Gau, where they had been collected by W. Berwick, a coloured man, residing there. The bark has a fine aromatic smell and flavour, a light-brown colour, is thicker than that of the cinnamon of commerce, and resembles some of the laurineous barks, such as the Sintoc and Culilawang, brought from the Moluccas. In Namosi it is used as a sudorific. Unfortunately, I did not see the tree in flower, and hence am unable to determine whether the “buds” are equal to the best “Cassia buds” of commerce. The resemblance of the Fijian names to that of “Massoy,” given to a fine quality of Cassia bark, from New Guinea, deserves investigation.

EXPLANATION OF PLATE XLVIII., representing *Cinnamomum pedatinervium*.—Fig. 1, a branch of a young plant; 2, section of the wood in the stage when the bark is taken off by the natives.

II. **Tetranthera**, Jacq. Hort. Schœnb. vol. i. p. 59. t. 113; Meisn. in DC. Prodr. vol. xv. pars i. p. 177. Flores dioici (rarissime hermaphroditi?), umbellati, involucrati. Calyx 6-fidus v. -partitus; lobis petaloideis v. herbaceis æqualibus v. rarius inæqualibus deciduis, interdum obsolete, numero variantibus v. penitus 0. Fl. ♂: Stamina fertilia 9–12 v. rarius 15–30, fauci inserta; filamenta conspicua, interiora 3–6 basi glandulis 2–1 sessilibus v. stipitatis prædita; antheræ omnes introrsæ, ovali- v. 4-angulo-oblongæ, muticæ, 4-locellatæ, locellis superpositis rectis v. obliquis, inferioribus sæpe sublateralibus. Staminodia 0 v. raro obsoleta. Pistilli rudimentum in fl. ♂ plerumque 0. Fl. ♀: Stamina ligulæformia, glandulis prædita. Stylus filiformis, stigmate dilatato sublobato. Bacca calycis basi patellæformi integerrimæ v. raro sublobatæ planæ v. parum concavæ v. apice pedicelli plus minus incrassati imposita, nuda.—Arbores et frutices; foliis sparsis v. rarius oppositis, penninerviis, indivisis, perennibus v. rarius deciduis; gemmis incompletis v. raro foliaceo-squamatis; umbellis 4–∞-floris, involucre 4–6-phylo (ante expansionem globoso) cinctis v. inclusis, pedunculatis, e gemma axillari plerumque obsoleta ortis, solitariis v. fasciculatis v. in pedunculo communi (sc. ramulo aphylo) brevissimo v. elongato corymbosis v. racemosis.—*Litsæa*, Lam. Dict. vol. iii. p. 574, non Juss. *Tomex*, Thunb. Fl. Jap. p. 190. *Sebifera* et *Hexanthus*, Lour. Fl. Cochinch. vol. ii. pp. 241 et 783. *Glabraria*, Linn. Mant. p. 156. *Fiwa*, Gmel. Syst. p. 745.

Prof. Asa Gray writes to me (Jan. 15, 1866):—“The botanists of our United States Exploring Expedition collected the following new species, viz. 1, *T. elæocarpa*, A. Gray; 2, *T. enneadenia*, A. Gray, and the foliage of an allied species, viz. 3, *T. (Cylicodaphne?) Pickeringii*, A. Gray, your n. 378; 4, *T. Richii*, A. Gray; and 5, *T. Seemanni*, Meisn., var. *chartacea*; also considerable undeterminable foliage, two species are seemingly of the *Oreodaphne* tribe.” I regret that descriptions of these new species have as yet not been published. I also collected the foliage of a *Laurinea*, which may belong to this genus, and be described as follows:—*Laurinea*, n. 377; glaberrima; foliis alternis ovatis longe acuminatis basi in petiolum brevem attenuatis 3-plinerviis, utrinque subconcoloribus, chartaceo-coriaceis.

1. **T. palmatinervia**, (sp. nov.) Meisn. in DC. Prodr., l. c. (Tab. LI.); foliis chartaceo-coriaceis e basi rotundata orbiculari-ovatis obtusis pseudo-3–5-nerviis subtiliter v. obsolete laxè venosis, supra ramulisque glabris, subtus minute puberulis; umbellis subsolitariis parvulis glabriusculis.—Voma Peak, about 3000 feet above the sea; Viti Levu (Seemann! n. 375).

Leaves 1½–2 inches long, 1–1½ inch broad. Calyx 6-partite. Stamens 9 or 12? Fem. fl. unknown.

EXPLANATION OF PLATE LI., representing *Tetranthera palmatinervia*, Meisn.—Fig. 1, flower-bud; 2, open male flower; 3, stamen; 4, one of the stamens:—all magnified.

2. **T. Seemanni**, (sp. nov.) Meisn. in DC. Prodr., l. c. p. 192 (Tab. XLIX.); glabra; foliis rigide coriaceis passim subtriplinerviis e basi acuta v. obtusiuscula ovalibus oblongisve obtusis minute reticulatis v. supra eveniis, subtus glaucis; umbellis solitariis breve pedunculatis.—Voma peak, Viti Levu (Seemann! n. 374).

A tree 18–20 feet high. Leaves not so green as they are made in our Plate by mistake of the colourist, but glaucous below. Anthers on long filaments, in which this species differs materially from the allied *T. Vitiana*, Meisn.

EXPLANATION OF PLATE XLIX., representing *Tetranthera Seemanni*, Meisn.—Fig. 1, umbel before the opening of involucre; 2, an umbel expanded; 3, a flower-bud; 4, flower open; 5 and 6, stamens; 7, ovary:—*all magnified*.

3. **T. Vitiana**, (sp. nov.) Meisn. in DC. Prodr. l. c. p. 514 (Tab. L.); glabra; foliis coriaceis immerse penninerviis e basi acuta elliptico-oblongis breviter obtuseque acuminatis concoloribus opacis, supra eveniis, subtus dense v. obsolete immerso-reticulatis; umbellis fasciculatis.—Nomen vernac. Vitiense, teste Storck, “Lidi.”—Port Kinnaird, Ovalau (Storck! n. 903).

“Flowers greenish-yellow; flowering-season in December.”—Storck.

EXPLANATION OF PLATE L., representing *Tetranthera Vitiana*, Meisn.—Fig. 1, umbel; 2, the same in bud; 3, flower-bud; 4, expanded flower; 5, stamens:—*all magnified*.

4. **T. (Cyclicodaphne?) Pickeringii**, (sp. nov.) A. Gray in litt. ad auct. sine descript.; arborea, ramulis rufo-villosiusculis demum glabratis; foliis longiuscule petiolatis chartaceo-coriaceis, ovatis obtusis acuminatis triplinerviis, supra glabris, subtus albidis et ad axillas venarum rufo-villosis; cætera mihi ignota.—Nomen vernac. Vitiense, “Siqa” v. “Siga.”—Somosomo, island of Taviuni (Seemann! n. 378). Also collected in Viti by U. S. Expl. Exped.

Petioles 1 inch long. Blade of leaf $4\frac{1}{2}$ –5 inches long, 2–3 inches broad.

III. **Cassytha**, Linn. Gen. n. 505; Meisn. in DC. Prodr. vol. xv. pars i. p. 252. Flores hermaphroditi (rarissime abortu dioici?). Calyx urceolatus v. junior rotatus, 6-fidus, totus persistens; lobis exterioribus minoribus sæpe nanis; tubo demum subgloboso carnosus. Stamina fertilia 9, 3-seriata, fauci inserta, uniformia, filamentis brevi lato, anthera ovata 2-loculari, exteriora 6 introrsa basi eglandulosa, interiora 3 minora extrorsa basi e glandulis geminis sessilibus filamentis adnatis; stigmata cum staminodiis 3 triangularibus v. glandulæformibus stipitatis v. rarius sessilibus alternantia. Ovarium calycis tubo inclusum, liberum, stylo brevi, stigmatibus parvo depresso. Caryopsis subcarnosa, inclusa; calycis tubo carnosus apice constricto pervio v. lobis erecto-conniventibus coronato.—Herbæ parasiticæ, aphyllæ, *Cuscutæ* similes. Caulis teres, ramosus, haustoriis seriatis papillæ- v. patellæformibus; foliis abortivis nanis squamæformibus; floribus glomeratis v. capitatis v. spicatis, rarius fasciculatis v. racemosis, interdum paniculatis, singulis 3-bracteatis parvis.—*Volutilla*, Forsk. *Ægypt.* p. 84. *Calodium*, Lour. *Cochinch.* vol. i. p. 302.

1. **C. filiformis**, Linn. Sp. Pl. ed. i. p. 35; Meisn. l. c.; glabra, caule tenui; pedunculis solitariis bractea minuta obtusa fultis; spicis gracilibus laxis v. interruptis; calycis lobis obtusis, interioribus ovatis, exterioribus bracteolisque rotundatis dimidio brevioribus ciliolatis.—*Cuscuta Rhombut*, Rumph. *Amb.* vol. v. t. 184. f. 4. *Acatsia Valli*, Rheede, *Mal.* vol. vii. t. 44.—Nomen vernac. Vitiense, teste Williams, “Wa lukumai lagi.”—Common on trees all over Viti (Seemann! n. 373; Williams!). Also collected in the Hawaiian Islands (Barclay!), Tahiti (Herb. Mus. Brit.!), and Christmas Island (Herb. Mus. Brit.!). Common in S. China, India, and the Indian Archipelago.

ORDO LXXIX. HERNANDIACEÆ.

This small Natural Order is represented in Polynesia by three species, viz. *Hernandiopsis Vieillardii*,

Meisn. (*Hernandia ovigera*, Vieill.), from New Caledonia (Vieillard! n. 1089), *Hernandia Moërenhoutiana*, Guill., from Tahiti (Moërenhout!), and the Tongan Islands (Sir E. Home! in Herb. Mus. Brit., Mathews!), and *H. peltata*, Meisn., from Tahiti, Wallis Island, and Viti.

I. **Hernandia**, Plum. Gen. p. 6. t. 40; Linn. Gen. ed. i. p. 374. n. 925; Meisn. in DC. Prodr. vol. xv. p. 262. Flores monoici, in involucri foliaceo 4-phyllo terni, intermedio femineo sessili involucello urceolari repando-truncato persistente calyculato 4-mero, lateralibus masculis pedicellatis 3-rarissime 4-meris haud involucellatis. Calyx herbaceus, tubo brevi angusto, in ♀ articulo, parte superiore decidua; limbo (in alabastro subgloboso) in masc. 6-8- in fem. 8-partito regulari; lobis biserialibus 1-nerviis utrinque puberulis æstivatione valvatis, interioribus paullo angustioribus et tenuioribus. Fl. ♂: Stamina 3 v. 4, calycis fauci inserta, lobis exterioribus anteposita iisque breviora erecto-conniventia; filamenta brevia, ima basi 1-adelpha, singula basi glandulis 2 collateralibus subsessilibus carnosissimis subglobosis glabris v. 1 2-loba v. indivisa filamenti basi v. margini adnatis v. liberis stipata; antheræ ovales, didymæ (magnæ), muticæ, connectivo latiusculo adnatæ, erectæ, antice turgidæ, 2-loculares, pariete demum tota rima longitudinali a connectivo soluta et valvulæ instar extrorsum revoluta decidua et connectivum nudum relincente. Pistilli rudimentum 0. Fl. ♀: Glandulæ faucis 4, indivisæ v. 2-lobæ, lobis exterioribus antepositæ. Ovarium calycis tubo inclusum, liberum, sessile, 1-loculare, ovulo 1 ex apice loculi pendulo anatropo. Stylus terminalis, filiformis, calycem æquans, deciduus; stigmatibus carnosissimis dilatato, irregulariter 2-4-crenato v. lobato. Drupa sicca (magna) ovata, 8-sulcata v. lævis, calycis tubo vesicæformi apice truncato pervio inclusa, libera, spongiosa, 1-sperma. Semen inversum, subglobosum, raphe annulari, testa crustacea. Albumen 0. Embryo orthotropus; cotyledones magnæ, carnosæ, lobatæ, torulosæ; radícula brevis, supera.—Arbores, truncis ramisque torulosissimis; foliis exstipulatis sparsis petiolatis ovatis v. peltatis integerrimis coriaceis, nervis palmatis v. pinnatis; pedunculis axillaribus v. terminalibus cymam compositam corymbiformem ad ramificationes bracteatas gerentibus.

In the female flowers of *H. peltata* the calyx becomes thick and fleshy when the fruit approaches maturity, not membranaceous, as Meisner describes it.

1. **H. peltata**, Meisn. in DC. l. c. (Tab. nostr. LII.); foliis peltatis late ovatis breviter acuminatis palminerviis coriaceis glabris, summis passim in petiolum subattenuatis; corymbis longe pedunculatis cano-tomentosis; involucri foliolis obovato-oblongis, glandulis filamenti basi adnatis; drupa subsessili ovoidea 8-costata.—*H. Sonora*, Forst. Prodr. n. 340, non Linn. *H. ovigera*, Soland. Prim. Fl. Ins. Pacif. et in Parkins. Drawings of Tahit. Plants, t. 93 (ined.)—Nomen vernac. Tahit., teste Solander, "Tunina," Vitiense, "Yevuyevu" v. "Uviuvi."—Abundant near the seacoast of Viti Levu, Vanna Levu, and Taviuni (Barclay! Seemann! n. 372). Also collected in the Society Islands (Banks and Solander!), Frankland Isles (McGillivray!), and Wallis Island (Sir E. Home!). Common in the Indian Archipelago.

EXPLANATION OF PLATE LII., representing *Hernandia peltata*, Meisn.—Fig. 1, bud of male flower; 2, male flower; 3, stamen; 4, bud of female flower; 5, female flower; 6, ripe fruit; 7, drupe:—all, with exception of Figs. 6 and 7 (copied from Parkinson's drawings at the British Museum), magnified.

ORDO LXXX. MYRISTICACEÆ.

I. **Myristica**, Linn. Gen. ed. 1742, p. 524; Alph. De Cand. in DC. Prodr. vol. xiv. p. 189. Flores dioici. Perigonium 3-lobum, nunc in eadem planta 2-4-lobum, lobis æstivatione valvari. Stamina 3-18, sæpius 6-12, 1-adelpha; filamentis nempe in stipitem glabrum connatis; antheris (ubi 3) cum

lobis perigonii alternantibus, linearibus v. ovalibus, 2-ocularibus, longitudinaliter extrorsum dehiscentibus, circa aut super apicem stipitis dorso v. basi adnatis, sæpius connatis, nunc a medio v. a basi liberis; connectivis perspicuis, sæpe in dentem brevissimum cuique antheræ proprium v. omnibus communem desinentibus. Pollen sphaericum aut sphaerico-3-gonum. Ovarium superum; stigmatibus subsessili, vix 2-lobo v. depresso-capitato. Ovarium a basi ovarii 1, anatropum. Fructus carnosus, tarde valvis 2, rarissime 4 dehiscens. Semen sessile, arillodio basi cupuliformi, a medio sæpius lobato et quasi lacerato, rubro v. aurantiaco, carnosum v. tenui, sæpe suaveolente involutum; testæ strato externo membranaceo v. carnosulo, interno duro; raphe lineari, externe perspicua, a basi seminis ultra apicem extensa, chalaza inde non solum supera, sed paulo laterali tumida; endopleura tenui, plicis interne aucta, exsiccatione a plicis segregata; albumine ruminato, plicis nempe ex endopleura sese insinuantibus. Embryo minimus prope hilum; cotyledonibus divergentibus, ovatis, planis v. undulatis; radícula brevi, infera, conica.—Arbores, rarius frutices, sæpe aromaticæ, succo acrido sæpe rubicundo scatentes; novellis et inflorescentia plerumque stellato-tomentosis; foliis alternis, distichis, integerrimis, sæpe pellucido-puncticulatis, penninerviis, vernatione conduplicata, limbo nempe secus nervum centram longitudinaliter involuto v. plicato, nervis lateralibus patentibus plerumque validis prope marginem arcuatis et sæpe connexis, numero in quaque specie constante. Stipulæ 0. Racemi v. paniculæ axillares, interdum supra-axillares; floribus plerumque pedicellatis, parvis, externe stellato-tomentosis; albumen sæpe sebaceum v. oleosum.

M. hypargæa, A. Gray (from Samoa and Tonga), is the only other species besides the following as yet met with in tropical Polynesia.

1. ***M. castaneæfolia***, A. Gray, Bot. Wilkes, vol. i. p. 32; foliis oblongis seu oblongo-lanceolatis sensim acutis basi rotundatis glabris subtus albidis, nervis later. utrinque 20–30; floribus axillaribus, ♂ amentaceo-spicatis pedunculo incrassato sæpius furcato deflexo petiolo subbrevisiore, bracteis sub flore floribusque ferrugineo-pubescentibus, antheris 8–10; fructu oblongo obtuso subapiculato ferrugineo-pubescente.—Nomen vernac. Vitiense, “Male.”—Mountains of Ovalau, frequent (U. S. Expl. Exped.), Viti Levu, and Vanua Levu (Seemann! n. 6 et 866).

This species of Nutmeg is found in the larger islands, forming stout trees 60–80 feet high, but producing a very inferior kind of timber, which rapidly decays on being exposed to the influence of the weather. Both its “mace” and “nut” prove good substitutes for those of the genuine Nutmeg (*Myristica moschata*, Linn.), and are used as such by the white settlers. They were turned to no account by the natives. The fruit is about the size of a pigeon’s egg; the mace (*arillus*) is of a fine pink colour. The shape of the “nut” is too oblong to allow this kind ever to be passed off for the genuine and best sorts of the Indian Archipelago, though the other qualities of the Fijian produce would be no great obstacle to that being done.

2. ***M. grandifolia***, Alph. De Cand. in DC. Prod. l. c. p. 194; foliis magnis obovato-oblongis basi angustatis glabris subtus albidis, nervis lateralibus utrinque 3–5; fl. et fruct. ignotis.—*M. macrophylla*, A. Gray, Bot. Wilkes, p. 33, non alior.—Nomen vernac. Vitiense, “Male.”—Ovalau, in mountain forests (U. S. Expl. Exped.).

ORDO LXXXI. MONIMIACEÆ.

“I have,” says A. Gray in Seemann’s ‘Journal of Botany,’ 1866, p. 83, “from the Fiji Islands, imperfect specimens of what I take may be a new genus of *Monimiaceæ Atherospermeæ*, with *alternate* entire leaves, and a sort of lignescent receptacle, achenioid ovaries, very hairy, and a perianth of 4 or 6 broad lobes; but we can make nothing of it, unless Dr. Seemann should have some materials.”

Forster collected in New Caledonia specimens, without flower or fruit, of a plant which in habit and foliage is very near *Doryphora Sassafras*, Endl., and to which he has not given a name. It may be described

as *Doryphora* (?) *Austro-Caledonicus*, Seem. mss. in Herb. Mus. Brit.; glaber; foliis oppositis lanceolatis obtusis ($2\frac{1}{2}$ poll. long.), grosse et irregulariter serratis, serraturis mucronatis.

I. **Hedycarya**, Forst. Char. Gen. t. 64; Endl. Gen. n. 2018. Flores dioici. Fl. ♂: Perigonium plano-rotatum, 8-10-fidum. Stamina ∞ ; filamenta 0; antheræ in fundo perigonii sessiles, cordatæ, 2-loculares, apice pilosæ, loculis appositis, longitudinaliter dehiscentibus. Fl. ♀: Perigonium maris. Ovaria ∞ , breviter stipitata, perigonii basi lanatæ inserta, 1-locularia. Ovulum 1, pendulum. Stigma sessile, obtusum. Drupæ abortu paucae, stipitatæ v. sessiles, subverticillatæ, perigonio immutato stipitatæ, 1-spermæ. Semen inversum. Embryo in axi albuminis dense carnosus rectus; cotyledonibus planis, ellipticis, radícula brevi supera.

1. **H. dorstenioides**, A. Gray in Seemann, Journ. of Botany, 1866, p. 83; foliis fere membranaceis ovatis oblongisve plerumque integerrimis longius petiolatis; racemis terminalibus 5-7-floris; receptaculo cum perigonio peltato disciformi margine subintegerrimo, masculo glabro supra antheris innumeris dense vestito, connectivi apice dilatato truncato quam loculi angusti latiore; fructifero supra pubescente; drupis haud stipitatis.—Bua or Sandal-wood Bay, Vanua Levu (U. S. Expl. Exped.!). (Græffe!)

“The peculiarity of the species, mostly with larger and thinner, ovate-oblong leaves, sometimes toothed, a variety of which is found in Samoa, is in the flat, disk-shaped *Dorstenia*-like male (and I suppose also female) receptacle, the lobed or calycine part of which is reduced to obscure crenatures, and in the truncated, dilated tip of the connective of the anther, resembling that of most *Anonaceæ*.”—A. Gray.

ORDO LXXXII. THYMELÆACEÆ.

I. **Wikstroemia**, Endl. Fl. Norf. p. 47; Meisn. in DC. Prodr. vol. xiv. p. 543. Flores hermaphroditi, 4-meri. Calyx coloratus, demum totus deciduus, tubo cylindrico v. infundibuliformi continuo, limbo 4-fido æquali, demum sæpius a tubo deciduo, fauce nuda. Squamæ perigynæ 0, hypogynæ 4 parvulæ, lineares, liberæ v. inferne connatæ. Antheræ 8, in summo tubo 2-seriatæ, subsessiles et inclusæ. Ovarium 1-loculare, ovulo pendulo anatropo. Stylus terminalis brevis v. subnullus, stigmatate capitato. Bacca drupacea, interdum sicca, a calyce demum hinc fisso tarde recedente, denudata. Semen inversum. Albumen 0? v. parcum. Embryo axilis.—Arbores v. frutices, foliis oppositis v. rarius sparsis herbaceis v. vix coriaceis venosis deciduis; pedunculis terminalibus axillaribusque simplicibus v. rarius corymboso-ramosis apice ∞ -floris; floribus sessilibus v. brevissime pedicellatis subcapitatis v. axi excrecente demum breviter spicatis v. racemosis.—*Diplo-morpha*, Meisn. in Regensb. Denkschr. vol. iii. p. 289. *Daphnes* sp. auct.

Though we know at present only one species of this genus from Viti, the widely-diffused litoral *W. foetida*, A. Gray, no less than nine are already recorded from various parts of Polynesia, the limits of several of which have recently been better defined by A. Gray (Seem. Journ. of Bot. 1865, p. 302). These are—1, *W. rotundifolia*, Decne. (*Daphne rotundifolia*, Linn.), from the Tongan Islands (D.—Nelson!); 2, *W. elongata*, A. Gray, from the Hawaiian Islands (U. S. Expl. Exped.); 3, *W. Sandwicensis*, Meisn., from the Hawaiian Islands (Nelson! Macrae!); 4, *W. Uva ursi*, A. Gray, from the Hawaiian Islands (Remy, n. 225, etc.); 5, *W. buxifolia*, A. Gray, from the Hawaiian Islands (D. Nelson! U. S. Expl. Exped.); 6, *W. phyllireæfolia*, A. Gray, from the Hawaiian Islands (Nelson! Macrae! Barclay!), where it is found in two varieties, and, according to Barclay, is vernacularly termed “Kaule,” four feet high, and has greenish flowers; 7, *W. Australis*, Endl., from Norfolk Island; 8, *W. Cunninghamsi*, Meisn., from Norfolk Island; and 9, *W. coriacea* (sp. nov.), Seem. in Herb. Mus. Brit. (*Daphne coriacea*, Soland. Fl. Ins. Pacif. (ined.), p. 251; et in Parkins. Drawings of Tahit. Plants (ined.), t. 45, from the Society Islands (Banks and Solander!). “Frutex humanæ altitudine, ramosus. Rami adscendentes, stricti, glabri, læves, purpurascens. Folia opposita, petiolata, lanceolato-oblonga, elliptica, acuta, integerrima, glabra, lævia, saturate viridia, compacta, subcoriacea, plana, raro triuncialia. Petioli breves, vix 3 lineas longi. Flores subuni-

bellati, circiter 10 in singula umbella, breviter pedunculati. *Pedunculi* terminales v. raro axillares e supremis axillis oppositis v. 3 lineares, villosi. *Pedicelli* subæquales, breves, raro semiunciales et unciales. *Calyx* 0. *Corolla* infundibuliformis, subuncialis, flava. *Reliqua* omnino ut in *Daphne capitata* [*Wikstroemia foetida*, A. Gray], cui valde similis, sed differt habitu, ramis strictis erectis, foliis crassioribus angustioribus, pedicellis longioribus, floribus majoribus altiusque coloratis. *Obs.*—*Corolla* et in hac et in *Daphnide capitata*, Sol., sub florescentia, subcoriacea, pilosiuscula, tandem membranacea, marcescens fundumque tubi sub fructu relinquens. *Folia* ramulique et hujus et *Daphnidis capitatae* contusa et cum nucleo *Butonicæ splendidae*, Sol. [*Barringtoniæ speciosæ*, Forst.] raspulis mixta, aquisque injecta, pisces inebriant ut aquis supernatent manuque capi possint." Sol. mss. Whilst the flowers of *W. foetida* are terminal and greenish-white, and the drupes ovoid, with a sharp point and red, the flowers of *W. coriacea* are axillary, yellow, and also larger than those of *W. foetida*, and the drupe ovate, obtuse, and in colour like the "berries" of the Yew.

1. ***W. foetida***, A. Gray in Seem. Journ. of Bot. 1865, p. 302; foliis herbaceis ovato-oblongis oblongisve sæpius acutis glabris, venis primariis patentibus reti venularum copioso tenui vix validioribus; fasciculis capitulisve subsessilibus v. brevipedunculatis; rachi glabrata brevi; alabastris ramulisque novellis sericeo-puberulis; calycis (flavo-viridis) lobis ovatis oblongisve obtusis; drupa ovoidea (rubra).—*W. Indica*, C. A. Meyer in Bull. Act. St. Petersb. vol. iv. n. 4. Meisn. in DC. l. c. p. 543. *W. Forsteri*, Dcne. in Jacquem. Voy. Bot. p. 146. *Daphne Indica*, Linn. Spec. vol. i. p. 511. Hook. et Arn. Bot. Beech. t. 15. *D. foetida*, Linn. fil. Suppl. p. 223. Forst. Prodr. n. 168, et Icon. (ined.) t. 119. *Capura purpurata*, Linn. Mant. p. 225.

Widely diffused in tropical Polynesia, New Holland, China, and the Indian Archipelago. There are, according to A. Gray, four varieties in Polynesia, viz. *a. Tahitensis*, (*Daphne capitata*, Sol. Prim. Fl. Ins. Pacif. p. 251, et in Parkins. Drawing of Tahit. Plants (ined.), t. 44, Forst. Icon. (ined.) t. 119,) from the Society Islands (Forster! Banks and Solander! Nelson! Barclay!), where it is named "Aowhao," "Avau-o-aa," or "Ooao;" *β. Samoensis*, A. Gray, from the Navigator Islands (U. S. Expl. Exped.); *γ. Oahuensis*, A. Gray, from the Hawaiian group (Menziés! Macrae! Barclay!); and—

Var. *Vitiensis*, A. Gray in Seem. Journ. l. c.; foliis membranaceis nunc firmioribus ovalibus utrinque obtusis v. obtusissimis; floribus paucis glabellis.—Nomen vernac. Vitiense, "Sinu matiavi."—Common on the sea-beach of Viti Levu and other islands (Seemann! n. 384). Also found in New Caledonia (W. Anderson!).

The bark of this seaside shrub, which is from 4–5 feet high, contains a readily available fibre which, like that of many other *Thymelæaceæ*, is used in Viti for cordage, fishing-nets, etc.; the same is done, according to Mr. W. T. Pritchard, in the Samoan Islands, where the plant is termed "Mati." The Vitian name is "Sinu matiavi;" "Sinu" being a generic name applied to other *Thymeleæ*, and also to *Excæcaria Agallocha*, Linn., whilst "matiavi" probably signifies "litoral" or "tidal" ("mati" being "tide"), given in allusion to the habitat of the plant. The Vitian native physicians apply the root bark externally to sores, and give the leaves and bark of the stem and branches for coughs. According to Solander, the branches and leaves of the Tahitian variety of *W. foetida*, bruised and mixed with the rasped seeds of *Barringtonia speciosa*, are used in the Society Islands to stupefy fish for the purpose of catching them when they come to the surface of the water. But I have not seen the plant used in Viti in that way.

II. ***Drymispermum***, Reinw. Sylloge Nov. Plant. Ratisb. 1828, p. 15. t. 2. *Calyx* coloratus, hypocraterimorphus v. infundibuliformis, limbo 4–5-fido. *Squamæ* faucis 5, lobis alternæ v. sæpius obsoletæ v. 0. *Stamina* 8–10, summo tubo inserta; filamentis tubo adnatis exsertis v. inclusis; antheris ovalibus dorso connectivo crassiusculo adnatis. *Ovarium* sessile, basi disco cupuliformi cinctum, 2-loculare. *Stylus* terminalis, filiformis v. clavatus, stigmatate capitato papilloso. *Drupa* ovoidea, nuda, 2-sperma. *Semina* exalbuminosa, testa crustacea. *Cotyledones* crassæ.—*Arbusculæ* v. frutices; foliis oppositis v. subsparis coriaceis; pedunculis axillaribus terminalibusque solitariis; floribus capitatis v. umbellatis albis odoratis involucre communi 2–∞-phyllo cinctis, genitalibus exsertis v. inclusis; drupis sæpe coccineis.—*Phaleria*, Jack, Malay. Misc. ex Hook. Comp. Bot. Mag. vol. i. p. 156. *Leucosmia*, Benth. in Hook. Lond. Journ. vol. ii. p. 231; Bot. Sulph. p. 179. t. 57. *Dais* sp. auct.

I have united *Leucosmia* and *Drymispermum*, because there does not seem any valid difference between them. The scales of the calyx throat vary much in position, being in one or two rows, and occasionally scattered; and in some species, as for instance in my *D. subcordatum*, they are almost abortive. The number of stamens is in some species 8, in others 10, as is also that of the lobes of the calyx. The anthers of *Leucosmia* proper are not versatile. A. Gray has also shown that the length of the *genitalia* varies in the same species, as it does in many *Rubiaceæ*. In habit there is nothing whatever to distinguish the typical *Leucosmia Burnettiana* from *Drymispermum*. We have, therefore, no option but to adopt the suggestion of Asa Gray, and unite the two genera, leaving the task of remodelling the tribes of *Thymelæaceæ* to those who may monograph the whole Natural Order.

SECT. I.—*Flores 5-meri.*

1. **D. Burnettianum**, Seem.; glaberrimum; foliis breve petiolatis coriaceis ovatis v. ellipticis v. summis suborbicularibus breve acuminatis reticulato-venosis nitidis; capitulis breviter pedunculatis, solitariis v. subpaniculatis, involucre 2-bracteato, bracteis deciduis; calyce (albo basique petioli purpurascete) extus glabro, lobis oblongis obtusis concavis; squamis faucis parvis ovatis; ovario villosulo; drupa compresso-globosa v. subdidyma (coccinea).—*D. (?) Forsteri*, Meisn. in DC. Prodr. vol. xiv. p. 605, ex parte. *Dais disperma*, Forst. Prodr. n. 192 ex parte. *Dais disperma*, Forst. Icon. (ined.) t. 136!, non Herb. *Leucosmia Burnettiana*, Benth. Bot. Sulph. p. 179. t. 57.—Nomina vernac. Vitiensia, “Sinu dina” et “Sinu damu.”—A seaside shrub growing with *Hibiscus tiliaceus* and *Colubrina Asiatica*, and found on Ovalau and Viti Levu (Seemann! n. 383, Barclay!). Also collected in the Tongan (G. Bennett! Harvey!) and Samoan Islands (U. S. Expl. Exped.).

The dark-green leaves and their shining surface, the white, (ultimately cream-coloured) and highly-scented flowers, and scarlet drupes as large as hazel-nuts, render this shrub, which is about 14 feet high, a desirable acquisition for our gardens. The Vitians string the flowers upon a reed or cord, and make necklaces of them, which they call “sinu-codo,” a term also applied to a chain. “Sinu damu” means the red Sinu, “Sinu dina” the genuine Sinu.

The synonymy of this plant has engaged the attention of both myself (Bonplandia, 1862, p. 154) and A. Gray (Journ. of Botany, 1865, p. 305). I pointed out that the drawing of *Dais disperma* made by Forster at Tonga Tabu, and preserved at the British Museum, exactly represented Bentham's *Leucosmia Burnettiana*, a plant of which (in some copies of the ‘Botany of the Sulphur’) a plate is given. But on turning to Forster's ‘Prodromus,’ we find that that author must have combined with the species figured in his unpublished drawings another species, also from the Tongan Islands, with tetramerous flowers and ovate-lanceolate acuminate leaves. A. Gray justly suspected that this second species was the plant he has recently described as *Leucosmia acuminata*. But at the time he made his inquiries at the British Museum, the specimens of *L. acuminata* collected during Captain Cook's voyages had accidentally been placed in a wrong cover, and the questions addressed to Mr. Bennett could therefore not be so fully answered as could be wished. Since then fine specimens of *L. acuminata*, collected by D. Nelson in the Tongan Islands, have turned up, and they agree exactly with the single leaf and the leaf description of Forster's, and they have also the tetramerous flowers introduced into Forster's diagnosis. In my mind there is no doubt that *Dais disperma* of Forster's ‘Prodromus’ includes two very distinct species,—that the leaf in his herbarium belongs to *Leucosmia acuminata*, Gray, and the Drawing (t. 136) to *L. Burnettiana*, Benth. No stress can be laid upon the leaves being described as “enerviis.” When fresh the venation is scarcely visible; but on drying, the veins become more prominent, and the blade might then, in some instances, be described almost as membranaceous.

2. **D. pubiflorum**, (sp. nov.) Seem.; foliis ovato-lanceolatis oblongisve sensim acutatis vel acuminatis subcoriaceis; pedunculis axillaribus et fasciculatis e ramis vetustioribus defoliatis; capitulis pauci-pluri-floris; floribus 5-meris 10-andris extus pubescentibus, lobis oblongis; squamis faucialibus parvis integris; antheris parvis brevi-oblongis; drupa immatura ovato-fusiformi.—*Leucosmia pubiflora*, A. Gray in Seem. Journ. of Bot. 1865, p. 306.—Kadavu (Seemann! n. 379; U. S. Expl. Exped. ! in Mus. Brit.).

SECT. II.—*Flores 4-meri.*

3. **D. lanceolatum**, A. Gray in Seem. Journ. of Bot. 1865, p. 304; glaberrimum; foliis breviter petiolatis lanceolatis utrinque subacutis supra nitidulis, venis venulisque teneribus; fasciculis

terminalibus paucifloris; calyce infundibuliformi-tubuloso extus glabro, lobis ovato-acuminatis.—Mountains behind Macuata, Vanua Levu (U. S. Expl. Exped. ! in Mus. Brit.).

Leaves 2 inches long. Flowers "white and fragrant," 4-merous, a little more than an inch long.

4. **D. acuminatum**, Seem.; foliis ovato-lanceolatis seu ovato-oblongis sensim vel promisse acuminatis membranaceis; capitulis terminalibus axillaribusque ∞ -floris; floribus 4-meris 8-andris extus glabris, lobis oblongis; squamis faucialibus majusculis tenuibus subincisis erosive; antheris oblongis.—*Leucosmia acuminata*, A. Gray in Seem. Journ. of Bot. 1865, p. 306. *Dais disperma*, Forst. Herb. nec Icon. *Dais disperma*, Forst. Prodr. n. 192, ex parte.—Viti, locality not specified (U. S. Expl. Exped. ! in Mus. Brit.). Also collected in the Tongan (D. Nelson ! Forster !) and Samoan Islands (U. S. Expl. Exped.).

5: **D. subcordatum**, (sp. nov.) Seem. (Tab. LIII.); foliis ovato-oblongis acuminatis basi rotundatis v. cordatis; involucro foliolis cordatis acuminatis; capitulis axillaribus ∞ -floris, floribus 4-meris 8-andris extus glabris, lobis ovato-oblongis obtusis; ovario piloso; stylo gracili filiformi, exserto, stigmatate capitato.—Nomen vernac. Vitiense, "Sinu matiavi" v. "Matiavi."—Rewa, Viti Levu, and Taviuni, in woods (Seemann ! n. 381 et 383).

A small tree or shrub. Leaves 7-8 inches long, 3-3½ inches broad. Scales very small. Flowers sweet-scented.

EXPLANATION OF PLATE LIII., representing *D. subcordatum*, Seem.—Fig. 1, entire flower; 2, the same laid open; 3, ovary; 4 and 5, sections of ovary:—*all magnified*.

6. **D. montanum**, (sp. nov.) Seem. (Tab. LIV.); foliis ovatis v. ovato-ovalibus acuminatis, basi rotundatis v. acutis; capitulis axillaribus terminalibusque ∞ -floris; floribus 4-meris 8-andris extus glabris, lobis ovatis acutis; stylo clavato exserto; involucro foliolis ovatis obtusissimis plurimis imbricatis; ovario glabro.—Buke Levu, Island of Kadavu, about 2000 feet above the sea (Seemann ! n. 380).

A tree about 20 feet high. Leaves 2½-3 inches long, 1-1½ inch broad.

EXPLANATION OF PLATE LIV., representing *D. montanum*, Seem.—Fig. 1, a flower head; 2, flower bud; 3, entire flower; 4, the same, laid open; 5, stamen and faucial scale; 6 and 7, sections of ovary:—*all magnified*.

ORDO LXXXIII. SANTALACEÆ.

This Natural Order is represented in tropical Polynesia by *Santalum* and *Exocarpus*, the latter genus including *E. Gaudichaudii*, Alph. de Cand. (*E. cupressiformis*, Hook. et Arn., non R. Br. ?), from the Sandwich Islands, and *E. phyllanthoides*, Endl., from Norfolk Island. There are no specimens or drawing of Forster's *Xylophylla longifolia* (*E. longifolius*, Endl.) at the British Museum, and no locality is given in Forster's Prodr. for this plant; the uncertainty lingering about his species I have it, therefore, not in my power to clear up. Can it be a species of *Pseudopanax* from New Zealand?

I. **Santalum**, Linn. Gen. ed. ii. n. 383 (non Herb.); De Cand. Prodr. vol. xiv. p. 681. Perigonium campanulatum, 4- rarius 5-fidum; lobis ovatis triangularibusve, basi interne fasciculo pilorum ad antheras tendentium donatis; sinu uno axim spectante. Stamina 4, rarius 5, lobis opposita; filamento ligulato vel filiformi; antherâ ovoideâ, 2-loculari, loculis profunde 2-locellatis longitudinaliter rimâ unicâ dehiscentibus. Pollen subglobosum. Discus concavus, fundo perigonii adhærens, lobis cum lobis perigonii alternantibus. Ovarium initio liberum, per anthesin semi-inferum, deinde inferum, 1-loculare. Stylus conicus vel cylindricus. Stigmata 2-3-4, ubi numero loborum perigonii iis alterna, ubi 2 sinubus duobus opposita. Placenta centralis, ovoideo-acuta, basi ovula pendentia numero stigmatum iisque supposita anatropa gerens. Drupa globosa vel obovoidea, cicatrice ex lobis perigonii truncato-delapsis coronata, putamine ligneo punctis rimisque plus minus ruminato. Semen inversum, endospermio carnosum, embryone cylindræo-fusiformi, radiculâ superâ

cotyledonibus multo longiore.—Arbores fruticesve, foliis oppositis, raro in eâdem plantâ oppositis et alternis, aut rarius omnibus alternis, integris, planis, nervis lateralibus sæpius rectis obliquis parvis; cymis ubi folia opposita terminalibus et axillaribus pedunculis oppositis v. rarius alternis, ubi folia alterna lateralibus pedunculis alternis; bracteis bracteolisque caducis.—*Fusanus*, Linn. Syst. vol. xiii. p. 765, ex cit. Endl. *Mida*, A. Cunn. in Ann. Nat. Hist. vol. i. p. 376.

Santalum, the type of the Natural Order *Santalaceæ*, is composed of about twenty species, spread over Asia, Australia, and Polynesia, and which may be best compared in aspect with Myrtles. Indeed, the Fiji islanders class their species with the *Myrtaceæ*, and give them the same generic name. And they are not far wrong. Both have opposite leaves, furnished with oily glands, flowers similarly arranged, and an inferior ovary. But the genus *Santalum*, unlike *Myrtaceæ*, has no petals, only a tetramerous, seldom pentamerous calyx, which in most species is white, but gradually changes to pink, and ultimately becomes brown. Hence some authors have described them as bearing differently coloured flowers. The fruit of some New Holland species is eaten by the natives.

In tropical Polynesia the genus is represented by—1, *S. Freycinetianum*, Gaud., from Oahu, Hawaiian Islands (Barclay!); 2, *paniculatum*, Hook. et Arn. (*S. Freycinetianum*, var., A. Gray), from Hawaii (Macrae!) and Oahu (Macrae!); 3, *S. ellipticum*, Gaud., from Oahu (Macrae!); 4, *S. pyrularium*, A. Gray, from Kauai, Hawaiian Islands (U. S. Expl. Exped.); 5, *S. insulare*, Bert., from the Marquesas and Tahiti; 6, *S. Homei* (sp. nov.), Seem. mss. in Herb. Mus. Brit. Arboreum, ramulis novellis compressis petiolis paniculisque glaucis; foliis oppositis obovatis v. ovatis, obtusis v. acutis, in petiolum angustatis, supra lucidis, subtus opacis, venis prominulis; cymis paniculatis axillaribus terminalibusque petiolo duplo longioribus; floribus 4-meris, perigonio campanulato lobis ovatis obtusis, disci lobis oblongis obtusis; stylo elongato; drupa ignota.—Isle of Pines, off New Caledonia (Sir E. Home!, collected in 1852; M'Gillivray!, collected in 1860). Aneitum and Eromanga (M'Gillivray!). Petioles 6–7 lines long, blade of leaf 2–3 inches long, 1–1½ inch broad.—7, *S. Yasi* (sp. nov.), Seem., from Viti; and perhaps one or two new species from New Caledonia, gathered by the French collectors, but not yet described.

The most easterly species of the genus is *Santalum insulare*, found in the Marquesas Islands and Tahiti, where it is known as “Eai;”* the southernmost in New Zealand (*S. Cunninghamii*), known there as “Mairi;” the northernmost in the Sandwich Islands; and the most westerly (*S. album*) in the Indian peninsula. All the species delight in dry, rocky localities, hovering about the craters of extinct volcanoes and similar situations, and degenerating in quality, commercially speaking, when growing in moist places. The most barren islands in the South Sea are those yielding the finest sandal; and as in such islands provisions are scarce, and the natives much less hospitable than where food is abundant, we shall see in the sequel how disastrous this peculiarity has proved to the white race.

Several species produce sandal-wood. In old English works sandal-wood is sometimes called “Sanders-wood,” but our present form, “Sandal” (Arab. *Sandal*), is more correct; the Chinese term the wood collectively, “Tan-heong,” *i.e.* scented tree. On the Malabar coast, *Santalum album* is termed “Chandana cotta,” whilst the Polynesian species go by the generic name of “Ahi” (with various prefixes and affixes), which in Fijian becomes “Yasi;” in Eromangan, “Nassau,” and in Tana, “Nebissi,” and reminding one of *Ayasru*, the name *Santalum album* bears in Amboyna.†

1. **S. Yasi**, (sp. nov.) Seem. (Tab. LV.); arboreum, glabrum; foliis oppositis ovato-lanceolatis v. sublineari-lanceolatis attenuatis basi acutis; paniculis axillaribus terminalibusque folio multoties brevioribus; floribus 5-meris (albis, demum roseis, deinceps brunneis), perigonio lobis acutis, fauce perigonii pilosa, antheris ovatis, disci lobis subobovatis obtusis; stylo elongato; drupis subrotundis (nigris).—Nomen vernac. Vitiense, “Yasi.”—Bua or Sandal-wood Bay, Vanua Levu (Seemann! n. 385; Sir E. Home!).

“We know nothing of the Viti Islands botanically, except that they contain rich forests of sandal-wood.” Thus wrote Endlicher in 1836, in his summary of the Flora of the South Sea Islands; and he might have added, that it was this knowledge, scanty though it was, which led to the present free intercourse between the savage Fijian and civilized nations.

* Mentioned by S. Parkinson (Voy. to the South Seas, p. 50), under the name of “*E ahei*,” as being used for scenting oil by the Tahitians in Captain Cook’s days.

† Mr. E. Deutsch, of the British Museum, a distinguished Oriental scholar, kindly forwarded the following reply to several questions which I put to him about the derivation, meaning, and nature of the

The trade in Sandal-wood, still important, has been going on since the dawn of history, and will probably not cease until the connection between sandal-trees and idolaters, existing from time immemorial, shall have been broken up by either the one or the other becoming as extinct a race as the Archæopteryx, the Moa, or the Dodo. The religious sentiment of millions of human beings is still intimately associated with this wood. When the Hindoo or Buddhist beholds its smoke, incense-like, gently curling heavenwards, he feels that he has acted up to the religious duties expected from him, and that the perfume, smelling sweetly in the nostrils of his deity, "will cover a multitude of sins," of which he may have been guilty. History fails to record why sandal was chosen for offices so important, but we may easily fill up the blank. Mankind in its infancy attributed to the gods all the passions, weaknesses, and predilections common to men. Sandal-wood as a perfume was in high esteem throughout tropical Asia, and for people with so limited conceptions nothing was more natural than to suppose it acceptable to supreme beings having passions identical with those of the worshippers. Some of the most ancient records inform us of the prominent part played by the wood in India; and since the introduction of Buddhism into China, that country, itself destitute of the trees producing it, has become the principal market for this important production. The usual size preferred in the Celestial empire is of a diameter of four to six inches, and a length of three feet. A piece of these proportions (eight or twelve of which generally weighing one picul = 133 lbs.) is regarded as the most acceptable offering a person can make to the idols of the temples. Large pieces are presented by the rich to burn on particular occasions. On certain festivals, for instance the beginning of the New Year, small pieces are abundantly sold in the streets to the lower classes. This is the case especially in the northern provinces of the empire; in Canton and other coast districts the population is less superstitious, and consequently less inclined to invest in sandal-wood.* I visited a good many temples in Southern China, and never noticed whole pieces of the wood, but thousands of so-called "Joss-sticks" (pastile-like preparations, made of the sawdust of sandal-wood and the dung of swine, stuck in pots of sand) burning slowly before the grave faces of the idols.

The perfume of the wood is owing to an essential oil, chiefly situated in the heart of the tree and near the root, the outer parts of old trunks and young trees being almost entirely without scent; hence the sandal cutters carefully remove the outer and generally lighter portion of the wood, which they term the "sap." The oil is easily extracted, a pound of wood yielding about two drachms, and it is wonderfully strong and penetrating. Mixed with pure alcohol it forms the perfumer's "Extrait de bois de Santal," and in order to sweeten it for handkerchief use a slight addition of rose is required. It mixes well with soap. With charcoal and a little nitre it forms sandal pastiles for perfuming apartments; but these are indifferent in odour. Finally, from mixing favourably with otto of rose, it is often employed for adulterating that article. The seeds of the *Santalum album* also yield by expression an oil, but that is thick and viscid, only fit for burning, and employed in that way by the poorer classes in India.

The chief European reputation for sandal rests upon its being a most excellent wood for carving. In the Indian collection of the Great Exhibition of 1862 there were an infinite variety of elaborately worked card-cases, work-boxes, trays for cards, walking-sticks, fly-flaps, and similar pieces of workmanship of it. The ancients seem to have been fully aware of this peculiarity, and the algum or almug trees which the fleets of Hiram and Solomon brought from Ophir, mentioned both in the first book of Kings (x. 11, 12) and the second of Chronicles (ix. 10, 11), never seen before that time in the land of Judah, and employed for making pillars and terraces for the temple and the king's house, and harps and psalteries for the singers,—are supposed to have been sandal-trees. A more recent use has been prominently brought before the Indian public by Dr. Hunter, who has shown how admirably it is adapted for wood-engravings. Some

various Asiatic names of the sandal-wood:—"Sandal is termed 'Chandana' in Sanscrit, and is the name of the tree as well as its wood and the perfumes prepared from it. 'Chandana-chala' is another name of the 'Malaya Mountain,' a part of the Southern Ghats, whence a great deal of sandal-wood is derived. The name does not imply fragrant wood or sweet wood.—The term 'Sandal' is Arabic, and also used in Hindustani; but does not seem to have any meaning save that of sandal-wood. That the Biblical Algum or Almug means sandal-wood is a mere recent conjecture. The Talmud identifies it, perhaps on account of the colour, with corals. Celsius believes it to be a spurious red sandal-wood (*Pterocarpus santalinus*), while the LXX. translate it *πελεκητά*, *πέυκινα*, and the Vulgate, Cina (Hyedar? African Arbor vitæ? or a kind of Pine?). David Kimchi, a commentator of the twelfth century, regards it as the Arabic 'Al-Baccam' (almond-tree, *Cæsalpinia Sappan*, *Pterocarpus santalinus*?). But this, too, is mere guess-work. The word is not of Hebrew or even of Semitic origin, but seems to have been handed over by the Arabs, who probably derived it from India. Almug, however,—remember *al* is the article,—somewhat recalls the Sanscrit terms, 'Mocha,' 'Mochata,' which also signify sandal-wood. You may, however, rest satisfied that *nothing certain is known* about the foregoing terms. They seem as if dropped from the sky, and philologists would be obliged to any one who could throw some light on them."

* G. Bennett, in Loudon's 'Magazine of Natural History,' series i. vol. v. p. 255 (1832).

blocks yielded upwards of 20,000 impressions without being worn out. The dark-coloured wood, five inches in diameter, grown on rocky soil, is the best for the engraver's purpose. This has not been tried in England, as its price was thought to be too high; but on comparing it with box-wood, which sells in England for one penny the square inch, it was found to be cheaper in India than box-wood in England.

Santalum album, and a marked variety of inferior quality, known as *myrtifolium*, grows on the mountains of continental India and the Indian Archipelago, Mysore, Malabar, and Canara being the principal districts. The tree is usually twenty-five feet high, and when allowed to attain a greater height its trunk is generally found rotten at the core. The natives have an idea that the trees ought to be felled in the wane of the moon,—an idea Europeans are wont to laugh at, though they might look a little more closely into the matter before doing so. I remember that in tropical America I often heard the wood-cutters declare it to be absolute folly to fell timber whilst the moon was on the increase, as it was sure to become rotten very soon, being then in full sap. The bark of the sandal-tree should be taken off immediately, and the trunks cut into billets two feet long. These should be buried in a piece of dry ground for two months, during which time the white ants will eat away all the outer wood, without touching the heart, constituting the sandal of commerce; the billets ought then to be taken up and smoothed, and, according to their size, sorted into three kinds. The deeper the colour, the stronger is the perfume; and hence the merchants sometimes divide sandal into red, yellow, and white; but these are all various shades of the same colour, and do not arise from any different species in the tree. The nearer the root, in general, the stronger is the perfume; and care should be taken, by removing the earth, to cut as low as possible. The billets next to the root, when this has been done, are commonly called *root sandal*. In smoothing the billets, chips of the sandal are, of course, cut off; so are also fragments in squaring their ends, both of which, with the smaller assortment of billets, answer best for the Arabian markets; and from them the essential oil is distilled, so much esteemed in Turkey. The larger billets are sent to China, and the middle-sized ones used in India. When thus sorted and prepared, the sandal, at least three or four months before it is sold, ought to be shut up from the rain and wind, in a close warehouse; and the longer it is kept, with such precautions, the better, its weight diminishing more than its smell. Prepared in this way, it rarely splits or warps—accidents which render it unfit for many of the purposes to which it is applied.

Until the middle of the last century sandal was exclusively obtained from the East Indies; but after Captain Cook and his successors had made Europeans familiar with the chief geographical features of the South Sea, enterprising traders went in search of the wood amongst the innumerable islands scattered over the broad Pacific like stars on the firmament. One of the first groups visited, chiefly by vessels from Manilla, was Viti. The sandal-wood of that group, confined to Bua Bay on Vanua Levu, and derived from *Santalum Yasi*, a middle-sized tree, with lanceolate leaves, white ultimately brown flowers, and a fruit resembling a black currant, had long been famous in those waters, and induced the Tongans to undertake regular trading voyages to the place where it grew, and even attempt to transplant the tree to Tonga, where, though it vegetated, the wood was found to be almost without scent. We are indebted to Mariner for an insight into this early intercourse.* He tells us of a Tongan chief who had been abroad for fourteen years, and originally set out on a sandal-wood expedition to Fiji. Before iron tools and implements came in use, the Tonguese paid in bark-cloth, the *sting* of a fish used for spears, sail-mats, plaits, and a rare ornamental shell peculiar to Vavau. They passed on portions of the wood to the Samoans, who, in common with themselves and the Fijians, grated the sandal-wood on the mushroom coral (*Fungia*) and used it for perfuming the cocoa-nut oil, so extensively applied by Polynesians for greasing their naked bodies. The white traders who first ventured to Fiji seem to have proceeded with great caution, and never commenced transacting business until chiefs of rank had been placed on board as hostages. Notwithstanding, several collisions between natives and whites are recorded. So great was the demand for the wood in both the Chinese and Polynesian markets that, about 1816, there was scarcely enough left for home consumption. In 1840 the United States Exploring Expedition with difficulty obtained a few specimens for the herbarium, and to save the tree from utter extinction the Rev. Mr. Williams planted one in the gardens of the Bua mission station, which enabled me to describe it botanically. At present fancy prices are readily given by the Vitians for the little sandal-wood now and then turning up; and a log about six feet long, presented to me in 1860, and now in the Kew Museum, was thought a valuable gift by my native attendants.†

About 1778 the attention of the commercial world was first drawn to the existence of sandal-wood in the Hawaiian or Sandwich Islands; and a Captain Kendrick, of a Boston brig, is known to have been the first who left two men on Kauai to contract for several cargoes. The natives term it "Lau ala" (*i.e.* fragrant wood) or Iliahi, and distinguish two different kinds—the Lau keokeo or white, and the Lau hulahula

* J. Martin, 'Account of the Natives of the Tonga Islands,' pp. 319, 333. London, 1817.

† Secmann, 'Viti,' p. 343. London, 1862. And in Correspondence relating to Fiji Islands, ordered by the House of Commons to be printed.

or red. Botanists have described four species of *Santalum* from this group (viz. *S. Freycinetianum*, *paniculatum*, *ellipticum*, and *pyrularium*), but *S. ellipticum* and *paniculatum* are held to be mere varieties of the first-named, so that two species only remain, agreeing with the native classification. They are spread over Hawaii, Maui, Oahu, and Kauai, where they occupy stony, well-drained places. Of the magnificent groves that formerly covered parts of the islands, only a few isolated specimens now remain, and these would long ago have been converted into fuel had not the law thrown its protecting shield over them. When in 1849 I visited Oahu I saw merely a few bushes, not exceeding three feet in height, at a place called Kuaoha;* but towards the end of last century and the beginning of this, the infant kingdom of Hawaii, then under the able government of the first Kamehameha, exported vast quantities of the wood; and without this profitable trade that king would probably not have succeeded in leading his people, in one generation, from extreme barbarism to nascent civilization. The sandal-wood was to these islanders the start in life, without which few nations or individuals ever succeed in pushing their way in the world. From 1790-1820 numerous vessels called for sandal-wood, bringing all sorts of good things in exchange; and about 1810 Kamehameha I. and his people began to accumulate considerable wealth. In one year near 400,000 dollars were realized. Kamehameha, hearing of the great profits derived from the sales in China, determined to send a ship of his own to Canton laden with the produce. Extravagant port charges and the misconduct of the English captain and native supercargo led to the commercial failure of this enterprise. The king found himself 3000 dollars out of pocket by it; nevertheless he had the satisfaction of seeing for the first time his flag displayed in a foreign port, whilst the charges for pilotage, anchorage, and custom dues suggested to him the idea of raising a revenue from the same sources, and thus permanently benefit his dominions. Under the reign of his successor (Liholiho) the sandal-wood began to be exhausted, though in 1820 we still hear of 80,000 dollars' worth of the wood being paid for the barge of the 'Cleopatra,' and in 1822 of a voyage to Kauai to collect the annual tribute of the wood in that island. But the produce became every day more difficult to procure, and could no longer be demanded in payment of taxes. True, quantities were now and then brought together, but they were insufficient to fill whole vessels as in times gone by. Nor did the discovery of a substitute, *Myoporum Sandwichense*, A. Gray (*M. tenuifolium*, Hook. et Arn., non Forst.), a tree from fifteen to twenty feet in height, with small leaves and white flowers, and a scented wood, revive the trade—the spurious sandal proving useful only for planes. A new chance, however, seemed to present itself, and of this both chiefs and people eagerly availed themselves. In November, 1829, a vessel arrived at the Sandwich Islands, from which it was learnt that in the South Pacific an island full of sandal-wood had been discovered. Its situation was confidentially communicated to Boki, the governor of Oahu, who, delighted with a chance of retrieving his ruined credit, accepted the proposal to fit out an expedition for taking permanent possession of it. Two men-of-war brigs, the 'Kamehameha' and the 'Becket,' were selected for the purpose, and well provided with ammunition, arms, and stores for colonization. Nearly 500 people, including ten foreigners, embarked in these small vessels. All were going to make their fortune; and so great was the general infatuation that, in spite of the earnest remonstrances of the foreign residents, the expedition started. It first touched at Rotuma, north of Fiji, where discontent, from the hardships of the voyage, began to show itself, and where a number of the aborigines were pressed into the service of the already overcrowded vessels. The destination now turned out to be the island of Eromanga, and the 'Kamehameha,' having completed her preparations, sailed ten days in advance of her consort; but she was never heard of again. The 'Becket' reached Eromanga in safety, and remained for some weeks, committing outrages on the natives, which led to frequent hostilities, and completely frustrated the object of the expedition. The 'Kamehameha' not arriving, and a distemper breaking out, which carried off many of the company, including the commanding chief, the 'Becket' resolved to return home. A scene of horror now ensued which baffles description. Crowded with the sick, the dying, and the dead, the vessel, slowly making her way through the sultry regions of the tropics, became a floating charnel-house. The sufferings of the survivors were aggravated by the want of water, food, and medicines. The course of the brig was tracked by corpses; and out of two hundred and twenty-six souls that comprised her company on leaving Rotuma, only twenty, eight of whom were white men, returned home. When, on the 3rd of August, 1830, she arrived at Oahu, weeping and wailing was heard night and day. The loss of so many active and fine men was felt as a national calamity, and formed a sad conclusion of the sandal-wood trade of the Sandwich Islands.†

Eromanga, after this time, was constantly visited by similar expeditions, got up by either Polynesians

* Seemann, 'Narrative of the Voyage of H.M.S. Herald,' vol. ii. p. 83. London, 1853.

† J. J. Jarves, 'History of the Hawaiian Islands,' pp. 80, 102, 104, 113, 118, 144. Honolulu, 1847. If my memory serves me right, I fancy that I have read about twenty years ago some information about the Hawaiian Sandal-wood trade in Jarves' 'Scenes and Scenery in the Sandwich Islands,' a book I have not been able to consult in England.

or white men. It appears that the island had just been annoyed by a party of sandal-wood traders, who had killed several of the natives and robbed their plantations, when, on the 29th of November, 1839, the good ship 'Camden,' with the missionaries Williams and Harris on board, hove in sight at Dillon Bay. The Eromangans, unable to guess the glad tidings about to be made known to them, thought it was that sandal-wood party returning to repeat the offences. That very day there was to have been a great festival on shore, and near the beach heaps of yams and taro had been piled up for that occasion. Fearing that portions of them might be carried off, the natives tried to prevent the landing of the strangers; but finding their signs misunderstood, and no heed taken of the absence of women and children, a party, headed by chief Kauiau, commenced the attack. Poor Harris was the first struck down; Williams ran into the sea, but before able to reach the boat he too was a dead man, and his body, like that of his unfortunate companion, cooked and eaten.* In 1859 the missionary Turner visited the scene of the massacre. The chief who headed the attack was still alive, and was even induced to go on board the 'John Williams,' when long and silently he gazed upon the portrait of the man whom his murderous hand had made the Martyr of Eromanga. During an interval of twenty years the sandal-traders had obtained a firm footing on this notorious island, the wood being still so plentiful that one firm employed about sixty men to cut it in the bush. But they found the Eromangans reluctant to work, and had to import labour from Lifu, Vate, and other islands. This reluctance may be explained by bearing in mind that all Polynesians work more willingly and better abroad than at home, and also because a belief had taken hold of the mind of the Eromangans that a dysentery, which in 1842 carried off a third of their number, was owing to some *hatchets* obtained from a sandal-wood vessel, inducing them to throw the implements away. Another incident may have prompted them to keep aloof from contact with these traders. In 1843, two vessels under British colours, the 'Sophia' and the 'Sultana,' and a third, said to have carried the flag of Tabiti, manned by sixty Tongans, commanded by chief Maafu, and under the supreme leadership of a Mr. Henry, an Englishman, arrived at Eromanga for the purpose of forcibly cutting sandal-trees. The party, armed with muskets, landed, and cut and embarked a quantity of the wood. For the first few days the Eromangans were friendly, but at the end of that time, some of their number having stolen three axes, a disturbance took place, when one of the supposed thieves was shot by a Tongan. The fire was returned by arrows, and mortally wounded a Tonguese. In consequence of this affray, Henry and his party left Eromanga, and proceeded to Vate, where the men were again landed, armed as before, and directed to cut sandal-wood, the whites prudently remaining on board. This robbery could not but lead to evil consequences. Before long there was a battle with the natives, who, having no muskets, had twenty-six killed, whilst none of the intruders were wounded. In a subsequent storming of a fort more natives were killed, and the remainder retreated to an island, where they took refuge in a cave. The sandal-wood party, not satisfied with their triumph, pursued them, and finding that firing produced no apparent effect, they piled combustible material before the mouth of the cave, and setting fire to it, smoked the poor natives like rats, until all were suffocated. History repeats itself, for the same horrible scene here enacted by lawless savages was copied two or three years later by an heroic French general in Algeria. The Vateans were not long in the strangers' debt, the crews of two English vessels engaged in the sandal-wood trade, the 'Cape Packet' and the 'British Sovereign,' having been massacred by them a few years afterwards. The 'Cape Packet' was betrayed into their hands by a few discontented South Sea Islanders on board, whilst the 'British Sovereign' had the misfortune to get wrecked, and its company, tormented by hunger and thirst, made for the shore, where all, with the exception of one Englishman and a boy, were clubbed and cooked. There seems to have been no provocation on the part of the strangers, and the sole cause for killing them appears to have been a desire for the bodies and clothes of the unfortunate men.†

But Eromanga and Vate are not the only spots notorious for quarrels between traders and natives of the soil. Nearly every island of the South Pacific where the much-coveted wood is found has become the theatre of bloodshed and murder. In most cases it is impossible to say who is to blame. The Christian missionaries, almost invariably taking the side of the natives, lay all the blame on the traders, whilst the traders attribute every quarrel to the undeniably ferocious disposition of the aborigines. Both sides of looking upon the subject came out in bold relief at Sydney during the trial of Captain Lewis, the superintendent of a sandal-wood establishment at the Isle of Pines, who was accused of killing a native of Mare and wounding others. Mare first became known as a sandal-wood island in 1841, when a whole boat's crew, supposed to have belonged to the 'Martha,' of Sydney, was massacred.‡ About 1843 the islanders

* That veteran explorer, Dr. George Bennett, of Sydney, had amply warned poor Williams of the treacherous nature of the natives, and even lent him, during his visit to Sydney, a statement of the Eromanga affray, which appeared in the 'Asiatic Journal' for 1832. (See Bennett's Letter in Seemann's 'Journal of Botany,' 1864, p. 218.)

† Erskine, 'The Islands of the Western Pacific,' pp. 143, 144, 326. London, 1853.

‡ The Sandal-wood of Mare may be identical with that of New Caledonia, lately described by Vieillard

attempted to capture the 'Brigand,' which, however, was frustrated by the prudence of the captain. An attack on the 'Sisters' unhappily proved successful, and since that time a number of white lives have been sacrificed in trading with Mare for sandal-wood. When H.M.S. 'Havannah,' Captain Erskine, visited the Loyalty group, it was learnt that Captain Lewis had shot a native who, with some others, attempted to board the 'Will-o'-the-Wisp.' The justification of his conduct given by Captain Lewis not being deemed sufficient, a complaint was lodged at Sydney, in consequence of which Lewis was arrested on an accidental visit to the place, and on the 7th July, 1851, brought to trial for murder. Though every effort was made by religious bigots to obtain a conviction, the jury found the prisoner not guilty. Captain Lewis then returned to his station, and one of the first acts of the natives was to capture his cutter and murder the whole of her crew.*

Owing to the ferocious character of the Polynesian natives in whose islands the sandal-trees grow, and the difficulty hitherto experienced in putting this trade upon a different footing than it is at present, the loss of life resulting from this species of commerce is proportionally much greater than experienced in the whaling trade, with which it ranks as the most adventurous of callings. Mr. M'Gillivray, who was employed in the sandal-wood trade, states that the profits obtained from this species of commerce are sometimes enormous, whatever that may mean. Lieut. Pollard, formerly of H.M.S. 'Havannah,' has furnished more satisfactory estimates, as far as the South Sea is concerned, and shows that in the case of the 'Julia Percy,' which cost £1200 with her boats,—in one voyage, after all expenses, including interest and amounting to £2595, had been paid, a clear profit of £1182. 4s. was yielded to the owner. The Australian vessels employed in the collection are in general small, and such as are nearly worn out, and unfit for other branches of commerce. The crews, collected at Sydney, or picked up amongst the islands, are almost universally paid by the *lay*, as in whaling voyages; that is, by a share either of the wood collected, or of the value calculated at a low fixed price (about £12 a ton), the proportion for each seaman being one seventy-second part, so that for every ton of sandal-wood he receives £12. The amount of trade between the Australian colonies and China depends entirely on the price of the commodity in the market, which varies from £40 to £12 a ton.†

EXPLANATION OF PLATE LV., representing *Santalum Yasi*, Seem.—Fig. 1, an entire flower; 2, the same laid open; 3, stamen and lobe of disk; 4 and 5, sections of ovary; 6, ripe fruit:—all, with exception of Fig. 6, magnified.

ORDO LXXXIV. EUPHORBIACEÆ.

This Natural Order is very strongly represented in tropical Polynesia, especially in the western parts, more than 150 species being already known,—a third of which number have been met with in Viti. In addition to the genera and species enumerated or alluded to below, we have the following:—viz. *Lithoxylon nitidum*, Müll. Arg. (*Securinega nitida*, Lindl. Collect. t. 9), from Tahiti; *Longetia buxoides*, Baill., from New Caledonia; *Breynia disticha*, Müll. Arg. (*Breynia disticha*, Forst. Gen. t. 73), from Tana (Forster!); *Bridelia buxifolia*, Baill., from New Caledonia; *Cleistanthus stipitatus*, Müll. Arg., from New Caledonia; *Bocquillonia spicata*, Baill., from New Caledonia; *B. brevipes*, Müll. Arg., from New Caledonia; *B. sessiliflora*, Baill., from New Caledonia; and *Steigeria montana*, Müll. Arg., from New Caledonia.

I. **Euphorbia**, Linn. Gen. Plant. p. 243; Boiss. in DC. Prodr. vol. xv. p. 7. Involucrum sub-regulare, campanulatum turbinatum v. hemisphæricum; lobis 5 (rarius 4–8) primariis membranaceis, 5 aliis (rarius 8) secundariis alternantibus glanduliferis, glandulis abortu interdum 1–4-nis. Flores ♂ pedicellati, ecalyculati, bracteolis ciliato-laceris interdum obsolete basi stipati, in series 5-nas (rarius 4–8-nas) lobis primariis involucri oppositas dispositi. Flos ♀ centralis, pedicellatus, calyce 3–6-lobo suffultus, sæpius ecalyculatus. Styli 3, distincti v. plus minus coaliti, 2-fidi; lobis apice v. latere interiori stigmatosis. Semina pendula cum v. absque carunculâ.—Plantæ monoicæ, rarissime dioicæ, monocarpicæ v. perennes, herbacæ v. fruticosæ, et arbores, succo acri lacteo

under the name of *Santalum Austro-caledonicum*, and named "Tibéan" by the aborigines of that great island. M'Gillivray says, "The sandal-wood trees of the Fijis, Aneitum, and the Isle of Pines constitute three distinct species."

* Erskine, l. c. 390, and Appendix, p. 478.

† Erskine, l. c., Appendix C, p. 486.

(rarius luteo) turgidæ, interdum carnosæ. Folia sparsa v. opposita, rarius verticillata, stipulata v. stipulis destituta, floralia (involucella auctorum) opposita v. ternata. Inflorescentia definita, cymosa; cymis axillaribus v. terminalibus 2-5-tomis sæpe in pseudumbellam dispositis interdum abortu 1-lateralibus, racemiformibus spiciformibus v. ad involucrum solitarium reductis.—*Tithymalus*, Tournef. Inst. p. 85. t. 18. *Poinsettia*, Grah. Edinb. Phil. Journ. 1836. *Anthacantha*, Lem. Illustr. Hort. 1855, p. 69.

Besides the *Euphorbias* described below, we have, in tropical Polynesia, the following species, viz. 1. *E. diversifolia*, Hook. et Arn., from the Hawaiian Islands; 2. *E. celastroides*, Gaud., from the Hawaiian Islands (Nelson!); 3. *E. multiformis*, Gaud. (*E. annulata*, Nutt. Herb.), from the Hawaiian Islands (Menzies! Nelson! Nuttall!); 4. *E. Remyi*, A. Gray, from the Hawaiian Islands; 5. *E. Hookeri*, Steud. (*E. myrtifolia*, Hook. et Arn., non Linn.), from the Hawaiian Islands, where it is vernacularly termed "Akoko," and used for bird-lime (Barclay!); 6. *E. Aubryana*, Baill., from New Caledonia; 7. *E. obliqua*, F. Bauer (*E. origanoides*, Forst. Prodr. n. 206, non Linn.), from the Tongan Islands (Forster!), Aneitum, Eromanga, and Isle of Pines (M'Gillivray!), and Norfolk Island; 8. *E. cordata*, Meis., from the Sandwich Islands (Nelson! Macrae!); 9. *E. Pancheri*, Baill., from New Caledonia; 10. *E. Neo-Caledonica*, Boiss., from New Caledonia; 11. *E. Kanalensis*, Boiss., from New Caledonia; and 12. *E. Cleopatra*, Baill., from New Caledonia.—There is besides, at the British Museum, a new species from the Hawaiian Islands, collected by Nuttall, and named *E. pauciflora* by him. The branches are articulate, the leaves cordate-ovate, acutely serrate, and the flowers isolated. *E. Helioscopia*, Linn., has been introduced into the Sandwich Islands.

1. **E. Atoto**, Forst. Prodr. n. 207, et Icon. (ined.) t. 149; Boiss. in DC. l. c. p. 12; glabra, pallide virens; caule ascendente v. procumbente, ramis dichotomis ad articulationes nodosis; foliis internodio sublongioribus breviter petiolatis oblongis obtusis integerrimis; stipulis interpetiolaribus minimis triangularibus fimbriatis; cymis ex axillis supremis longiuscule pedunculatis oligocephalis folioso-bracteatis; involucri turbinati glabri fauce hirtuli lobis triangularibus; glandularum appendice angustissimâ; stylis 2-fidis non incrassatis; capsulæ coccis vix carinatis; seminibus ovatis lævibus.—*E. develata*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 262, et in Parkins. Drawings of Tahit. Plants (ined.) t. 53. *E. ovaria*, F. Muell. mss. in Herb. Hook.—Nomen vernac. Tahitense, "Atoto" (Vitiense, "Totolu" v. "Totoyava?").—Common on the seabeach of most Vitian islands (Seemann! n. 406; Storck! n. 904; Sir E. Home!). Also collected in the Society (Banks and Solander! Forster!), Tongan (Capt. Cook! Barclay!), Samoan (U. S. Expl. Exped.), and Sandwich Islands (Macrae! Nuttall! Barclay!). Diffused over North-eastern Australia, the East Indian Archipelago, and Ceylon.

2. **E. Chamissonis**, Boiss. in DC. Prodr. l. c. p. 14; glabra, caulibus cinerascenti-nigricantibus; foliis integerrimis petiolatis e basi subcordata obovatis obtusis v. retusis subtus glaucis nervulosis; cymis terminalibus bis terve dichotomis præter folia floralia squamiformia nudis; involucri turbinati majusculi dentibus ovato-triangularibus hirsutis; glandularum appendice alba eis duplo latiori integra v. lobulata; semine ovato-quadrangulo transverse et obsolete rugoso tuberculato.—*Anisophyllum Chamissonis*, Gareke et Klotzsch.—Viti Islands, locality not specified (Harvey). Also collected in Radak, Romanzow Archipelago.

Allied to *E. Taitensis*, Boiss. (*E. Atoto*, Guill., non Forst.).

3. **E. pilulifera**, Linn. Am. Ac. vol. iii. p. 114; Boiss. l. c. p. 21; tota crispule pubescens, caulibus erectis v. ascenduntibus simplicibus v. parce ramosis superne plus minus patule flavido-setulosis; foliis e basi breviter petiolata valde inæquali cuneata v. truncata ovato-rhombeis v. oblongo-lanceolatis acutis argute serrulatis dentatisve; stipulis minimis linearibus fimbriatis; cymis axillaribus sessilibus v. breviter pedunculatis globoso-capituliformibus ∞ -cephalis; involucris minimis turbinatis hirtis intus glabris, lobis triangularibus fimbriatulis, glandulis orbiculatis concaviusculis, appendice obsoleta v. angustissima; stylis brevissimis 2-lobis, apice capitatis; capsulæ adpresse flavido-hirtæ coccis compresso-carinatis; semine rubello acute oblongo-tetragono transverse ruguloso, rugulis irregulariter anastomosantibus.—*E. hirta*, Linn. Am. Ac. vol. iii. p. 114. *E. capitata*, Lam. Diet.

vol. ii. p. 422. *E. globulifera*, Kunth in H. B. Nov. Gen. vol. ii. p. 56. *E. verticillata*, Velloz, Fl. Flum. vol. v. t. 16.—Nomen vernac. Vitiense, “De ni osi” (*i. e.* horsedung, from the natives believing that this weed was introduced together with the horse). Common in waste and cultivated places all over Viti (Seemann! n. 405). Also collected in the Hawaiian Islands (Nuttall! Barclay!), and Eromanga (M’Gillivray!). Diffused over tropical America, Asia, and Africa.

Evidently a comparatively recent introduction to Polynesia, as it was not mentioned or collected by the older botanists.

4. **E. Tanensis**, Spreng. Syst. vol. iii. p. 791; glabra, fruticosa; ramis inferne nudis cicatricosis lucidis superne densiuscule foliosis; foliis late linearibus subsessilibus integris obtusis; involucris in axillis supremis terminalibusque pedunculis foliis brevioribus medium versus 2 foliolis linearibus instructis suffultis hemisphærico-campanulatis lobis ovatis valde ciliatis; glandulis transverse oblongis facie interiori pilosis; stylis brevibus crassis ad medium connatis; capsulæ breviter pedicellatæ magnæ ovatæ coccis carinatis; semine ovato lævi, caruncula patellari minima.—*E. Norfolkiana*, Boiss. in DC. Prodr. vol. xv. p. 110. *Croton cluytioides*, Forst. ex Spreng. *Croton*, e Tana, Forst. Herb. in Mus. Brit.—Island of Kadavu (Seemann! n. 404). Also collected in Norfolk Island (W. Anderson! A.D. 1774), Tana, New Hebrides (Forster!), and Isle of Pines, off New Caledonia (M’Gillivray!).

A shrub, about six feet high. A specimen collected by Forster, in Tana, and preserved at the British Museum, establishes the identity of the hitherto doubtful *E. Tanensis*, Spreng., and Boissier’s *E. Norfolkiana*.

5. **E. Fidjiana**, Boiss. in DC. l. c. p. 110; glabra, fruticosa (?); ramis teretibus inferne nudis cicatricosis superne confertim foliosis; umbellæ radiis 2–4 foliis supremis brevioribus bis terve divaricatim dichotomis; foliis elliptico-linearibus obtusis in petiolum brevem attenuatis mucronulatis integerrimis floralibus ad dichotomias ovatis scariosis mucronatis; involucris intra folia floralia longiuscule pedunculatis campanulato-hemisphæricis; lobis elongatis obovatis apice dentatis, glandulis transverse ovatis; capsula . . .—Viti, locality not specified (U. S. Expl. Exped.).

II. **Antidesma**, Burm. Thes. Zeyl. p. 22; Müll. Arg. in DC. Prodr. vol. xv. p. 247. Calycis masculis lacinia imbricativæ. Petala suppressa. Stamina laciniis calycis opposita, circa rudimentum ovarii evolutum inserta. Antheræ 2-rimosæ; loculi ex apice penduli; loculorum basis in alabastris infera, in floribus evolutis oscillando-supera. Disci glandulæ inter rudimentum ovarii et stamina sitæ, cum filamentis et laciniis calycis alternantes. Ovarium evolutum, 1-loculare; loculus 2-ovulatus. Fructus drupaceus, indehiscens. Semina exarillata, ecarunculata, albuminosa. Radicula elongata, tenuis; cotyledones late ovatæ, complanatæ.—Arbores arbusculæ v. rarius frutices. Folia alterna, simplicia, 2-stipulata, breviter petiolata, penninervia; costæ ante marginem semper integrum arcuato-adscendentes, anastomosantes. Flores semper dioici, spicati v. racemosi, numerosi, parvi. Rhachis inflorescentiæ simplex v. ramosa.—*Stilago*, Schreb. in Linn. Gen. Pl. ed. 8. n. 1381.

A. sphaerocarpum, Müll. Arg., from the Samoan Islands (U. S. Expl. Exped.), and *A. platyphyllum*, H. Mann, from the Hawaiian group, are the only species of the genus, besides the following, hitherto discovered in tropical Polynesia.

1. **A. pacificum**, Müll. Arg. in DC. l. c. p. 254; stipulis et bracteis lanceolato-ovatis brevibus; calyce ♀ parvulo profunde 5–4-fido, laciniis triangulari-ovatis acutis; disco hypogyno subintegro pubescente; drupa oblique ellipsoidea utrinque subacuta modice incurva sublævi.—Viti, locality not specified (U. S. Expl. Exped.).

III. **Phyllanthus**, Linn.; Müll. Arg. in DC. Prodr. vol. xv. p. 274. Calycis ♂ lacinia imbricativæ, dorso non plicato-appendiculatæ. Petala 0. Disci extrastaminalis glandulæ cum laciniis

calycis alternantes v. suppressæ. Stamina centralia. Ovarii 2-15-ocularis loculi 2-ovulati. Capsula 2-∞-cocca. Semina ecarunculata, exarillata, albuminosa. Embryo subrectus; cotyledones complanatæ.—Arbores v. sæpius frutices, sæpissime fruticuli v. suffrutices v. etiam sed rarius tamen herbæ. Ramuli florigeri sæpissime distiche nunc sparse foliosi, raro foliis ad squamas tantum reductis præditi, teretes, angulosi aut rarius foliaceo-complanati. Folia disticha aut angulo $\frac{2}{3}$ peripheriæ inter se distantia, forma magnitudine consistentia et indumento varia, sæpissime tamen glabra, nunquam longe petiolata, integra, penninervia, bistipulata. Inflorescentiæ axillares; vulgo in axillis foliorum sitæ, raro in parte bienni aut trienni ramorum lignosorum sitæ, monoicæ aut dioicæ, v. etiam in eodem ramulo inferiores aut intermediæ unisexuales a reliquis sexu distinctæ, nunc aliæ sexu mixtæ, aliæ unisexuales v. omnes bisexuales, nunc ad florem unicum reductæ. Flores fasciculati aut solitarii; pulvinuli fasciculigeri interdum elongati et racemulum brevem dense imbricatim bracteatum formantes.—*Cicca* et *Xylophylla*, Linn. *Bradleia* et *Emblica*, Gært. *Glochidion* et *Breynia*, pro parte, Forst.

One-third of all the *Euphorbiaceæ* hitherto discovered in tropical Polynesia, belong to this genus as now circumscribed, there being, besides the species described below, the following, viz. 1. *Phyllanthus macrophyllus*, Müll. Arg., from New Caledonia; 2. *P. Wagapensis*, Müll. Arg., from New Caledonia; 3. *P. Kanaloophilus*, Müll. Arg., from New Caledonia; 4. *P. Billardieri*, Müll. Arg., from New Caledonia; 5. *P. Caledonicus*, Müll. Arg. (*Bradleia Zeylanica*, Labill. Sert. Austr. Cal. p. 76, t. 76. excl. syn.), from New Caledonia; 6. *P. cuspidatus*, Müll. Arg., from the Samoan Islands; 7. *P. Gaudichaudii*, Müll. Arg., from the Samoan and Tongan groups; 8. *P. Taitensis*, Müll. Arg. (*Bradleia pubescens*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 329; vulgo Tahitens. "Mahame" dicitur), from Tahiti (Banks and Solander!); 9. *P. Grayanus*, Müll. Arg., from Tahiti; 10. *P. glaucus*, Müll. Arg., from New Caledonia; 11. *P. Kanalensis*, Müll. Arg., from New Caledonia; 12. *P. bupleuroides*, Baill., from New Caledonia; 13. *P. macrochorion*, Baill., from New Caledonia; 14. *P. torrentium*, Müll. Arg., from New Caledonia; 15. *P. salicifolius*, Müll. Arg., from New Caledonia; 16. *P. vespertilio*, Baill., from New Caledonia; 17. *P. loranthoides*, Baill., from New Caledonia; 18. *P. myrianthus*, Müll. Arg., from the New Hebrides; 19. *P. platycalyx*, Müll., from New Caledonia; 20. *P. Faqueti*, Baill., from New Caledonia; 21. *P. æneus*, Baill., from New Caledonia; 22. *P. Baladensis*, Baill., from New Caledonia; 23. *P. Chamæcerasus*, Baill., from New Caledonia; 24. *P. Pancherianus*, Baill., from New Caledonia; 25. *P. cataractarum*, Müll. Arg., from New Caledonia; 26. *P. cornutus*, Baill., from New Caledonia; 27. *P. caudatus*, Müll. Arg., from New Caledonia; 28. *P. Bourgeoisii*, Baill., from New Caledonia; 29. *P. ciccaoides*, Müll. Arg. (*Breynia disticha*, Forst. Gen. t. 73), from Tana (Forster!); 30. *P. Deplanchei*, Müll. Arg., from New Caledonia; 31. *P. Vieillardii*, Baill., from New Caledonia; 32. *P. Societatis*, Müll. Arg., from the Society group; 33. *P. rufidulus*, Müll. Arg., from New Caledonia; 34. *P. pacificus*, Müll. Arg., from the Marquesas Islands (Barclay!); 35. *P. urceolatus*, Baill., from New Caledonia; 36. *P. micranthoides*, Baill., from New Caledonia; 37. *P. Sandwichensis*, Müll. Arg. (*P. distichus*, Hook. et Arn.), from the Hawaiian Islands (Macrae! Nuttall! Barclay! Seemann! n. 2284); 38. *P. persimilis*, Müll. Arg., from New Caledonia; and 39. *P. chrysanthus*, Baill., from New Caledonia.

1. ***P. ramiflorus***, Müll. Arg. in DC. l. c. p. 289; floribus ♂ ♀-que longiuscule pedicellatis parvulis, laciniis calycis ♂ ovatis concavis; ovario globoso 6-loculari glabro; columna stylari vix distincta; stylis brevissimis, conniventibus; capsula depresso-globosa vertice foveola excavata 12-sulcata.—*Glochidion ramiflorum*, Forst. Prodr. n. 361. *Bradleia glochidion*, Gært. Fruct. vol. ii. p. 128. t. 109. *Bradleia lævigata*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 329, et in Parkins. Drawings of Tahit. Plants (ined.) t. 103.—Nomen vernac. Tahitense, *fide* Solander, "Ula-moe-mou."

Var. *lanceolatus* (Müll. Arg. l. c.); arborea; petiolis 4-5 mm. longis, foliis ovato-lanceolatis utrinque acuminatis mediocribus v. parvulis.—Nomen vernac. Vitiense, "Molau."—Somosomo, Island of Taviuni, and Ovalau (Seemann! n. 415). Also collected in the Marquesas (Jardin). Wood used for making clubs.

Dr. Müller enumerates several varieties of this species, which, in my opinion, are scarcely more than mere forms or stages of growth. At the British Museum there is a number of specimens representing a

transition from one to the other, collected in the Marquesas (Barclay!), Tongan (Capt. Cook! Mann!), Society (Forster! Banks and Solander!), and New Hebrides Islands (Forster! Barclay!).

2. **P. concolor**, (n. sp.) Müll. Arg. in DC. l. c. p. 290; pedicellis ♂ fœmineos superantibus gracilibus, laciniis calycis ♂ late ellipticis interioribus duplo minoribus; ovario valde depresso 6-7-loculari glabro; columna stylari valde depresso-hemisphærica ovarium latitudine æquante coque brevior vertice conniventer acute et depresso-6-7-loba; capsula valde depressa.

Var. *a. ellipticus*; foliis ellipticis, costis secundariis inferioribus patulis arcuatis quam intermediæ brevioribus.—Viti (Harvey!).

Var. *β. obovatus*; foliis paulo minoribus obovatis v. oblongo-obovatis basi angustatis apice acutis v. acutiusculis haud cuspidatis minus firmis vulgoque magis nitidis, costis secundariis inferioribus angulo semirecto insertis subrectis quam intermediæ sublongioribus.—*Glochidion concolor*, *β. obovatum*, Müll. Arg. in Linnæa, vol. v. t. 32, p. 63.—Viti Levu (Seemann! n. 412); Narai (Milne!).

3. **P. Vitiensis**, Müll. Arg. in DC. l. c. p. 290; floribus ♀ breviter pedicellatis; calycis ♀ laciniis late ovatis obtusis ovario 6-loculari glabro; columna stylari nano-conica breviter lobulato-dentata; capsula truncato-obovoidea ambitu leviuscule sulcata in calyce sessili.—Viti, locality not specified (U. S. Expl. Exped.).

4. **P. Seemannianus**, (n. sp.) Müll. Arg. in DC. l. c. p. 290; arborea; floribus breviter pedicellatis; calycis glabri laciniis oblongo-ovatis acutiusculis interioribus brevioribus; ovario globoso 5-loculari glabro; columna stylari valde depressa conniventer 5-loba quam ovarium multo brevior; capsula depressa 5-sulcata.—Nomen vernac. Vitiense, "Molau."—Kadavu (Seemann! n. 413).

5. **P. venulosus**, Müll. Arg. in DC. l. c. p. 291; floribus ♀ subfasciculatis breviter pedicellatis; calycis ♀ laciniis late ovatis rotundato-obtusis; ovario 6-7-loculari pubescente; columna stylari depresso-conica basi valde dilatata; capsula valde depressa vertice profunde excavata ambitu profunde 12-14-sulcata.—Viti, locality not specified (U. S. Expl. Exped.).

6. **P. cordatus**, (n. sp.) Müll. Arg. in DC. l. c. p. 294; floribus ♀ breviter pedicellatis; calyce incano-villoso, laciniis ovatis subobtusis; ovario 6-loculari sericeo-villoso demum indumento albicante brevi obducto; columna stylari crassa ovarium longitudine vix superante et latitudine subæquante villosula demum albido-subsericea; capsulis depressis.—*Glochidion cordatum*, Seem. in Bonplandia, 1861, p. 259.—Viti Levu and Ovalau (Seemann! n. 416; Harvey!).

7. **P. Manono**, Müll. Arg. in DC. l. c. p. 296; floribus ♂ fasciculatis, ♀ glomeratis; laciniis calycis ♂ ellipticis ♀ ovatis subacutis; ovario globoso sulcato 7-6-loculari glabro; columna stylari anguste cylindrico-conica quam ovarium duplo et ultra longiore et multo tenuiore apice leviter 7-6-dentata, dentibus emarginatis; capsula depressa globosa 7-6-loculari profunde sulcata.—*Glochidion Manono*, Baill. Étud. Gen. Euph. p. 637. *Bradleia nitida*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 330.—Nomen vernac. Tahitense, "Manono."—Viti, locality not specified (U. S. Expl. Exped.). Also collected in Tahiti (Banks and Solander!).

8. **P. podocarpus**, Müll. Arg. in DC. l. c. p. 310; floribus ♀ solitariis breviter pedicellatis; sepalis ♀ liberis v. subliberis ovato-lanceolatis subobtusis altitudine subinæquali insertis; ovario 6-7-loculari stipitato glabro, columna stylari obovoideo-cylindrica superne leviter latiore 6-7-dentata fere triplo longiore quam lato glabra; capsula parvula depressa in calyce distincte stipitata ambitu obtuse sulcata.—Viti, locality not specified (U. S. Expl. Exped.).

9. **P. amentuliger**, Müll. Arg. in DC. l. c. p. 313; costis secundariis basi foliorum subapproximatis; inflorescentiis amentiformibus brevibus aggregatis densissime imbricato-bracteatis; floribus ♂

breviter pedicellatis puberulis; calycis ♂ laciniis oblongo-ovatis exterioribus majoribus; antheris 3, connectivo exserto obtuse apiculatis.—Bua or Sandal-wood Bay, Vanua Levu (U. S. Expl. Exped.).

10. **P. heterodoxus**, Müll. Arg. in DC. l. c. p. 321; ramulis compresso-angulosis; floribus monoicis in axillis foliorum subsolitariis ♂ graciliter ♀ longe pedicellatis; calycis ♂ laciniis exterioribus ovato-lanceolatis parvulis interioribus obovatis haud emarginatis, ♀ orbiculari-ovatis; glandulis disci ♂ 3 subbilobis; columna staminali integra; antheris muticis; stylis basi breviter connatis patulis acuminatis.—Viti, locality not specified (U. S. Expl. Exped.).

11. **P. simplex**, Retz. Obs. vol. v. p. 29; Müll. Arg. in DC. l. c. p. 391; pedicellis ♂ 2–3 ♀ subsolitariis masculos superantibus; laciniis calycis ♀ ovatis subacutis demum reflexis; glandulis florum ♂ liberis; ovario papilloso; stylis profunde 2-partitis gracilibus; seminibus secus lineas longitrorsas aspero-punctulatis.—*P. anceps*, Vahl, Symb. vol. ii. p. 95; Sol. Prim. Fl. Ins. Pacif. (ined.) p. 318; Parkins. Drawings of Tahit. Plants (ined.) t. 94. *P. virgatus*, Forst. Prodr. n. 341. *P. fruticosus*, Seem. Bonpl. 1861, p. 259. *P. simplex*, var. *virgatus*, Müll. Arg. in DC. l. c. —Nomen vernac. Tahitense, teste Solander, “Moe-moe.”—In swamps, common in most parts of Viti (Seemann! n. 418). Also collected in the Tongan (Capt. Cook! Barclay!), Samoan (U. S. Expl. Exped.), and Society Islands (Banks and Solander! Barclay!).

The numerous varieties into which Dr. Müller divides this species, are met with in the East Indies, the Indian Archipelago, China, Ceylon, in Amoor, and New Caledonia.

12. **P. Wilkesianus**, Müll. Arg. in DC. l. c. p. 396; ramulis filiformibus, racemulis ♂ minimis dense imbricato-bracteatis; calycis ♂ laciniis anguste lanceolatis; disci extrastaminalis glandulis liberis; columna staminali integra; antheris horizontaliter inclinatis.—Viti, at 2000 feet elevation, locality not specified (U. S. Expl. Exped.).

IV. **Baccaurea**, Lour. Fl. Cochinch. ed. Willd. vol. ii. p. 813; Müll. Arg. in DC. Prodr. vol. xv. p. 456. Calycis ♂ laciniæ æstivatione imbricativæ. Petala 0. Discus suppressus v. evolutus. Stamina circa basin rudimenti ovarii inserta. Antheræ 2-rimosæ; loculi longitrorsum connati. Ovarii loculi 2-ovulati. Fructus haud capsulari-aperiens; columna centralis, tamen evoluta. Semina arillata, albuminosa. Cotyledones ovatae, 3-nerviæ; radícula brevis.—Arbores. Folia alterna, petiolata, 2-stipulata, simplicia, penninervia, sæpissime elliptica v. elliptico- v. obovato-lanceolata basi vulgo acuta apiceque obtuse cuspidato-acuminata, integra v. subdentata; margine subtus distanter glanduligera; costæ et primariæ et secundariæ subtus valide prominentes, cum parenchymate glabræ v. pilis simplicibus raro stellatis vestitæ. Inflorescentiæ axillares, racemiformes v. subspiciformi-paniculares, unisexuales. Flores dioici v. in aliis ramis masculi, in aliis ejusdem arboris fœminei, bracteati, in axilla cujusvis bractæ sæpius ternatim v. quinatim siti, pedicellati. Bractæ sæpe longiusculo tractu cum pedunculo partiali connatæ.—*Hedycarpus*, Miq. *Pierardia*, Roxb. *Microsepala*, Miq. *Adenocrepis*, Blume. *Calyptroon*, Miq. *Pierardia*, Baill.

B. Tahitensis, Müll. Arg., from Tahiti (U. S. Expl. Exped.), is the only other species of this genus, besides these enumerated below, hitherto discovered in tropical Polynesia.

1. **B. Wilkesiana**, Müll. Arg. in DC. l. c. p. 461; costis secundariis utroque latere 6–7 angulo semirecto insidentibus marginem versus arcuato-adscendentibus, spicis ♂ fasciculatis folia subæquantibus; bracteis ovatis parvis cum pedunculo 1–3-floro 2-bracteolato fere omnino connatis; calyce ♂ parvo subirregulariter 4-partito laciniis ovatis v. lanceolatis extus intusque breviter et crassiuscule papilloso-pubentibus; filamentis glabris; ovarii rudimento elongato subclavato integro dense papilloso-pubescente; fructibus demum paulo latioribus quam longis utrinque subdistincte subacutatis ambitu teretibus.—Viti, locality not specified (U. S. Expl. Exped.).

2. **B. Seemanni**, (n. sp.) Müll. Arg. in DC. l. c. p. 462; costis secundariis utroque latere 6-7 angulo circ. semirecto insidentibus subrectis, spicis ♂ fasciculatis folio brevioribus micranthis, bracteis ♂ latæ ovatis acutis exiguis; calyce ♂ depresso-globoso 3-4-partito extus intusque pulveraceo-puberulo.—*Pierardia Seemanni*, Müll. Arg. in Flora Ratisb. 1864, p. 469.—Ovalau (Seemann! n. 390).

Middle-sized tree. Female flowers and fruit unknown.

3. **B. stylaris**, Müll. Arg. in DC. l. c. p. 465; racemis ramuliculis, calycibus utriusque sexus exiguis, disci extrastaminalis glandulis connatis crassis puberulis; staminibus 6-8, filamentis hirtellis; ovario fusiformi-ellipsoideo basi breviter stipitato apice sensim longe in columnam stylarem ei æquilongam subgracilem angustato parce pubescente.—Viti, locality not specified (U. S. Expl. Exped.).

V. **Bischoffia**, Blume, Bijdr. p. 1168; Müll. Arg. in DC. l. c. p. 478. Calycis ♂ lacinia quinquecuncialiter imbricativæ, margine induplicativo cucullato-concavæ. Petala utriusque sexus 0. Discus (e situ staminum) suppressus. Stamina circa rudimentum ovarii inserta, laciniis calycinis opposita; antheræ 2-rimosæ; loculi longitrorsum connati. Rudimentum ovarii evolutum. Ovarii loculi 2-ovulati. Fructus subbaccatus; mesocarpium carnosum; endocarpium 3-coccum, pergamaceum. Semina ecarunculata, subparce albuminosa. Radicula cotyledonibus amplis cordato-ovatis complanatis subtriplo brevior.—Arbores magnæ. Lignum durum. Folia alterna, trifoliolata, longe petiolata; foliola petiolulata; petiolulus terminalis reliquis longior. Limbus foliolorum ovatus, penninerviis, margine crenato-dentatus, majusculus, rigide membranaceus. Inflorescentiæ axillares, amplæ, plus minusve paniculatæ. Flores dioici, numerosissimi, parvuli.—*Microëlus*, Wight et Arn. in Edinb. New Phil. Journ. vol. xiv. p. 298. *Stylodiscus*, Bennett in Horsf. Plant. Jav. Rar. p. 133, t. 29.

This genus is now reduced to two species, the one found in Viti, and *B. leptopoda*, Müll. Arg., as yet only met with in the Samoan group.

1. **B. Javanica**, Blume, Bijdr. p. 1168; Müll. Arg. in DC. l. c. p. 478; foliis subellipticis basi obtusis v. subobtusis apice brevius v. longius cuspidato-acuminatis; pedicellis fructigeris incrassatis fructum longiuscule superantibus; fructibus pachydermeis rugulosis basi brevissime contracto-angulatis.—Miq. Flor. Ind. Bat. vol. i. pars ii. p. 363, et Suppl. p. 444. *B. Cumingiana*, Dene. in Jacquem. Voyage aux Indes, p. 153. *B. Ræperiana*, Dene. in Jacq. l. c.; Baill. Étud. Gén. Euphorb. t. 26, f. 25-32. *Stylodiscus trifoliatus*, Benn. in Horsf. Plant. Jav. Rar. p. 133, t. 29. *Microëlus Ræperianus*, Wight et Arn. in Edinb. New Phil. Journ. vol. xiv. p. 298; Wight, Icon. Plant. Ind. Or. t. 1880. *Andrachne trifoliata*, Roxb. Flor. Ind. vol. iii. p. 728. *A. apetala*, Wall. Cat. n. 7956 (nomen). *Phyllanthus gymnanthus*, Baill. Rec. d'Obs. Bot. vol. ii. p. 240 (fide specim. orig.). Nomen vernac. Vitiense et Tonguense, "Koka."—Banks of the Navua river, Viti Levu (Seemann! n. 417). Also collected in New Caledonia (Forster!), Tahiti (Capt. Cook!), Tonga (Harvey!), and the Samoan Islands (U. S. Expl. Exped.). Distributed over the East Indies and Indian Archipelago.

This tree yields a hard and durable timber, used for posts of houses. Harvey remarks (Sched. in Herb. Kew) that the Tonguese stain their cloth with the bark.

VI. **Croton**, Linn. *ex parte*; Müll. Arg. in DC. l. c. p. 512. Calyx ♂ 5-(4-6-)partitus; lacinia latius angustiusve imo angustissime et apice tantum distincte imbricativæ, secunda spiræ (impar) postica axin inflorescentiæ spectans. Petala laciniis calycis isomera, evoluta v. plus minusve rudimentaria aut obsoleta. Glandulæ disci cum petalis alternantes. Stamina centralia (5-400, sæpius 10-20); filamenta apice cum antheris inflexa; antheræ plus minusve basifixæ, demum oscillando-erectæ, 2-rimosæ. Ovarii loculi (2-4, sæpissime 3) 1-ovulati. Styli dichotome divisi. Fructus

capsularis; cocca 2-valvia. Semina carunculata. Embryo in albumine rectus; cotyledones ovatae, radiculam æquantēs.—Arbores v. sæpius frutices et herbæ perennes, rarius annuæ, habitu variegato. Folia alterna, petiolata, distincte v. obsolete 2-stipulata, dentata v. integra, rarius lobata, penninervia v. 3-5-plinervia, consistentia varia. Indumentum lepidotum v. depresso-stellatum v. sæpius stellatum. Flores vulgo monoici, in racemum sæpe spiciformem sæpissime terminalem dispositi; inferiores fœminei.—*Tridesmis*, Lour. *Astrogyne*, Benth. *Tigilium*, Klotzsch, etc.

This vast genus is represented in tropical Polynesia, by only four members, of which one, *C. insularis*, Müll. Arg., is found in New Caledonia (M'Gillivray!), whence it extends to the north-east coast of New Holland.

1. **C. metallicus**, (n. sp.) Seem. in Bonpl. 1861, p. 259; Müll. Arg. in DC. l. c. p. 572 (Tab. LVI.); foliis mediocriter petiolatis basi subtus sessili-2-glandulosis subtus lepidotis, lepidibus argilla-ceo-rufescentibus demum argenteo-albicantibus nitidis; alabastris ♀ oblongo-ovoideis, disco hypogyno urceolari tenui repando-lobato; staminibus circ. 15, filamentis infra medium pilosis; ovario dense lepidoto-squamuloso; stylis abbreviatis crassis 2-partitis ovario 2-3-plo brevioribus; seminibus lævibus.—Macuata, coast of Vanua Levu (Seemann! n. 408).

EXPLANATION OF PLATE LVI.—Fig. 1, flower-bud; 2, flower opening; 3, flower open; 4, stamens; 5, lepidote scales of flowers:—*all magnified*.

2. **C. heterotrichus**, Müll. Arg. in DC. l. c. p. 620; ramulis angulosis; petiolis limbo 3-5-plo brevioribus, limbo penninervio basi sessili-2-glanduloso; stipulis obsolete; pilis indumenti dimorphis; racemis rigidulis, floribus ♀ numerosis, calycis ♀ laciniis ovato-lanceolatis; ovario pilis stellatis ferrugineis dense hirtello; stylis semel 2-fidis rigidulis.—Viti, 2000 feet above the sea, locality not specified (U. S. Expl. Exped.).

3. **C. Verreauxii**, Müll. in DC. l. c. p. 620; foliis ad apicem ramulorum confertis longiuscule petiolatis ad basin limbi subtus 2-glandulosis rigidulis; stipulis conico-subulatis brevissimis rigidis; racemis elongatis laxifloris; bracteis exiguis lanceolato-ovatis 1-5-floris alabastris ♂ subglobosis; calycis ♀ laciniis oblongo-ovatis; petalis ♂ anguste oblongato-obovatis; filamentis glabris; ovario pilis stellatis exiguis adpressis hirtello, stylis subliberis bipartitis; laciniis lævibus; capsulis 3-dymis parvulis.

Var. *Storckii*, Müll. Arg. l. c. (Tab. LVII.); foliis orbiculari- v. ovato-ellipticis v. late lanceolatis basi subobtusis margine integris v. obiter repando-denticulatis; pedicellis ♂ capillaceis vulgo solitariis; stylis longe ultra medium bifidis.—*Croton Storckii*, Seem. in 'Bonplandia,' 1862, p. 297.—Nomen vernac. Vitiense, teste Storck, "Danidani."—Port Kinnaid, Island of Ovalau (Storck! n. 905).

EXPLANATION OF PLATE LVII., representing *Croton Verreauxii*, var. *Storckii*.—Fig. 1, flower-bud; 2, flower open; 3, petal; 4, stamen; 5, ovary; 6 and 7, sections of ovary:—*all magnified*.

4. **C. leptopus**, Müll. in DC. Prodr. l. c. p. 622; petiolis demum limbum fere æquantibus, limbo penninervio basi graciliter stipitato-2-glanduloso membranaceo; stipulis obsolete; indumento pilis exiguis albido-argillaceis, racemis tenellis paucifloris, pedicellis utriusque sexus elongatis tenuibus solitariis, calycis ♀ laciniis anguste triangulari-ovatis haud accrescentibus; alabastris ♂ muticis, filamentis glabris; ovario dense stellato-hirtello; stylis 2-fidis rigidulis; capsulis depresso-globosis 3-dymis.—Viti, locality not specified (U. S. Expl. Exped.).

VII. **Aleurites**, Forst. Char. Gen. n. 56, cum icon.; Müll. Arg. in DC. Prodr. vol. xv. p. 722. Calyx utriusque sexus valvatim subirregulariter rumpens (2-3-partitus). Petala utriusque sexus 5, æstivatione contorta v. quincuncialiter imbricata. Discus utriusque sexus evolutus; glandulæ cum

petalis alternantes. Stamina in receptaculo conico nudo inserta; antheræ 2-rimosæ; loculi tota longitudine connectivo adnati, basi v. supra basin fixi, stantes. Rudimentum ovarii 0. Ovarii loculi 1-ovulati. Fructus carnosus-capsularis. Semina ecarunculata. Albumen oleaginosum. Embryo rectus; cotyledones orbiculari-ovatae, membranaceo-complanatae, palminerviae, radiculam brevissimam multoties superantes.—Arbores. Folia alterna, longe petiolata, ambitu lata, 5-7-plinervia, superne penninervia, margine integra v. rarius grosse sinuato-dentata, 3-9-lobata v. elobata, basi supra patellari-2-glandulosa. Flores monoici, in paniculam terminalem valde floribundam quoad axes penultimos et antepenultimos irregulariter cymoso-ramosam dispositi; masculi foemineis vulgo multo numerosiores, laterales, gracilius pedicellati ipsique breviores et obtusiores, in axilla bractearum solitarii; foeminei vulgo apicem axium priorum ordinum inflorescentiae terminantes.—*Dryandra*, Thunb. Fl. Jap. p. 267, t. 27. *Vermicia*, Lour. Fl. Cochinch. p. 720. *Telopea*, Sol. Prim. Fl. Ins. Pacif. 7 (ined.) p. 332. *Ambinux*, Comm. *Camirium*, Rumph. *Juglandis* sp., Lour.

1. **A. Moluccana**, Willd. Spec. vol. iv. p. 590; Müll. in DC. l. c. p. 723; petalis ♂ lanceolato-cbovatis basi intus barbatis caeterum glabris, ♀ liguliformibus, receptaculo cum filamentis stellato-hispidis; ovario densissime hispido; seminibus rugoso-gibberulosis.—Bl. Bijdr. p. 619; Dene. in Nouv. Ann. du Mus. vol. iii. p. 487. *A. triloba*, Forst. Char. Gen. p. 112, n. 56, cum ic.; Prodr. p. 68, n. 360, et Icon. (ined.) t. 262; Lam. Encycl. vol. i. p. 80, et Illustr. t. 791; Guillem. Zephyrit. p. 34; Roxb. Flor. Ind. vol. iii. p. 629; Blanco, Flora de Filip. ed. ii. p. 520. *A. commutata*, Geisel. Crot. Monogr. p. 82. *A. ambinux*, Pers. Ench. p. 587; Adr. Juss. Tent. Euphorb. t. 12. *A. cordifolia*, Steud. Nomencl. p. 49 (non *Dryandra cordata*, Thunb.). *A. lobata*, Blanco, Flor. de Filip. ed. i. p. 756. *A. lanceolata*, Blanco, l. c. ed. i. p. 757, et ed. ii. p. 521. *Camirium cordifolium*, Gærtn. Fruct. vol. ii. p. 195 (non *Dryandra cordata*, Thunb.). *Cam. oleosum*, Reinw. Bl. Cat. 104 (ex Hassk. Cat. Hort. Bog. p. 236). *Jatropha Moluccana*, L. Spec. Pl. ed. i. p. 1006 (1753, nomen specificum prioritate gaudens). *Juglans Camirium*, Lour. Flor. Cochinch. p. 702. *Camirium*, Rumph. Amb. vol. ii. p. 180, t. 58. *Telopea perspicua*, Soland. Prim. Fl. Ins. Pacif. (ined.) p. 332, et in Parkins. Drawings of Tahit. Plants (ined.) t. 105 et 106.—Nomen vernac. Hawaiiense, "Kukui," Tahitense, "Tutui;" Vitiense, "Tutui," "Lauci" v. "Sikeci."—Common in all the large Vitian Islands (Seemann! n. 403). Also collected in the Hawaiian (Macrae! Barclay! Seemann! n. 1729), Society (Banks and Solander!), and Tongan Islands (Forster! Capt. Cook! Barclay!). Also in New Caledonia. Widely diffused in the tropics of both hemispheres.

The Candle-nut tree, termed "Lauci," "Sikeci," and "Tutui," in the various dialects of Fiji, is of middle size, common throughout Fiji, and rendered a conspicuous object by the whiteness of its leaves, produced by a fine powder, which is easily removed. The ground underneath it is always densely covered with "nuts," and large quantities might be collected. These "nuts" (*albumen*) contain a great deal of oil, of which, however, the natives make only a limited use for polishing, though in other parts of Polynesia lamps are fed with it, and in the Hawaiian Islands the entire kernels are strung on a stick and lighted as candles. In Viti the fruit is better known as a dye, and is used for tattooing, as in Tahiti and other parts of Polynesia; it also plays an important part at the birth of a child, for no sooner is a baby born than the midwife rushes to the Lauci to gather a fruit fresh from the tree, which she places in the mouth of the interesting young stranger, with the conviction that its milky juice will clear the throat, and more effectually enable it to announce its welcome arrival. Mr. Wilson, the managing director of Price's Patent Candle Company, at Vauxhall, London, writes to me:—"The oil of the *Aleurites triloba* is fine and hard, worth at least as much as sesame or rape oil, in this market. It is held very tightly in its matrix, and should be pressed where grown. If the 'nuts' were brought home in their shells, the freight would be expensive; and if shelled, insects would eat them."

VIII. **Claoxylon**, Andr. Juss. Tent. Euph. p. 43, t. 14, f. 43; Müll. Arg. in DC. l. c. p. 775. Calyx ♂ valvaris. Petala utriusque sexus 0. Disci hypogyni glandulae evolutae, cum laciniis calycis et carpidiis (si isomera) alternantes. Stamina in receptaculo elevato centralia; antheræ 2-rimosæ;

loculi basi fixi, crecti, præter basin inter se liberi. Rudimentum ovarii 0. Ovarii loculi 1-ovulati, laciniis calycis oppositi v. iis pauciores, unus posterior. Fructus capsularis. Semina ecarunculata.—Frutices et arbores v. rarius herbæ. Folia alterna, stipulata, petiolata, penninervia, sæpe purpurascencia v. subviolaceo-rubentia, basi supra plus minusve distincte denticuliformi 2-4-stipellata, subtus nunquam maculato-glandulosa. Flores dioici v. casu monoici, parvi, in racemos axillares simplices fasciculigeros v. glomeruligeros dispositi.—*Erythrochilus*, Reinw. Ap. Bl. Bijdr. p. 615. *Athroandra*, Hook. f. *Micrococca*, Benth. *Mercurialis*, Baill.

C. Sandwichense, Müll. Arg., from the Hawaiian Islands; *C. insularum*, Müll. Arg., from New Caledonia; and *C. Tahitense*, Müll. Arg., from Tahiti (Forster! Capt. Cook!), are the only three species of this genus hitherto found in tropical Polynesia, besides the two following.

1. **C. fallax**, (n. sp.) Müll. Arg. in DC. l. c. p. 780; racemis ♂ spiciformibus elongatis gracilibus, bracteis ♂ 3-5-floris; staminibus circiter 30; filamentis breviter sericeis.—*C. parviflorum*, Seem. Bonpl. 1861, p. 258 (nomen), non Adr. Juss.—Ovalau (Seemann! n. 394).

A tree, 24 feet high, closely allied to *C. Sandwichense*, with which it forms the section *Gymnoclaoxylon*.

2. **C. echinospermum**, Müll. Arg. in DC. l. c. p. 787; petiolis limbo 3-5-plo brevioribus; limbo membranaceo-subcornaceo; racemis gracilibus ♂ parvifloris; bracteis ♂ 3-1-floris; staminibus 30, glandulis receptaculi obovato-lanceolatis apice truncato paucipilosis; ovario pallide ochraceo-sericeo; stylis parvis minute laceris; capsulis intus nitidis; seminibus echinato-tuberculatis.—Island of Ovalau (U. S. Expl. Exped.).

IX. **Acalypha**, Linn. Gen. Plant. p. 502, n. 1082, 1767; Müll. Arg. in DC. Prodr. vol. xv. p. 799. Calyx ♂ valvaris, ♀ imbricativus, hujus laciniarum una antica. Petala et discus utriusque sexus 0. Stamina in receptaculo elevato pulviniformi centrum occupantia. Antheræ 2-rimosæ; loculi subvermiformes, liberi, ex apice penduli. Rudimentum ovarii 0. Ovarii loculi 1-ovulati, 2 anteriores, bracteam spectantes, 1 posterior. Fructus capsularis. Semina subobsolete v. distincte carunculata. Embryo in albumine rectus; radícula cotyledones ovatas subæquans.—Frutices suffrutices herbæque perennes v. annuæ. Folia alterna, sæpius longe v. longiuscule petiolata, nunc fere sessilia, penninervia v. 3-7-nervia, consistentia varia, margine nunquam omnino integra; limbus cum reliquis partibus foliaceis sæpissime minute pellucido-punctatus. Petioli basi 2-stipulati, apice subglanduligeri. Inflorescentiæ situ et forma variæ, nec non satis variantes, normaliter 1-sexuales aut 2-sexuales, et tum flores ♂ sæpissime superiores. Flores ♂ in axillis bractearum subnumerosi, in spicam dense glomerulifloram sæpe continuam dispositi, exigui, demum articulato-decidui, ♀ in axillis bractearum sæpius 1 v. 2-3, sessiles rariusve pedicellati.—*Cupameni*, Adans. *Caturus*, Linn. *Galurus*, Spreng. *Linostachys*, Klotzsch. *Odonteilema*, Turcz. *Gymnalpha*, Griseb.

This large genus has, in tropical Polynesia, the following representatives, besides those found in Viti, viz. 1. *A. Forsteriana*, Müll. Arg. (*A. virgata*, Forst. Prodr. n. 67, non Linn.), from Tana, New Hebrides (Forster!); 2. *A. Pancheriana*, Baill., from New Caledonia; 3. *A. Neo-Caledonica*, Müll. Arg., from New Caledonia; and 4. *A. Lepinei*, Müll. Arg., from Tahiti.

1. **A. grandis**, Benth. in Hook. Lond. Journ. of Bot. 1843, p. 232; Müll. Arg. in DC. l. c. p. 806; stipulis angustis elongatis; spicis longissimis densifloris; bracteis ♀ 1-floris fructigeris capsulam paulo superantibus, orbiculari-reniformibus pro $\frac{1}{3}$ longitudinis acute 7-9-lobato-dentatis, dente terminali haud longiore; ovario hirtio; stylis breviuscule pennatim 5-9-lacinulatis.—*A. Amboinensis*, Benth. l. c. p. 405.—Viti Levu (Barclay!). Also collected in Wallis Island (Sir E. Home!) and Aneitum (Milne!), the Moluccas, Amboina, and the Philippine Islands.

2. **A. consimilis**, Müll. Arg. in DC. l. c. p. 807; stipulis setaceis; limbo membranaceo; spicis utriusque sexus elongatis; bracteis ♀ 1-floris late triangularibus 9-11-dentatis capsulam longe superantibus, dente terminali majore; ovario hirtello; stylis mediocriter pectinatim divisis.—Viti, locality not specified (U. S. Expl. Exped.).

3. **A. rivularis**, (n. sp.) Seemann in Bonpl. 1861, p. 258; Müll. Arg. in DC. l. c. 817; foliis breviter petiolatis coriaceo-membranaceis angustis; spicis ♀ elongatis; bracteis ♀ 1-floris triangulari-ovatis acutis superne tantum utrinque 2-3-dentatis, dente terminali paulo majore, demum late reniformibus brevissime acutatis basi cordatis; ovario pubescente; stylorum brevium lacinulis pectinatim sitis circ. 8 adscendentibus.—Nomen vernac. Vitiense, "Kadakada."—On the banks of the Navua and Namosi rivers, Viti Levu (Seemann! n. 391).

4. **A. latifolia**, Müll. Arg. in DC. l. c. p. 817; petiolatis limbo pluries brevioribus; limbo amplo subintegro rigide membranaceo; spicis ♂ densifloris breviusculis.—Viti, locality not specified (U. S. Expl. Exped.).

5. **A. Wilkesiana**, Müll. Arg. in DC. l. c. 817 (Tab. LVIII.); petiolis limbo pluries brevioribus; stipulis lineari-lanceolatis subulato-acuminatis limbo obtuse grossius serratis; spicis utriusque sexus elongatis ♂ tenuibus; bracteis ♀ 1-floris late triangularibus utrinque pro $\frac{1}{3}$ longitudinis inciso-4-5-dentatis, dentibus anguste triangularibus, terminali reliquis majore; stylis pectinatim lacinuligeris.—*A. circinata*, A. Gray, mss. in Herb. Hook. *A. tricolor*, Hort.—Nomen vernac. Vitiense, "Kalabuci damu" (*i.e.* Red Kalambuci, from the general coppery appearance of the shrub).—Islands of Taviuni, Ovalau, Vanua Levu, and Viti Levu (Seemann! n. 392), often planted about houses. Cultivated in English gardens.

This shrub attains about 10 feet in height, and its foliage has generally the colour of our Copper Beeches; but very often the leaves assume a great variety of tints,—pink, yellow, and brown,—and then the plant is highly ornamental. It is often cultivated by the natives, together with other fine-foliaged plants, such as *Dracæna ferrea*, *Codiaeum variegatum*, *Nothopanax fruticosum*, etc. In some of the specimens the male flowers were, probably quite accidentally, somewhat circinate, inducing A. Gray to suggest the name *A. circinata*.

EXPLANATION OF PLATE LVIII., representing *A. Wilkesiana*, Müll. Arg., when displaying several tints.—Fig. 1, bud of male flower; 2, male flower, open; 3, stamens:—*all magnified*.

6. **A. insulana**, Müll. Arg. in DC. l. c. p. 818; petiolatis limbo 3-5-plo brevioribus; spicis ♂ elongatis gracilibus, ♀ laxifloris; bracteis ♀ 1-floris reniformi-ovatis utrinque acute subtridentatis, dente terminali lato haud producto recurvo subretuso mucronato; calycis ♀ laciniis ovatis acuminatis; ovario pubescente; stylis pectinatim circ. 10-lacinulatis; seminibus lævibus.—Nomen vernac. Vitiense, "Kalabuci."—Islands of Ovalau, Gau, Narai, and Vanua Levu (Seemann! n. 392, 393, Milne!). Also found in Samoan Islands.

Var. *a. flavicans*, Müll. l. c.; ramulis petiolis et foliis junioribus indumento densiusculo molli flavicante villosis; stipulis subulatis.—Ovalau (U. S. Expl. Exped.).

Var. *β. stipularis*, Müll. Arg. l. c.; ramulis petiolis costisque et costulis foliorum molliter pubescentibus; stipulis ovato-lanceolatis.—Collected by Harvey! and Seemann! n. 392, *pro parte*.

Bark used by the natives as a remedy for rheumatism.

Var. *γ. villosa*, Müll. l. c.; ramulis superne cum foliis junioribus dense villosis; foliis evolutis supra adpresso-pubescentibus subtus villosis, stipulis parvis anguste lineari-lanceolatis.—Collected by Vieillard.

Var. *δ. pubescens*, Müll. Arg. l. c.; ramulis petiolis et costis foliorum molliter subvelutino-pubescentibus; limbo subtus præter costas pubescente v. glabrato; stipulis subulatis.—Collected by Seemann! n. 393, *pro parte*; Milne! U. S. Expl. Exped.

Var. *ε. glabrescens*, Müll. l. c.; ramulis cum petiolis et costis foliorum brevissime puberulis demum plus minusve glabratis; limbo subtus præter costas glabrato.—Collected in Viti by Seemann! Milne! Wilkes's Exped. Also found in Samoa.

7. **A. anisodonta**, Müll. Arg. in DC. l. c. p. 818; petiolis limbo 2–5-plo brevioribus; limbo membranaceo; stipulis elongatis setaceis; spicis ♀ inferne longe nudis gracilibus laxifloris; bracteis ♀ 1-floris mediocribus late ovatis 5–9-dentatis, dentibus lateralibus triangularibus acutis, infimis minimis, terminali multo majore subrotundato-obtuso; calycis ♀ laciniis lanceolato-ovatis; ovario pubescente; stylis pectinatim paucilacinulatis.

Var. *α. subvillosa*; parte superiore ramulorum cum petiolis evolutis et parte inferiore costarum foliorum paginæ inferioris pilis mollibus patulis in costis distiche subadpressis albis laxe villosulis; petiolis breviusculis.—Ovalau (U. S. Expl. Exped.).

Var. *β. subsericea*; ramulis apice cum pagina inferiore et petiolis foliorum novellorum pallide fulvo-sericeis cum petiolis glabrescentibus superne brevissime velutinis; foliis subtus basin versus in costis et parenchymate villosulis v. demum glabratis; petiolis longiusculis.—Viti, locality not specified (U. S. Expl. Exped.).

8. **A. denudata**, Müll. Arg. in DC. l. c. 819; petiolis limbo $2\frac{1}{2}$ –6-plo brevioribus; limbo firmo; stipulis subulatis breviusculis; spicis ♂ gracillimis, ♀ laxifloris; bracteis ♀ subbifloris late subreniformi-ovatis 5–9-dentatis capsulas demum longe superantibus, dentibus lateralibus triangularibus, terminali reliquis multo majore late subrotundato; calycis ♀ laciniis late triangulari-ovatis; ovario glabro; stylis pectinatim lacinuligeris.—Viti, locality not specified (U. S. Expl. Exped.).

9. **A. repanda**, Müll. Arg. in DC. l. c. p. 819; petiolis limbo 4–6-plo brevioribus; stipulis lanceolato-subulatis; spicis ♀ inferne longe nudis laxifloris obliganthis gracilibus; bracteis ♀ 1-floris late reniformi-ovatis utrinque repando-2–3-dentatis v. integris capsulam duplo superantibus, dente terminali haud producto; calycis ♀ laciniis ovatis acuminatis, ovario pubescente; stylis elongato-paucilacinulatis; seminibus lævibus.—Viti, locality not specified (Harvey! in Herb. Hook.).

10. **A. lævifolia**, Müll. Arg. in DC. l. c. p. 853; stipulis exiguis subulatis; petiolis limbo 2–8-plo brevioribus; limbo lævigato; spicis solitariis basi nudis inferne bracteis ♀ paucas distantes gerentibus; bracteis ♀ late orbiculari-ovatis repando-5–9-dentatis, dentibus integris v. hinc inde paucidentatis; calycis ♀ laciniis lanceolato-ovatis; stylis firmis pectinatim lacinulatis.—Vanua Levu (U. S. Expl. Exped.).

11. **A. bæmerioides**, Miq. Fl. Neerl. Ind. Suppl. i. p. 459; Müll. Arg. in DC. l. c. p. 871; foliis longiuscule petiolatis; spicis sessilibus brevibus subdensifloris; bracteis ♀ 1-floris fructigeris capsulam paulo superantibus hemisphærico-campanulatis circiter octona parte longitudinis indentes 11–15-oblongo-ovatos sinu obtuso inter se discretos divisos; ovario scabro et hirto; stylis 2–3-fidis; seminibus obtusis minutissime scrobiculato-scabris.—*A. hispida*, Bl. Bijdr. p. 628.—Viti Levu (Seemann! n. 389, Barclay!). Also found in Java, Banka, and the Philippine Islands.

X. **Mallotus**, Lour. Fl. Cochinch. p. 781; Müll. Arg. in DC. Prodr. vol. xv. p. 956. Calyx ♂ valvaris. Petala 0. Discus in flor. ♀ 0 v. rarissime evolutus, in floribus ♂ 0. Stamina in centro elevato subdilato inserta; antheræ 2-rimosæ. Rudimentum ovarii 0 v. ad vestigium inconstans reductum. Ovarii loculi 1-ovulati. Fructus capsularis. Semina ecarunculata; albumen copiosum. Cotyledones latæ, radiculam longe superantes.—Arbores et frutices. Folia alterna v. opposita, 2-stipulata, brevius longiusve petiolata, penninervia v. sæpius palmatinervia, basi haud raro peltata, lobata v. elobata, subtus perpaucis exceptis, glandulis disculiformibus nitentibus subaureis v. demum fuscis v. rufescentibus adpersa, et indumento cæterum stellari v. dimorpho e pilis stellatis simplici-

busque formato prædita. Flores dioici v. rarius monoici, racemosi v. spicati. Inflorescentiæ præsertim specierum alternifoliarum terminales, sæpeque autem evolutione ramulorum summorum axillarium spurie axillares fractæ.—*Echinus*, Lour. *Elateriospermum*, Bl. *Rottlera*, Roxb. *Hancea*, Seem.

1. **M. tiliæfolius**, Müll. Arg. in DC. l. c. p. 969; foliis longe petiolatis palmatinerviis; racemis elongatis; bracteis ♂ sublinearibus elongatis ♀ lanceolatis, laciniis calycis ♀ lanceolatis; staminibus circ. 80–100; ovario 3–4-loculari tomentello; capsulis parciuscule et breviuscule molliter echinulatis fulvo-tomentellis.—*Croton tiliæfolius*, β. *aromaticus*, Lam. Encycl. vol. ii. p. 206 (non *C. aromaticus*, Linn.). *Rottlera tiliæfolia*, Bl. Bijdr. p. 607, non Decne. *R. acuminata*, Adr. Juss. Tent. Euphorb. p. 33 (non *Adisca acuminata*, Bl.); Miq. Flor. Ind. Bat. vol. i. pars ii. p. 395. *Rottlera Blumei*, Decne. Herb. Timor. in Nouv. Annal. Mus. Paris, vol. iii. p. 486.—Vanua Levu (Seemann! n. 407; Milne!). Also collected in Eromanga (M'Gillivray!) and Isle of Pines (M'Gillivray!). Dispersed over China, New Ireland (Barclay!), Java, the Moluccas, and Ceylon.

XI. **Cleidon**, Bl. Bijdr. p. 612; Müll. Arg. in DC. Prodr. vol. xv. p. 983. Calyx ♂ valvaris, ♀ imbricativus. Petala utriusque sexus 0. Discus utriusque sexus suppressus aut foemineus evolutus. Stamina in receptaculo conico inserta; verticilli accurate inter se alternantes, unde antheræ in series verticales (ob connectiva aliter colorata) distinctissimas dispositæ. Antheræ juniores dorso circa medium oblique peltatim filamento insertæ, intus loculos 4, utroque latere 2, distinctos, dein circa punctum insertioni oppositum subcruciatim aperientes et confluentes gerentes; dissepimenta loculorum persistentia. Ovarii rudimentum 0. Ovarii loculi 2–3, 1-ovulati, ante lacinias calycis 3-partiti siti, 1 anterior, bracteam spectans, v. in ovario 2-loculari laterales ante lacinias calycis (si calyx 4-partitus) exteriores siti. Fructus capsularis. Semina carunculata. Cotyledones amplæ, quam radícula multo longiores.—Frutices. Folia alterna, subulato-2-stipulata, varie petiolata, penninervia, denticulata, subtus prope basin suburceolato-2–6-glandulosa. Indumentum partium simplex, parcum. Flores in iisdem ramis tantum unius sexus v. rarissime 2-sexuales. Flores aut inflorescentiæ axillares. Flores ♀ in rhachi gracili recta, vulgo simpliciter laxè racemosi v. etiam in axilla foliorum solitarii et longe pedicellati, ♂ interrupte glomerato-spicati v. fasciculato-racemosi v. paniculati.

Besides the species enumerated below, there are three species of this genus in tropical Polynesia, viz. 1. *C. spathulatum*, Baill.; 2. *C. verticillatum*, Baill.; and 3. *C. claoxyloides*, Müll. Arg., all from New Caledonia.

1. **C. Vieillardii**, Müll. Arg. in DC. l. c. p. 985; floribus ♂ fasciculato-racemosis, ♀ elongato-racemosis v. depauperato-paniculatis; inflorescentiis inferne longe nudis; filamentis basi non dilatatis; ovario pubescente; stylis basi breviter connatis ultra medium 2-fidis papillois; capsulis tridymis pachydermeis.

Var. *Vitiensis*, Müll. l. c. p. 986; foliis spathulato-lanceolatis acuminatis basi angustata subbi-auriculato-retusis submembranaceis serratis glabris; racemis ♀ gracillimis depauperatis 1–3-floris; ovario parcissime puberulo.—*Macaranga leptostachya*, Müll. Arg. in DC. l. c. p. 1007.—Ovalau (Vieillard, n. 33, in Herb. Lenorm.; Harvey!; Seemann! n. 388).

XII. **Macaranga**, Pet. Thours. Gen. Madag. p. 26, n. 88; Müll. Arg. in DC. l. c. p. 987. Calyx ♂ valvaris, ♀ imbricativus. Petala utriusque sexus 0. Discus utriusque sexus 0. Stamina centralia, in receptaculo convexo v. plano-convexo sita. Antheræ non regulariter in series verticales dispositæ, dorso subpeltatim fixæ, 3–4-loculares; connectivum incompletum, loculis brevius. Rudimentum ovarii 0. Ovarii loculi 1-ovulati. Fructus capsularis. Semina non carunculata, albuminosa. Cotyledones latæ, radícula multo longiores.—Plantæ semper lignosæ. Folia vulgo alterna,

sæpe ampliuscule 2-stipulata, longius breviusve petiolata, basi haud raro plus minusve peltata; limbus cæterum ambita latior aut angustior, vulgo eo angustior quod brevius petiolatus, angustior penninervius, latior palmatim 3-7-nervius, subtus sæpissime glandulis ceraceis aureis aut dein fuscis v. ferrugineis punctiformibus adpersus. Flores dioici, glomerati v. fasciculati, in spicas aut racemos axillares simplices v. paniculato-ramosos dispositi, quod numerum partium ludentes; stamina sæpius infra 15, in paucis paucissima, 3-2-1. Fructus juniores vulgo carnosuli, maturi autem capsulari-aperientes, inermes aut varie armati.—*Mappa*, Adr. Juss. Tent. Euph. p. 44, t. 14, f. 44. *Ricini* sp. Forst. Prodr.

Besides the species enumerated below, we have the following *Macarangas* in tropical Polynesia, viz. 1. *M. Taitensis*, Müll. Arg., from Tahiti (Bidwill!); 2. *M. Tanarius*, Müll. Arg., from Tana (Capt. Cook!); 3. *M. Mappa*, Müll. Arg. (*Ricinus Mappa*, Forst. Prodr. n. 356), from Tana (Forster!); 4. *M. Grayana*, Müll., from Samoa (U. S. Expl. Exped.); 5. *M. stipulosa*, Müll., from Samoa; 6. *M. Vedeliana*, Müll. Arg., from New Caledonia; 7. *M. corymbosa*, Müll. Arg., from New Caledonia; 8. *M. coriacea*, Müll. Arg., from New Caledonia; 9. *M. Vieillardii*, Müll. Arg., from New Caledonia; and 10. *M. dioica*, Müll. Arg. (*Ricinis dioicus*, Forst.), from Tana (Forster!). My n. 420 appears to be a new species with large membranaceous and hirsute leaves.

1. **M. secunda**, Müll. Arg. in DC. l. c. p. 996; stipulis triangulari-lanceolatis longe acuminatis; paniculis ♂ censifloris breviter pedunculatis secundis fastigiatis superne squarroso-bracteatis; bracteis infimis sterilibus lanceolatis integris ramulorum lineari- v. anguste ovato-lanceolatis basi angustatis longe acuminatis inciso-dentatis apice recurvis glomerulorum florum ovatis acuminatis pectinato-lobatis recurvo-patulis; floribus ♂ 4-2-andris.—Viti, locality not specified (U. S. Expl. Exped.).

2. **M. membranacea**, Müll. Arg. in DC. l. c. p. 996; stipulis longissimis lanceolato-linearibus subfalcatis sensim acuminatis; limbo basi late peltato v. etiam profunde cordato.—Viti, locality not specified (U. S. Expl. Exped.).

3. **M. Harveyana**, Müll. Arg. in DC. l. c. p. 998; stipulis magnis triangulari-lanceolatis; floribus ♂ paniculatis, ♀ racemosis v. subpaniculatis; bracteis ♂ parvis latis subtruncato-obtusis v. abrupte acuminatis integris, ♀ inferioribus sterilibus lanceolatis integris fertilibus lanceolato-rhombis superne inciso-multidentatis dein cuspidato-acuminatis; floribus ♂ circ. 12-9-andris; calyce ♀ oblongo-ovoideo superne angustato subulato 5-dentato dein spathaceo-rupto ovarium tegente; ovario ceraceo-glanduloso; stylis magnis elongatis longe acuminatis valide longeque papillosis; capsula in dorso cujusvis cocci elongata 2-6-echinata.—*Mappa Harveyana*, Müll. Arg. in Flora Ratisb. 1864, p. 467.—Viti, locality not specified (U. S. Expl. Exped.; Seemann! n. 395). Also collected in Tahiti (U. S. Expl. Exped.), Tonga (Harvey!), and Samoa (U. S. Expl. Exped.).

4. **M. Seemanni**, (n. sp.) Müll. Arg. in DC. l. c. p. 999; limbo foliorum latissime peltato; stipulis magnis lanceolatis subscariosis; floribus ♂ glomerato-paniculatis, ♀ paniculatis; bracteis ♂ e basi ampliata obovato-lanceolatis apice et margine grosse glanduligeris integris, staminibus 9-6; ovario inermi glanduloso-scabro; capsulis parvis; seminibus globosis tuberculato-asperis.—Viti Levu (Seemann, n. 397, 419, Harvey!). Also collected in the Tongan Islands (Capt. Cook! U. S. Expl. Exped.).

A tree, 30 feet high.

5. **M. macrophylla**, (n. sp.) Müll. Arg. in DC. l. c. p. 1001; foliorum limbo profunde cordato v. peltato; paniculis ♀ amplis; rhachi angulosa; bracteis brevissimis ovatis integris; calyce ♀ turbinate-obconico late aperto margine integro basi sensim in pedicellum abeunte; ovario ellipsoideo basi stipitiformi-angustato inermi brevissime fulvo-tomentello; stigmatibus in corpusculum apicem ovarii breviter calyptratim tegens fuscum connatis.—*Mappa macrophylla*, A. Gray in Herb. Kew. ex Seem. Bonpl. 1861, p. 258. Nomen vernac. Vitiense, "Mavu."—Viti Levu (Seemann! n. 396).

A tree, the wood of which is used for temples, and the gum it exudes for arrows,—at least I take two phrases in the Fijian Dictionary to mean that,—“*E dau drega ni gasau; a kau ni bure kalou.*”

XIII. **Ricinus**, Tournef. Inst. p. 532. t. 307, 1719; Müll. Arg. in DC. l. c. p. 1016. Calyx utriusque sexus valvaris. Petala et discus utriusque sexus 0. Stamina in receptaculo plano-convexo (∞) in fasciculos distinctos ∞ -andros superne multoties dichotome ramosos connata; antheræ 2-loculares, didymo-globosæ, tota longitudine dorso adnatæ. Rudimentum ovarii 0. Ovarii loculi 1-ovulati, 1 anterior bracteam spectans. Fructus capsularis. Semina carunculata, copiose albuminosa. Albumen oleosum. Cotyledones amplæ. Radicula brevis.—Planta arborescens, speciosissima, macrophylla, glabra. Folia $\frac{1}{2}$ –3-pedalia, alterna, longe petiolata, peltata, palmatinervia, palmatim 7–11-lobata, dentata, herbacea, membranacea; petioli pagina superiore ob margines confluentes obsoleta teretes facti, in linea ventrali s. suturali marginum tuberculis subglanduliformibus onusti. Flores monoici, in racemos contracto-paniculiformes, inferne σ , superne ρ , terminales v. innovatione ramorum lateralium suboppositifolios factos dispositi, majusculi, numerosi, myriandri, 1-bracteati, opposite 2-bracteolati; bracteolarum axillæ aut steriles aut altera alternatim fertilis aut ramulum continuans, unde evolutio ramorum racemi circinalis. Pedicelli circa medium articulati.

1. **R. communis**, Linn.; Müll. Arg. in DC. l. c. p. 1017.—Nomen vernac. Vitiense, “Bele ni papalagi” (*i.e.* foreign Bele, Bele being *Hibiscus esculentus*, Linn., which the *Ricinus* somewhat resembles in leaf).—Naturalized in many parts of Viti (Seemann! n. 401). Also collected in the Hawaiian Islands (Barclay!).

The Castor-oil plant does not exist in the older collections, nor is it alluded to by the older botanists as found in any part of tropical Polynesia. I saw it far in the interior of Viti Levu. No oil is as yet extracted from the seeds.

XIV. **Manihot**, Plum. Cat. 20, pro parte; Müll. Arg. in DC. l. c. p. 1057. Calyx utriusque sexus imbricativus. Petala suppressa. Discus utriusque sexus evolutus, florum σ intrastaminalis; lobi laciniis calycis oppositi. Stamina in receptaculo haud elevato circa discum inserta, interiora cum laciniis calycis alternantia. Antheræ 2-rimosæ. Ovarii loculi 1-ovulati, 1 posterior, 2 anticolaterales, bracteam spectantes. Fructus capsularis. Semina carunculata. Cotyledones latæ.—Plantæ herbacæ, grandes, raro arboreæ, vulgo inferne brevius v. longius lignescentes v. omnino herbacæ, nunc tuberosæ, sæpius glabræ et glaucescentes. Folia in sinu bascos sæpe leviter retrorsum peltato-producta.

1. **M. palmata**, Müll. Arg. in DC. l. c. p. 1062; inflorescentiis ex ima basi divisis longirameis paniculiformibus; bracteis parvis lanceolatis; calyce extus glabro evoluto majusculo; antheris pluries longioribus quam latis; disco filamentis et connectivis glabris; ovario levius costulato-anguloso; capsulis subglobosis exalatis superne leviter angulosis.

Var. *Aipi*, Müll. Arg.; foliis 5-(7-3-)partitis; laciniis obovato-lanceolatis v. elliptico-lanceolatis subtus plus minusve glaucis. Nomen vernac. Vitiense, “Yabia ni papalagi” (*i.e.* foreign arrow-root).—Cultivated by the white settlers on account of its edible root (Seemann! n. 399).

This plant is quite a recent introduction, and the natives have as yet not taken to its cultivation. Captain Bedford Pim, in his ‘Gate of the Pacific,’ London, 1863, p. 77, publishes a note on it, which has a direct bearing on Polynesia:—“Intoxication is common at certain seasons amongst the Indians of Nicaragua. The liquor is made from the cassava, in the same manner as Cook found the Sandwich and other South Sea Islanders making ava or kava; it is chewed by the women, after boiling the roots; about one-third is chewed, the rest pounded; then hot water and cane-juice is poured upon it, and after two days’ fermentation it is ready. It looks like buttermilk, and is sour, but very strong. Can there be any philological connection between the American terms ‘Cassava’ or ‘Kasava’ and the Polynesian ‘Kava’ or ‘Ava,’ supposed to be derived from the Sanscrit ‘Kasya’ (=intoxicating beverages)? Strange to add, preparing an intoxicating liquor from the cassava, or yuka (*Manihot Aipi*, Pohl), is also practised in the interior of

Peru, where the Indians call it 'Masato.' Antonio Raimondy, in his 'Apuntes sobre la Provincia litoral de Loreto' (Lima, 1862, p. 132), gives a circumstantial account of it which, from its ethnological importance, ought to be compared with the description of the preparation of kava furnished by Dr. Seemann in his 'Viti' (London, 1862), p. 327: "In order to get an idea of the way in which this beverage (*masato*) is prepared," says Raimondy, "it is necessary to enter for a moment one of the great houses of the heathens of Ucayali on the eve of a great festival. On one side are seen several half-naked women seated on the floor around a heap of yucas, and occupied in peeling the skin off them. On the other side is a woman busy in putting the cleaned roots in a huge pot. After this has been done, a small quantity of water is put in the pot, the yucas are covered over with leaves, and then boiled. When boiled, they are mashed. . . . Advanced to this state, the most important, and at the same time most disgusting operation is proceeded with. The women, and in some instances the men also, sit down once more in a circle around the mashed yucas, taking large handfuls of it in their mouths, which they chew without swallowing until completely saturated with saliva and almost become liquid. In this state the filthy mass is spit out, and the operation repeated until the required quantity is prepared. After this a small portion of mashed yuca is mixed and kneaded with the chewed mass and then put into the pots, which are covered up till fermentation sets in. The saliva contained in the mashed yuca produces fermentation, changes the starch into sugar, and the sugar into alcohol—a process which, according to the state of the temperature and the existing quantity of saliva, takes place in two, three, or four days. This fermented mass accompanies the Indians on all their journeys. When wishing to prepare from it their disgusting beverage, it is dissolved with a little water." "

XV. **Jatropha**, Linn. Gen. Plant. ed. i. p. 288; Müll. Arg. in DC. l. c. p. 1076. Calyx utriusque sexus imbricativus. Petala utriusque sexus cum laciniis calycis alternantia, evoluta aut suppressa. Disci glandulæ laciniis calycis oppositæ, cum petalis aut earum loco vacuo alternantes. Stamina centralia, exteriora petalis aut eorum loco vacuo opposita; antheræ 2-rimosæ; loculi inferne liberi, paulo infra medium inserti. Rudimentum ovarii 0. Ovarii loculi 1-ovulati, 1 posticus. Fructus capsularis. Semina carunculata. Cotyledones complanatæ, latæ, palmatinerviæ; radícula brevis.—Plantæ frutescentes, partibus præter caulem plus minusve herbacæ v. omnino herbacæ, grandes, rarius arborescentes. Folia alterna, 2-stipulata, vulgo longe petiolata, integra v. lobata, margine cæterum integra v. dentata, palmatinervia, membranacea. Flores sæpissime monoici, vulgo corymboso-paniculati; paniculæ 2-sexuales, dichotome ramosæ, in dichotomiis flores ♀ proferentes.—*Curcas*, Adans. *Loureiria*, Cav.

1. **J. Curcas**, Linn. Sp. Plant. ed. i. p. 1006; Jacq. Hort. Vind. vol. iii. p. 36. t. 63; Müll. Arg. in DC. l. c. p. 1080; cymis longe pedunculatis subalternatim brevissimeis compacto-multifloris; bracteis lanceolatis majusculis; calycis ♂ laciniis ovatis obtusis, ♀ lanceolatis acuminatis; petalis lanceolato-ellipticis calycem ♂ bis æquantibus usque ad medium cohærentibus intus lanatis, filamentis exterioribus fere omnino liberis; ovario glabro sensim in columnam stylarem brevem stigmatibus multo brevioribus abeunte; stigmatibus 2-fidis; capsula carnosa magna.—*Curcas purgans*, Med. Ind. Plant. Hort. Manhem. vol. i. p. 90. *C. Indica*, A. Rich. in Sagra, Hist. Cub. vol. iii. p. 208. *Castiglioni lobata*, Ruiz et Pav. Prodr. p. 139. t. 37.—Nomen vernac. Vitiense, "Uto ni papalagi."—Lakeba and Ovalau (Seemann! n. 400).

The Physic-nut plant was introduced from the Tongan Islands, and is now extensively used for living fences. The oleaceous medicinal properties of the seeds have not as yet been turned to account by the natives.

XVI. **Codiaeum**, Rumph. Amb. vol. iv. p. 68. t. 25-27; Müll. Arg. in DC. Prodr. vol. xv. p. 1116. Calyx utriusque sexus imbricativus. Petala cum laciniis calycis et cum glandulis disci extrastaminalis alternantia (utriusque sexus evoluta aut florem ♀ rudimentaria aut omnino suppressa). Stamina in receptaculo elevato inserta, centralia; antheræ 2-rimosæ. Rudimentum ovarii 0. Ovarii loculi 1-ovulati, cum laciniis calycis interioribus (si calyx 5-merus) alternantes. Fructus capsularis. Semina carunculata.—Arbores v. frutices. Folia opposita v. sæpius alterna, penninervia, integra.

Flores monoici. Inflorescentiæ terminales aut axillares, racemiformes v. rarius umbelliformes, 2-sexuales v. rarius 1-sexuales. — *Phyllaurea*, Lour. *Baloghia*, Endl. Fl. Norf. p. 84. *Crozophoræ* sp., Labill.

Besides the widely diffused *C. variegatum*, we have, in tropical Polynesia, the following species, viz. 1. *C. lucidum*, Müll. Arg. (*Baloghia lucida*, Endl. Fl. Norf. p. 84, et Gen. Plant. Illustr. t. 122, 123), from New Caledonia (Forster! Capt. Cook!), Norfolk Island, and north-east coast of New Holland; 2. *C. (?) carunculatum*, Müll. Arg., from New Caledonia; 3. *C. alternifolia*, Müll. Arg., from New Caledonia; 4. *C. (?) Pancheri*, Müll. Arg., from New Caledonia; 5. *C. Inophyllum*, Müll. Arg. (*Crozophora peltata*, Labill. Sert. Austr. Caled. t. 75. *Croton Inophyllum*, Forst. Prodr. n. 355), from New Caledonia (Forster! Anderson!).

1. **C. variegatum**, Müll. Arg. in DC. l. c. p. 1119; cicatricibus foliorum disciformibus; inflorescentiis longissimis; ovario glabro.—Nomen vernac. Vitiense, “Sacasaca.”—Occurs as underwood in the larger islands, and also frequently cultivated for ornamental purposes by the natives (Seemann! n. 409, 410, 411). Also found in Tana (Forster! Anderson! Barclay!), and Malicolo (Forster!), and other Polynesian islands. Widely diffused in the East Indies and the Archipelago.

Var. *a. pictum*, Müll. l. c.; foliis breviter petiolatis ovatis v. ovato-lanceolatis basi plus minusve cordatis $1\frac{1}{2}$ -3-plo longioribus quam latis pulchre fusco-roseo-luteo-viridi-variegatis.—*Codiaeum pictum*, Hook. in Bot. Mag. t. 3051. *Croton pictus*, Lodd. Bot. Cab. t. 870. *Ricinus pictus*, Noronha, ex Hassk. Hort. Bog. p. 237. Cultivated by the natives.

Var. *β. Moluccanum*, Müll. l. c.; foliis longius breviusve petiolatis latius v. angustius spathulatis basi acutis apice breviter acuminatis. Hæc occurrit:—*a. latifolium*; foliis vulgo brevius petiolatis obovato-spathulatis 3-4-plo v. rarius 5-plo longioribus quam latis.—*C. chrysosticton latifolium*, Rumph. Amb. vol. iv. p. 66. n. 2 et n. 5. *C. Moluccanum*, Decaisne, Herb. Timor. in Nouv. Annal. du Museum, vol. iii. p. 485; Miq. Flor. Ind. Bat. vol. i. pt. ii. p. 383. *C. cuneifolium*, Zip. ex Span. in Linnæa, 1841, p. 348. *C. obovatum*, Zoll. in Fl. Ratisb. 1847, p. 663. *C. Timorense*, Adr. Juss. Tent. Euph. p. 34 (nomen). Nomen vernac. Vitiense, “Sacasaca loa.” Cultivated by the natives. (Seemann! n. 409.)

Var. *γ. genuinum*, Müll. l. c.; foliis latius angustiusve lanceolatis utrinque æqualiter angustatis acutiusculis v. obtusis basi haud cordatis.—*Croton variegatus*, Linn. Sp. Plant. ed. iii. p. 1424; Lam. Encycl. vol. ii. p. 203. *C. bractiferus*, Roxb. Fl. Ind. vol. iii. p. 680. *C. Baliospermum*, Span. in Linnæa, 1841, p. 348. *Codiaeum chrysosticton*, Spreng. Syst. Veg. vol. iii. p. 866. *C. medium*, Baill. Rec. d’Obs. Bot. vol. i. p. 348.—Wild in the larger islands.

A great many varieties and subvarieties of this species are cultivated for ornamental purposes, by the natives of Viti, all of which have distinguishing names. My n. 411, Mueller’s *genuinum*, subvariety *angustifolium*, is termed “Vasa damu;” my n. 409, “Sacasaca loa.” The most singular form is my n. 410 (Mueller’s *genuinum*, subvariety *tæniosum*), where the blade of the leaf is in parts reduced to the mere midrib.

XVII. **Carumbium**, Reinw. Cat. Hort. Buitenz. p. 105, 1823; Müll. Arg. in DC. l. c. p. 1143. Calyces ♂ a dorso et ventre compressi, ♀ haud compressi. Laciniæ aut sepala calycis ♂ æstivatione imbricativa. Petala 0. Discus 0. Stamina centralia, receptaculo compresso breviter conico-convexo inserta; antheræ 2-rimosæ. Rudimentum ovarii 0. Ovarii loculi 1-ovulati. Fructus indehiscens. Semina ecarunculata.—Arbores. Folia alterna, longe petiolata, 2-stipulata v. connato-1-stipulata, vulgo late rhombeo-ovata, rarius elliptica, palmati- v. rarius penninervia, sæpe iis populorum quoad ambitum similia; basi supra v. rarius subtus tuberculato-2-glandulosa. Stipulæ sæpius elongatæ, subscariosæ. Inflorescentiæ terminales, spiciformes, vulgo 2-sexuales; bracteæ 2-glandulosæ, inferiores flores ♀ reliquæ ♂ gerentes, 1-∞-floræ.—*Duania*, Noronh. *Omalanthus*, Adr. Juss. *Homalanthus*, Bartl. *Dibrachion*, Regel, Gartenfl. t. 504.

Besides the species enumerated below, we have, in tropical Polynesia:—1. *C. acuminatum*, Müll., from Samoa; 2. *C. Mærenhoutianum*, Müll. (*Croton populneum*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 334, et in Parkins. Drawings of Tahit. Plants (ined.) t. 107. “Bobo” of the Tahitians), from Tahiti (Banks and Solander!); and 3. *C. polyandrum*, Müll., from the Kermadec Islands (Milne!, M’Gillivray!).

1. **C. nutans**, Müll. Arg. in DC. l. c. 1146; limbo foliorum basi subtus 2-glanduloso; racemis tenellis; bracteis minutis late ovatis; sepalo anteriore reniformi posteriore obsoleto; antheris subquadrilateralibus cum filamentis scabridulis; fructu ellipsoideo utrinque breviter acuminato parvulo.—*Croton nutans*, Forst. Prodr. n. 354, et Icon. (ined.) t. 260. *Stillingia nutans*, Geisel. Crot. Monogr. p. 80; Endl. Flor. d. Südseeins. p. 184. *Omalanthus pedicellatus*, Benth. in Hook. Lond. Journ. of Bot. vol. ii. p. 232. *Carumbium pedicellatum*, Miq. Fl. Ind. Bat. vol. i. pt. ii. p. 414.—Nomen vernac. Vitiense, “Tadano.”—Viti Levu, common (Seemann! n. 402, Milne!, Harvey!), Gau (Milne!) Also collected in New Caledonia (Sir E. Home!), Eromanga (M’Gillivray!), Tana (Anderson!), and Society and Tongan Islands (Forster!, Barclay!, Harvey!).

The leaves of this plant are, like those of *Solanum anthropophagorum*, eaten at cannibal feasts as a vegetable.

XVIII. **Stillingia**, Garden in Linn. Mant. vol. i. p. 19. n. 1279, 1767; Müll. Arg. in DC. l. c. p. 1155. Calycis laciniæ utriusque sexus imbricativæ. Petala et discus utriusque sexus 0. Stamina in receptaculo haud elevato centralia; antheræ 2-rimosæ. Rudimentum ovarii 0. Ovarii loculi 1-ovulati, 1 anterior. Fructus capsularis; columella centralis rudimentaria, ejus loci receptaculum in carpodophorum 3-cornutum horizontaliter evolutum. Semina carunculata, albuminosa; chalaza basi sita. Albumen basi truncata fixum. Embryo verticalis; cotyledones latæ, radiculam bene æquant. —Frutices v. suffrutices. Folia 2-stipulata, alterna v. rarius opposita, penninervia, margine glanduloso-denticulata et insuper sæpius margine glandulas parvas patelliformes gerentia. Flores monoici, spicati v. spicato-racemosi. Spicæ terminales v. laterales; basi flores 1-3 fœmineos gerentes, cæteræ masculæ. Bracteæ 2-glandulosæ, ♀ 1-floræ, ♂ sæpius 2-3-floræ.

1. **S. Pacifica**, Müll. Arg. in DC. l. c. p. 1156; costis secundariis dense approximatis, glandulis bractearum demum pluries longioribus quam latis quasi longitrorsum adnatis semicylindricis, floribus sessilibus.—Island of Ovalau (U. S. Expl. Exped., Sir E. Home! in Herb. Mus. Brit.).

XIX. **Excæcaria**, Linn. Gen. Plant. n. 1102; Müll. Arg. in DC. l. c. p. 1201. Calycis laciniæ utriusque sexus imbricativæ (masculæ evolutæ v. plus minusve reductæ). Petala et discus utriusque sexus 0. Stamina centralia; antheræ 2-rimosæ; loculi longitrorsum adnati. Ovarii rudimentum 0. Loculi ovarii 1-ovulati. Styli haud laminiformi-compressi. Fructus maturus capsulari-aperiens (siccus aut carnosus), columella centrali evoluta munitus. Semina ecarunculata; chalaza basilaris. Embryo verticalis; cotyledones latæ.—Arbores et frutices. Folia sæpissime alterna, in paucis opposita, 2-stipulata, petiolata, penninervia v. rarius palmatinervia, firma, ambitu et margine varia. Flores monoici v. rarius dioici, in spicas sæpissime 2-sexuales, basi flores vulgo 1-2 ♀ rarius numerosiores gerentes cæterum ♂ nunc terminales nunc axillares dispositi.—*Commia*, Lour. Fl. Cochinch. p. 605 et 742.

Imperfect specimens of a plant (my n. 414), collected at Namosi, Viti Levu, have been referred with a mark of doubt to this genus by Dr. Mueller.

1. **E. Agallocha**, Linn. Sp. Plant. p. 1451; Müll. Arg. in DC. l. c. p. 1220; bracteis dense imbricatis latis brevibus truncatis margine subintegro excepto glanduloso-incrassatis; calycis ♂

sessilis 2-bracteolati laciniis lineari-lanceolatis basi lacero-dentatis.—Lam. Illustr. t. 805; Endl. Prodr. Fl. Norf. p. 82*; Ferd. Bauer, Plant. Norf. t. 182 (ex Endl. l. c.): *Commia Cochinchinensis*, Lour. Flor. Cochinch. ed. Willd. p. 743. *Excæcaria affinis*, Endl. Prodr. Flor. Norf. p. 83 (ex icone Baueriana). *Stillingia Agallocha*, Baill. Étud. Gén. Euphorb. p. 518. t. 7. f. 31–34. Nomen vernac. Vitiense, “Sinu gaga” (*i. e.* poisonous Sinu).—On the seabeach of most of the Vitian Islands. Also collected in Tonga (Capt. Cook! Sir E. Home!), New Caledonia (M’Gillivray!), and Norfolk Island. Diffused over N.E. New Holland, Ceylon, India, and the Archipelago and Cochinchina.

The Sinu gaga (*Excæcaria Agallocha*, Linn.) or poison Sinu, called so in contradistinction to the Sinu damu (*Drymispermum Burnettianum*, Seem.) and the Sinu mataivi (*Wikstrœmia Indica*, C. A. Meyer), both of which, like the Sinu gaga, are littoral plants, is a tree, contact with which is avoided by the Fijians. It is found in mangrove swamps or on dry ground, just above high-water mark. It is sixty feet high, has a glossy foliage, oblong leaves, and small green flowers arranged in spikes. It is difficult to exterminate, for unless the stumps are taken up, innumerable young shoots spring up as soon as the main stem is felled. When the tree is wounded, abundance of white milky juice flows, which produces a burning effect on coming in contact with the skin. Some natives, however, can handle this poisonous juice with perfect impunity (*era sinu dranu*), analogous to what I witnessed in the Manzanillo or Manchineel tree of tropical America, the sap of which caused me the greatest agony after it had accidentally entered my eyes, and never raised even as much as a blister on being allowed to dry on the hands of a travelling companion. The smoke of the burning wood affects the eyes with intolerable pain, exactly as that of the Manchineel tree does, (of which I gave an instance in the ‘Narrative of the Voyage of H.M.S. Herald.’ vol. i. p. 141,—one of our boat’s crew becoming blind for several days after lighting a fire with Manchineel wood). Only those, like myself, who have been sufferers from the effect of these poisons, can form any adequate conception of the agonies endured, and the courage displayed, by a Fijian who voluntarily submits himself to being cured of leprosy by the smoke of the Sinu gaga wood. The Rev. W. Moore, of Rewa, was well acquainted with Wiliami Lawaleou, a young man who underwent the process of being smoked. Mr. Moore gave me the particulars of this remarkable case, when I was his guest in 1860, and he has also published a full account of it in the ‘Wesleyan Missionary Notices,’ Sydney, 1859, p. 157. After stating that he knew Wiliami as a fine healthy young fellow, Mr. Moore was surprised to find him one day so much altered by the effects of leprosy. Some time after he again met him full of health, and, on inquiry, learnt the treatment adopted to bring about this change. Taken to a small empty house, the leper is stripped of every article of clothing, his body rubbed all over with green leaves, and then buried in them. A small fire is then kindled, and a few pieces of the Sinu gaga laid on it. As soon as the thick black smoke begins to ascend, the leper is bound hand and foot, a rope fastened to his heels, by means of which he is drawn up over the fire, so that his head is some fifteen inches from the ground, in the midst of the poisonous smoke. The door is then closed and his friends retire a little distance, whilst the poor sufferer is left to cry and shout and plead from the midst of the suffocating stream; but he is often allowed to remain for hours, and finally he faints away. When he is thought sufficiently smoked the fire is removed, the slime scraped from the body, and deep gashes cut into the skin until the blood flows freely. The leper is now taken down and laid on his mats to await the result. In some cases death—in many, life and health. Wiliami had undergone this fearful process. He had taken some of the youths of the place, and on his way to the smoking-house told them his pitiable condition, his shame as an outcast, and his willingness to suffer anything to obtain a cure, and much would depend on their firmness. They were not to be moved by his groans and cries, and, for the love they bore him, he begged them to do the operation well, and threatened to punish them if they performed it only half. Imagine the scene! They proceed to the lonely house. Wiliami’s companions, as much afraid of overdoing as underdoing their sad task, leave the poor leper drawn up by the heels in the midst of a thick black smoke; they retire to some distance, and presently are horrified by his piteous cries and groans. Some weep, some run home, others rush into the smoking-house to take him down; but, with Spartan-like endurance, he commands them not to terminate his suffering until the process is complete. At last they take him down—he is faint and exhausted—the operation has been successful. Wiliami is no longer a leper, but again walks God’s earth a healthy man.

ORDO XXXI. URTICACEÆ.

SUBORDO I. ULMACEÆ.

Represented in tropical Polynesia by *Celtis paniculata*, Planch. (*Solenostigma paniculatum*, Endl.), from Norfolk Island (Bauer, Forster! which has caducous stipules), *Celtis pacifica*, Planch., from Nukahiva (Matthews in Herb. Hook.), and Tongan Islands (Capt. Cook!), and the species mentioned below.

The genus *Euptelia* was, and by some authors still is referred to this suborder, though it constitutes, together with *Trochodendron*, a new Natural Order, far removed from *Urticaceæ*. The whole question has been well summed up by Dr. Eichler (Seemann's 'Journal of Botany,' vol. iii. p. 150) in these words:—"A few weeks after I sent my paper 'On the Structure of the Wood of *Drimys* and *Trochodendron*, and the Systematic Position of the latter Genus' to the editor of the 'Flora,' but before the paper was printed, (Sept. 17, 1864,) there appeared in the August number of the second volume of the 'Journal of Botany, British and Foreign,' the first part of Dr. B. Seemann's 'Revision of the Natural Order *Hederaceæ*.' In this paper that author dwells, amongst other things, on the systematic position of *Trochodendron* (p. 237, seq.), a genus which Bentham and Hooker fil. had referred to *Araliaceæ*. Dr. Seemann controverts their view, places *Trochodendron* once more near *Winteraceæ*, allies it with *Euptelia*, Sieb. et Zucc., and is inclined to regard both genera as 'the first known members' of a new Natural Order, that of *Trochodendreeæ*. Dr. Seemann has thus partly anticipated me, as, in the paper alluded to, I had also advocated the propriety of 'leaving *Trochodendron* near *Winteraceæ*, but separated from them, until further discoveries should bring to light either connecting links or forms which might vindicate the independence of a group of plants of equal importance with the last-named (*Winteraceæ*).' That both of us should have arrived, independently, at the same conclusions is a source of satisfaction to me, and may be regarded as a certain proof of their correctness. It was impossible for me to know, when writing my paper, that such a discovery, enabling Dr. Seemann to advocate the establishment of the Natural Order *Trochodendreeæ*, had actually come to light in the carpological structure of *Euptelia*. This genus, established by Zuccarini upon a Japanese species discovered by Siebold, ('Flora Japonica,' p. 133, t. 72,) was referred by its author to *Ulmaceæ*, in accordance with its then known anthological characters; but, on account of its numerous disconnected carpels, it occupied in that Order an isolated position. A second species in ripe fruit was afterwards discovered by Griffith in Assam. At first sight this was not identified with *Euptelia*, and strangely enough, in the preliminary arrangement of the specimens, was also referred to *Ulmaceæ*, where it remained till recently more carefully examined by the celebrated authors of the 'Flora Indica,' Drs. Hooker and Thomson. It was found that Zuccarini was wrong in placing *Euptelia*, with its large quantity of albumen and minute embryo; in *Ulmaceæ*, and that its true relationship had to be sought for in the neighbourhood of *Winteraceæ*. Hooker and Thomson's article 'On the Genus *Euptelia*' was published in No. 28 of the 'Journal of the Proceedings of the Linnean Society,' which, though appearing early in 1864, did not reach Munich till the autumn, so that when writing my paper I could have no knowledge of it."

"As already mentioned, Dr. Seemann declares *Euptelia* to be closely allied to *Trochodendron*, and both genera to be the first-known members of a new Natural Order. After examining the authentic specimens of both genera existing in the Academical Herbarium at Munich, I fully concur in his view; and, as the subject has been mooted, I will briefly refer to the Natural Order constituted by the two genera, and the characters in which they agree and differ. In the first instance, we have in both genera the same habit, an erect shrubby or arborescent growth; alternate, simple, penninerved, exstipulate leaves, with a serration, the points of which are glandulose (a peculiarity which Zuccarini overlooked in *Trochodendron*); leaf and flower-buds are covered with protecting scales; there is an indeterminate (racemose or cymose) inflorescence, and scaly bracts. With regard to the structure of flowers and fruit, both agree in the total absence of a perigonium, in the indefinite number of stamens and their structure, and in the indefinite number of the carpels, and also in the circumstance that they are arranged around the very short floral axis in a single whorl. They have further in common the anatropous ovule, affixed on the ventral suture, with a downwards-bent raphe ("ovulum epitropum," Agardh); and, finally, the same relative size of testa, albumen, and embryo. On the other hand, their differences are such that we can easily find analogues in allied Natural Orders. The polygamous, or rather monoicous nature of *Euptelia*, as contrasted with the hermaphrodite one of *Trochodendron*, we have in a similar manner in the genus *Drimys*, the section *Tasmania* of which agrees in this respect with *Euptelia*. The separation of the carpels in *Euptelia*, whilst they are connate in the ovary of *Trochodendron*, is a common occurrence in all allied Orders. The development of the points of the carpels in a wing, and the indehiscence of the fruit in *Euptelia*, have their analogy in *Liriodendron*, whilst *Trochodendron* would agree with those species of *Talauma* where a septicidal separation of the different carpels is accompanied by a splitting of the ventral suture. The polyspermous condition of *Trochodendron* agrees with *Drimys*, whilst *Euptelia*, with one or a few ovules, reminds us of *Illicium*, the nearest ally of *Drimys*.

Other important differences have not been observed. All this leaves no doubt that the two genera in question are indeed more closely related to each other than they are to any allied Order, and that they possess that degree of affinity which justifies us in regarding them as belonging to one and the same Natural Order."

"Under these circumstances, the establishment of the independent Natural Order *Trochodendrea*, to be ranged with the other *Polycarpeæ*, appears to be perfectly justified, and as, in comparing them with the other *Polycarpeæ*, we have merely to keep in mind the *Magnoliaceæ*, *Winteraceæ*, and *Schizandreaæ*, we obtain absolute differential characters, and a distinct habit. We may be allowed to lay considerable stress upon the want of floral envelopes, this character being constant also in *Euptelia*. We must also attach importance to the epitropous nature of the ovules (to which Agardh justly assigns great systematic value), meeting with it in *Trochodendrea*, and not finding it in the three Orders with which we have compared them. If we add to these the differences which they respectively present, as, for instance, the want of stipules as contrasted with *Magnoliaceæ* (quite apart from the spathe-like development, the lower and higher leaf-formation of this Natural Order), and the want of oil-cells, so widely diffused in the *Winteraceæ* and *Schizandreaæ*, even in their foliage and bark,—if, finally, we take into consideration the distinct habit of the *Trochodendreaæ* as expressed by their *serrated leaves*, we shall have good evidence in favour of the above conclusions."

"It remains for me to express my thanks to Dr. Seemann, for kindly reminding me to examine the structure of the wood of *Euptelia*, with the view of ascertaining how far it agreed with that of *Trochodendron* described in my paper. In complying with his wish, I found that *Euptelia* had the usual structure of deciduous woods,—a close dotted prosenchyma, traversed by numerous net-like vessels without any observable peculiarities, and without any special characteristics agreeing with those of *Trochodendron*. We have here the same evident differences of anatomical structure as in the allied *Winteraceæ* between *Illicium* and *Drimys*, and an additional proof that botanical affinities and internal structure do not always go together."

I. **Sponia**, Comm. mss. ex Lamk. Dict. vol. iv. p. 138; Planch. in Ann. Sc. Nat. 3me Sér. t. x. p. 264. Flores polygami, 3-morphi. Fl. ♂: Perianthium 5-partitum, laciniis æstivatione sub-valvato-induplicatis, marginibus tamen leviter quincunciatim-imbricatis. Antheræ demum exsertæ, loculis basi non conspicue gibbosis, rimis dehiscentiæ introrsis. Fl. ♂: Perianthii fere masculi laciniis minus induplicato-valvatis et minus concavis; cætera ♂ et ♀. Fl. ♀: Perianthii laciniæ vix explanatæ, basi imbricatæ, apicibus non valvato-conniventibus. Bacca minuta, stylis 2 brevibus, plumoso-stigmatosis coronata, perianthio suffulta. Cotyledones falcato-conduplicatæ, carnosulæ, non corrugatæ.—Arbores inermes; foliis trinerviis sæpe canescenti- v. cinereo-pubescentibus, serratis; cymis axillaribus in axillis foliorum adulatorum et novellorum solitariis v. geminis, aliis in ramulo eodem masculis, aliis polygamis; fœmineis sæpius in ramulis propriis; pedicellis conspicue articulatis, articulis a sese invicem facile secedentibus.—Dcne. Descrip. Herb. Timor. p. 170.

Besides the two species enumerated below, there is, in tropical Polynesia, *S. discolor*, Dcne. (*Celtis discolor*, Brongn., *C. orientalis*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 345, et in Parkins. Drawings of Tahit. Plants (ined.) t. 115, "Ea-uhe," Tahitensibus), from the Society Islands (Banks and Solander! Forster! Barclay!).

1. **S. velutina**, Planch. l. c. p. 327; ramis novellis foliisque subtus molliter velutinis, indumento in novellis splendente; foliis ovato-oblongis cuspidatis, basi leviter inæquali cordatis v. rotundatis, margine serratis, supra puncticulis creberrimis asperis; cymis (♂, ♀, ♂ que), breve pedunculatis v. subsessilibus, petiolum æquantibus v. fere duplo superantibus, ∞-floris; floribus ♂ extus sparse pilosulis; bacca ovata, apicem rarius pilis paucis albis conspersa, cæterum glaberrima.—Lakeba (Seemann! n. 563). Also found on Uvea or Wallis Island (Græffe! n. 37), and in the East Indies, the Indian Archipelago, and China.

2. **S. Andersonii**, Planch. l. c. p. 336; ramulis crassis petiolisque tenuiter sericeis, demum cinereo-pubescentibus; stipulis dimidiato-ovato-lanceolatis, petiolum æquantibus; foliis ovato-

oblongis acuminatis, basi æquali v. subæquali leviter cordatis v. rotundatis, crenulato-serrulatis, novellis utrinque sericeis, adultis ovato-glabrescentibus, supra puncticulato-pilosulis (albumen sublævibus); cymis ♂ densifloris, perianthii (fl. ♂) laciniis concavis, conspicue imbricatis; cymis ♀ paucifloris petiolo brevioribus; bacca parva ovata glaberrima.—*Celtis orientalis*, Forst. Prodr. n. 394, et Herb. *C. glabrata*, Soland. Prim. Fl. Ins. Pacif. (ined.) p. 345. Nomen vernac. Tahitense, teste Solander, “Ea-erhe päio.”—Common all over Viti (Seemann! n. 562). Also collected in Tana (W. Anderson, A.D. 1774, Barclay!), Society Islands (Forster! Banks and Solander!), and New Caledonia (M’Gillivray!).

II. **Gironniera**, Gaud. Voy. de la Bonite, t. 85. Flores dioici (? saltem dielines in ramulis diversis). Fl. ♂: Perianthium 4-partitum, laciniis subrotundis æstivatione valde imbricatis. Stamina 4. Fl. ♀: Perianthium maris, sed majus. Nux sicca, lenticularis, adpressa, strigulosula, perianthio persistente suffulta. Styli 2, basi in 1 brevem confluentes, cæterum filiformes, longi, undique papillis piliformibus brevibus stigmatosi, persistentes.—Frutices v. arbores inermes, foliis penninerviis integerrimis v. denticulatis, stipulis liberis majusculis folium terminale gemmaceum densissime sericeum primo velantibus, illo sese explicante, caducis; floribus ♂ minutis in glomerulos (revera cymulas contractas) collectis, glomerulis dispositis in racemum axillarem sæpius ad basin in ramos 3 divisum, alterum brevissimum, 2 inæqualiter elongatos; florum ♀ cyma contracta dein ramosissima v. laxa, subracemiforme depauperata.—*Nemostigma*, Planch. in Ann. Sc. Nat. ser. 3. t. x. p. 265 et 338.

1. **G. celtidifolia**, Gaud. l. c. t. 85; Planch. l. c. 340; arborea; foliis magnis oblongis acute brevique cuspidatis, basi oblique cordatis, margine revoluto remote denticulatis, subtus secus nervos strigosis; nucibus parvis, pluribus in cymam confertissime ramosam densam collectis.—Nomen vernac. Vitiense, “Nunu.”—Island of Ovalau (Seemann! n. 423). Also found in the Philippine Islands (Cuming! n. 870).

The fruit of the Nunu is said to be eaten in famine (see ‘Feejeean and English Dictionary,’ Vewa, Feejee, p. 319).

SUBORDO II. URTICEÆ.

Besides the genera enumerated below, the following have been met with in tropical Polynesia, but as yet not in Viti, viz. 1. *Urtica*, represented by *U. Sandwichensis*, Wedd., in the Sandwich Islands (Macrae!). 2. *Urera*, represented by *U. glabra*, Wedd., in the Sandwich Islands (Captain Cook! Macrae!), and *U. Sandwichensis*, Wedd. (*Villeburnea crenulata*, Gaud. Bonit. t. 92), also a native of the Hawaiian group. 3. *Pilea*, represented by *P. peploides*, Hook. et Arn., in the Sandwich Islands (Seemann! n. 2261, Gaudichaud!). 4. *Lecanthus*, represented by *L. Solandri*, (n. sp.) Seem. in Herb. Mus. Brit. (*Dorstenia oppositifolia*, Sol. Prim. Fl. Ins. Pacif. (ined.) t. 322, et in Parkins. Drawings of Tahit. Plants (ined.) t. 96. Nomen vernac. Tahitense, “Pirhi papa” v. “Pilki pupa,” teste Solander); glabra; foliis ovalibus obtusis integerrimis interdum basi subcordatis; floribus masculis 4-meris (albidis). Tahiti (Banks and Solander!). Seems to be perfectly distinct from the well-known *L. Wrightii*, Wedd. Solander gives the following description of it:—“Planta herbacea, parasitica, supra radices arborum forte annua, tota succulenta, lævis, vix pedalis. Caulis basi sæpe per spatium 3-unciale decumbens, ubi radices fibrosas ∞ subtus excrescens ibique sæpe crassitie digiti minimi, dein erectus, teres, glaber, ramosissimus. Rami oppositi, cauliformes. Folia opposita, petiolata, ovalia, obtusa, integerrima, interdum basi parum cordata, glabra, lævia, succulenta, enervia, uncialia. Petioli foliis duplo breviores. Flores omnes collecti in receptaculo carnosio subrotundo, planiusculo, parum convexo, magnitudine unguis, terminali sessili, sub quo paria 2 suprema foliorum receptaculo adnata quæ involucrum formant. ♂ Flores pauciores in eodem receptaculo cum femineis, sed supra illos elevati, pedicellis filiformibus sæpe 3 lineas longis. Calyx 0. Corolla 1-petala, campanulata, herbacea, subpellucida, sesquilinearis, 4-fida; laciniæ ovatae, apice parum incrassatae, subbicornes; corymbis brevissimis erectis. Filamenta 4, fundo corollæ adnata, filiformia, plana, pellucida, corolla fere duplo longiora, divergentia, ante explicationem geniculo-inflexa duplicata, dein elastica exsiliencia. Antheræ ovatae, didymæ, albidæ.

♀ Flores numerosiores, in eodem receptaculo cum masculis, sessiles. Calyx 2-phyllus seu 2-valvis, valvula exterior multo major, paulo supra lineam longa, erecta, obtusa, carinata, concava, oblonga, apice subfornicata, incrassata, emarginata; interior minima, ovata, concava, pellucida. Corolla 0. Germen superum, ovatum; stylum et stigma non potui videre. Pericarpium 0, sed calyx persistens sub fornice semen recondens. Semen 1, ovatum, acutum, nudum, glabrum, brunneum." 5. *Neraudia*, represented by *N. melastomæfolia*, Gaud., in the Sandwich Islands (Macrae! Seemann! n. 2260), and *N. sericea*, Gaud., in the same islands (Captain Cook!). 6. *Touchardia*, represented by *T. latifolia*, Gaud., a native of the Sandwich Islands; and 7. *Parietaria*, represented by *P. debilis*, Forst., in Norfolk Island (Forster).

III. **Fleurya**, Gaud. Uran. 497; Weddell, Urticac. p. 109. Flores diclini, monoici v. dioici, in glomerulos cymulasve dichotomo-scorpioideas paniculatas aut subdistiche racemosas digesti, ♂ et ♀ in eadem v. in distinctis inflorescentiis nascentes, paniculis racemisve in singulis axillis solitariis, pedicellis florum marium necnon femineorum articulatis. Fl. ♂: Perigonium 4-5-partitum, segmentis ovatis lanceolatisve, glabris aut pubescentibus v. sub apice stimuligeris; alabastro umbilicato. Stamina 4 v. 5. Pistilli rudimentum globosum clavatum v. sublobatum. Fl. ♀: Perigonium 4-partitum v. 4-lobum; segmentis interdum fere æqualibus, sæpe etiam inæqualibus et tunc interioribus (s. lateralibus) quam exteriores multo majoribus oblique ovatis planiusculisque, exteriorum autem altero (scilicet superiore) rotundato subpileato inermi v. pilo urente calcarato, altero (seu inferiore) lanceolato et vix perspicuo. Ovarium initio rectum, dein magis minusve obliquum, ovoideum. Ovulum juxta loculi fundum adfixum, obliquum, funiculo gracili. Stigma sessile, ovatum, lanceolatum v. lineare, persistens et denique uncinatim reflexum, in unica specie basi lacinulis duabus filiformibus auctum. Achæmium oblique ovatum rotundatumve, compressum, margine abrupte acutatum interdumque anguste membranaceo-alatum, in utraque facie sæpissime scrobiculato-concavum tuberculatumque, pedicello obliquissime insidens et perigonio membranaceo parum aucto vestitum. Semen endocarpio conforme. Albumen nisi juxta apicem seminis parcissimum. Embryo cotyledonibus transverse oblongo-rotundis, basi et apice parum emarginatis; radícula conica.—Herbæ annuæ, stimulis armatæ aut fere inermes; foliis alternis, serratis, trinerviis; cystolithis linearibus; stipulis axillaribus, profunde 2-fidis; floribus sæpissime ebracteatis, masculis albidis roseisve, femineis virentibus, fructiferorum mox deciduorum pedicellis cylindricis rariusve laterali-compressis.—*Schychowskia*, Endl. Ann. Wien. Mus. vol. i. p. 187. t. 43.

Besides the following, there is only one other species of this genus in tropical Polynesia, viz. *F. ruderalis*, Gaud. (*F. paniculata*, Gaud. *Urtica ruderalis*, Forst. Prodr. n. 344, et Icon. (ined.) t. 258. *U. lucida*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 434, et in Parkins. Drawings of Tahiti Plants (ined.), t. 99), from the Society Islands (Banks and Solander! Forster!).

1. **F. interrupta**, Gaud. Bot. Voy. Urania, p. 497; Weddell, Urticac. p. 115; stimulosa; caule nonnunquam inter stimulos pilosulo; foliis ovatis, acuminatis, basi subcordatis truncatis v. late cuneatis, crenato-serratis serratisve; floribus monoicis, inflorescentiis androgynis aut unisexualibus? (masculis femineisque conformibus), quam petioli longioribus rariusve brevioribus; perigonio ♀ cupuliformi, 4-dentato, pedicello supra articulationem dilatato; stigmatibus dimidio achænio fere æquilongis, basi 2-brachiatis.—*Urtica pilulifera* et *fatua*, Burm. Thes. Zeyl. 231 et 232. t. 100. f. 1 et 2. *U. interrupta*, Rumph. Amb. vol. vi. t. 20; Linn. Sp. Plant. 1398; Wight, Icon. vol. ii. t. 692; Sol. Prim. Fl. Ins. Pacif. (ined.) p. 325; Parkins. Drawings of Tahiti Plants (ined.) t. 100. *U. æstuans*, Forst. Prodr. n. 342? *U. Javanica*, Blume, Bijdr. 503. *U. affinis*, Hook. et Arn. Bot. Beech. p. 69. *F. spicata*, Gaud. l. c. *F. glomerata*, Gaud. l. c.—Nomen vernac. Vitiense, "Salato ni coro," Tahitense, teste Solander, "Liaco."—In waste places, common in all the Viti Islands, principally near dwelling-places (Seemann! n. 428, Milne!) Also collected in the Society Islands (Banks and Solander! Barclay!), Tongan (Captain Cook!), Salomon (Milne!), and New Hebrides Islands (Anderson! Barclay!). Diffused over New Guinea, the Indian Archipelago, and Abyssinia.

It is probable that *Urtica inermis*, Spreng. Syst. vol. iii. p. 836 (*U. hastata*, Forst. mss. fide Spreng.), overlooked by Weddell, is a synonym of this species.

The "Salato ni coro," as the Vitians term this plant, abounds about towns and villages, hence the specific name "ni coro." The virulence of its sting is not to be compared to that of our European nettles, yet the natives so carefully avoid all contact with it, and ran away in such fright when I gathered specimens of it for my herbarium, that one is tempted to believe their skin more keenly affected by it than ours.

IV. **Laportea**, Gaud. Uran. 498; Weddell, Urticac. p. 121. Flores diclini, dioici v. monoici, glomerulati, glomerulis in inflorescentias paniculiformes semperque unisexuales digestis, paniculis ♀ ac ♂ apud species monoicas ex axillis distinctis ortis, ♂ superioribus; pedicellis florum ♂ articulatis. Fl. ♂: Perigonium 4- v. 5-partitum; segmentis ovatis glabrisque aut magis minusve hispidis, apice membranaceis; alabastro in medio depresso. Stamina 5. Pistilli rudimentum globosum. Fl. ♀: Perigonium 4-partitum v. 4-lobum; segmentatis s. lobis fere æqualibus aut inæqualibus, nempe interioribus sæpe multo majoribus ovatis rotundatisve glabris v. dorso et margine pilosulis exteriorumque altero (denique superiore) latiore rotundato et sæpius cucullato v. pileato, altero lanceolato multo brevior. Ovarium junius rectum, sed mox obliquum, ovoideum. Ovulum erectum v. adscendens, funiculo brevi aut longiusculo suffultum. Stigma sessile, lineare elongatumque v. rarissime breve et oblongum, villosum, in fructu persistens. Achæmium oblique ovatum rotundatumve, raro ventricosum, pericarpio nonnihil succulento, plerumque compressum et haud raro discoideum, margine æquali v. parum incrassato faciebus læviusculis aut rarius granulosis, pedicello plus minus oblique insidens perigonioque membranaceo subimmutato vestitum. Semen pericarpio conforme. Albumen tenue. Embryo cotyledonibus rotundatis, apice subtruncatis; basi emarginatis; radícula conica brevi.—Herbæ perennes aut frutices aut arbusculæ v. arbores, stimulis raris aut crebris armati; foliis alternis aut integerrimis, crenulatis serratisve, penninerviis; cystolithis minutis punctiformibus; stipulis axillaribus, 2-nerviis, integris v. 2-fidis, deciduis; cymis s. paniculis sæpe distiche ramosis; floribus haud raro ebracteatis, ut plurimum virentibus; pedicellis femineorum cylindricis aut varie dilatatis incrassatisve interdumque subfastigiato-coadunatis.—*Dendrocnide*, Miq. Plant. Jungh. 29.

The generic Vitian name of *Laportea* is "Salato." Scraps of two new large-leaved species of this genus, one of which is termed "Mako" by the natives, were collected by the Rev. Mr. Williams, but they are too imperfect to be described.

1. **L. (Sclepsion?) Milnei**, Seem. (n. sp.); arborea; foliis late ovatis acuminatis, 3-plinerviis repando-dentatis, stimulosus demum glabratis; inflorescentiis femineis axillaribus; pedicellis alatis; achænio oblique ovato acuto.—Nomen vernac. Vitiense, "Salato."—Island of Viti Levu (Milne! in Herb. Mus. Brit.).

There is a scrap of this species, at the British Museum, preserved in spirits, and which I take to be the plant Milne alludes to in Hooker's 'Kew Miscellany,' vol. ix. p. 110, where he says, "There is a species of *Urticaceæ* of which the natives are very much afraid; and well they may be, for if you should be so unfortunate as to sting yourself, you will feel the consequences of it for some months. I am at this moment suffering from its effects, of an accident which occurred a month ago. There is no eruption, but [the place where I stung myself] is most painful when exposed to the influence of water. In some places this Nettle is called 'Kau tabua' (? Editor); it is best known as 'Salato.'"

Leaves rather fleshy, 5 inches long, 2½ inches broad. Primary veins, nine on each side of the midrib. Flowers not seen. Ripe achænia about the size of lentils.

2. **L. (Dendrocnide) Harveyi**, (n. sp.) Seem. (Tab. LIX.); arborea; foliis late cordatis v. subpeltatis acuminatis, irregulariter subrepando-dentatis 3-plinerviis, utrinque glabris; cymis pedunculatis, ♀ laxifloris; pedicellis haud dilatatis; perigonio subæqualiter 4-lobo.—Nomen vernac.

Vitiense, "Salato."—Somosomo, Island of Taviuni (Seemann! n. 426) and Nadi, Vanua Levu (Harvey! Sir E. Home! in Mus. Brit.).

A tree, 40 feet high. Stipules large. Petioles 3-4 inches long. Blade of leaf 6-8 inches long, 5-6 inches broad. Panicles axillary, shorter than the leaves.

EXPLANATION OF PLATE LIX., representing *Laportea Harveyi*, Seem.—Fig. 1, perigonium of female flower and pistil; 2, nearly ripe fruit; 3, longitudinal section of the same; 4, longitudinal section of seed; 5, cotyledons and embryo,—all magnified.

3. **L. (Dendrocneide) Vitiensis**, (n. sp.) Seem. (Tab. LX.); arborea, inermis; foliis ovalibus v. ovato-oblongis acuminatis basi cordatis integerrimis penninerviis, supra viridibus, subtus subglauciscentibus, utrinque glaberrimis; cymis paniculæformibus paucifloris; perigonio fl. ♀ lobis ovatis acuminatis pubescentibus; stylo elongato filiformi.—Nomen vernac. Vitiense, "Salato."—Macuata coast of Vanua Levu (Seemann! n. 427).

Allied to *L. photiniphylla*, of Queensland, Australia, but differing by its entire pinnately-veined leaves and large perigonium lobes. The stem is arboreous; leaves on rather short ($1-1\frac{1}{4}$ inch long) petioles. Blade of leaf 6-8 inches long, 3-4 inches broad, pinnately veined, green above, rather glaucous below. Primary veins 8 or 9 on each side of midrib.

EXPLANATION OF PLATE LX., representing *Laportea Vitiensis*, Seem.—Fig. 1 and 2, female flowers; 3, pistil; 4, cross section of ovary,—all magnified.

V. **Pellionia**, Gaud. Uran. p. 494; Weddell, Urticac. p. 282. Flores diclini, dioici, vulgo glomerati v. dense cymoso-paniculati; inflorescentiis sessilibus pedunculatisve, in axillis singulis sæpius solitariis. Fl. ♂: Perigonium 5-partitum; segmentis obtusissimis, margine membranaceis, summo dorso mucronatis, in præfloratione valde imbricatis; alabastro subsphærico, mucronibus distinctis. Stamina 5; lobis antherarum oblongo-reniformibus. Pistilli rudimentum conicum, glaberrimum. Fl. ♀: Perigonium profunde 5-partitum; segmentis æqualibus inæqualibusve, infra apicem mucronatis. Ovarium ellipticum, parum compressum, perigonio brevius. Ovulum imo loculo affixum, erectum, funiculo brevi aut longiusculo sustentum. Stigma sessile, penicillatum. Staminum rudimenta squamiformia, tot quot perigonii segmenta iisque opposita, inflexa. Achæmium late ovatum, magis minusve compressum aut fere cylindricum, læve et punctulato-pictum sæpiusve tuberculatum, perigonio persistente vestitum. Embryo cotyledonibus ut plurimum rotundatis radículaque crassa conica duplo longioribus; albumine parcissimo.—Herbæ, raro suffrutescentes v. frutices, glabræ rariusve villosæ; foliis distiche suboppositis (cujusque jugi altero minimo aut fere inconspicuo) v. (hocce omnino abortiente) alternis, inæquilateralibus (margine lateris angustioris limbi sursum constanter spectante), integerrimis serratisve, penninerviis v. 3-nerviis; cystolithis fusiformibus inspersis; floribus bracteis parvis triangulari-lanceolatis stipatis; glomerulis s. fasciculis involucro vero destitutis.

1. **P. elatostemoides**, Gaud. Bonit. t. 119; Weddell, l. c. p. 286; dioica, glaberrima; foliis suboppositis, admodum disparibus; altero cujusque jugi amplo, suboblique elliptico- v. oblongo-obovato, abrupte acuminato, basi acuto, ultra medium laxè serrato; altero contra minimo, ovato integroque; inflorescentiis ♂; ♀ parvis, sessilibus; perigonii fructiferi segmentis subæqualibus, summo dorso longe aristato-mucronatis; achænio compresso, læviusculo, marmorato.—*Procris rostrata*, Reinw. mss.; Blume, Bijdr. 510. Nomen vernac. Vitiense, teste Williams, "Raula."—Viti Levu, Taviuni, and Ovalau (Seemann! n. 429; Milne! Harvey! Williams!). Also found in the Marquesas (Hombron), New Guinea, and the Moluccas.

2. **P. flicoides**, (sp. nov.) Seem.; fruticosa, erecta; foliis alternis sessilibus parvis lineari-

oblongis v. lanceolatis acutis basi 1-auriculatis obtuse serratis 1-nerviis, supra pubescentibus, demum glabratis, subtus ramulisque sparse pilosis; inflorescentiis axillaribus longe pedunculatis.—*Elatostema filicoides*, Seem. in Bonpl. vol. ix. p. 259. *Pellionia Vitiensis*, A. Gray, mss. in Herb. Hook.—Woods on the banks of the Navua river, Viti Levu (Seemann! n. 421). Also collected by Williams! and Harvey! in Viti.

An erect shrub, 4–5 feet high, much resembling some kinds of Fern in appearance. Stem terete, whitish; branches and leaves distichous. Largest leaves 1–1½ inch long, 3–4 lines broad. My specimens and those of Williams are sterile; those of Harvey, existing at Kew, have imperfect inflorescence, and are mere scraps.

VI. **Elatostema**, J. R. et G. Forst. Char. Gen. 33; Weddell, Urticac. p. 290. Flores diclini, monoici v. dioici, densissime cymoso-capitati, capitulis unisexualibus in singulis nodis solitariis geminisve, bracteato-involucratis rariusve exinvolucratis; receptaculo angusto aut dilatato plano v. concavo (rarissime ficiformi), subcarnoso sæpius regulari. Fl. ♂: Perigonium 4- v. 5-partitum; laciniis infra apicem mucronatis. Stamina 4 v. 5; lobis antherarum oblongis; filamentis inferne perigonio plus minus adnatis. Pistilli rudimentum globosum clavatum conoideumve, glaberrimum. Fl. ♀: Perigonium sæpe minimum aut imperfectum, plerumque 3-, rarius 4–5-phyllum; segmentis lineari-subulatis lanceolatisve, subæqualibus, glabris aut ciliatis. Ovarium ellipsoideum, perigonium vulgo superans. Ovulum imo loculo affixum, erectum, funiculo brevi. Stigma sessile, longiuscule penicillatum, penicillo e papillis seu pilis paucis pluribusve et mox evanescentibus constante. Stamina rudimenta ut plurimum squamiformia, inflexa, tot quot laciniae perigonii. Achænium ovatum v. ellipticum, compressiusculum, læve rariusve sulcatum, sæpissime punctulato-pictum, subnudum; pericarpio tenui fragilique. Embryo ellipsoideus; cotyledonibus ellipticis radiculæ crassæ æquilongis; albumine 0 v. parcissimo.—Herbæ annuæ v. perennes, rarius suffrutices, sæpe radicales, glabræ pubescentesve; foliis distichis, fere oppositis v. sæpius (altero cujusque jugi abortiente) alternis (stipula folii deficientis nihilominus evoluta inflorescentiamque persæpe axillante), inæquilateralibus (margine lateris angustioris limbi sursum spectante), varie dentatis rariusve integris, 3-nerviis v. 3-plinerviis; limbo cystolithis linearibus ut plurimum insperso; petiolo brevi aut fere nullo; stipulis axillaribus, integris; capitulis subsessilibus pedunculatisve; bracteis involucratis magis minusve coalitis rarissime liberis; floribus femineis plerumque pedicellatis; bracteis numerosis lineari-spathulatis et longe ciliatis intermixtis; floribus masculis modo sessilibus, modo pedicellatis; bracteis lineari-oblongis obovatisve stipatis.

E. sessile, Forst. (*Dorstenia pubescens*, Forst. Prodr. n. 59. *D. serrata*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 320. *Procris sessilis*, Hook. et Arn. Bot. Beech. p. 70), will probably be also met with in Viti, as it has been detected in the Samoan (Powell!) and Society Islands (Forster! Banks and Solander!), in Lord Howe's Island (Milne! M'Gillivray!), New Holland, Java, Philippine Islands, and Bootan.

1. **E. nemorosum**, (n. sp.) Seem. (Tab. LXI.); hirsutum; caule erecto crasso suffruticoso; foliis alternis amplis obovatis acuminatis in petiolum alatum basi 1-auriculatum attenuatis, ab ima basi usque ad acumen grosse et inæqualiter serratis, penninerviis, subtus in nervis hirsutissimis; stipulis magnis lanceolatis persistentibus; capitulis brevissime pedunculatis; receptaculo inflorescentiæ ♂ discoideo.—Island of Taviuni (Seemann! n. 422).

One of the largest species of the genus, which must be placed amongst Weddell's first ten species. Stem erect. Largest leaves from 12–15 inches long, and from 4–5 inches broad. Primary veins of blade 12–15 on each side of the midrib. Male flower-heads not seen. Female flower-heads with a disk-like receptacle. Bracts long, linear, acute. Female flowers pedicellate. Lobes of perigone linear.

EXPLANATION OF PLATE LXI., representing *Elatostema nemorosum*, Seem.—Fig. 1 and 2, female flowers and bracts; 3, female flower,—all magnified.

2. **E. macrophyllum**, Brongn. Bot. Voy. Coq. 207. t. 45; Wedd. Urticac. p. 300; caule breviter et subadpresse pubescente; foliis magnis oblique oblongis v. obovato-oblongis, breviter acuminatis, deorsum cuneatis acutatisque, supra basin v. partem tertiam dimidiumve inferiorem limbi inæqualiter serratis v. sinuato-serratis, penninerviis, pagina superiore glabra, inferiore sparsim subtiliterque pubescente v. glabrata, nervis villosis pilosisve; stipulis lanceolatis, majusculis; capitulis ♂ breviter pedunculatis.—*E. spectabile* et *E. paludosum*, Miq. Fl. Jungh. 19. *E. pedunculatum*, Miq. l. c. *E. nigrescens*, Miq. in Zoll. Syst. Verzeichn. 401.—Viti, locality not specified (Harvey!). Also found in Amboyna and Java.

Allied to, but very distinct from *E. nemorosum*, Seem.

VII. **Procris**, Commers. mss. ex Juss. Gen. Pl. 403; Weddell, Urticac. p. 333. Flores monoici, ♂ glomerati (glomerulis [raro capituliformibus] cymosis), ♀ in receptaculum carnosum globosum v. clavatum densissime aggregati; cymis capitulisque (ebracteatis) solitariis. Fl. ♂: Perigonium 5-partitum; laciniis obovatis, carnosulis, muticis. Stamina 5. Pistilli rudimentum globosum v. obovatum. Fl. ♀: Perigonium 3–4-phyllum; segmentis obovatis, cucullatis, carnosulis. Ovarium ovatum, perigonio brevius. Ovulum imo loculo affixum, funiculo brevi fultum. Stigma sessile, longe penicillatum, mox evanidum. Staminum rudimenta 0? Achænium ovatum v. ellipticum, subbaccatum, striolato-pictum, perigonii laciniis carnosis obtectum; capitulo fructifero demum fragariiformi. Embryo turbinatus, cotyledonibus late ellipticis radícula conica longioribus; albimine parcissimo v. deficiente.—Suffrutices fruticesve, erectiusculi v. adscendentes, sæpius glabri; foliis distichis, inæquilateralibus et valde inæquimagnis (folio nempe majore in utroque latere caulis cum folio abortivo seu bracteiformi alternante) integerrimis v. sinuato-dentatis, penninerviis; cystolithis linearibus minimis inspersis; stipulis axillaribus integris; capitulis femineis sessilibus aut pedunculatis; floribus bracteis lineari-spathulatis apice glandulosis stipatis; cymulis masculis pedunculatis, pedicellis ebracteatis.—*Sciophila*, Gaud. Bot. Uran. 493.

1. **P. Cephalida**, Comm. mss. cum icon.; Poir. in Lamk. Encycl. vol. iv. p. 629; Weddell, l. c. p. 334; foliis majoribus, oblique lanceolatis v. oblongo-lanceolatis, acuminatis; basi acutis, integerrimis aut prope apicem obsolete sinuato-serratis; floribus ♂ glomeratis, glomerulis cymosis; bracteis parum conspicuis; capitulis ♀ solitariis sessilibusque.—*Elatostema pedunculatum*, J. R. et G. Forst. Char. Gen. Pl. Ins. Austr. 53. *E. lucidum*, Eorund. ex Guillemain in Ann. Sc. Nat. ser. 2. vol. vii. p. 184; Pers. Synops. vol. ii. p. 557. *E. sessile*, Forst. mss. in Herb. Mus. Par. *E. succosum*, Miq. Pl. Jungh. p. 23. *Dorstenia lucida*, G. Forst. Prodr. n. 58; Parkins. Drawings of Tahit. Plants, (ined.) t. 95. *Procris lucida*, Spreng. Syst. Veg. vol. iii. p. 846. ? *P. longifolia*, Blume, Bijdr. 508. *P. integrifolia*, Hook. et Arn., non Don. *Urtica salicifolia*, Vahl, mss. in Herb. Juss. *Bæhmeria Cephalida*, Pers. Synops. vol. ii. p. 556. Nomen vernac. Tahitense, teste Solander, "Mahainui Pipi-Mate."—Island of Taviuni (Seemann! n. 430). Also collected in the Society Islands (Banks and Solander!) and Norfolk Island (Bauer!). Distributed over Java, Timor, and Madagascar.

VIII. **Bæhmeria**, Jacq. Stirp. Amer. Hist. 216; Weddell, Urticac. p. 313. Flores monoici v. dioici, glomerati (glomerulis axillaribus spicatis paniculatisve), ♂ et ♀ discreti, bracteis brevibus scariosis stipati. Fl. ♂: Perigonium 4-partitum v. 4-lobum, rarissime 3- aut 5-partitum; segmentis ovatis subacuminatis v. infra apicem breviter mucronatis, in præfloratione valvatis. Stamina tot quot perigonii segmenta. Pistilli rudimentum clavatum v. fere globosum, glaberrimum aut basi breviter lanatum pilosulumve. Fl. ♀: Perigonium tubulosum, compressum v. magis minusve ventricosum, ore sæpius contracto 2–4-dentato. Ovarium inclusum, a perigonio discretum v. eidem

plus minus cohærens, sessile v. pedicellatum. Ovulum imo loculo v. juxta fundum loculi funiculo brevi affixum, erectum aut adscendens. Stigma elongato-filiforme, cum summo ovario continuum, altero latere papillosum. Achænium ovario subconforme, perigonio marcescente inclusum eique haud raro cohærens; pericarpio crustaceo, tenui v. nucamentaceo ut plurimum fusco. Albumen varium, sed nunquam deficiens. Embryo cotyledonibus ellipticis radícula conica sæpius paulo longioribus.—Frutices arbusculæ v. suffrutices, plerumque sylvicoli, sæpius magis minusve pubentes; foliis oppositis aut alternis, homomorphis æquilateralibusque v. dimorphis et interdum inæquilateralibus, varie dentatis, rarissime 2-lobis, 3-nervibus, lævibus rugosisve, petiolatis; cystolithis punctiformibus parum conspicuis; stipulis axillaribus, plerumque liberis v. basi tantum coalitis, rarissime in unam integram connatis, vulgo deciduis.—*Splitgerbera*, Miq. Comm. Phyt. p. 134.

Besides the following species, there are, in tropical Polynesia,—1. *B. australis*, Endl. (*Procris splendens*, Lindl. Veg. Kingd. ed. 2. f. 175), from Norfolk Island; and 2. *B. stipularis*, Weddell (*Urtica grandis*, Hook. et Arn.), from the Hawaiian Islands (Lay and Collie!).

1. **B. platyphylla**, Don et Hamilt. Prodr. Fl. Nepal. p. 60, non Sieb. et Zucc.; Weddell, Urticac. p. 364; monoica v. dioica?; foliis oppositis v. superioribus haud raro alternis, fere isomorphis, ovatis ellipticis rotundatisve, in eodem jugo æqualibus v. inæquimagnis, acuminatis, varie dentatis, planis aut magis minusve rugosis, plerumque hispida, hirtellis pubescentibusve, rarius tomentosis, rarissime omnino glabratis; stipulis liberis; spicis 1-sexualibus androgynisve, simplicibus v. ramosis fere semper aphyllis, longitudine quam maxime varia, erectis patulis pendulisve, glomerulis ♀ approximatis v. sæpius discretis; perigonio fructifero elliptico obovato v. rotundato, plus minus compresso aut inæqualiter angulato, sæpius obtuse marginato, pilis rectis v. quibusdam uncinatis hispido.—*Urtica virgata*, Forst. Prodr. n. 345; Soland. Prim. Fl. Ins. Pacif. (ined.) p. 323; Parkins. Drawings of Tahit. Plants (ined.) t. 98. *Bæhmeria virgata* et *B. interrupta*, Guill. in Ann. Sc. Nat. ser. 2. vol. vii. p. 182. *B. Taitensis*, Weddell, l. c. 200. Nomen vernac. Tahitense, teste Solander, “E Whaidoa” v. “E Whairhoa.”—Common in all the Viti Islands (Seemann! n. 432 et 433; Milne!). Also collected in the Society Islands (Banks and Solander! Forster!) and New Caledonia (Vieillard!).

IX. **Cypholophus**, Weddell, Urticac. p. 433. Flores monoici aut dioici, densissime glomerati bracteolisque scariosis suffulti, glomerulis semper 1-sexualibus axillaribus, ♀ demum amplexicaulibus. Fl. ♂: Perigonium 4-partitum; segmentis sub apice acuto-mucronatis, in præfloratione valvatis. Stamina 4. Pistilli rudimentum obovatum, glabrum, basi pilis paucis stipatum. Fl. ♀: Perigonium tubuloso-ventricosum; ore contracto 4-dentato. Ovarium inclusum, oblongum, a perigonio discretum, sessile. Ovulum suberectum. Stigma filiforme, cum apice ovarii continuum, valde incurvum, superne longiuscule pilosum seu fere plumosum. Achænium obovatum ellipticumve aut lenticulare; perigonio carnuloso arcte inclusum; pericarpio crustaceo, pariete superiore sæpius admodum incrassato. Albumen satis copiosum. Embryo cotyledonibus ellipticis, radícula cylindrica obtusa paulo longioribus.—Frutices, foliis oppositis, nonnunquam inæquilateralibus et subheteromorphis, serratis, sæpe rugosis, petiolatis; cystolithis punctiformibus; stipulis liberis axillari-lateralibus deciduis.

1. **C. macrocephalus**, Weddell, Urticac. p. 434. tab. xii. C (Tab. LXII.); monoicus v. dioicus; foliis in eodem jugo inæquimagnis sæpiusque heteromorphis, oblique ovatis, ellipticis, lanceolatis oblongisve, plerisque acuminatis, basi rotundatis obtusis aut acutatis, folio minore cujusque jugi sæpe subcordato, crenulato-serratis v. serratis, rugosis, supra hispida demumque asperatis aut lævisculis, subtus in nervis molliter pilosis, intervenio haud infrequenter tenuiter canescenti-tomentoso.—*Bæhmeria Harveyi*, Seem. in Bouplandia, p. 259, et in tab. nostr. n. LXII. *Fleurya* (?) *rugosis-*

sima, Miq. Fl. Néerl. Ind. Suppl. vol. i. p. 412. Nomen vernac. Vitiense, "Rere;" Samoëense, teste Powell, "O le Tau pata."—Viti Levu, Kadavu, Ovalau, and Gau (Seemann! n. 431; Græffe! n. 20; Harvey! Milne!). Also found in the Samoan (Powell!), Society (Banks and Solander!), Philippine (Cuming! n. 768), and Malayan (Cuming! 1839) Islands. Teijsmann collected it in Sumatra.

Extremely variable in leaf, but easily known from most other *Urticeæ* by the rugose surface of the blade. According to Powell, the bark is made by the Samoans into the fine white mats called by them "Sialoa" and "Jesina." W. T. Pritchard, in his 'Polynesian Reminiscences,' edited by me (p. 131), says, "The articles of clothing most highly valued by the Samoans are their 'je-toga,' or fine mats. They are a medium of exchange and standard of wealth. When they change hands, the history is related with solemn precision; and age enhances their value. These mats are made of the leaves of a *Pandanus* They are the work of women, and it often takes two or three years to make one. Another mat, which takes as much time to make, though it is somewhat less valued, is the 'je-sina,' made of the bark of the *Hibiscus tiliaceus* [should be *Cypholophus macrocephalus*, B.S.]. The strips of bark are soaked, bleached, plaited, and left shaggy on one side of the mat, while the other side is made smooth. These and the fine mats are worn only on the occasions of the meetings of great chiefs for public purposes, or at marriages of great chiefs."

EXPLANATION OF PLATE LXII.—Fig. 1, bud of male flower; 2, male flower open; 3, head of female flowers; 4, female flower; 5, pistil,—all magnified.

X. **Pipturus**, Weddell, Urticac. p. 444. Flores dioici, ♂ glomerati, ♀ capitati, bracteis parvis hirtis stipitati, glomerulis axillaribus v. interrupte spicatis, spicis interdum distiche ramosis. Fl. ♂: Perigonium 4-5-lobum; lobis ovatis acutis. Stamina tot quot perigonii segmenta. Pistilli rudimentum clavatum, lanatum. Fl. ♀: Perigonium ovatum, ventricosum, sensim attenuatum, sæpe cano-tomentosum, ore contracto, limbo minimo 4-5-denticulato. Ovarium perigonio conforme eique concretum. Ovulum e basi loculi erectum, funiculo brevi sustentatum. Stigma elongato-filiforme, hinc villosum, cum ovarii apice articulatum; basi glabrum breviterque insertum, caducissimum. Fructus ventricosus, e pericarpio nucamentaceo perigonio baccante (?) vestito constitutus. Embryo cotyledonibus ellipticis ovatisve radícula paulo longioribus; albumen parcum.—Frutices v. arbores glabriusculi v. sæpius magis minusve tomentosi; foliis alternis homomorphis æquilateralibusque integris v. dentatis, subtus sæpe canescentibus 3-nervibus, petiolatis; cystolithis punctiformibus; stipulis in unam axillarem profunde 2-fidam connatis; receptaculo capituli feminei demum carnosum.—*Bœhmeria* et *Urticæ* sp., Auct. *Nothocnide*, Blume, Mus. Lugd. Bat. vol. ii. f. xiv.

Besides the following species we have, in tropical Polynesia, *P. albidus*, A. Gray (*Bœhmeria albida*, Hook. et Arn.), which is restricted to the Hawaiian Islands (Menzies! Macrae! Seemann! Barclay!), and could therefore not retain the erroneous geographical name (*P. Taitensis*) which Weddell gave to it. It is very common in Oahu (Seemann! n. 1712), where it is called "Mamaki," and where its bark is used for the manufacture of native cloth, specimens of which I sent to the Kew Museum. (See Seemann's 'Narrative of the Voyage of H.M.S. Herald,' vol. ii. p. 86.)

1. **P. velutinus**, Weddell, Urticac. p. 446; ramulis breviter incano-tomentosis v. pubescentibus; foliis amplis late ovatis subabrupte acuminatis, basi cordatis v. rotundatis, crenulatis serrulatisve, supra hispidis aut glabratis, glomerulis in spicas laxè paniculatas dispositis.—*Urtica cinerascens*, Vent. mss.; Poir. ? Encycl. Suppl. vol. iv. p. 224. *U. pellucida*, Labill. Sert. Austr. Calcd. p. 79. t. 80. *U. incana*, Blume, Bijdr. p. 497. *Bœhmeria velutina*, Dene. Herb. Timor, p. 163. *B. incana*, Hassk. Cat. Hort. Bogor. p. 79; ejusd. Plant. Jav. Rar. 207; Miquel, Plant. Jungh. 36. *Urtica argentea*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 345, et in Parkins. Drawings of Tahit. Plants (ined.), t. 101 et 102. Nomen vernac. Tahitense, teste Solander, "Eroha" v. "Erowha."—Island of Gau (Milne!). Also found in the Society (Lesson, D'Urville, Banks and Solander!), Tongan (Captain Cook!), and Marquesas Islands (Barclay!); in the Isle of Pines, off New Caledonia (M'Gilivray!), Java, Timor, and Amboyna.

A shrub, 10–12 feet high, of which Solander writes, “Cortex hujus fruticis fila subministrat tenacissima, e quibus retia fabricant et linteas piscatorias omnibus aliis et jam optimis nostris cannabinis tenaciores; unde omnia ex hac cortice conferta care venduntur.”

2. **P. propinquus**, Weddell, *Urticac.* p. 447; ramulis breviter incano-tomentosis v. pubescentibus; foliis minoribus breviusque petiolatis ovatis v. elliptico-lanceolatis, rarius cordatis acuminatis v. sensim attenuatis acutisque, adultis supra glabratis lævibusque; glomerulis axillaribus aut plerisque in spicas simplices interruptas et nonnunquam apice foliosas dispositis.—*Urtica argentea*, Forst. Prodr. n. 343. *U. cinerascens*, Blume, Bijdr. 497. *U. albido-punctata*, Steud. Nomencl. vol. ii. p. 734. *Bæhmeria propinqua*, Dcne. Timor, l. c. *B. Candolleana*, Gaud. Uran. t. 148. *Pipturus Candolleanus*, Weddell.—Viti, locality not specified (Harvey!). Also found in the Tongan Islands (Forster!), Aneitum (M'Gillivray!), Java, the Mariannes, Timor, and Queensland.

XI. **Missiessya**, Gaud. Bonit. t. 93; Weddell, *Urticac.* p. 465. Flores ut plurimum dioici, ♂ glomerulati, feminei receptaculo globuloso sessiles v. breviter pedicellati denseque aggregati, capitulis in axillis foliorum sæpius geminis raro corymbulosis aut irregulariter cymosis. Fl. ♂: Perigonium 4–5-partitum; segmentis ovatis acutis in præfloratione valvatis, alabastro acutiusculo. Stamina 4 v. 5. Pistilli rudimentum conicum, lanatum v. glabrum. Fl. ♀: Perigonium liberum, breve, cupuliforme, breviter et plerumque obtuse 4–5-dentatum. Ovarium oblique elliptico-ovatum, subcompressum, glabrum v. superne et margine strigillosum. Ovulum imo loculo funiculo brevi affixum, micropyle sæpius infundibuliformi-ampliata fimbriataque et summo loculo cohærente. Stigma penicillato-capitatum v. subpeltatum, longe papillosum. Fructus subexsuccus, pericarpium nempe strato extimo vix carnosulo, intimo chartaceo. Semen pericarpium cavitati conforme; testa tenuissima. Embryo cotyledonibus ellipticis radícula cylindrica crassiusculaque vix longioribus; albumine parco.—Arbusculæ v. frutices; foliis distiche alternis, subæquilateralibus, conspicue v. subobsolete serratis, 3-nerviis, subtus canescenti-tomentosis; cystolithis punctiformibus; stipulis in unam axillarem 2-fidam connatis; glomerulis masculis bracteatis; pedicellis florum femineorum teretibus v. superne incrassatis bracteolatis; receptaculo fructifero carnosulo.—*Leucosyke*, Zoll. et Moritz.

1. **M. corymbulosa**, Weddell, *Urticac.* p. 475; foliis ovato-lanceolatis ovatisve, acuminatis, acutissimis, supra basim obtusatam rotundatamve argute serrulatis; pagina superiore adpresse puberulis læviusculisque aut asperulis, inferiore cinereis albidisve; stipulis lanceolatis, cito deciduis; capitulis sæpius pluribus in singulis axillis, pedunculatis, corymbulosis.—Nomen vernac. Vitiense, “Matadra.”—Growing as underwood in Viti Levu, Gau, and Taviuni (Seemann! n. 424, Milne! Home!).

A straggling shrub, having slender branches. It attains 6–8 feet in height, has leaves somewhat resembling those of the Elm, but white underneath, and minute flowers and fruits arranged in small corymbs. Some of the white residents in Viti have drunk a decoction of the leaves without perceiving it to be different from Chinese tea. The natives do not seem to employ the plant in this way.

XII. **Maoutia**, Weddell in Ann. Sc. Nat. Ser. 4. vol. i. 193, et *Urticac.* p. 476. Flores monoici v. dioici, glomerulati, glomerulis laxè irregulariterque cymosis; cymis in axillis singulis sæpius geminis. Fl. ♂: Perigonium 5-partitum; segmentis ovatis, subacuminatis, extus hispidulis, in præfloratione valvatis; alabastro brevissime acuminato. Stamina 5. Pistilli rudimentum obovoideum, in lana densa nidulans. Fl. ♀: Perigonium deficiens. Ovarium ovoideum, rectum, setosum aut subadpresse hispidum. Ovulum imo loculo affixum, suberectum. Stigma stylo brevi suffultum, laterale, lanceolatum v. subcapitatum, persistens, papillis brevibus elongatisve instructum. Achænium ovatum, interdum obtuse 3-gonum, hispidum v. longiuscule setosum; pericarpium strato extimo carno-

sulo, intimo osseo s. nucamentaceo magis minusve compresso et nonnunquam crasse marginato. Semen ellipticum, compressum, pericarpium cavitatem implens. Albumen tenue. Embryo cotyledonibus ellipticis oblongisve radícula tereti et gracili paulo longioribus.—Frutices; foliis alternis, crenulatis serratisve, 3-nerviis, subtus cano-tomentosis; cystolithis punctiformibus; stipulis axillaribus, sæpius profunde 2-fidis; glomerulis basi bracteatis; floribus femineis omnino nudis v. bracteolis parvis stipatis.—*Lecanocnide*, Blume, Mus. Bot. Lugd. Bat. vol. ii. f. xii.

1. **M. australis**, Weddell, Urticac. p. 480; sæpius dioica; foliis ovatis v. elliptico-ovatis lanceolatisve, anguste acuminatis; basi acutis obtusatis rotundatisve, acumine basique exceptis grossiuscule crenato-serratis serratisve, siccitate plerumque subcoriaceis, planis rugosulisve, junioribus supra sparsim pilosulis et mox fere omnino glabratis lævibusque, subtus niveo-tomentosis, nervis adpresse pubescentibus; achæniis breviter rostratis, inferne et in angulis præsertim patule v. subadpresse setosis; stigmatibus obliquo, subrecurvo.—*Urtica candicans*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 326.—Nomen vernac. Vitiense, teste Williams, "Dagasele;" Samoëcense, teste Powell, "O le Taunuta."—Viti Levu, Taviuni, Narai, Matuka, Ovalau, and Vanua Levu (Seemann! n. 425; Milne! Harvey!). Also collected in the Samoan (Powell!) and Society Islands (Banks and Solander! Bidwill!).

SUBORDO III. MOREÆ.

All the Polynesian genera of this suborder are represented in Viti.

XIII. **Morus**, Tournef. Inst. t. 362; Linn. Gen. n. 1055; Endl. Gen. n. 1856. Flores monoici, dense spicati. Fl. ♂: Perigonium 4-partitum, laciniis ovatis æstivatione imbricatis, demum patentibus. Stamina 4, perigonii laciniis opposita; filamenta filiformi-subulata, transversim rugosa, elastica; antheræ introrsæ, 2-loculares, dorso affixæ. Ovarii rudimentum. Fl. ♀: Perigonium 4-phyllum, foliolis ovatis concavis oppositis, exterioribus majoribus. Ovarium sessile, ovatum, 2-loculare, loculo altero minore. Ovula in loculis solitaria, dissepimento prope apicem affixa, amphitropa, micropyle supera. Stigmata 2, terminalia, elongato-filiformia, intus villosa. Achenium membranaceum v. subcarnosum, 1-loculare, 1-spermum, perigonio immutato stipatum v. eodem baccante inclusum. Semen pendulum, uncinatum, testa dura fragili. Embryo in centro albuminis carnosissimi homotropus, uncinatus; cotyledonibus oblongis, incumbentibus; radícula longiuscula, umbilico contigua, supera.—Arbores v. frutices lactescentes; foliis alternis, integris v. lobatis, stipulatis; spicis axillaribus solitariis, masculis elongatis, femineis brevibus ovatis v. subglobosis, fructibus nonnullarum edulibus.

Morus insularis, Spreng. Syst. vol. i. p. 492 (foliis oblongis obtusis basi attenuatis integerrimis triplicinerviis glaberrimis), from the Marquesas (Forster ex Spreng.), placed by Sprengel in Tetrandria Digynia, I take to be a Menispermaceous-looking plant, which was collected by Forster in that group of islands, but is not named by him in his collection at the British Museum. Mr. Miers, whose attention I drew to it, holds it to be no *Menispermacea*, but a *Euphorbiacea*.

M. pendulina, Endl., has been collected in Norfolk Island and the Hawaiian group (Remy, 203, 204).

1. **M. Indica**, Rumph. Herb. Amb. Auct. 5; Wight, Icon. vol. ii. tab. 677; fruticosa; foliis cordato-ovatis (rarius 5-lobis) longe acuminatis inæqualiter serratis glabriusculis; spicis ovalibus. Roxb. Fl. Ind. vol. iii. p. 396.—Cultivated in Bau, off Viti Levu (Seemann! n. 434), also in the Sandwich Islands (Seemann! Barclay!), Tranquebar (Soc. Unit. Frat. in Herb. Mus. Brit.), and India (Royen!).

This species is much cultivated in India for feeding silkworms. In the Sandwich Islands it is termed

“Kilica,” and its fruit, which when ripe is black, but inferior in flavour to any of the mulberries cultivated in Europe, is eaten. The foliage is small, yet in the Sandwich Islands a plant of eight months’ growth, taken from the fields at random, produced three pounds and a half of leaves, and within six weeks after being wholly stripped, it had so much recovered that it could not be distinguished from those which had not been so treated. By some oversight this species is omitted in H. Mann’s excellent ‘Enumeration of Hawaiian Plants.’

XIV. **Broussonetia**, Vent. Tab. du Règne Végét. vol. iii. p. 547; Endl. Gen. n. 1858. Flores dioici. Fl. ♂ dense spicati, bracteati. Perigonium 4-partitum, laciniis ovatis acuminatis, æstivatione imbricatis, demum patentibus. Stamina 4, perigonii laciniis opposita; filamenta filiformi-subulata, elastica; antheræ introrsæ, 2-loculares, dorso affixæ. Fl. ♀ super receptaculum globosum dense capitato-congesti, squamis pilosis (floribus abortivis) mixti. Perigonium urceolatum, 3-4-dentatum. Ovarium ovatum, 1-loculare, gynophoro clavato demum elongato oblique impositum. Ovulum 1, parietale, amphitropum, micropyle supera. Stylus filiformis, excentricus, hinc stigmatosus. Achenium subcarnoso-gelatinosum, gynophoro baccato basi perigonio cincto longe exserto elevatum, ejusque marginibus inæqualiter productis inclusum. Semen pendulum, uncinatum; testa tenuissime membranacea. Embryo intra albumen parvum carnosum homotropus, uncinatus; cotyledonibus oblongis incumbentibus; radícula umbilico contigua, supera.—Arbores lactescentes; foliis alternis, integris v. lobatis.—*Papyrius*, Lam. t. 762.

1. **B. papyrifera**, Vent. l. c.; foliis 3-5-lobis adultioribus subrotundo-ovatis indivisis, supra scabris, subtus villosis.—*Morus papyrifera*, Linn. Sp. Plant. 1899.—Nom. vernac. Vitiens., “Ai Masi” et “Malo;” Hawaiense, “Wauke;” Tahitense et N. Zeland. “Auti.”—Cultivated throughout Viti (Milne! Seemann!). Also collected in the Hawaiian Islands (Macrae! Seemann! n. 1711), New Zealand, Northern Island (Banks and Solander! in Mus. Brit.), Tonga (Sir E. Home!), Society Islands (Capt. Cook!), and Formosa (Oldham!).

When Captain Cook discovered New Zealand, he found the paper mulberry cultivated in the Northern Island, but only to a limited extent, under the Tahitian name of “Auti” (identical, making allowance for dialectic changes, with the Sandwich Island name “Wauke”). The specimens collected on that occasion by Banks and Solander are at the British Museum. Since the introduction of cheap clothing, the cultivation of the plant in New Zealand has almost entirely ceased; and Colenso doubts whether it is cultivated at all at the present day; whilst Dr. Hooker, in his ‘Flora of New Zealand,’ does not even allude to it. The Vitiian name, “Ai Masi,” has evidently no connection with the more general Polynesian; and Viti may therefore have received the plant from another source. The cultivation of the plant does not seem to extend further westward towards the New Hebrides, New Caledonia, and the Loyalty group; nor does it seem to be in vogue amongst the islands of the Indian Archipelago and in India. I believe nowhere in Polynesia has the plant been found truly wild, and the question naturally arises, whence was it derived? It is said to be indigenous in Japan, and the manufacture of the bark into paper by the Japanese was described by Kämpfer (Am. ex. Fasc. vol. ii. p. 471), and also by Thunberg (Fl. Jap. p. 72). But the process of boiling the branches, practised by them, is never resorted to in any part of Polynesia; and none of the Japan names (Sjo, Ri, Kaadsi, Kaasi, and Kansi) are much like the Polynesian.

Materials for the scanty clothing worn by the Fijians are readily supplied by a variety of plants, foremost amongst which stands the Malo or Paper Mulberry (*Broussonetia papyrifera*, Vent.), a middle-sized tree, with rough trilobed leaves, cultivated all over Fiji. On the coast, the native cloth (Tapa*) and plaitings are gradually displaced by cheap cotton prints introduced by foreign traders,—a fathom of which is considered enough for the entire dress of a man. In the inland heathen districts the boys are allowed to run naked until they have attained the age of puberty and publicly assumed what may be termed their *toga virilis*—a narrow strip of native cloth (Malo) passing between the legs, and fastened either to a waistband of string or to a girdle formed by one of the ends of the cloth itself. The length of the Tapa hanging down in front denotes the rank of the wearer; the lower classes not having it longer than is absolutely necessary for the purposes of securing it to the waistband, whilst the chiefs let it dangle on the ground,

* Tapa = Kapa of some dialects, I take to mean originally “covering;” Atap, the name for *thatch* in the Indian Archipelago, doubtless belongs to the same set of words.

and when incommoded by it in walking, playfully swing it over their shoulder. In the Christianized districts of the coast, a piece of Tapa, at least two yards long and one yard broad, is worn around the loins, and distinguished persons envelope their body in pieces many yards long, and allow long trains to drag after them on the ground. A fine kind of Tapa (Sala) is worn in the shape of a turban by those who still adhere to the old custom of letting their hair grow long. From a laudable desire to promote cleanliness the missionaries have pronounced against long hair and the use of the Sala, but in doing so they deprived the natives of a capital protection against the sun; the immense mass of hair curled and frizzled to make it stand off many inches, and covered with a piece of snow-white Tapa, must have kept the head cool. Now most of the Christian natives move about without any covering for their head, and with their hair cut short, which, in a tropical climate, cannot improve their mental power. The abolition of the old custom might have proved more beneficial, if immediately followed by the substitution of some kind of head-dress. The manufacture of native cloth is entirely left to women in places not inhabited by great chiefs, probably because the noise caused by the beating out of the cloth is disliked by courtly ears. The rhythm of Tapa-beating imparts, therefore, as thoroughly a country air to a place in Fiji as that of threshing corn does to our European villages. The Masi tree is propagated by cuttings, and grown about two or three feet apart, in plantations resembling nurseries. For the purposes of making cloth it is not allowed to become higher than about twelve feet, and about one inch in diameter. The bark, taken off in as long strips as possible, is steeped in water, scraped with a conch shell, and then macerated. In this state it is placed on a log of wood, and beaten with a mallet (Ike), three sides of which have longitudinal grooves, and the fourth a plain surface. Two strips of Tapa are always beaten into one with the view of strengthening the fibre—an operation increasing the width of the cloth at the expense of its length. It is easy to join pieces together, the sap of the fibres being slightly glutinous; and in order to make the junction as perfect and durable as possible, a paste is prepared of arrowroot, or a glue of the viscid berries of the Tou (*Cordia Sprengelii*, DC.). I have seen pieces of native cloth, intended for mosquito curtains and screens, which were nearly one hundred feet long and thirty feet broad. Most of the cloth worn is pure white, being bleached in the sun as we bleach linen; but printed Tapa is also, though not so frequently, seen, whilst that used for curtains is always coloured. Their mode of printing is by means of raised forms of little strips of bamboo, on which the colour is placed, and the tops pressed; indeed, the fundamental principle is the same as that of our printing books, the little strips of bamboo standing in the place of our types. The chief dye employed is the juice of the Lauci (*Aleurites triloba*, Forst.), and the pattern, though rudely executed, often displays much taste. It is stated that in times when the Malo plantations have failed to produce a sufficient quantity of raw material, recourse is had to the Baka (*Ficus obliqua*, Forst.); but this is only a makeshift, whilst the bark of the Breadfruit-tree seems never to be resorted to in Viti as in other parts of Polynesia.

XV. **Ficus**, Tournef. Inst. t. 420; Linn. Gen. n. 1168; Endl. Gen. n. 1859. Receptaculum carnosum, clausum, globosum v. pyriforme, basi squamoso-bracteatum, ore squamulis clauso. Flores ∞ , minimi, in superficie interna receptaculi pedicellati, conferti, dioici v. superiores σ , reliqui ρ . Fl. σ : Perigonium 3-partitum. Stamina 3, perigonii laciniis opposita; filamenta capillaria; antheræ introrsæ, 2-loculares, incumbentes. Fl. ρ : Perigonium 5-fidum, tubo in pedicellum decurrente. Ovarium gynophoro brevi sublateraliter impositum, 1-loculare. Ovulum unicum, parieti styligero appensum, amphitropum, micropyle supera. Stylus lateralis gynophoro continuus, filiformis; stigmatibus breviter 2-fido. Receptaculum fructiferum, succulentum, utriculis membranaceis exaridis, perigonii rudimentis stipatis foetum. Semen parietale, uncinatum; testa dura fragili. Embryo in centro albuminis carnosissimi homotropus, uncinatus; cotyledonibus ellipticis incumbentibus; radícula elongata, umbilico contigua, supera.—Arbores interdum excelsæ v. frutices scandentes lactescentes; foliis alternis, integerrimis v. lobatis, stipulatis, stipulis magnis convolutis, gemmas terminales velantibus, deciduis v. persistentibus, receptaculis axillaribus solitariis v. confertis, rarissime terminalibus racemosis.

Amongst Forster's plants at the British Museum there are no authentic specimens or drawings of *Ficus religiosa*, Forst. Prodr. n. 402, non Linn., *F. septica*, Forst. l. c. n. 407, *F. stipulacea*, Forst. l. c. n. 571, and *F. Indica*, Forst. l. c. n. 406; and I am therefore unable to clear up the synonymy satisfactorily. *F. religiosa* of Forster, from Tana, New Hebrides, is doubtless not the species to which Linnæus gave that name; and there is no species from Tana in our collections which accords with the short diagnosis Forster furnishes. *F. septica* of Forster has been named *F. verrucosa* by Vahl, Enum. vol. ii. p. 16, and is also from

Tana. *F. stipulacea* of Forster, another species from Tana, was not described, but merely named; it may be identical with *F. Forsteriana*, Endl., which has rather large stipules, and in an unnamed scrap collected by Forster in Tana (?) this character rather than any other is prominent. *F. Indica* of Forster (*F. Forsteriana*, Endl. in Ann. Wien. Mus. vol. i. p. 166), which Forster collected in Tonga, the New Hebrides, and New Caledonia, must be the species which Barclay found in Tana, New Hebrides, and Sir E. Home and Barclay in the Isle of Pines, off New Caledonia. Like *F. obliqua*, the branches throw out aerial roots. Barclay in his schedules calls it a tree fifty feet high; Forster, "arbor excelsa;" and Sir E. Home has the following memorandum with his specimens:—"A species of Banyan from the Isle of Pines, from the bark of which the natives of Tana and the New Hebrides make their cloth, instead of that of the Paper Mulberry." The species, from Barclay and Home's specimens and notes, may be thus described: Arborea; ramis radican- tibus (modo *F. Indicæ*); foliis alternis petiolatis ovalibus v. ovato-lanceolatis breviter acuminatis integerrimis basi acutis v. obtusis triplinerviis, nervis primariis utrinque 5-6; pedunculis aggregatis apice caly- culatis; receptaculis globosis (Pisi maj. mag.). Leaves less coriaceous than those of *F. obliqua*, and without the prominent marginal vein of that species, $2\frac{1}{2}$ - $3\frac{1}{2}$ inches long, $1-1\frac{1}{2}$ inch broad. This description agrees sufficiently well with that of Forster (foliis lanceolatis integerrimis petiolatis, pedunculis aggregatis, ramis radican- tibus.—Arbor in Tana, Novarum Hebridum insula, umbrosa, excelsa, propter fructus parvulos et insipidos colebatur. Hi ex eodem puncto seu cicatricula caudicis plures aggregati proveniebant, ita ut totus truncus iisdem consitus esset. Descriptionem hujus speciei ex meis schedis deperidi; an cum *F. Indica*, Linn., merito conjugenda sit etiam dubito). Indeed, I hold *F. Forsteriana*, Endl., identical with *F. proluxa*, Forst. Prodr. n. 410; Guill. Zephyr. Tait. p. 33; Sol. Prim. Fl. Ins. Pacif. (ined.), p. 353 (*Uro- stigma proluxum*, Miq.; nomen vernac. Tahitense, "Aoa"), which, in the Society Islands (Banks and Solander! Nelson! Forster!), was one of the sacred trees planted about temples. Ellis ('Polynesian Researches,' vol. ii. p. 172,) says, "The Aoa was not entirely devoted to the nature of that debasing superstition by which the people [of the Society Islands] were oppressed. With the thin slender twigs or young branches of this tree a strong kind of cloth was made, which they called Ora, or Aoa, and which, on account of its dura- bility, was highly esteemed. Garments made with the bark of a tree constituted the principal article of native dress prior to the introduction of foreign cloth. It is manufactured chiefly by females, and was one of their most frequent employments. The name for cloth among the Tahitians is *ahu*. The Sandwich Island word *tapa* is, we believe, never used in this sense, but signifies a part of the human body. In the manufacture of their cloth, the natives of the South Sea Islands use a greater variety of materials than their neighbours in the northern group; the bark of the different varieties of Wauke, or Paper Mulberry (*Broussonetia papy- rifera*), being the only article used by the latter*; while the former employ not only the bark of the Paper Mulberry, which they call Auti, but also that of the Aoa and of the Breadfruit."

F. Webbiana, Seem. (*Covellia Webbiana*, Miq.), was collected by Forster and Anderson in New Cale- donia (Herb. Brit. Mus.), but not described or named by the former.

F. Carica, Linn., is cultivated in the Hawaiian Islands (Barclay!).

F. Granatum, Forst. Prodr. n. 408, Icon. (ined.) t. 293, et Plant. Excl. n. 8, was collected in Tana (Forster!), and New Caledonia (Forster!). Allied to it are two species cultivated in the Sydney Botanic Gardens (*F. habrophylla*, G. Bennett, and *F. Tanensis*, G. Bennett), both introduced from Tana, and one of which has, as *F. Granatum*, edible fruit. Dr. George Bennett, in his well-known 'Gatherings of a Natu- ralist,' speaking of the many valuable plants of the Sydney Gardens, says, p. 341, "There is an elegant new species of Fig from Tana, with large, handsome, and luxuriant foliage, which I have named *F. habro- phylla*. The fruit when ripe is of a purplish-red colour, and excellent for tarts and preserves. Growing close to it is another new species (*F. Tanensis*) from the same island." As the latter two species had never been described, and I did not feel quite sure (having very hastily seen them some years ago in Sydney) whether they were different from *F. Granatum*, I asked Dr. G. Bennett to forward specimens of them, which, with his usual readiness to assist scientific investigation, he kindly complied with, enclosing, at the same time, two other new species (*F. Bennettii*, Seem., and *F. Moorei*, Seem.), from the Polynesian Islands, all four of which are allied to *F. Granatum*, Forst.

F. habrophylla, G. Bennett, 'Gatherings of a Naturalist,' p. 341; arborea; ramulis petiolis recepta- culisque velutino-pubescentibus; foliis alternis obovato-oblongis integerrimis attenuatis basi cordatis penninerviis, venis primariis utrinque 15-17, glabris; receptaculis axillaribus geminis pedunculatis obovato- obtusis, pedunculo medio articulado 3-bracteato, bracteis ovatis acutis.—Tana, New Hebrides. Cultivated in the Botanic Gardens, Sydney, N. S. Wales. Branchlets stout. Largest leaves from 12-15 inches long, and from 6-8 inches broad. Receptacles as large as those of the ordinary garden Fig.

F. Tanensis, G. Bennett, 'Gatherings of a Naturalist,' p. 341; arborea; ramulis petiolisque glabris; foliis alternis petiolatis ovato-oblongis v. obovato-oblongis abrupto-acuminatis basi cordatis integerrimis glabris penninerviis, venis primariis utrinque 8-10; receptaculis axillaribus geminis longiuscule peduncu-

* This is not strictly correct, as the Sandwich Islanders also made cloth of the bark of *Pipturus albidus*, A. Gray. (Vide supra, p. 243.)

latis globosis basi in pedunculum attenuatis puberulis demum glabratis, pedunculis puberulis basi 3-bracteatis, bracteis ovatis acutis.—Tana, New Hebrides. Cultivated in the Botanic Gardens, Sydney, N. S. Wales. Branchlets stout. Leaves from 6–8 inches long, and from 3–4 inches broad. Peduncles as long as the petioles. Receptacle as large as a cherry.

F. Moorei (n. sp.), Seem. mss. in Herb. Mus. Brit.; arborea; ramulis pilosulis demum glabris; foliis alternis petiolatis ovato-oblongis acuminatis basi subcordatis, margine integerrimo undulato, glabris penninerviis, nervis primariis 7–13 (costaque in stirp. junior. purpureis); receptaculis axillaribus geminis pedunculatis obovatis glabris, pedunculo medio incrassato 3-bracteato, bracteis ovatis obtusiusculis.—*F. sanguinervium*, Hort. *F. Cooperi*, Hort. ex Regel, Index Semin. Hort. Petropolit. 1866, p. 89 (?).—Samoan Islands (according to the records of the Sydney Botanic Gardens). Branchlets stout. Petiole $1\frac{1}{2}$ –2 inches long. Blade of leaf from 10–12 inches long, and from $4\frac{1}{2}$ –5 inches broad. Peduncle about a third as long as the petiole. Receptacle 6 lines in diameter. I have named this species in honour of my esteemed friend Mr. Charles Moore, Director of the Sydney Botanic Gardens. Dr. Bennett writes,—“The plant is sold here at Sydney under the name of *F. sanguinervium*, from the midrib and primary veins being of a purplish colour; but, as this peculiarity is only seen in very young specimens, and disappears as the plant grows older, it would be an objectionable specific name.” I am almost sure that *F. Cooperi* of our gardens, lately described by my friend Dr. Regel in the Seed Catalogue of the Petersburg Garden, must also be referred here as a synonym. Dr. Regel was good enough to send me a leaf, which agrees tolerably well with those of the specimens from the Sydney Gardens.

1. **F. tinctoria**, Forst. Prodr. n. 405; Icon. (ined.) t. 292 (Tab. LXIII.); glabra, lævis, foliis breviter petiolatis cartilagineis subtus pallidis reticulatis ovalibus utrinque acutis basi subobliquis integerrimis 3-plinerviis, venulis patentibus utrinque 8–10; stipulis ovato-lanceolatis acutis, receptaculis axillaribus 2-nis globosis in stipitem longiusculum ima basi bracteatum constrictis; perigonio ♂ 3-phylo 1-andro; perigonio ♀ 5-phylo.—Soland. Prim. Fl. Ins. Pacif. (ined.) p. 352, excl. syn. Rumph.; Parkins. Drawings of Tahit. Plants (ined.), t. 118; Miquel in Hook. Journ. of Bot. vol. vii. p. 436, t. 6 B.—Nomen vernac. Vitiense, teste Williams, “Savirewa;” Tahitense, teste Solander, “Matti.”—Somosomo, Island of Taviuni (Seemann! n. 437; Williams!). Also collected in the Society Islands (Banks and Solander!) and Wallis Island (Sir E. Home!)

I subjoin Solander’s description above referred to:—“*Arbor* magna, lactescens, tota glabra; truncus simplex. *Rami* multos exserentes stolones. *Ramuli* teretes. *Folia* alterna, petiolata, ovato-oblonga, acutiuscula, integerrima, utrinque levia, majora spithamam longa, 3 uncias lata, coriacea, venosa, *venis* raris venulisque pluribus reticulata. *Petioli* semiuncia paulo longiores, raro unciales, sæpe cuticula furfuracea induti. *Fructus* axillares, gemini, pedunculati, globosi, glabri, Piso paulo majores. *Pedunculi* teretes, brevissimi, æquales, petiolis duplo vel triplo breviores. *Bractea* 3, ovatae, acutae, parvae, semilunares, ad basin singuli pedicelli.”

EXPLANATION OF PLATE LXIII., representing *Ficus tinctoria*.—Fig. 1, receptacle; 2, longitudinal section of the same; 3, male flower; 4, female flower; 5, pistil:—all magnified.

2. **F. scabra**, Forst. Prodr. n. 403; Icon. (ined.) t. 290 (Tab. LXIV.); ramulis petiolisque pubescentibus; foliis breviter petiolatis ovato-oblongis acuminatis basi oblique cordatis 3–5-plinerviis integerrimis, utrinque scabris demum glabratis; stipulis ovato-lanceolatis; receptaculis axillaribus 2-nis globosis calyculatis; fl. ♀ 5-phyllis, phyllis lineari-spathulatis ciliatis.—Nomen vernac. Vitiense, “Ai Masi.”—Port Kinnaird, Island of Ovalau (Seemann! n. 445 et 448). Also collected in Tana, New Hebrides (Forster!) and Tonga (Sir E. Home!)

This tree is called “Ai Masi” (from the verb “masi-a” = to scour), the leaves being used as sand-paper by the natives. Forster describes the receptacle as ecalyculate, but there are three small bracts at the upper end of the peduncle.

EXPLANATION OF PLATE LXIV., representing *Ficus scabra*, Forst.—Fig. 1, receptacle; 2, longitudinal section of the same; 3 and 4, female flowers:—all magnified.

3. **F. aspera**, Forst. Prodr. n. 404; Plant. Escul. p. 36. n. 7, et Icon. (ined.) t. 291 (Tab. LXV.); arborea; ramulis petiolis foliisque junioribus pubescentibus, sensim scabrescentibus et glabrioribus; foliis petiolatis ovato-oblongis longe acuminatis basi oblique cordatis subrepando-den-

tatis v. integerrimis 3-nerviis, venis utrinque 8-12; receptaculis axillaribus 2-nis pedunculatis basi bracteatis globoso-urceolatis tomentoso-pubescentibus, demum glabratis, pedunculis basi bracteatis; perigonio fl. ♀ 4-phyllo, phyllis ovato-oblongis v. lineari-oblongis acutis glabris.—Nomen vernac. Vitiense, "Masi draudrau."—Buke Levu Mountain, Kadavu (Seemann! n. 446). Also collected in Tana, New Hebrides (Forster! Anderson! Barclay!), where it is also cultivated on account of its edible fruit; Brisbane river, New Holland (Cunningham!).

A tree 50 feet high. My specimens agree exactly with those of Forster and his drawing. The Vitian name of the plant signifies the Fig-tree, on the leaves of which food is served or wrapped.

EXPLANATION OF PLATE LXV., representing *Ficus aspera*.—Fig. 1, longitudinal section of receptacle; 2 and 3, female flowers; 4 and 5, pistils:—all, with the exception of Fig. 1, magnified.

4. **F. Vitiensis**, (sp. nov.) Seem.; foliis longe petiolatis ovato-oblongis acuminatis basi subcordatis, integerrimis 3-plinerviis utrinque scaberrimis; receptaculis solitariis (an semper?) sessilibus globoso-depressis.—Viti Levu (Seemann! n. 447).

Allied to *F. scabra*, but the fruit is larger, and the leaves have long petioles, are different in shape, and always equilateral. Petiole 1-1½ inch long; blade of leaf 4-8 inches long, 3½-5 inches broad, with 5-6 primary veins on each side of the midrib. Ripe fruit 9 lines in diameter.

5. **F. Harveyi**, (sp. nov.) Seem.; petiolis elongatis ferrugineo-paleaceis, demum glabratis; foliis ovato- v. obovato-oblongis abrupte acuminatis integerrimis glabris 3-plinerviis; receptaculis 2 axillaribus sessilibus globoso-depressis.—Namosi, interior of Viti Levu, and Moturiki (Seemann! n. 440 et 444). Also collected by Harvey, but exact locality not specified.

Petiole often 2½ inches long, with brown scales, ultimately glabrous. Blade of leaf 8-9 inches long, 5 inches broad. Receptacle 1 inch in diameter.

6. **F. Bennettii**, (n. sp.) Seem. mss. in Herb. Mus. Brit.; arborea; ramulis petiolis pedunculisque pubescentibus; foliis alternis ovato-oblongis acuminatis basi cordatis, margine integerrimo undulato, glabris penninerviis, venis primariis utrinque 10-12, subtus prope axillas glanduliferis; receptaculis axillaribus solitariis (an semper?) pedunculatis globosis pedunculisque velutinis; pedunculis medio 3-bracteatis; bracteis ovatis obtusiusculis.—Viti, exact locality not specified (according to specimens cultivated at the Botanic Gardens, Sydney).

I have named this fine species, which is allied to *F. Granatum*, Forst., *F. Moorei*, Seem., *F. habrophylla*, G. Bennett, and *F. Tanensis*, G. Bennett, in honour of my esteemed friend Dr. George Bennett, F.L.S., of Sydney, author of several well-known works on Polynesia. Branchlets stout. Leaves coriaceous, from 8-10 inches long, and 4-6 inches broad. Petiole 1 inch long. Peduncle 10-12 lines long. Receptacle 1½ inch in diameter.

7. **F. Barclayi**, Seem. (Tab. LXVI.); petiolis pedunculis et receptaculis junioribus pilis teneris fugacibus conspersis; foliis alternis breviter petiolatis inæquilatero-ellipticis attenuato-subacuminatis acumine lato obtuso basi inæquali subcordatis denticulato-repandis 3-nerviis et utrinque circiter 5-venuloso-costatis, supra glabris lævibus, subtus pallidis sublævibus rarissime hinc illic pilis conspersis; receptaculis axillaribus (solitariis) pedunculatis ovatis dein globosis, basi nudis; bracteis parvis supra pedunculum sparsis.—*Covellia Barclayana*, Miq. in Hook. Lond. Journ. of Bot. vol. vii. p. 461. t. 7 B. Nomen vernac. Vitiense, "Loselose."—South coast of Viti Levu (Barclay! n. 3465, Seemann! n. 438).

Shrub 6 feet high. "The smaller branches are used by the natives as bougies, hence a bougie is called a loselose."—Fij. Dict. p. 317. The fruit is edible.

EXPLANATION OF PLATE LXVI., representing *Ficus Barclayi*.—Fig. 1, receptacle; 2, longitudinal section of the same; 3, female flower; 4, pistil:—all magnified.

8. **F. bambusæfolia**, (n. sp.) Seem. (Tab. LXVII.); fruticosa, glabra; foliis alternis ovato-

linearibus longe attenuatis basi obtusis v. acutis obscure denticulatis 3-plinerviis glabris; receptaculis axillaribus solitariis pedunculatis globosis (Pisi maj. magnitudine) basi bracteatis; bracteis rotundato-ovatis obtusis; fl. ♂ perigonio 4-phylo, phyllis 4-spathulatis dentatis, stamine 1; fl. ♀ perigonii phyllis 4 lineari-spathulatis dentatis stylo laterali.—Nomen vernac. Vitiense, "Loselose ni wai."—Banks of the Navua and Rewa rivers, Viti Levu (Seemann! n. 439), growing with *Lindenia Vitiensis* and *Acalypha rivularis*.

"Loselose ni wai" (*i. e.* water or river Loselose) is the name by which this species is known, in contradistinction to the other Loselose (*F. Barclayi*, Seem.), which does not grow near rivers. A shrub about 6 feet high, with a willow-like habit. Branches slender and flexible. Leaves on short petioles 3-5 inches long, 4-6 lines broad. Receptacle about the size of a large pea.

EXPLANATION OF PLATE LXVII., representing *Ficus bambusæfolia*, Seem.—Fig. 1, receptacle; 2, section of the same; 3, male flower; 4 and 5, female flowers:—*all magnified*.

9. **F. obliqua**, Forst. Prodr. n. 409, et Icon. (ined.) t. 294 (Tab. LXVIII. Fig. 1-7); arborea, glabra; trunco ramisque radicanibus; foliis alternis lanceolatis v. ellipticis utrinque acutis sæpe obliquis coriaceis penninerviis crassiuscule marginatis; pedunculis geminis brevissimis; receptaculis globosis (Pisi maj. magnitudine), basi bracteis 3 brevibus cinctis; fl. ♂ perigonio 4-phylo, 1-andro; fl. ♀ stylo laterali.—*Urostigma obliquum*, Miq. in Hook. Lond. Journ. of Bot. vol. vi. p. 563. Nomen vernac. Vitiense, "Baka."—Island of Taviuni (Seemann! n. 436). Also collected in Namoka and Tana (Forster!).

Forster says of the bracts (calyx) that they are as long as the receptacle; but neither in his mss. drawing nor in his specimens are they longer than drawn in my plate. Fig. 8 of Plate LXVIII. may perhaps prove a distinct species; but the specimens from which that figure was taken grew close to an old tree of *F. obliqua*, and I took them to be seedlings of the same. The leaves, however, are less coriaceous than those of the specimens represented by Fig. 1.

F. obliqua is termed Baka by the Vitians, and, like the allied *F. proluxa* of the Society Islands, it was regarded by the natives as a sacred tree. The Baka is not famous for its timber; but its habit is as remarkable as that of the Banyan-tree of India, aerial roots propping up its branches and forming a fantastic maze which no words can describe. At first living as an epiphyte on other trees, it soon acquires such dimensions that it kills its supporter, and henceforward must draw its nourishment from the soil. There are fine specimens of the Baka on the Isthmus of Kadavu; and on an islet belonging to Mr. Hennig, the aerial root of the Baka formed a cabin in which Mr. Pritchard, myself, and all our boat's crew took shelter during a heavy tropical shower; and twenty more persons might have found room there. The crown of this tree was one hundred and fifty-two feet in diameter, or four hundred and fifty-six feet in circumference. The horizontal branches and the large roots issuing from all parts of the stem, and more sparingly from the branches, rendered this tree a noble object, well calculated to inspire pleasure or awe. The Rev. W. Moore lamented the destruction of one of these fine trees near Rewa, committed by a sick man in hopes that it might be pleasing to the Christian God, and incline him to favour his convalescence. These sacred groves and trees were not worshipped as gods, but, as in the Odic religions of our ancestors, looked upon as places where certain gods had taken up their abode. In times when the plantations of *Broussonetia papyrifera* fail to produce a sufficient quantity of raw material for making native cloth, recourse is had to the Baka.

EXPLANATION OF PLATE LXVIII.—Fig. 1, branch of *Ficus obliqua*, Forst.; 2 and 3, receptacles; 4, section of the receptacle; 5, male flower; 6, female flower; 7, pistil:—*all magnified*. Fig. 8, branch of a plant, supposed to be a young seedling of *F. obliqua* (*natural size*).

10. **F. Storckii**, (n. sp.) Seem. (Tab. LXIX.); arborea; ramulis tenuibus; foliis alternis petiolatis oblique cordato-ovatis breviter acuminatis integerrimis glabris 3-5-plinerviis; receptaculis aggregatis pedunculatis ex trunco ramisve globosis (Pisi maj. magnitudine) scabris; pedunculis ebracteatis; fl. ♀ perigonio 5-phylo, phyllis subspathulatis pilosulis, stylo laterali.—Buke Levu Mountain, Island of Kadavu (Seemann! n. 442!). Also collected in the Tongan Islands (Barclay!).

A tree about 40 feet high. Branches not emitting aerial roots. Leaves on petioles 1 inch long. Blade 5-7 inches long, 4-6 inches broad. Peduncles in clusters, growing from the trunk and old wood, never from the axils of the growing branches, as in many other species. Peduncles longer than the diameter of receptacle.

EXPLANATION OF PLATE LXIX., representing *Ficus Storckii*, Seem.—Fig. 1, longitudinal section of receptacle; 2, female flower after the style has fallen off; 3, female flower; 4, pistil; 5, utricules:—*all magnified*.

11. **F. Pritchardii**, (n. sp.) Seem. (Tab. LXX.) ; arborea, glabra ; foliis alternis petiolatis ovato-oblongis acuminatis basi acutis obliquis integerrimis penninerviis, venis primariis utrinque 9–10 ; receptaculis cymoso-paniculatis ex trunco erumpentibus globosis pedunculatis basi bracteatis ; fl. ♀ perigonio phyllis 3 ovatis obtusis glabris ; stylo laterali.—Buke Levu Mountain, Island of Kadavu, in dense forests about 2000 feet above the sea (Seemann ! n. 443).

Named in honour of Mr. W. T. Pritchard, F.R.G.S., at the time of my visit H.B.M. Consul in Viti, who was present when I discovered this species. A tree 40 feet high. Leaves 5–6 inches long, 2½–3 inches broad, underneath densely covered with minute dot-like warts. Receptacles in paniced cymes (perhaps branches with abortive leaves), which grow out of the trunk and old wood. Receptacle about the size of a large pea.

EXPLANATION OF PLATE LXX., representing *Ficus Pritchardii*, Seem.—Fig. 1, receptacle ; 2, section of the same ; 3, female flower ; 4, pistil :—*all magnified*.

12. **F. theophrastoides**, (n. sp.) Seem. (Tab. LXXI.) ; arborea, glabra ; trunco erecto subsimplici ; stipulis ovatis acuminatis ; foliis alternis brevissime petiolatis obovato-oblongis acuminatis basi cordatis pinnatinerviis, nervis primariis utrinque 18–20 ; receptaculis axillaribus solitariis geminisve brevissime pedunculatis globosis, basi bracteis ovatis obtusis cinctis ; fl. ♀ perigonio 1-phylo pistilloque glabro.—Island of Ovalau, at Port Kinnaird (Seemann ! n. 441).

A small tree, in habit not unlike that of a *Theophrasta* or *Crescentia regia*, the trunk forming straight generally simple poles, crowded at the point with large leaves. Leaves from 1½–2 feet long, and from 5–7 inches broad, leathery, entire. Receptacle from 1½–2 inches diameter.

EXPLANATION OF PLATE LXXI., representing *Ficus theophrastoides*, Seem.—Fig. 1, receptacle ; 2, the same cut longitudinally ; 3, bract ; 4, female flower ; 5, pistil ; 6, young utriculus :—*all, with exception of Fig. 1 and 2, magnified*.

SUBORDO IV. ARTOCARPEÆ.

Represented in tropical Polynesia by *Antiaris*, *Caturus*, *Artocarpus*, and *Trophis*.

XVI. **Antiaris**, Leschen. in Ann. du Mus. vol. xvi. p. 476. t. 22 ; Trécul in Ann. Sc. Nat. ser. 3. vol. viii. p. 142. t. 6. f. 158–162. Flores monoici. Fl. ♂ in involucre ∞-floro ∞-phylo, foliolis plurifariam imbricatis, receptaculum demum convexum cingentibus, dense congesti. Perigonia 4-rarius 3-phylla, inter se aliquando connata ; foliolis spathulatis, apice inflexis, æstivatione imbricatis. Stamina 4, rarius 3, perigonii foliolis opposita, inclusa ; filamenta brevissima ; antheræ oblongæ, erectæ, extrorsæ, biloculares, loculis connectivo lineari adnatis, rima longitrorsum dehiscens. Fl. ♀ super receptaculum foliolis imbricatis instructum solitarii. Perigonium 0. Stylus brevis, 2-fidus, cruribus filiformibus. Ovarium involucre connatum, 1-loculare, 1-ovulatum ; ovulum ex apice loculi pendulum, anatropum. Fructus drupaceus. Semen testa chartacea ; embryo exalbuminosus, cotyledonibus plano-convexis crassis ; radícula supera.—Arbores v. frutices lactescentes ; foliis (in *A. toxicaria*) distichis petiolatis integris integerrimis, nonnunquam dentatis, basi sæpe cordatis, apice acutis v. acuminatis ; stipulis 2 axillaribus, non amplexicaulibus ; inflorescentiis axillaribus, masculis geminis v. pluribus femineis solitariis.

Hitherto only three species of *Antiaris* were known, viz. *A. toxicaria*, Lesch. (the genuine Upas-tree of Java), *A. innoxia*, Bl., and *A. macrophylla*, R. Br. A fourth species (ramis foliisque utrinque velutinis) is cultivated in the Royal Botanic Gardens at Kew. A fifth species was found by Thwaites in Ceylon, and

has been described by me as *A. Zeylanica* (Bonpl. vol. x. p. 4, in adnot.*); it is called by the Cingalese "Ritti-gass," and supplies, like *A. saccidora*, Dalz., materials for sacks. In his Enumeratio Pl. Zeyl. p. 263, Thwaites classes it with *A. innoxia*, Bl., and *A. saccidora*, Dalz.; but I am by no means certain that even *A. innoxia* and *A. saccidora* are identical, and feel convinced that *A. Zeylanica*, Seem., is a very distinct species, at once distinguished from *A. saccidora*, Dalz., of which Wight gives a figure, by its scabrous leaves and pear-shaped fruits. A sixth species was found by Welwitsch in Western tropical Africa (*A. Africana*, Seem.), and a seventh is the one which, in honour of its original discoverer, I have named *A. Bennettii*.

1. ***A. Bennettii***, (n. sp.) Seem. in Bonpl. vol. ix. (1861) p. 259, et ibid. vol. x. p. 3. t. 7 (1862) (Tab. LXXII.); Bennett's 'Gatherings of a Naturalist in Australasia,' p. 403; arbor mediocris; ramulis petiolisque pubescentibus, demum glabris; foliis brevipetiolatis ovato-oblongis acuminatis integerrimis, basi inæquali-subcordatis, utrinque subglabris, supra lucidis; fl. ♂ fasciculatis (2-4), pedunculis velutino-pubescentibus, involucro laciniis ovato-acuminatis perigoniorum longitudine reflexis; fl. ♀ solitariis; drupa ovato-acuta, dense velutina.—Nomen vernac. Tucopiense, "Mami," teste G. Bennett; Vitiense, "Mavu ni Toga," teste Seemann.—In Viti Levu, about Namara, and in Moturiki (Seemann! n. 449, Harvey!). Also collected in Tucopia, lat. 12° S., long. 169° E. (G. Bennett! in Herb. Hook.), and Wallis Island, lat. 16° 30' S., long. 176° W. (Sir E. Home! in Mus. Brit.)

Closely allied to *A. macrophylla*, R. Br., from the northern parts of New Holland, but at once distinguished by its fruits being thickly covered with velvety hair. It was found in Fiji, first by Prof. Harvey, afterwards by me. About thirty years earlier, however, viz. in May, 1830, it had been discovered by Dr. George Bennett, of Sydney, New South Wales, on a small island situated north-west of Fiji, in lat. 12° S., long. 169° E., and was thus alluded to in his 'Gatherings of a Naturalist in Australasia' (8vo, London, 1860, p. 403):—"When visiting the Island of Tucopia in May [1830], I observed the *Antiaris*, or Upas-tree, planted in rows near the native huts; but I am not aware that it is indigenous. It is named "Mami" by the natives. It is allied to the celebrated Upas-tree of Java, and accords with *A. macrophylla*, described and figured by the late Dr. Brown in the Appendix to 'Flinders's Voyage.' The tree at Tucopia is of slender growth, with pendulous branches; it was growing to the height of 8 to 12 feet. The leaves are oblong, large, pointed, distinctly-veined, and of a light green colour. The fruit is oval, rather larger than a pigeon's egg, rough externally, and of a beautiful crimson colour. Between the husk and kernel there is a quantity of white viscid juice. The kernel, of white colour and intensely bitter taste, is enclosed in a thin shell of a grey colour. It is planted by the natives either for dyeing or manufacturing the bark into native cloth. Specimens in fruit and flower are in the Botanical Collection of the British Museum." Thus far Dr. Bennett.

The Mavu ni Toga (=Tonga) was formerly planted about heathen temples, and is even now to be found in towns and villages. It is a middle-sized tree, with a thick crown of foliage, oblong glossy leaves, and a fleshy fruit of the size of an apricot, covered with velvety hair, and of a most beautiful crimson colour. A gum exuding from the stem and branches is used for arrows. The exact nature of its poisonous qualities has not yet been ascertained. That they are not equal to those ascribed to the true Upas-tree of Java (*A. toxicaria*, Lesch.) is proved by the manner in which the natives handle it; but it is impossible to say whether one of the reasons for its cultivation near temples, and its probable introduction from Tonga, may not be found in its yielding a poison, of which the heathen priests may have occasionally made use. Mr. Storck inclines to that opinion. Mavu ni Toga literally means the Mavu from the Tongan Islands; and it is not improbable that the tree may have been introduced from there. I have not met with any specimens from Tonga in our herbaria; but that would not prove that *A. Bennettii* has originally not been derived from Tonga, as that group has been explored only very superficially, and Sir E. Home found it east of Fiji, viz. at Wallis Island, in long. 176° W. For the present, Viti must be regarded as the extreme southern limit of this species (and also of the genus *Antiaris*), and Tucopia as the northern. It is noteworthy that neither Dr. George Bennett nor I found this species in a truly wild state; for in Viti it looks as if originally planted. The beauty of the foliage and the rich colour of the fruit fully entitle it to a place

* *Antiaris Zeylanica*, Seem. in Bonpl. vol. x. p. 4, in adnot.; arbor excelsa; ramulis petiolis pedunculis drupisque velutinis; foliis obovato-oblongis acuminatis integerrimis, supra scabris, subtus hirtellis; involucris masculi laciniis perigoniorum longitudine reflexis; drupa obovato-obtusa (v. s. sp.).—*A. innoxia*, Thwaites, Enum. Zeyl. p. 263, non Bl., excl. syn. omn.—In Zeylanica, ubi, teste cl. Thwaites, "Ritti-gass" vocatur.—The fruit of *A. saccidora*, Dalz., is elliptical in shape, as may be seen in the figure of it published by Wight, who distinctly states that it represents the Indian, not the Cingalese plant.

in our living collections; and we were so much struck with these qualities, that Mrs. Smythe made a coloured drawing of the plant on the spot, which, together with my dried specimens, served as the basis of the plate published in the 'Bonplandia,' and also in this work.

EXPLANATION OF PLATE LXXII., representing *Antiaris Bennettii*, Seem.—Fig. 1 and 2, receptacle of male flowers; 3, longitudinal section of the same; 4, a male flower; 5, perigonal leaf; 6, stamens; 7, ripe fruit, cut longitudinally:—*all, with exception of Fig. 7, magnified.*

XVII. **Caturus**, Lour. Fl. Cochinch. p. 612, non Linn. Flores dioici. Fl. ♂ in spicas ∞-floras bracteatas dispositis. Perigonium 3-phyllum. Stamina 3, æstivatione induplicata; filamenta brevissima; antheræ ovatæ, 2-loculares, longitudinaliter dehiscentes. Ovarium abortivum. Stigma 2-lamellatum. Fl. ♀ in capitulas globosas v. oblongas arcte aggregatis, aliis fertilibus, aliis abortivis. Perigonium urceolatum, apice dentatum ovarium includens. Ovarium superum, 1-loculare, 1-ovulatum, ovulo pendulo. Stylus 1, terminalis; stigmata 2, filiformia. Fructus drupaceus. Semen 1; embryo curvatus, cotyledonibus conduplicatis inæqualibus, radícula supera.—Frutices arborescentes, scandentes, lactiferi, ramis sæpius verrucosis, foliis alternis ovatis v. oblongis integerrimis v. dentatis penninerviis, stipulis axillaribus 2; floribus axillaribus solitariis binis v. ternis; masculis spicatis, femineis capitatis.—*Malaisia*, Blanco, Flor. Filip. (1837) p. 789; Endl. Gen. n. 1880-1. p. 1376. *Dumartroya*, Gaud. Bonit. t. 97.

Loureiro's genus *Caturus* (*Caturus* of Linnæus being a synonym of *Acalypha*) has been referred by Dr. Mueller-Arg. (DC. Prodr. vol. xv. p. 906) to *Alchornea* amongst *Euphorbiaceæ*. Dr. Mueller examined Loureiro's authentic specimen at the British Museum, but it should be added that there are male flowers only, and that he was unacquainted with the large synonymy of the plant. The genus is identical with *Malaisia*, of the generic character of which Endlicher, in his first Supplement, p. 1376, has given a somewhat incorrect Latin version, and also with Gaudichaud's '*Dumartroya*,' of which a plate, but no description, was published in the 'Botany of the Bonite's Voyage.' Endlicher ranged the genus amongst the genuine *Urticeæ*, near *Elatostema*, but Gaudichaud, more correctly, with *Antiarideæ*. Indeed, it is closely allied to *Antiaris* itself. Trécul, in his 'Monograph,' has quite overlooked it, though there are several species, nine of which are known to me, and more will probably turn up in herbaria and scattered publications, if a proper search, which I have not the time to make just now, is instituted. These species are the following, viz.:—

1. *C. torulosus*, Seem.—*M. tortuosa*, Blanco, Fl. de Filipinas (1837), p. 789. Nomen vernac. Philippinense, "Malaisis," fide Blanco.—Philippine Islands (Cuming! n. 1314; Blanco), where a decoction of the plant is given medicinally to women at childbirth.

2. *C. scandens*, Lour. Fl. Cochinch. p. 612.—*Trophis scandens*, Hook. et Arn. Bot. Beech. p. 214. *Alchornea scandens*, Muell. Arg. in DC. Prodr. vol. xv. p. 906. *Malaisia scandens*, Planch. in Herb. Hook. *Cudrania Javanensis*, Wight, Icon. t. 1960, non Trécul. *Morus scandens*, Hort. Calcut.; Wall. Cat. n. 4652; foliis obovato-oblongis abrupte acuminatis basi obtusis integerrimis.—Macao and Canton, South China (Millet! Hance!), Cochinchina (Loureiro! in Mus. Brit.).

3. *C. fagifolius*, Seem.—*Dumartroya fagifolia*, Gaud. Bonit. tab. 97; foliis ovato-oblongis acuminatis basi cordatis dentatis.—Native country unknown to me.

4. *C. oblongatus*, (sp. nov.) Seem.; Herb. Mus. Brit.; foliis alternis ovato-oblongis acuminatis glabris integerrimis penninerviis, venis primariis utrinque 12-14, supra atro-viridibus, subtus subalbidis; spicis ♂ axillaribus solitariis, elongatis.—Tahiti (Capt. Cook! in Mus. Brit.; Bidwill! in Herb. Kew.).—Evidently an undescribed plant. According to Bidwill's notes, it is a tree twenty feet high, and very rare in the mountains behind Papeito, island of Tahiti.

5. *C. pelagicus*, (sp. nov.) Seem.—From Viti (Seemann, 434 B) and New Caledonia (M'Gillivray! in Herb. Mus. Brit.).

6. *C. Deplanchei*, (sp. nov.) Seem.—New Caledonia (Deplanche! n. 103).

7. *C. virescens*, Seem.—*Malaisia virescens*, Planch. mss. in Herb. Hook.—Brisbane, Queensland (Cunningham!).

8. *C. Cunninghamsi*, Seem.—*Malaisia Cunninghamsi*, Planch. mss. in Herb. Hook.—Brisbane, Queensland (Cunningham! F. Mueller!).

9. *C. acuminatus*, Seem.—*Malaisia acuminata*, Planch. mss. in Herb. Hook.—East coast of Australia (Backhouse! Oldfield!).

1. **C. pelagicus**, (sp. nov.) Seem.; ramulis foliisque glabris; foliis alternis petiolatis ovato-oblongis abrupte acuminatis v. obtusis, integerrimis coriaceis, supra lucidis penninerviis, nervis venisque subtus prominulis; fl. ♂ axillaribus pedunculatis, pedunculis spicas 3 villosopuberulas gerentibus.—Island of Kadavu (Seemann! n. 434 B). Also collected in New Caledonia (M'Gillivray!).

I collected nothing but very young male flowers in bud. What induced me to refer it to this genus was a specimen, collected by M'Gillivray in New Caledonia, preserved at the British Museum, which agrees exactly in habit, foliage, and pubescence, with my n. 434 B, but which has only female flowers. These female flowers are in heads arranged in axillary cymose racemes, and their style is about twelve lines long. They quite agree, as far as I can make out, with those of the typical *Caturus*; and specimens gathered at Wide Bay, Australia (Bidwill!), seem also to belong to my *C. pelagicus*. My Viti specimens have slender, dark-coloured branches, with small white warts: their leaves are from $2\frac{1}{2}$ –3 inches long, $1\frac{1}{2}$ – $1\frac{3}{4}$ inch broad, smooth above, and with prominent veins below; their primary veins being from 7–12 on each side of the midrib; their peduncles are bracteate; and their flowers numerous, and in dense spikes.

XVIII. **Artocarpus**, Forst. Plant. Esc. p. 23; Trécul, Ann. Sc. Nat. ser. 3. vol. viii. p. 109. t. 4. f. 100–120. Flores monoici, ♂ et ♀ in receptaculis distinctis globosis oblongisve dense conferti. Flores ebracteolati v. bracteolis peltatis interstincti. Fl. ♂: Perigonium 2–3–4-phyllum; foliolis liberis aut magis minusve inter se connatis, concavis, obtusis, in æstivatione imbricatis. Stamen 1, centrale, exsertum; filamentum complanatum; anthera oblonga v. brevissima, 2-ocularis, loculis primum unilateralibus, postea oppositis, rima longitrorsum dehiscentibus, interdum incumbens, dorso medio filamenti vertici affixa. Fl. ♀: Perigonia magis minusve inter se adnata. Perigonium tubulosum, integrum, apice poro apertum. Stylus terminalis v. excentricus, simplex, stigmatate cylindrico spathulato v. peltato terminatus, aut rarissime 2–3-fidus, cruribus stigmatosis. Ovarium liberum, 1-loculare, rarissime 2–3-loculare, loculis 1-ovulatis; ovulum prope verticem loculi pendulum, anatropum. Syncarpium achæniis creberrimis paucis v. unico, perigoniis persistentibus inclusis compositum. Pericarpium pergamaceum, indehiscens. Semen parieti styligero pendulum; testa membranacea. Embryo exalbuminosus, homotropus; cotyledonibus crassis; radicula supera.—Arbores lactescentes; foliis alternis, sæpe distichis petiolatis ovatis obovatis oblongisve integerrimis, trilobis aut pinnatifidis, glabris v. pubescentibus; stipulis 2 deciduis axillaribus, nunc magnis amplexicaulibus oppositis, altera marginibus alteram tegente, nunc minimis non amplectentibus; pedunculis axillaribus solitariis simplicibus, in amenta globosa aut elongata desinentibus.—*Sitodium*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 314; et in Parkins. Icon. (ined.) t. 86–90. *Rima*, Sonner. Voy. p. 99. t. 57–60. *Rademachia*, Thunb. Act. Holm. vol. xxxvi. p. 252. *Soccus*, Rumph. Amb. vol. i. p. 104–110. *Polyphrema*, Lour. Fl. Cochinch. vol. ii. p. 346.

1. **A. incisa**, Forst. Plant. Escul. p. 23; et Icon. (ined.) t. 250, 251, 252; Trécul, l. c. p. 110; Hook. Bot. Mag. t. 2869, 2871; foliis integerrimis v. pinnatifidis, lobis oblongis acutis acuminatis v. pinnatifidis; stylo 2- v. 3-fido.—*Rademachia incisa*, Thunb. Act. Holm. vol. xxxvi. p. 252. *Soccus*, Rumph. Amb. vol. i. p. 112. t. 33. *Sitodium utile*, Sol. l. c. p. 314; et in Parkins. l. c. t. 86–90.—Nomen vernac. Vitiense, “Uto.”—Cultivated throughout Viti, and in some parts to all appearances wild (Seemann! n. 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460). Tahiti (Banks and Solander!); Hawaiian Islands (Seemann!).

In Viti the breadfruit is seen in regular forests, and in a great number of varieties, which a new-comer has some difficulty in distinguishing, until he has learnt to observe that in the shape of the leaves—which are either entire, pinnatisect, or bi-pinnatisect—their size, and their either bullate or even surface, the shape and size of the fruits, the time of its maturity, the absence or presence, as well as the length of the prickles on its outside, and the abortion of its ovules or their development into seeds, offer good marks of distinction. The general Fijian name for the breadfruit is “Uto,” signifying “the heart,” from the resemblance of the

form of the fruit to that organ, whilst the varieties are distinguished by additional names. Those less frequently cultivated are, however, not known by the same names throughout the group, but bear different ones in different districts. Hence, the exact number of varieties cannot be accurately determined, until there shall be a botanic garden in Fiji, where a complete collection of breadfruits is cultivated. I have identified several names of the most prominent varieties, but hesitate about others, as I could only take the leaves with me from place to place, and often did not see the fruit, or had to carry it in my mind's eye. The principal breadfruit season is in March and April, but some kinds ripen considerably later or earlier, whilst in some districts the season itself is altogether later. It may thus be said, speaking generally, that there is ripe breadfruit, more or less abundant, throughout the year, in either one part or the other. The fruit is made into puddings or simply boiled or baked. Quantities of it are preserved underground, to make "madrai" or native bread. Some kinds are best suited for puddings, some for bread, or culinary purposes of a still more simple description. Besides the fruit, the wood of the breadfruit-tree is useful, but that of some kinds better adapted for canoes and buildings than others. The bark is not beaten into cloth, as in other parts of Polynesia; but the gum (drega), issuing from cuts made into the stem, is used for paying the seams of canoes.

The two most common kinds are *Uto dina* and *Uto buco*. The *Uto dina*, or true breadfruit, has pinnatisect leaves, the surface of which is even, and destitute of that bullate appearance which imparts to the *Koqo* and other varieties an almost sickly look; the fruit, bearing abortive ovules, is nearly round, smooth on the outside, and supported on stalks four to five inches long, which, from the very first, are bent downwards. It is this variety which most botanists consider as the type of the species, and the adjective "dina," true or genuine, given by the Fijians, may be cited as a proof of the correctness of this surmise. But if we have to look for an original stock from which all other sorts have sprung, we ought not to select one which, like the *Uto dina*, has invariably abortive ovules, and can therefore not produce seeds from which new varieties can be raised. The *Uto sore*, *Uto vaka sorena*, or *Uto maliva*, as it is termed in different districts, has not that deficiency, but does yield ripe seeds in abundance, and has, therefore, greater claims to be regarded as the type from which all the other varieties may have been raised. The name of *Uto dina* (true or genuine breadfruit) may perhaps have been applied on account of its goodness, which, I believe, is undisputed. The *Uto buco* also has pinnatisect leaves with an even surface, as opposed to the bullate one of other kinds, and an obovate obtuse fruit of larger size than that of the *Uto dina*, and quite free from any prickles on the outside when fully ripe.

In order to obtain a clearer insight into the varieties, it will be best to subjoin a synopsis of all the breadfruits cultivated in Fiji:—

I. LEAVES NEARLY OR QUITE ENTIRE.

1. *Uto lolo* bears this name in the Straits of Somosomo, and is called *Uto cokocoko* in the Rewa district; perhaps, also, identical with the *Uto dogodogo* and *Uto draucoko* mentioned in the Fijian Dictionary. It looks different from all others, the leaves, especially when the tree gets older, being quite entire; in young plants they are sometimes obscurely lobed. The fruit is without seeds.

II. LEAVES PINNATISECT.

2. *Uto dina*.—Known by that name, and that name only, throughout Fiji. Leaves with an even surface; fruit without seeds, nearly spherical, with a smooth surface, and supported on stalks, four or five inches long, nodding from the first.

3. *Uto buco*.—Known by that name throughout the group. Leaves with an even surface, and in young plants often entire. Fruit ovate, obtuse, larger than that of most sorts, destitute of seeds, and with a smooth surface when ripe. Also collected in Tahiti (Banks and Solander! in Mus. Brit.).

4. *Uto koqo*.—Known by this name throughout the group, but in some dialects called *Oqo* and *Qoqo*. Leaves bullate; fruit without seeds, and as large as that of *Uto dina*, smooth on surface.

5. *Uto votovoto*.—Known by this name throughout the group. Leaves with an even surface; fruit oblong, without seeds, and covered with prickles three-quarters of an inch long.

6. *Uto varuqa* (*Uto varaka* in some dialects).—Known by this name in Rewa and Bau. Leaves larger than those of any other kind; fruit roundish, of middle size, without seeds, and with a rough surface.

7. *Uto bokasi*.—Known by that name in Rewa and Ovalau. Leaves with even surface; fruit obovate, with a smooth surface, without seeds, erect when young, nodding when ripe, and arriving at maturity early in the season.

8. *Uto sore*.—Known by that name in Rewa, by that of *Uto vaka sorena* in Ovalau, *Uto asalea* in the Straits of Somosomo, and *Uto maliva* at Nukubalava. *Uto sasaloa* may also prove a synonym. "Sore" or "Sorena" signifies a seed; hence *Uto sore*, or *Uto vaka sorena*, is the seed-bearing breadfruit; the only

kind in which the ovules develop into seeds, rendering it probable that this kind is the parent of all the others. Leaves with even surface.

9. *Uto rokouta*.—Known by that name at Namara, near Bau. Leaves bullate, giving the tree a sickly look.

10. *Uto balekana*.—Known by that name in the Straits of Somosomo and at Ovalau. Leaves with even surface; fruit small, but of superior quality, according to the natives.

11. *Uto qio*.—Known by that name in Ovalau. Fruit almost as large as that of *Uto buco*. "Qio" is the name for shark, and was probably given to this fruit from its surface resembling in roughness that of the fish.

12. *Uto vono*.—Known by that name at Somosomo. Leaves with even surface, and very large; fruit largish.

III. LEAVES BIPINNATIFID.

13. *Uto kalasai*.—Known by that name in Rewa, and by that of *Uto sawesawe* in the Straits of Somosomo. The leaves, especially when the plant is young, are distinctly bipinnatifid, in which respect this kind differs from all others; fruit, according to natives, rather oblong and covered with prickles. Also collected in Tahiti (Banks and Solander! in Mus. Brit.).

Of the following I know nothing, save the names, taken partly from Hazelwood's Fijian Dictionary, partly from a list of breadfruits known at Ovalau, and kindly communicated by the late Mr. Binner, of Levuka. Most of them will doubtless prove synonyms of those enumerated above:—Draucoko (=Cokocoko?), Bucotabua Utoga (=Koqo), Waisea, Utoloa (=Uto lolo?), Matavesi, Dregadrega (N.B. Drega is the name of the gum issuing from the stem), and Bucu uvi. The "Bucudo" of Wilkes's Narrative is probably identical with Bucu, though he mentions the latter name spelt "Umbuda;" but what can be meant by his "Botta-bot"?

The variety which Forster figures, and of which specimens from Tahiti are preserved at the British Museum, has pinnatifid, deeply-cut leaves, with long, narrow segments, I did not meet with in Viti; but my var. *bipinnatifida* was collected in Tahiti by Banks and Solander. Tahiti—indeed, the whole Society Islands—seem to be the place where the greatest number of varieties are to be found, Solander enumerating twenty-one, and G. Bennett (Gatherings of a Naturalist, p. 396) even as many as twenty-four, all of which bear distinctive names. Tahitian traditions hint at a time when the tree did not exist in the Society Islands,—at least that I suppose to be implied in the following, which I take in substance from Ellis's 'Polynesian Researches:—"In the reign of a certain king, when the people ate red earth, a man had an only son, whom he loved tenderly. One day he said to the wife, 'I pity our son; he is weak and unable to eat the red earth. I will die, and become food for him.' The wife asked, 'How will you become food?' He answered, 'I will pray to my god; he has power, and will enable me to do it.' Accordingly he repaired to the family marae (temple), and presented his petition to the deity. A favourable answer having been given to his prayer, he called his wife and said, 'When I am dead, take my body; plant my head in one place, my heart and stomach in another, etc., and then wait in the house. When you shall hear at first a sound like that of a leaf, then of a flower, afterwards of an unripe, and at last of a ripe round fruit falling on the ground, know that it is I who have become food for our son.' He died soon after, and his wife obeyed his injunctions. After a while, she heard a leaf fall; then the large scales of the flowers; then a small unripe, and afterwards one full-grown and ripe fruit. By this time, it was daylight; she awoke her son, and took him out. They beheld a large and handsome tree, clothed with broad shining leaves, and loaded with breadfruit. She directed him to gather a number, take the first to the family god and to the king; to eat no more red earth, but to roast and eat the fruit of the tree growing before them."

XIX. **Trophis**, P. Browne, Jam. p. 375. t. 37; Trécul, Ann. Sc. Nat. ser. 3. vol. viii. p. 146. Flores dioici. Fl. ♂: Perigonium 4-fidum, laciniis valvatis. Stamina 4, perigonii foliolis opposita; filamenta filiformia, in æstivatione inflexa; antheræ rotundato-cordatæ, introrsæ, 2-loculares, loculis dorso connectivo crassiusculo adnatis, rima longitrorsum apertis. Pistilli rudimentum breve, subob-

conicum. Fl. ♀: Perigonium tubulosum, ovatum, apice in collum breve contractum, 4-dentatum v. 4-fidum. Stylus brevis. Stigmata 2, longa, dense papilloso-puberula. Ovarium perigonio adnatum, 1-loculare, 1-ovulatum. Ovulum ax apice loculi pendulum, campylotropum.—Arbores; foliis alternis integris; floribus axillaribus spicatis.

1. **T. anthropophagorum**, (n. sp.) Seem. (Tab. LXXIII.); arborea, glabra; foliis ovato-oblongis v. ovalibus acuminatis basi rotundatis v. attenuatis integerrimis pinnatinerviis; spicis axillaribus 2-3 folio longioribus; fl. ♂ perigonii laciniis subrotundatis obtusis puberulis; fl. ♀ perigonio 4-fido puberulo, ovario ovato globoso glabro.—Nomen vernac. Vitiense, "Malavaci."—Interior of Viti Levu (Seemann! n. 435).

A middle-sized tree, with dark-green shining leaves, which, I was told, were eaten as vegetable at cannibal feasts. Petiole 1-1½ inch long; blade of leaf 4-12 inches long, and from 2-6 inches broad.

EXPLANATION OF PLATE LXXIII., representing *Trophis anthropophagorum*, Seem.—Fig. 1, male flower; 2, female flower; 3, pistil, cut longitudinally; 4, fruit, almost ripe; 5, the same, cut through:—*all magnified.*

ORDO LXXXVI. CERATOPHYLLÆ.

I. **Ceratophyllum**, Linn. Gen. n. 1055; Endl. Gen. n. 1829. Flores monoici. Fl. ♂: Involucrum axillare, ∞-fidum, sessile. Antheræ ∞, sessiles, 2-loculares, indehiscentes. Fl. ♀: Involucrum ut in fl. ♂. Ovarium 1, sessile, 1-loculare. Ovulum 1, pendulum, orthotropum. Stylus terminalis, apice hinc stigmatosus. Nucula coriacea basi aculeata, stylo apiculata. Semen 1, pendulum. Embryo exalbuminosus, cotyledonibus 4 verticillatis, per paria inæquilatis, plumula ∞-phylla, radícula brevissima infera.—Herba sub aquis demersa; foliis verticillatis, rigidulis, di-trichotome multifidis, involucris axillaribus solitariis. Species unica:—

1. **C. demersum**, Linn. Sp. 1409.—*C. submersum*, Linn. Sp. 1409.—In swamps, Viti Levu (Seemann! n. 386).

ORDO LXXXVII. CHLORANTHACEÆ.

I. **Ascarina**, Forst. Char. Gen. n. 59. Flores dioici. Fl. ♂ 1-andri, laxe spicati, ∞-bracteati. Filamentum brevissimum; anthera oblonga, 4-sulca, 2-locularis, longitudinaliter dehiscens. Fl. ♀ laxe spicati, 1-bracteati. Ovarium globosum v. ovoideum, 1-loculare. Ovulum 1, pendulum. Stigma sessile, subtrilobum. Drupa 1-sperma.—Arbores v. frutices, ramis teretibus v. subtetragonis; foliis oppositis serratis stipulatis, spicis solitariis v. racemosis.

There is, besides the species mentioned below, only one other in tropical Polynesia, viz. *A. polystachya*, Forst. Prodr. n. 364, et Icon. (ined.) t. 264, 265 (*Psilotum serratum*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 338, et in Parkins. Drawings of Tahit. Plants), t. 112, from the Society Islands (Forster! Bidwill! Barclay!).

1. **A. lanceolata**, Hook. f. in Journ. of Proc. Linn. Soc. vol. i. p. 129 (Tab. LXXIV.); arbuscula; foliis petiolatis lanceolatis acuminatis grosse serratis subtus glaucis, coriaceis; paniculis folio brevioribus; antheris ovato-oblongis basi læviter cordatis; filamentis brevissimis.—Voma Peak, Island of Viti Levu (Seemann! n. 564). Also collected in New Caledonia (Vieillard! 1213) and Kermandec (M'Gillivray!), and Samoan Islands (Powell!).

According to Powell, this plant is named "O le Afia" by the Samoans, and much esteemed by them for perfuming oil.

EXPLANATION OF PLATE LXXIV., representing *Ascarina lanceolata*, Hook. f.—Fig. 1, a branch, with male flowers; 2, male flower; 3, stamen; 4, a branch of the female plant; 5, young fruit; 6, the same, cut longitudinally. Figs. 2, 3, 5, and 6, *magnified*, and copied from a sketch made by my friend Count Herm, of Solms-Laubach.

ORDO LXXXVIII. PIPERACEÆ.

I. **Peperomia**, Ruiz et Pavon, Prodr. Flor. Peruv. p. 8. Flores ♂, dense v. remote amentacei. Bracteæ peltatæ, breviter v. longiuscule pedicellatæ, pelta carnosa v. foliacea, persistentes v. deciduæ. Stamina 2, lateralia, filamentis teretibus v. subulatis, antheris 2-ocularibus, loculis appositis effœtis, sursum confluentibus, hinc subunilocularibus. Ovarium sessile, ovoideum v. oblongum, aliquando foveolæ rhachos subimmersum, rectum v. obliquum. Stigma sessile, deciduum, penicillatum, penicillis longioribus v. exilissimis, aut in apice ovarii recti aut in antico pariete ovarii oblique acuminati et tunc plerumque minutissimum. Bacca sessilis, fere exsucca. Pericarpium tenue. Semen conforme, testa membranacea v. coriacea, albumine candido farinoso. Embryo minutissimus.—Herbæ carnosæ, succulentæ, inarticulatæ, aliquando minutissimæ, v. suffruticosæ, erectæ v. subrepentes nasique radicanter, ramosæ, ramis foliisque alternis, oppositis v. verticillatis, his plerumque petiolatis, succulentis v. raro membranaceis, glabris pubescentibus v. tomentosis, costulatis v. ∞-nervi-venosis exstipulatis, viridibus v. coloratis, non raro pellucido-glandulosis cauleque aliquando odoratis; amentis pedunculatis axillaribus v. ex axillis foliorum supremorum terminalibus v. oppositifoliis, longis v. brevibus, rectis v. curvatis, filiformibus v. carnosio-incrassatis, rhachi lævi v. foveolata; floribus remotis v. densissime confertis, illis bracteis plerumque foliaceis deciduis, his carnosis persistentibus instructis; baccis insipidis v. acris.—*Micropiper* et *Peperomia*, Miq. Comm. Phytogr. pp. 37 et 39. *Tildenia*, ejusd. in Diar. Inst. Reg. Nederl. 1842. *Dugagelia*, Gaudich.? Miquel, Syst. Pip. p. 63.

Peperomia is strongly represented in Polynesia. In New Ireland we have *P. Seemanniana*, Casim. DC. in Seem. Journ. vol. iv. p. 164; in New Caledonia, *P. Caledonica*, Casim. DC. l. c. p. 135; in the Kermadec group and New Zealand, *P. Urvilleana*, A. Rich.; in Norfolk Island, *P. Endlicheri*, Miq. (*Piper simplex*, Endl.), and *P. Baueriana*, Miq. (*Piper ascendens*, Endl.); in the Society Islands, *P. pallida*, Miq. (*Piper pallidum*, Forst.), *P. reflexa*, A. Dietr. (*P. tetraphylla*, Hook. et Arn.; *Piper tetraphyllum*, Forst.), a species also known from the Hawaiian Islands (Barclay! Nuttall! Macrae!) and Norfolk Island (Endlicher's *Piper æmulum*), and *P. rhomboidea*, Hook. et Arn. (*Piper polymorphum*, Soland. Prim. Fl. Ins. Pacif. (ined.) p. 206, et in Parkins. Drawings of Tahit. Plants (ined.), t. 8; *Piper acuminatum*, Forst. Prodr. n. 23, non alior. Nomina vernacula Tahitensia, teste Soland., "Epaimato" et "Pilhi-papa"); and in the Hawaiian or Sandwich group we have *P. membranacea*, Hook. et Arn.; *P. Gaudichaudii*, Miq. (*P. membranacea*, var. ?); *P. Sandwichensis*, Miq.; *P. insularum*, Miq.; *P. latifolia*, Miq.; *P. hypoleuca*, Miq.; *P. pachyphylla*, Miq. (*P. verticillata*, Hook. et Arn.); *P. Macraëana*, Cas. DC. in Seem. Journ. vol. iv. p. 145; *P. leptostachya*, Miq.; and *P. Fernandeziana*, Miq.

1. **P. pallida**, A. Dietr. Spec. vol. i. p. 153; Miq. Syst. Pip. p. 103; foliis alternis v. oppositis oblongo-ellipticis v. obovatis acuminatis glabris 3-5-plinerviis; amentis axillaribus, solitariis filiformibus, baccis remotis distinctis.—*Piper pallidum*, Forst. Prodr. n. 24.—Island of Taviuni, on rocks (Seemann; n. 565). Also collected in Tahiti (Forster! Banks and Solander! Nelson!).

II. **Piper**, Linn. Gen. n. 43. Flores ♂ v. polygami. Amenta oppositifolia, axillaria v. terminalia. Bracteæ peltatæ, inflexo-cucullatæ v. subconchæformes. Stamina 2-∞; antheræ 1-2-locu-

lares. Ovarium sessile, 1-loculare. Stigmata 2-5. Baccæ liberæ v. connatæ.—Suffrutices frutices v. arbores, quandoque radicales, articulatæ; foliis alternis, stipulatis; pedunculis solitariis v. aggregatis, simplicibus v. divisis.—*Quebitea*, Aubl. Guin.! *Macropiper*, *Artanthe*, *Pothomorpha*, Miq.

To *Piper* belongs the long-forgotten genus *Quebitea*, Aubl., of which the original specimens exist at the British Museum, as I pointed out to M. Casimir DeCandolle.

Besides the species represented in Viti, there are in tropical Polynesia—1. *P. excelsum*, Forst. Prodr. n. 20, et Icon. (ined.) t. 12 (*P. latifolium*, Hook. f. in Proceed. Linn. Soc. vol. i. p. 127, non Forst.; *P. psittacorum*, Endl. Fl. Norf. n. 80?), from the Kermadec group and Lord Howe's Island (M'Gillivray!); easily known by its bifid peduncles; and 2. *P. Austro-Caledonicum*, Casim. DC. mss. (*P. Siriboa*, Forst. Prodr. n. 19, non alior.), from New Caledonia (Forster! in Herb. Mus. Brit.), which approaches in look *P. excelsum*, but has solitary catkins, longer than the petiole and longer even than the blade of the leaf, and oblique, cordate-ovate, acute, and penninerved leaves.

The four Vitian species are easily distinguished, viz. :—

Stem climbing	<i>P. insectifugum</i> .
Stem erect.	
Catkins shorter than the petiole	<i>P. methysticum</i> .
Catkins longer than the petiole, solitary	<i>P. Macgillivrayi</i> .
Catkins in twos or threes	<i>P. latifolium</i> .

1. ***P. methysticum***, Forst. Plant. Esc. 50; Prodr. n. 21; foliis membranaceis æquilateris lato-ovatis subrotundatis profunde cordatis, breviter acuminatis, 9-12-nerviis, subtus in nervis subtilissime puberulis; amento ♂ oppositifolio solitario brevi.—*Macropiper methysticum*, Miq. Syst. Pip. p. 217; Guillem. in Ann. des Sc. Nat. (nov. ser.) t. vii. p. 18; De Less. Icon. t. iii. p. 53. *P. spurium*, Forst. in Herb. Mus. Paris. *P. inebrians*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 204, et in Parkins. Drawings of Tahit. Plants (ined.), t. 6. *P. decumanum*, Opiz.! in Reliq. Hænkean. fasc. vol. iii. p. 160; Icon. De Less. l. c. t. 89 (optima).—Nomen vernac. Vitiense, "Yaqona;" Tahitense, teste Solander, "Ava-ava;" Hawaiense, teste Seemann, "Kawa."—Extensively cultivated in Viti (Seemann! n. 568), also in the Hawaiian (Macrae! Barclay! Nuttall! Seemann!), Society (Banks and Solander! Forster!), and Tongan Islands (Sir E. Home!), as well as in Wallis Island (Sir E. Home!). Not grown in islands inhabited exclusively by Papuans.

Of this pepper there are six varieties in Viti, distinguished by the height of the entire plant, the length and thickness of the joints, and the more or less purplish or greenish tinge of the stem and leaves. The best Yaqona ("Kawa" or "Ava" in many Polynesian islands), for in Viti this name applies to the plant as well as to the beverage extracted from it, grows from 500 to 1000 feet above the sea-level, and in the islands of Kadavu and Viti Levu. The plant is cultivated throughout the group in small patches, and isolated specimens are frequently noticed around public and private houses. It is propagated by offshoots. The highest shrubs are about six feet, and their stem from an inch to an inch and a half in diameter; the leaves are cordate, and either green or more or less tinged with purple. The root and extreme base of the stem are the parts of which the drink is prepared; they are preferred fresh, but are nearly as good when dry. After the roots have been dug up, they are placed in an airy spot, generally on a stage over the fireplaces of the houses. In order to prepare the beverage, it is necessary to reduce the roots to minute particles, which, according to regular Polynesian usage, is done by chewing—a task in Fiji devolving upon lads who have sound teeth, and occupy a certain social rank towards the man for whom they perform the office. In other Polynesian islands it is done by young women. When a sufficient quantity has been chewed, the masticated mass is placed in a bowl made of the wood of the Vesi (*Afzelia bijuga*, A. Gray), and having four legs and a piece of rope attached to it, which, when the bowl is brought in, is thrown towards the greatest man present, and guides those who happen to arrive in ignorance of his rank in observing the ceremonies required from them. Some Fijians make it a point to chew as great a quantity as possible in one mouthful; and there is a man of this sort at Verata, famous all over the group, who is able within three hours' time to chew a single mouthful sufficient to intoxicate fifty persons. Fortunately, Kawa, unlike distilled spirits, does not render people quarrelsome; and Fijians, on extolling the virtues of their national beverage, often make this observation. On public occasions, or at convivial meetings, when the chewed root is placed in the bowl, and water is being poured on, the whole assembly begin to chant appropriate songs, accompanied by the beating of little sticks on a bamboo or log of wood, and this is kept up until the dregs of the root have been strained through the fibres of the Vau (different species of

Hibiscus), or, in the absence of them, through fern leaves. When the beverage is ready, the chant is discontinued, and the priest or any head man present pronounces a toast or prayer over it, after which the first cup—a cocoa-nut shell—is handed to the person of highest rank in the assembly. The Kawa is taken out of the bowl by means of the strainer, which is dipped into the fluid, and then squeezed. Although both bowl and cup are always carefully dried and cleaned after having been used, a crust invariably forms at the inside, giving them the appearance as if they had been enamelled. This crust, after a lapse of three or four months, is carefully scraped off, and makes the strongest of all Yaqona. The beverage has the look of coffee with plenty of milk in it, and an aromatic slightly pungent taste, which, when once acquired, must, like all acquired tastes, be perfectly irresistible. Drunk in moderation, it has probably no bad effect, and acts upon the system somewhat like betel-nut; but, taken in excess, it generates all sorts of skin-diseases, and weakens the eyesight. Nearly all the lower class of whites in the Fiji are Kawa drinkers, some regular drunkards; and it is generally accepted as a proof of a man belonging to the more respectable portion of society if he refrains from touching this filthy preparation. Most of these whites prefer it prepared in true Polynesian fashion; only a few have the root rasped on a grater—a process said to impair the flavour considerably. Roots of Yaqona are presented to visitors as tokens of goodwill, and to the temples as offerings. I have also seen the leaves of the plant hung up in the temples, together with the little twigs of the *Waltheria Americana*. As we in Europe, when engaging soldiers or servants, hand a small coin in proof that the bargain has been accepted, so the Fijians, when effecting a bargain or sale, give or take a small deposit, which is called the “Yaqona,” and either consists of a piece of Kawa-root, or any other article that may prove acceptable. Drinking Kawa being peculiar to all light-skinned Polynesian tribes, Thomson (‘Story of New Zealand:’ London, 1859: vol. i. p. 193) expresses surprise that the Maoris of New Zealand should have forgotten the art of extracting it, “seeing that the plant (*Piper methysticum*, Forst.) grows abundantly in the country.” But the *Piper* found wild in New Zealand is not, as Thomson supposes, the *Piper methysticum*, Forst. (the true Kawa plant), but the *Piper excelsum* of the same author (*Macropiper excelsum*, Miq.). Hence it can form no surprise that a genuine Polynesian people should have forgotten the art alluded to during the long lapse of time intervening between their departure from Samoa and their discovery by Europeans. They have, however, preserved the name of “Kawa,” which they have transferred to their indigenous pepper (Kawa-kawa), and also to a beverage (Kawa) made of the fruits of the *Coriaria myrtifolia*, Linn., a plant by them termed Tupa-Kihi, Tutu, or Puhou. Kawa-kawa, according to Colenso’s statement in J. D. Hooker’s ‘Flora of New Zealand,’ signifies “piquant.” Thomson attempts to trace Kawa, Kava, or Ava, as the various Polynesian dialects have it, to the Sanscrit “Kasya,” which seems to be a general term for intoxicating beverages. It is strange that in the Abyssinian province of Cafe (see Harris’s ‘Highlands of Ethiopia’) the name of “Kah-wah” should be given to coffee. The word “Kawa” is not preserved in the Vitian language, except in the instance of “Wa-Gawa” (literally the climbing Kawa), the vernacular name of *Piper insectifugum*, Casim. DC. The medicinal properties of the Kawa-plant have claimed some attention. In the French translation of Golding Bird’s work on Calculous Affections, Dr. O’Rorke has inserted, amongst others, the following remarks:—“The Kawa-plant is the most powerful sudorific in existence, and its stimulant qualities render it applicable in those cases in which colchicum is prescribed. . . . The intoxication it produces is not like that caused by spirituous liquors, but rather induces a placid tranquillity, accompanied by incoherent dreams. Kawa is as powerful in its therapeutic action as lignum vitæ or guaiacum, sarsaparilla, etc., and the islanders use it as a specific against the diseases brought over to them by foreign vessels. On the other hand, this drug, used to excess as an intoxicating agent, over-excites the skin by its sudorific effects, and eventually even occasions elephantiasis. . . . The chemical constituents, according to Goble, are as follows:—carbon, 62·03; hydrogen, 6·10; nitrogen, 1·12; oxygen, 30·75. It contains 26 per cent. of cellulose, 49 per cent. of starch, one of methysticine, a crystallizable principle, two of an acrid resin called Kawine, and about 7 per cent. of gum, iron, and magnesia, and a few substances of minor importance.” In a paper which M. Cuzent laid before the Academy of Sciences at Paris, in 1861, the chemical composition of the Kavahine (thus it is spelt in the report at hand), the active crystallizable principle of the Kawa, identical, it would seem, with what Goble terms “Methysticine,” is thus given: no nitrogen, 66 per cent. of carbon, 6 of hydrogen, and 28 of oxygen.

2. **P. latifolium**, Forst. Prodr. n. 22, et Icon. (ined.) t. 13; Sol. Prim. Fl. Ins. Pacif. (ined.) p. 205; Parkins. Icon. (ined.) t. 7; foliis coriaceo-membranaceis (stirp. ♀) utrinque glabris v. subtus puberulis rotundatis basi truncatis v. leviter concavis, apice brevissime protracto obtusis, 11–13-nerviis, petiolis stipulaceo-alatis; amentis ♀ aggregatis axillaribus.—*Macropiper latifolium*, Miq. Syst. Pip. p. 218. Nomen vernac. Tahitense, teste Solander et Forster, “Ava avaidai.”—Taviuni (Seemann! n. 566). Also collected in the Society Islands (Banks and Solander! Forster! Bidwill!), Tana, New Hebrides (Anderson!), and Tongan Islands (Forster!).

Varies with glabrous and pubescent leaves.

3. **P. Macgillivrayi**, Casim. DC. mss. (Tab. LXXV.); foliis ovatis acuminatis basi rotundatis cordatisve 5-9-nerviis supra glabris subtus reticulatis pubescentibus v. glabris, petiolis ad medium anguste membranaceo-alatis; amentis ♀ elongatis solitariis.—*Macropiper puberulum*, G. Benth in Hook. Lond. Journ. of Bot. 1843, p. 235; Miquel, Syst. Pip. p. 221. Nomen vernac. Vitiense, "Yago-yagona." In woods, Viti Levu, Taviuni, and Kadavu (Seemann! n. 567; Barclay!). Also collected in the Tongan (Capt. Cook! Nelson! Barclay! Home!) and the Society Islands (Barclay!).

There are two varieties of this species; one, confined to Viti, has the leaves pubescent below; the other, found in Tonga and Tahiti, has the leaves glabrous on both sides.

This plant is not used for any purpose; but in the belief of the people of Viti Levu it is sacred to the Veli (spirits of the woods),—in fact, their Kawa plant, which mortals cannot destroy or injure without exposing themselves to the danger of being severely punished by them.

EXPLANATION OF PLATE LXXV., representing *Piper Macgillivrayi*, Casim. DC. (*P. puberulum*, Bth. in Plate.)—Fig. 1, portion of young female catkin; 2, portion of ditto, far advanced towards fruiting; 3, peltate bracts of ditto; 6, young ovary; 4, fruit, nearly ripe; 5, the same, with bract:—all, with the exception of Fig. 4, magnified.

4. **P. insectifugum**, Casim. DC. in lit.; scandens; radicans; foliis petiolatis rotundato-ovatis apice acuminatis basi æquali rotundatis subtruncatisve utrinque glabris membranaceis subpellucidis pellucido-punctulatis 9-nerviis et reticulato-nervulosis, centrali nervo ad $\frac{1}{3}$ long. usque nervum alternatim utrinque unum subadscendentem ante apicem evanidum sursumque nervulos validos tota longitudine mittente, lateralibus nervis utrinque 3 e basi solutis, petiolo subtilissime puberulo basi ima vaginante, maris amento quam folium brevior filiformi, pedunculo glabro quam petiolus brevior, bractea rotundata centro peltata breviter pedicellata glabra coriacea, staminibus 3, filamentis brevibus. "Wa-Gawa" (i. e. climbing "Kawa"), ab incolis dictum.—Interior of Viti Levu (Seemann! n. 569). Dioicum; ramuli glabri; limbi 0.115 long., 0.1 lati; petioli 0.016 longi.

"N. 569 of your Viti Collection (writes M. Casimir De Candolle) is a new species described in my manuscript under the name of *P. insectifugum*. It is evidently related to *P. methysticum*, Forst. (*M. methysticum*, Miq.), though differing from that species by the number of its stamens as well as by its nervation. *P. Siriboa*, Forst., to which you provisionally referred it, is the same as a *Piper* collected by Vieillard in New Caledonia, and which I describe under the name of *Austro-Caledonicum*."

ORDO LXXXIX. CASUARINEÆ.

I. **Casuarina**, Rumph. Amb. vol. iii. p. 87. t. 58. Endl. Gen. n. 1838. Flores mono-dioici. Fl. ♂: Perigonium 2-phyllum, 2-bracteolatum, foliolis calyptratim cohærentibus. Stamen 1; filamentum filiforme; anthera 2-locularis. Fl. ♀: Bracteolæ 2; perigonium 0. Ovarium 1-loculare. Ovulum 1, pendulum, anatropum. Stylus brevissimus; stigmata 2, filiformia. Caryopsis lenticularis. Semen inversum. Embryo exalbuminosus, orthotropus, radícula brevissima supera.—Arbores v. frutices, ramis ramulisque verticillatis, nodoso-articulatis, aphyllis v. rarissime foliigeris, articulis vaginatis, floribus masculis in spicas, femineis in capitula terminalia dispositis.

Besides the two species enumerated below, several are reported by Vieillard to occur in New Caledonia.

1. **C. nodiflora**, Forst. Prodr. n. 335; et Icon. (ined.) t. 255; Miq. Rev. Casuar. p. 15. t. 1, A; ramulis filiformibus breviusculis simplicibus v. divisis subquadriquetris glabris, internodiis 2-3 mm.

longis; vaginarum dentibus 4 triangularibus acutis, raro obtusiusculis carinatis pallido-marginatis appressis; amentis fl. ♂ plerumque compositis, fl. ♀ globosis, bracteolis alte exsertis.—*C. verticillata*, Lam. Nomina vernac. Vitiensia, “Cau,” “Caukuro,” et “Velau.”—Ovalau, Viti Levu, and other Vitian islands (Seemann! n. 571; Sir E. Home! Williams! Græffe!). Also collected in New Caledonia (Forster! Anderson! Sir E. Home!).

2. ***C. equisetifolia***, Forst. Gen. 103. t. 52; Prodr. n. 334, et Icon. (ined.) t. 254; Miq. Rev. Cas. p. 43; Parkins. Drawings of Tahit. Plants (ined.), t. 92; ramulis filiformibus strictiusculis cinereo-viridulis, 6–8- vulgo 7-angulato-teretibus; angulis acutiusculis, faciebus subdemissis, medio sulco puberulo v. glabro notatis, vaginarum subtumidarum dentibus 6–8 vulgo 7, appressis lanceolatis ciliolatis, dorso carinatis, internodiis 5–8 mm. longis; amentis fl. ♂ ramulos terminantibus v. ad ramos sessilibus, teretiusculis, adultis sursum subclavatim incrassatis pallescentibus, vaginis imbricatis in dentes 6–7–8 lanceolatos partitis, pubescentibus; amentis fl. ♀ lateralibus breviter pedunculatis, maturis ellipsoideis, bracteis bracteolisque pubescentibus, his ellipticis acutis exsertis.—*C. littorea*, Rumph. Amb. vol. iii. p. 86. t. 57. *C. Africana*, Lour. Fl. Cochinch. vol. ii. p. 670. *C. muricata*, Roxb. Fl. Ind. vol. iii. p. 519. *C. lateriflora*, Lam. *C. littoralis*, Salisb. Nomen vernac. Vitiense, “Nokonoko;” Tahitense, “Toa” v. “Aito.”—Common on the smaller and the coasts of the larger Vitian islands; occasionally planted over tombs of chiefs of rank (Seemann! n. 570; Williams!). Also collected in the Marquesas (Barclay!), Society (Banks and Solander! Forster!), and Tongan Islands (Sir E. Home!), as well as in the Isle of Pines off New Caledonia (Sir E. Home!). Widely spread over New Holland, India, and the Archipelago, Madagascar, and tropical Africa.

This tree is most frequent in the eastern parts of the group, its prevalence indicating a poor soil. Its sombre aspect, and the wailing sound caused by the playing of the breezes in the branches, forcibly appeal to the poetical sentiment; and hence the Nokonoko is planted in masses about tombs; a fine grove of that kind is seen at Lakeba, surrounding the burial-place of a departed chief. The young branches are drooping, imparting to the tree a peculiarly graceful look, and forming a beautiful contrast to the erect and rigid growth of its congener, the Velau (*Casuarina nodiflora*, Forst.), which is occasionally met with in its company, and also yields a useful timber. Whilst the Nokonoko assumes a more or less pyramidal form, is scarcely ever higher than forty feet, and has a greyish hue, the Velau is often sixty feet and even more in height and three feet in diameter, and has a green mossy-looking crown, which, by its flatness on the top, reminds one of the Stone-pine so characteristic of the Italian landscape. The Velau almost invariably grows in good soil, generally in mixed forests; whilst the Nokonoko shuns, as it were, a close contact with other kinds of trees, and it scarcely ever associates with any but the Balawa or Screw-pine (*Pandanus odoratissimus*, Linn.).

ORDO XC. CONIFERÆ.

Representatives of all the genera of *Coniferæ* of tropical Polynesia have been met with in Viti except *Araucaria*, of which one species (*A. excelsa*, R. Brown) occurs in Norfolk Island (Backhouse! Patterson!), one (*A. Cookii*, R. Brown) in the Isle of Pines, off New Caledonia (W. Anderson!, anno 1774, Sir E. Home!), and in New Caledonia (Strange!), and a third (*A. subulata*, Vieillard) in New Caledonia.

I. **Dammara**, Rumph. Herb. Amb. vol. ii. p. 174; Endl. Conif. p. 188. Flores dioici. Amenta ♂ axillaria v. extra-axillaria, cylindrica, basi perulata. Stamina ∞, axi inserta, imbricata; filamenta brevissima, horizontalia, in connectivum crassum cuneatum v. orbiculatum producta; antheræ loculi nunc 5 v. 6 uniseriati, nunc 6 ad 15 biseriati, e connectivi basi penduli, cylindrici, filamento paralleli et æquilongi, postice longitudinaliter dehiscentes. Fl. ♀: Amenta terminalia, solitaria v. gemina. Squamæ ∞, ebracteatae, axi insertæ, dense imbricatæ, apicem versus sensim crassiores. Ovula sub

quavis squama 1, eidem prope apicem inserta, inversa, libere pendula, atropa, apice deorsum spectante aperta. Strobilus ovato-globosus, e squamis coriaceo-lignosis, dense imbricatis, demum ab axi solutis. Semina sub quavis squama solitaria, inversa, libere pendula, ovata, compressa, hilo transversim lineari, integumento membranaceo utrinque in alam producto, ala altera sæpius angusta marginiformi, altera cultriformi squama latiore. Embryo in axi albuminis carnosissimi antitropus, ejusdem longitudine, cotyledonibus 2 semicylindricis obtusis, radícula cylindrica infera.—Arbores excelsæ, resinifluæ; folia alterna et subopposita, oblongo-lanceolata, integerrima, crassa, enervia, striata, facie inferiore tota stomatum seriebus dense sibi oppositis.

The genus *Dammara*, extending as far south as the northern island of New Zealand, and as far north as Borneo and Java, has its focus of geographical distribution in the Polynesian Islands. The genus will probably receive considerable additions when the various islands are thoroughly explored, as all the species seem to be very local. Eight species are known to me, seven of which I have seen growing in the Botanic Gardens of Sydney, New South Wales; and authentic living as well as dried specimens of them I brought home and made over to Kew Gardens. I pointed out these specimens to M. Parlatore, when he was in England, to work out the *Coniferae* for De Candolle's 'Prodromus,' and gave him all the notes and the references I had made on the various species. However much some of the species may resemble others in leaf, and undistinguishable as they may be in a dry state, nobody who has seen the various species growing side by side in the Sydney Gardens can for a moment confound them. Indeed, the different islanders who happen to visit Sydney have more than once pointed out which is the *Dammara* peculiar to their respective countries, as has already been stated by Dr. George Bennett, in his 'Gatherings of a Naturalist.' Every species has a peculiar mode of growth, and differently-coloured branchlets and leaves; and those who may be inclined to unite most of the proposed species, ought to examine the matter well and wait for better materials than are now accessible before they do so. The following are the species known to me, and some of the notes made on them at Sydney:—

1. *D. robusta*, Charles Moore, mss. in G. Bennett's 'Gatherings,' p. 353—*D. Brownii*, Hort. Angl. "Tendara" v. "Tedarandara;" Autochthon. Nov. Holland.—Southern Queensland, where discovered in January, 1849, by J. S. Bidwill (Cf. 'Kew Journal,' 1849, p. 284). It is stated by the discoverer to have a trunk 150–170 feet high by 3 feet in diameter; a bark smooth, shining, and dropping off in scales; and wood, which, when fresh, is tough and yellowish. Judging from the plant in the Sydney Garden, which in 1861 was 40 feet high, I think the name "*robusta*" well chosen; no other species of the genus has so robust a habit. The bark of the branches one year old was green, slightly tinged with brown; whilst the nascent branchlets and leaves were pruinose, the pruinose covering disappearing on being touched with the finger, and being more intense on the under side of the leaf than on the upper. The foliage generally was much more dense than that of either *D. ovata*, *australis*, *orientalis*, or *obtusa*.

2. *D. orientalis*, Lamb. Pin. Ed. vol. i. p. 61. t. 38 et 39; Endl. Conifer. p. 189.—"Dammara," Malay.—Moluccas, Java, and Borneo. In the Sydney Gardens the specimen had the bark of the branches one year old light-brown, and that of the nascent branchlets of the same colour and without any pruinose covering; leaves, just when unfolding, brown on the upper, pruinose on the lower side, but afterwards gradually losing the pruinose covering altogether.

3. *D. australis*, Lamb. Pin. Ed. vol. ii. p. 14. t. 6; Endl. Conif. p. 190.—"Kauri" v. "Kouri," Nov. Zel.—Northern island of New Zealand. In Sydney Gardens the nascent branchlets were deep purple and slightly pruinose, but the young leaves not pruinose.

4. *D. obtusa*, Ch. Moore, mss.; Lindl. in Journ. Hort. Soc. Lond. vol. vi. p. 270; G. Bennett, 'Gatherings,' p. 351.—Aneitum, New Hebrides. In Sydney the bark of branches one year old was light-brown, the nascent branchlets green, without a trace of *pruina*, and the leaves without any pruinose covering on either side.

5. *D. ovata*, Ch. Moore, mss. in G. Bennett's 'Gatherings of a Naturalist,' p. 353.—New Caledonia. In Sydney, the bark of branches one year old was of a yellowish-brown, the nascent branches were green, and slightly pruinose; leaves, when just unfolding, slightly pruinose on the lower surface, but not at all on the upper; the leaves ultimately green on both sides, and towards the petiole and margin of the same yellowish-brown as the branches one year old.

6. *D. macrophylla*, Lindl. in Journ. Hort. Soc. Lond. vol. vi. p. 271.—*D. Perousii*, Ch. Moore in Kew Journ. 1852, t. 5; G. Bennett, l. c. p. 351.—Vanikola or La Peyrouse Island, where discovered by Ch. Moore. I have no notes on this species from fresh specimens. It is just possible that it may also occur in Viti. The sterile specimen taken from a young plant which I gathered in Vanua Levu, and have figured in Plate LXXVI. Fig. 1, agrees in the shape of its leaves and thick medullose branches, with the branch figured by Hooker.

7. *D. Moorei*, Lindl. in Journ. Hort. Soc. Lond. vol. vi. p. 271; G. Bennett, l. c. p. 352.—New Caledonia. In Sydney, the bark of branches one year old, as well as the nascent branchlets, were green; the young leaves green above, and slightly pruinose below, whilst the old leaves were without any pruinose covering; the foliage was very dense. Branches at the base of tree pendulous. The cones are unknown; and I asked Mr. Moore whether he had any proofs of this species really belonging to *Dammara*, and not to *Podocarpus*, two genera impossible to distinguish in leaf in all cases, but he expressed himself satisfied about its being a genuine *Dammara*. It is just possible that *D. lanceolata*, from New Caledonia, a name mentioned by Vieillard in the Ann. des Sc. Nat. vol. xvi. (ser. 4) p. 56, may be identical with this species, which Lindley briefly characterized "foliis anguste lanceolatis acuminatis subfalcatis tenuioribus."

8. *D. Vitiensis*, Seem.; G. Bennett, l. c.—Viti. In Sydney the nascent branchlets and young leaves were green, without any pruinose covering.

A plant cultivated in Sydney, under the name *Dammara* sp. e horto Maurit., with leaves and branches green on both sides, I hold to be a *Podocarpus*.

1. **D. Vitiensis**, (sp. nov.) Seem. (Tab. LXXVI.); foliis oppositis lanceolatis acutis v. obtusiusculis; amentis ♂; strobili globosi squamis adpressis apice rotundatis; seminum alis subæqualibus cultriformibus.—Nomen vernac. Vitiense, "Dakua."—Vanua Levu, Viti Levu, Ovalau, and Kadavu (Seemann! n. 577.)

Dakua trees have been found in Vanua Levu, Viti Levu, Ovalau, and Kadavu; but European sawyers have already made such sad havoc amongst them, that it is only in the two former islands where they are still abundant. Wilkes alludes to a fine one near Levuka, Ovalau, which measured five feet in diameter, or fifteen feet in circumference. Those which I saw at Korovono, Vanua Levu, displayed greater dimensions, the largest stem being, at four feet above the base, eighteen feet; and another, also four feet above the base, sixteen feet in circumference. Milne (Hook. Journ. Bot. and Kew Misc. ix. p. 113) gives from eighteen to twenty-seven feet circumference as the maximum, but he does not state at what height above the base his measurement was taken. Some of the trees at Korovono were from eighty to a hundred feet high, and up to a height of sixty feet free from branches. The bark was whitish on the outer, red on the inner, surface, peeling off like that of Australian gum-trees. Old specimens did not exhibit regular whorls of branches, as is the case with most Conifers. The wood of the Korovono tree was white, but there is said to be also a red-wooded kind, which may perhaps prove specifically distinct from this plant. Dakua wood is used for masts, booms, and spars, for flooring houses, and for all those purposes for which deal is usually employed by us. Spars, from sixty to eighty feet long, and two to three feet thick, were seen at Taguru, Viti Levu. The Dakua is not gregarious, but always found isolated in forests of a mixed composition. Like other Kowrie-pines, the Fijian Dakua exudes a gum, or rather resin, called "Makadre." Lumps weighing 50 lbs. have occasionally been found under old rotten stumps; and much might be collected in districts whence these trees have disappeared, if the natives could be made acquainted with the peculiar way in which the New Zealanders sound the ground for their kowrie-gum. There has never been any foreign trade in this article, because the Europeans in Fiji, ignorant of its average market-value, rejected the offer of the natives to collect it. Captain Dunn, an American, is said to have taken away half a ton of it, but it has not transpired whether he was able to dispose of it to advantage. New Zealand kowrie-gum has for years past fetched at public sales in London from 14s. to 16s. the cwt. In consequence, however, of the rebellion in New Zealand, it gradually advanced in 1860 from 25s. to 28s.; in the spring of 1861 it was quoted at from 18s. to 20s., and it will no doubt ultimately be sold again at its former prices. The Fijians use the gum principally for glazing pots (vakamakadretaka),—the substance being put on while the vessels are yet very hot,—and for burning. The older the gum gets, the better it burns. At first it is of a light whitish colour, but with age becomes more and more that of amber, as well as transparent. The natives, fearing demons, ghosts, and other creations of their wild fancy, are always anxious to be housed before sunset, and when compelled to venture out in the dark or when benighted, set up loud yells to drive away evil spirits, and light a torch made either of the resin of the Dakua (bound round with rushes), the stem of the Wavuwavu (*Erigeron albidum*, A. Gray), the trunk of the Bamboo, or the flower-stalks of the Cocoa-nut Palm. In the smaller islands and certain coast-districts of Vanua Levu and Viti Levu, lamps fed with cocoa-nut oil are common; but in the interior of the principal islands, where that oil is an imported and costly article, the resin of the Dakua is burnt, either in the form of pastilles about two inches long, or in ribbon-like strips surrounded by slips of wood, so as to constitute a kind of candle. When burnt in the first-mentioned way, the resin is protected by crocks from running about and igniting the Pandanus matting or other inflammable materials of the houses. A dye obtained from the smoke of the burning resin is used for the hair and for painting native cloth black, or mixed with a certain red earth to make a brown pigment. Amongst the lower classes it is employed for tattooing women instead of the juice of the Lauci fruit (*Aleurites triloba*, Forst.), resorted to by ladies of rank: the skin being punctured with thorns of the Shaddock-tree.

EXPLANATION OF PLATE LXXVI., representing *Dammara Vitiensis*, Seem. Fig. 2, a cone (*nat. size*). 3, scale and seed; 4, one of the wings of seed (*both 3 and 4 magnified*). Fig. 1 represents leaf and part of branch of a young sterile plant, which may possibly not belong to *D. Vitiensis*, but to *D. macrophylla*, Lindl.; it should, however, be added, that I collected it close to the tree from which the cone and other branch figured in our Plate were taken.

II. **Podocarpus**, L'Hérit. mss.; Endl. Conif. p. 206. Flores dioici aut rarius in diversis ramis monoici. Fl. ♂: Amenta terminalia aut sæpius axillaria, 1 v. ∞ in pedunculo communi fasciculata, laxè spicata aut subracemosa, nuda, basi bracteis cincta, crasse cylindrica v. filiformi-gracilia. Stamina ∞, axi inserta; filamenta brevissima; antheræ 2-loculares, connectivo squamiformi interdum minimo obsoleto superatæ, loculis oppositis extrorsum dehiscentibus. Flores ♀ spicati, spica rarissime laxa, sæpissime abbreviata, 1-2-flora, bracteis cum rhachi carnosâ coalitis et solo apice liberis v. rhachi carnosâ incrassata ebracteata semini receptaculum succosum præbentibus. Squama ebracteata v. in bracteæ axilla 1 subcymbæformis, infra apicem ovulifera. Ovulum 1, infra apicem squamæ sessile, inversum, squamæ juxta totam longitudinem adnatum, integumento exteriori in collum breve producto integumentum interius tegente. Semen inversum, integumento exteriori carnosâ cum squama apice sæpissime in apiculum brevem producta omnino connato, interiore vero osseo drupaceum. Embryo in apice albuminis farinacei antitropus.—Arbores excelsæ v. rarius frutices; folia rarissime opposita et tunc enervia, late ovata, sæpissime sparsa, linearia, uninervia, quandoque quinquefariam imbricata aut distiche patentia, enervia, et Cupressinarum in modum dimorpha, subtus v. rarius utrinque stomata gerentia; gemmæ perulatæ.*

Vieillard names, but does not describe, a new species of this genus (*P. Novæ-Caledoniæ*) in his 'Useful Plants of New Caledonia' (Ann. Sc. Nat. (Ser. 4) vol. xvi. p. 56.).

1. **P. affinis**, (sp. nov.) Seem. mss.; arborea; foliis sparsis approximatis lineari-oblongis obtusissimis basi attenuatis 1-nerviis ($1\frac{1}{4}$ unc. long., 4 lin. lat.) margine revolutis, supra lucidis viridibus, subtus pallidioribus stomatibus donatis; fl. et fruc. ignot.—Nomen vernac. Vitiense, "Kuasi."—Mountains of Viti Levu, and forming the principal part of the vegetation of the summit of Voma Peak (Seemann! n. 574).

Allied to *P. elata*, R. Brown, to which I referred it in my provisional list of Vitian plants, but evidently a different species. The natives use the wood for outriggers of canoes.

2. **P. bracteata**, Blume, Enum. Plant. Jav. 88; Endl. Conif. p. 216; foliis approximatis lineari-lanceolatis longe acuminatis margine planis; amentis ♂ fasciculatis elongato-filiformibus basi squamis persistentibus.—*Lignum emanum*, Rumph. Amb. vol. iii. p. 47. t. 26. Nomen vernac. Vitiense, "Gagali."—Banks of Navua and other rivers of Viti Levu (Seemann! n. 575).

The sterile specimens I collected of my n. 575 agree best with *P. bracteata*, which *in leaf* seems to differ principally from *P. macrophylla*, Don, by the edge being flat, not recurved. In Viti the tree grows principally by rivers, and I did not see it higher than forty feet. During the wet season a great part of the trees is under water, but this submersion does not seem to affect them more than it does our Willows. The wood is peculiarly elastic, and would probably answer well for keels of boats and schooners.

3. **P. Vitiensis**, Seem. in Bonplandia, vol. x. p. 366, et Journ. of Botany, 1863, p. 33. t. 2 (Tab. LXXVIII.); arbor excelsa; ramis teretibus brunneis; foliis omnibus distichis ovato-lanceolatis

* *Podocarpus Dulcamara*, Seemann in Bonplandia, vol. ix. p. 253,—a species differing from all other *Coniferae*, by the leaves having a very sweet taste when first chewed, but directly after bitter, and cultivated in some gardens under the erroneous name of *Araucaria lancifolia*,—is identical with *Podocarpus amara*, Blume, Rumphia, t. 170; Blume's name, however inappropriate, enjoying the right of priority.

v. subellipticis acutis v. obtusiusculis 1-nerviis, nervo in petiolum adnatum decurrente supra viridibus, subtus pallidioribus, utrinque stomatiferis; amentis ♂ spicatis terminalibus solitariis gracilibus, connectivo ovato-acuminato; amentis ♀ ign.; fructu obovato obtuso, basi bracteato, lævi; semine erecto. Nomen vernac. Vitiense, "Kau solo."—In the island of Viti Levu (Milne! Seemann! n. 576; Græffe! n. 1).

This is one of the finest *Coniferæ* I have ever seen, and found by Milne, Græffe, and myself in the island of Viti Levu. It attains sixty feet in height, has a stem nine feet in circumference, and has drooping, extremely graceful branches, which would render the species a highly desirable acquisition to our living collections. In habit it is unlike any other *Podocarpus*, but from the materials now on hand we could not make it into a separate genus. The leaves are about one inch long and three lines broad. The male spikes are terminal, cylindrical, and an inch to an inch and a half long. The anthers are on short filaments, and form, together with the connective, a cordate acuminate body. The fruit is obovate, obtuse, and scarcely an inch long. The seed is erect, and the embryo clavate-cylindrical and acute.

EXPLANATION OF PLATE LXXVIII., representing *Podocarpus Vitiensis*, Seem.—Fig. 1, portion of branchlet; 2 and 3, anthers; 4, fruit (ripe); 6 and 7, the same, cut longitudinally and horizontally; 5, seed; 6, embryo:—Figs. 1, 2, 3, and 8, magnified.

4. **P. cupressina**, R. Brown, ex Mirb. in Mem. Mus. vol. xiii. p. 75; J. J. Bennett, in Horsfield, Plant. Jav. Rar. p. 35. t. 10; Endl. Conif. p. 222; foliis aliis lanceolatis spinuloso-mucronatis arcte quinquefariam imbricatis, aliis lineari-lanceolatis aversis falcatis elongatis distiche horizontaliter patentibus; seminibus ramulos breves sæpissime cernuos terminantibus.—*P. Horsfieldii*, Wall. Cat. n. 6049. *P. imbricata*, Blume, Enum. Pl. Jav. 89. Nomen vernac. Vitiense, "Kau tabua."—Island of Viti Levu (Milne!). Also collected in Aneitum (Milne!) and the Indian Archipelago.

This tree is from fifty to eighty feet high, with spreading, pendulous branches. The native name is derived from "kau" (wood), and "tabua" (a whale's tooth), because the timber has the yellowish tinge of a well-oiled whale's tooth, formerly esteemed the most precious article in Viti.

III. **Dacrydium**, Soland. ex Forst. Plant. Escul. 80; Endl. Conif. p. 224. Flores dioici. Fl. ♂: Amenta terminalia, solitaria, ovoidea, minuta, basi bracteis imbricatis cincta. Stamina ∞, axi inserta; filamenta brevissima; antheræ 2-loculares, connectivo squamæformi superatæ, loculis appositis extrorsum dehiscentibus. Fl. ♀ solitarii, ad ramulorum apicem laterales v. rarissime in spicam terminalem collecti. Squama ebracteata, subcymbæformis, medio ovulifera. Ovulum 1, in media squama sessile, inversum, integumento exteriori laxo, interioris apice in collum breve producto exserto. Semen tandem erectum, squamæ haud accrescenti insidens, integumento exteriori laxo carnosum, ore lato hiante, nucleo multo brevioris, disciformi, interiori osseo. Embryo in apice albuminis farinosi antitropus.—Arbores proceræ, sempervirentes, ramosissimæ, ramis sæpe pendulis; folia acerosa, decussatim opposita, decurrentia, undique stomatigera; flores terminales, exiles; gemmæ nudæ.

Vieillard, l. c. p. 56, enumerates an undescribed species of this genus (*D. ustum*) amongst the useful plants of New Caledonia.

1. **D. elatum**, Wall. Cat. n. 6045; Hook. Lond. Journ. of Bot. vol. ii. p. 144. t. 2; Endl. Conif. p. 226; foliis aliis acicularibus tetragonis acutis erecto-patentibus, aliis squamæformibus ovatis obtusis aut rarius acuminatis arcte adpressis; seminibus infra ramulorum apices solitariis.—*Juniperus rigida*, Wallich in Herb. Sieber. *Juniperus Philippsiana*, Wallich, ms. 1824. *Juniperus elata*, Roxb. Fl. Ind. Or. vol. iii. p. 838; "Gambinur," Sumatr. Junghuhn in Bot. Zeit. 1846, p. 678. coll. Schlecht.; ibid. p. 753-757. Nom. vernac. Vitiens., Seemann! "Leweninini" et "Dakua salusalu."—Ovalau (Seemann! n. 573; Storck! n. 906), Viti Levu (Græffe!).

The Leweninini is found in mixed forests from the seashore to the highest peaks. The branches are

very delicate, and the youngest hang down in graceful fringes, clad with needle-shaped leaves of about half an inch in length. The slightest breeze—and there is scarcely ever a calm in Fiji—causes the branchlets and foliage to tremble (ninini) somewhat like an aspen; hence the natives of Ovalau have given it the name of “Leweniuni.” When coming from Somosomo to Levuka, the crew on board the ‘Paul Jones’ gave me an account of a moving plant, which they assured me grew in the mountains of Ovalau, and which excited my curiosity in an eminent degree. No sooner had I landed than two boys were dispatched for specimens of the Leweninini; but instead of bringing this *Dacrydium*, they brought a club-moss, common in the tropics (*Lycopodium cernuum*, Linn.), and which I found was termed Leweninini-sa, on account of a certain resemblance to it. Macdonald (Journ. Geog. Soc. Lond. vol. xxvii. p. 247) fancied this *Dacrydium* identical with the New Zealand *Dacrydium cupressinum*, Sol.; but this is a mistake. He also expressed his belief that the wood called Dakua salusalu in Viti is the produce of this tree, and in this he is supported by Mr. Storck, who, being now a permanent resident in Fiji, had ample opportunity to go into the question. My inquiries respecting the last-mentioned point have not been attended with success. Nearly every native consulted pointed out to me a different tree as the source of that timber. Mr. Pritchard also took some pains about it, as the subject was brought before him in his consular capacity. A resident in Ovalau had made a contract with a man for a supply of Dakua salusalu. When the timber was delivered, cut on Vanua Levu, it was found to be that of the common Dakua (*Dammara Vitiensis*), quite unlike the wood going by the name of Dakua salusalu in Ovalau. Payment being refused, the consul’s interference was invoked. There being no scientific work to which an appeal could be made, Mr. Pritchard solved the difficulty by deciding that, although the wood tendered might bear or bore the name of Dakua salusalu in Vanua Levu, it was not the one recognised by that name in Ovalau; and whereas the contract had been entered into in the latter island, only such wood as was called “Dakua salusalu” there need be paid for.

ORDO XCI. CYCADEÆ.

At present only one representative of this Order is known to exist in tropical Polynesia.

I. **Cycas**, Linn. Gen. n. 1222; Endl. Gen. n. 704. Fl. ♂: Antheræ apertæ, in strobilum terminalem sessilem collectæ, undique rhachi communi insertæ, singulæ oblongo-cuneatæ, apice sursum flexo, facie inferiore polliniferæ, connectivo plus minus oblitterato. Fl. ♀: Carpida ∞, 1-phylla, aperta, in conum terminalem laxiuscule imbricata, singula elongato-spathulata, plana, crenata, ovulis in crenaturis solitariis sessilibus, erectis. Fructus carpidiis patentiusculis v. reflexis. Semina subglobosa, testa ossea, epidermide carnosula cincta. Embryo sæpius multiplex, in axi albuminis carnosus inversus, radícula supera.—Arbores v. arbusculæ, frondibus pinnatis, pinnis subdecurrentibus uninerviis, rhachi pinnulisque in vernatione circinatis.

1. **C. circinalis**, Linn. quoad syn. Fl. Malab. vol. iii. t. 3, 21.; petiolis angulatis spinosis, foliolis anguste lanceolatis subfalcatis; squamis ♂ longe anguste rigideque acuminatis; squamis ♀ longe petiolatis utrinque 1-4-ovulatis; lamina sterili deltoideo-elongata usque ad apicem profunde spinoso-serrata.—Miq. Prodr. Cycad. (1861), pp. 7 et 17; ejusd. Monogr. p. 27. t. 1 et 2; Linnæa, vol. xix. t. 1; Ann. Bot. Ind. vol. i. p. 33. t. 5. fig. C; Bot. Mag. t. 826-7.—*C. spherica*, Roxb. Fl. Ind. vol. iii. p. 747. *Blechnoides*, Forster, Herb. Nomen vernac. Vitiense, “Roro.”—Viti Levu and Ovalau (Seemann! n. 572). Also found in the Tongan and New Hebrides group (Capt. Cook! Forster!). Distributed over Ceylon, the East Indies, Sumatra (Seemann!), the Malay Archipelago, and the Moluccas.

The Roro, a tree thirty feet high in Viti, has been met with only in Viti Levu and Ovalau, and even there it is far from common; and as the pith-like substance of the trunk was reserved for the exclusive use of the chiefs, no inducement existed for the common people—as in the Tongan islands—to increase it by cultivation.

ORDO XCII.—PALMEÆ.

Besides the genera of this Natural Order represented in Viti, we have in tropical Polynesia two others, viz. *Clinostigma*, Herm. Wendl. in Seem. Bonplandia, 1862, p. 196, with one species (*C. Samoënse*, Herm. Wendl. l. c., collected by the United States Exploring Expedition in the Samoan or Navigation group), and *Teysmannia*, Zoll., also with one species, viz. *T. altifrons*, Zoll., Blass in Seem. Bonplandia, 1858, p. 322 (= ? *Pholidocarpus Ihur*, Blume; *Borassus* (?) *Ihur*, Giesecke; *Livistona* (?) *Diepenhorstii*, Hassk.), of which M'Gillivray collected in New Caledonia fruits, preserved at the British Museum.

The Fijians have specific names for all the Palms inhabiting their islands, and they are, besides, the only people who in their barbarous state had a collective term, "Niu," for them, viz. :—

Niu dina = *Cocos nucifera*, Linn.

Niu sawa = *Veitchia Joannis*, Herm. Wendl.

Niu niu = Cagicake = *Ptychosperma filiferum*, Herm. Wendl.

Niu soria = Sogo = *Sagus Vitiensis*, Herm. Wendl.

Niu massei = Sakiki = Viu = *Pritchardia pacifica*, Seem. et Herm. Wendl.

Niu Balaka = *Ptychosperma Seemanni*, Herm. Wendl.

The word "Niu" is common to most Polynesian languages, often taking the form of "Nia" and "Niau;" the New Zealand "Nikau," by which the Maoris designate their indigenous Palm (*Kentia sapida*, Seem.), does belong, and perhaps even "Nipa," the Philippine name of *Nipa fruticans*, may belong to the same group of words. We further trace the Fijian "Niu," or with the article "a" (a niu) before it, in the names Anao, Anowe, Anau, and Nu, by which a sugar-yielding Palm, the *Arenga saccharifera*, is known in different parts of the Indian Archipelago. The existence of a collective term for "Palms" never having been pointed out, the passage in John xii. 13, "Took leaves of the Palm-trees," is rendered both in the Viwa and the London edition of the Fijian Bible, "Era sa kauta na drau ni balabala,"—literally, "Took leaves of the Tree-fern," for the Balabala is a Tree-fern. "Niu" is the term that ought to have been used, there being in Syria two kinds of real Palms, but no Tree-ferns.

Only one of all the Palms as yet discovered in Fiji is a Fan-palm, the rest having pinnatifid leaves.

I. **Kentia**, Blume in Bull. Neerl. 1838, p. 66; Rumphia, t. 106; Endl. Gen. Supp. vol. i. p. 1371. Flores monoici, in eodem spadice fasciculato-ramosi, spatha 3-plici interiori incompleta cincti, in scrobiculis sessiles, bracteis haud distinctis cum rhachi coalescentibus, ♂ 2, ♀ 1 stipantes. Fl. ♂: Calyx 3-partitus, laciniis carinatis, haud imbricatis. Corolla 3-petala, petalis æstivatione valvatis. Stamina 6; filamenta brevissima, basi connata; antheræ lineares, basifixæ. Ovarii rudimentum. Fl. ♀: Calyx 3-phyllus et corolla 3-petala dissimilis, æstivatione convoluta. Staminum rudimenta 0. Ovarium 1-loculare, ovulo in fundo affixo. Stylus brevissimus; stigmata 3, distincta. Bacca parce fibrosa, 1-sperma. Albumen æquabile. Embryo basilaris.—Palme elatæ; caudice gracili, annulato, lævigato, infra petiolorum partem basilarem cylindricam longe vaginantem subincrassato, frondibus omnibus terminalibus, pectinato-pinnatisectis, segmentis reduplicatis, apice subbifidis, spadicibus infra frondes verticillatis v. solitariis, spathis coriaceis deciduis duplicato-ramosis, ramis arrecto-fastigiatis, ramulis undique in scrobiculis superficialibus, flore unico femineo minore binis masculis majoribus lateralibus stramineis obsesso, fructibus ellipsoideis parvis.

This genus is numerous in Polynesia. The most southern species are *K. sapida*, Seem. (*Areca sapida*, Sol.), of New Zealand, and *K. Baueri*, Seem. (*Areca Baueri*, Hook. f.), of Norfolk Island. A third (?) species, from the New Hebrides, is enumerated by Forster (Prodr. n. 488), under the names of "*Areca oleracea* (? ?) foliolis integerrimis; forte ad *Areca* sapidam referenda;" but nothing more is known of this doubtful species, which of course has nothing to do with the genuine *Areca oleracea*, of Linnæus. Six species have been discovered in New Caledonia, viz. *K. elegans*, Brongn. et Gris.; *K. olivæformis*, Brongn. et Gris.; *K. Vieillardii*, Brongn. et Gris.; *K. Deplanchei*, Brongn. et Gris.; *K. gracilis*, Brongn. et Gris.; and *K. Pancheri*, Brongn. et Gris.

1. **K. exorrhiza**, (sp. nov.) Herm. Wendl. in Bonpl. vol. ix. p. 190 (Tab. LXXVIII.); radicibus epigæis, segmentis frondium lanceolatis longissime acuminatis rigidiusculis; fl. ♂ phyllis perigonii

exterioris ovato-triangularibus, rudimento germinis brevi ovato.—*Areca (?) exorrhiza*, Herm. Wendl. Bonpl. 1861, p. 260, excl. descript. fruct.—Mountains of Somososo, near the Lake, island of Taviuni (Seemann! n. 660).

This Palm is remarkably straight, and often more than sixty feet high. The trunk is unarmed, smooth, and of a whitish colour; it is at a couple of feet above the base, from two to three feet in circumference. When the tree gets old, numerous aerial roots, all covered with spines, begin to appear, forcibly reminding one of the *Iriarteia exorrhiza* in tropical America. The leaves are from ten to twelve feet long, pinnatifid, and the segments four feet long and two inches broad. Before expanding they are perfectly erect, looking like a pole inserted into the heart of the foliage. The flowers appear *below* the crown of the leaves, growing out of the old wood; they are enveloped in thick coriaceous boat-shaped spathes, which, unlike those of the Sakiki (*Pritchardia pacifica*, Seem. et Herm. Wendl.), are not subject to rapid decay.

EXPLANATION OF PLATE LXXVIII., representing *Kentia exorrhiza*. Fig. 1, miniature portrait of the entire plant; 2, portion of leaf (*nat. size*); 3, portion of spatha (*nat. size*); 4, portion of spadix (*nat. size*); 5, bud of male flower; 6, male flower open; 7, stamens and abortive stigmas; Figs. 5—7, *magnified*.

II. **Veitchia**, (gen. nov.) Herm. Wendl. mss.—Spadix duplicato-ramosissimus, androgynus, superne ♂, spathis 2 deciduis. Flores in alveolis immersis, inferne 3 medii ♀, superne 2 ♂, alteri super alteros positi centrifugi. Fl. ♂: Calyx 3-sepalus, sepalis oblongo-rotundatis margine denticulatis membranaceis imbricatis. Corolla 3-petala, petalis oblique oblongis, præfloratione valvata. Stamina 6, inclusa; filamentis brevibus subulatis; antheris linearibus dorso affixis. Ovarii rudimentum columnare, apice obtusum, staminum longitudine. Fl. ♀: Calyx corollaque 3-phylli, phyllis conformibus orbiculato-oblongis. Staminodia 6, minima. Ovarium ovoideum, 1-loculare, stigmatibus minutis; ovulo fere longitudinaliter affixo hemianatropo. Fructus ovoideus v. oblongo-ellipsoideus, erectus, stigmatibus apicalibus, 1-spermus, magnus, Arecarum simillimus, lævis, mesocarpio crasso plus minusve fibroso, endocarpio crustaceo tenui. Semen longitudinaliter endocarpio affixum, subglobosum v. oblongo-ellipsoideum, rapheos ramis ∞ subparallele semen circumcurrentibus in dorso laxè anastomosantibus. Albumen æquabile. Embryo basilaris, erectus.—Palmæ inermes, caudice erecto simplici columnari, foliis plus minusve squamosis pinnatisectis, segmentis linearibus præmorsis marginatis, spadicibus magnis, fructibus flavescentibus v. aurantiacis majusculis.—In memoriam gentis Jacobi Veitch, mercatorum plantarum Londinensium celeberrimorum hortulanorum et introductorum plantarum novarum hoc genus novum dedicavi.

“This genus is closely allied to *Ptychosperma*, Labill., from which it differs in the position of the male flowers (which are in couples on the upper part of the spadix) in having only 6 stamens, in its hemianatropous, almost longitudinally affixed ovules, in its large fibrous mesocarp, and even albumen. At present four species are known—there being, besides the three enumerated below from the Viti Islands, a fourth from the New Hebrides, viz., *V. spiralis* (sp. nov.), Herm. Wendl. mss.; fructibus lato-ovoideis; seminibus subglobosis apice brevi-apiculatis badiis; raphi lata ejusdem ramis ∞ spiraliter albumen amplectentibus apice parallelis basin versus paulum reticulato-anastomosantibus.—Nomen vernac. Aneitense, teste M’Gillivray, “Nakoai.”—Island of Aneitum, New Hebrides (M’Gillivray! in Mus. Brit.). The fruit only is known; it is broadly ovoid, 4 cm. long, and not quite as many in diameter; the fibres of the mesocarp adhere together somewhat like those of *V. Storckii*, but they are more free from the base. The seed is nearly spherical, slightly protracted on the apex, 26 mm. long, and nearly 26 mm. in diameter. From the raphe issue a number of delicate, somewhat spiral, vascular bundles or branches.”—Herm. Wendl. mss.

1. **V. Storckii**, (sp. nov.) Herm. Wendl. mss. (Tab. LXXXI.); fructibus ellipsoideis; seminibus elongato-ovoideis apice obtusis in latere ventrali applanatis testaceis; raphi lata ejusdem ramis valde irregulariter anastomosantibus.—Nomen vernac. Vitiense, teste Storck, “Vuleito.”—Banks of the Rewa river, Viti Levu (Pickering! Storck! Græffe!).

“From notes furnished by Mr. Jacob Storck it appears that this Palm attains 40 feet in height, has a hard and smooth trunk (dark brown towards the base, and light brown towards the top), and has the base of the petiole short and gradually merging into the rachis, as is the case in *Cocos nucifera*. The leaf-seg-

ments are 7 dm. long, and from 5–8 cm. broad; they are coriaceous, glabrous on both sides, much folded towards the base, and furnished with three prominent longitudinal ribs, the two lateral ones of which are close to the margin of the segment. Between the midrib and the lateral ribs is a secondary rib, which is closer to the lateral rib than the midrib, and only prominent on the under side of the segment. The spadix resembles that of *Cocos nucifera* with regard to its size and ramification; it is about 8 dm. long, much and repeatedly branched; its peduncle is 1–2 dm. long, and shows three cicatrices (equidistant from each other), indicative of three spathes, of which the upper one was probably not at all or but imperfectly developed. The principal branches are 3-angular, the lower having as many as 12 branchlets, the upper less. Each branchlet is 4–5 dm. long, on the lowest part (about 1 dm. long) irregularly angular, very flexuose, and bears 4–6 female flowers. The other part of the branchlet is terete, and densely covered with deep *foveolæ*, arranged into 7 straight lines, and each *foveola* bears 2 male flowers. These 2 male flowers are superposed, and the lowermost seems to open only after the upper has done flowering; each is supported by a small membranaceous bract; the calyx is 3-sepalous, the sepals being oblong-round, one overlapping the other, and they have an irregularly denticulate margin, with downwards-bent teeth; the corolla is 3-petalous, the petals being oblique, rotundate, or oblong, valvate in æstivation; the stamens are 6 in number and as long as the petals, their filaments being very short, lancet-shaped, and their anthers elongated; the rudiment of the ovary is columnar. At the side of the upper part of each female flower there are two male flowers. The female flowers are surrounded by 2 cup-shaped bracts, not quite closed; their calyx and corolla are 3-phyllous, the sepals and petals resembling each other very much, being oblong-rotundate, and having an irregularly fimbriated margin. The ovary is oblong-rotundate, with obscure stigmas, surrounded by 6 broad ovoid staminodia, 1-ovulate, the ovule being hemianatropous and adhering nearly throughout its length. The fruit (including the flower organs adhering to it) is about 5 cm. long, and 25 mm. in diameter; it is ellipsoid, with a slender blunt taper; it appears to be yellowish or reddish-yellow when ripe. The mesocarp consists of numerous delicate fibres, the lower layers of which forming a rather woody mass, and being more firmly attached than those of *Areca Catechu*, with which the fruits of the different species of *Veitchia* have much outer resemblance."—Herm. Wendl. mss.

EXPLANATION OF PLATE LXXXI., representing *Veitchia Storckii*, Herm. Wendl. Fig. 1, miniature portrait of entire plant; 2, leaf segment; 3, portion of spadix; 4, bud of male flower; 5, male flower open; 6, female flower, far advanced towards fruit; 7, ovary; 8, ripe fruit; 9, fruit cut longitudinally; 10 and 11, seed; Figs. 4 and 5, *magnified*; Figs. 2, 3, 6, 7, 8, 9, 10, and 11, *nat. size*.

2. **V. Joannis**, (sp. nov.) Herm. Wendl. mss.; fructibus ovoideo-ellipsoideis; seminibus fructibus conformibus in apicem erectum productis porphyreis; raphi angusta ejusdem ramis apice parallelis basin versus magis reticulatim anastomosantibus.—Nomen vernac. "Niu sawa."—Moturike, Viti Levu, and Ovalau (Seemann! Veitch!) Cultivated in European and Australian gardens.

"This Palm was discovered by Dr. Seemann, who brought young plants of it to Sydney, where some of them were placed in the Botanic Garden of that place, but the others perished during the voyage to England. Mr. J. Veitch, more fortunate, succeeded in introducing the species into our European gardens. The fruits were first described by me in the 'Bonplandia' as those of *Kentia exorrhiza*, a mistake for which the discoverer assumes the responsibility. Seedlings have, from the first, a straight stem, their sheath, petiole, and rachis being of a dark blood-colour, and covered, when young, with a grey tomentum, which is interspersed with lancet-shaped, thin, dark-red *lepida*. The leaf-segments are at the point obliquely truncate, minutely dentate, and their midrib terminates in a small curve. The fruit is ovoid-ellipsoid, 6 cm. long, and 3 cm. in diameter, surrounded at base by incrassate and enlarged remnants of the flower, glabrous and bright-orange-coloured. The mesocarp is rather thick, and consists of a number of delicate fibres. The endocarp is as in *V. Storckii*. The kernel is ovoid-ellipsoid, tapering into a rather blunt point, 30–35 mm. long, and 2 cm. in diameter, and is attached, from the base to the apex, to the endocarp by means of the raphe, from which rise a number of delicate white vascular bundles, which are at the base placed parallel to each other, and towards the point overlying each other. The albumen, surrounded by a porphyr-coloured skin, is hard, white, even, and on the lower part encloses a straight embryo."—Herm. Wendl. mss.

This Palm is found all over Viti; and there is reason to believe that it is also found in the Tongan group, where, as in Fiji, it is known by the name of "Niu sawa," I am told; "sawa," signifying "red" in Tonguese (and having no meaning in Fijian), doubtless in allusion to the fruit, which merges from bright orange into red. The spadix, on which the minute monœcious green flowers are inserted, is much branched, and the branches forming large bunches, which, when loaded with ripe fruit, are rather weighty. As many as eight of these bunches are often seen on a tree at one time in various stages of development. The fruit is about the size of a walnut. At first green, it gradually changes into bright orange, and

ultimately merges into red at the base. The kernel has a slight astringent taste, and is eaten by the natives, especially by the youngsters. The wood is used for spars.

3. **V. subglobosa**, (sp. nov.) Herm. Wendl. mss. ; fructibus oblongo-ovoideis ; seminibus subglobosis ; raphi angusta obsoleta ejusdem ramis depauperatis obsoletisque.—Viti ; locality not specified (J. Veitch !)

“Only a single fruit of this is known to me, which was collected by Mr. Veitch. It is about 4 cm. long, and not quite 3 cm. across, has a delicate and very fibrous mesocarp, and a very thin endocarp. The kernel is 23 mm. long, and not quite as many mm. across. This fruit having been put out to germinate, the outer part of the kernel, and especially the raphe and its branches, had been somewhat injured, and I can only say with certainty that the raphe is narrow and does not penetrate into the albumen, and that its branches cross each other and are further apart than is the case in the other species of *Veitchia*.”—Herm. Wendl. mss.

III. **Ptychosperma**, Labill. in Mém. de l'Inst. 1800, p. 251 ; Endl. Gen. n. 1730. Flores polygamo-monoici, in spadice ramoso spathis ∞ incompletis stipato sessiles, bracteolati, δ superiores et inferne 2 φ singulos stipantes. Fl. δ : Calyx 3-phyllus, foliolis ovatis imbricatis. Corolla 3-fida, laciniis oblongis, æstivatione valvatis. Stamina ∞ , e fundo corollæ ; filamenta filiformia, libera ; antheræ lineares, subsagittatæ. Ovarii rudimentum. Fl. φ : Calyx et corolla maris, imbricato-convoluti. Staminum rudimenta 0. Ovarium 1-loculare. Stylus brevissimus, terminalis ; stigmata 3, patentia. Bacca 1-sperma, fibrosa. Albumen ruminatum. Embryo basilaris.—Palmæ elegantes, frondibus pinnatis, pinnis reduplicatis erosis, baccis ovalibus parvis.—*Seaforthia*, R. Brown, Prodr. 267 ; Mart. Palm. t. 105, 106, 109, 128, 129.

The focus of the geographical distribution of this genus is in the Indian Archipelago, but three species are found in New Holland, viz. *P. elegans*, Blume, Rumphia, ii. 118, in adnot. (*P. Seaforthia*, Miq., *Seaforthia elegans*, R. Brown, non Hook. Bot. Mag.), *P. Cunninghamii*, Herm. Wendl. Seem. Journ. of Bot. vol. i. p. 69 in adnot. (*Seaforthia elegans*, Hook. Bot. Mag. t. 4961, non R. Brown), and *P. Alexandræ*, F. Muell., one in the Society Islands, viz. *P. Tahitense*, Herm. Wendl. in Seem. Bonplandia, 1862, p. 196, and the following in Viti, viz. :

1. **P. Seemanni**, (sp. nov.) Herm. Wendl. in Bouplandia, 1862, p. 192 (Tab. LXXXII.) ; caudice gracili, segmentis utrinque 9 alternantibus, dimidiato-rhombeis apice sinuato-erosodontatis, antice cuspidatis, terminali profunde bifido ; spadicebus gracilibus, ramis 6–7 simplicibus vel inferioribus furcatis, distiche floriferis.—Nomen vernac. Vitiense, “Balaka,” v. “Niu Balaka.”—Southern parts of Vanua Levu, and northern parts of Taviuni (Seemann ! n. 664).

The Balaka is a diminutive Palm, growing as underwood in dense forests. It was met with both in Vanua Levu, on the southern side, and on the mountains of Taviuni. The trunk is remarkably straight, ringed, and about an inch in diameter when fully developed. On account of its strength and straightness it is used for spears by the natives, and would make good walking-sticks. The leaves are pinnatisect, about four feet long ; and the segments are eroso-dentate at the point, like those of *Caryota* and *Wallichia*. The flowers appear below the leaves, forming the crown of this, the smallest of all Fijian Palms.

EXPLANATION OF PLATE LXXXII., representing *P. Seemanni*. Fig. 1, miniature portrait of the entire plant ; 2, leaf (nat. size) ; 3, portion of spadix (nat. size) ; 4, female flowers with ovary approaching maturity ; 6, ovary ; 7, section of the same ; Figs. 4–7, magnified.

2. **P. perbreve**, (sp. nov.) Herm. Wendl. in Seem. Bouplandia, 1862, p. 193 ; caudice gracili ; segmentis utrinque 11–12 brevibus, mediis imbricatis dimidiato-quadratis apice sinuato-erosodontatis antice cuspidatis, terminali profunde bifido ; spadicebus gracilibus, ramis circ. 7 simplicibus, inferioribus furcatis, distiche floriferis ; baccis oblongis (rubris).—Bua or Sandalwood Bay, and Macuata Coast (2000 feet above the sea) of Vanua Levu (Pickering !).

Closely allied to *P. Seemanni*.

3. **P. pauciflorum**, (sp. nov.) Herm. Wendl. in Seem. Bonplandia, 1862, p. 193 ; caudice gracillimo, circ. 2½ cm. crasso ; spadicebus duplicato-triplicato-ramosissimis, ramulis spadicum paucifloris distiche floriferis, gregibus florum 5–9 remotiusculis.—Island of Ovalau (Pickering !).

4. **P. Pickeringii**, (sp. nov.) Herm. Wendl. in Seem. Bonplandia, 1862, p. 194; affinis *P. gracili*, Labill., differt: segmentis brevioribus apice oblique truncatis, apicalibus brevissimis 9-10 cm. longis; spadibus duplicato-triplicato-ramosissimis, ramulis gracilibus, floribus laxè spiraliter dispositis.—Island of Ovalau (Pickering!).

5. **P. Vitiense**, (sp. nov.) Herm. Wendl. in Seem. Bonplandia, 1861, p. 260, et 1862, p. 195; segmentis lato-linearibus, basi cuneatis, antice oblique præmorsis dentatisque apice obtusis vel paululum productis, apicalibus profunde bifidis.—Islands of Ovalau and Viti Levu (Seemann! n. 662).

In Wilkes's 'Narrative of the United States Exploring Expedition,' mention is made of a *Caryota*, as growing in Fiji, and being used for rafters in building. "Its straight stem, with its durable, hard, and tough qualities, render it well adapted for this purpose." No one has subsequently met with a true *Caryota*, one of the most remarkable genera of this Natural Order; and I fancy that the botanists of Wilkes's expedition may have mistaken for a *Caryota* the eroso-dentate leaves of a timber-yielding Palm, probably this *Ptychosperma Vitiense*, Wendl., abounding in some parts of Viti Levu. It is about forty feet high, has a smooth trunk, pinnatifid leaves, and was seen by me at Nukubalavu. I have not been able to learn its native name.

6. **P. filiferum**, (sp. nov.) Herm. Wendl. in Seem. Bonplandia, 1862, p. 195; segmentis elongato-lanceolatis, falcatis, apice valde oblique acuminatis coriaceis rigidis, infimis apice in filum longissimum 1-2 m. longum terminantibus; baccis ellipticis (aurantiacis) albumine æquabili.—Nomina vernac. Vitiensia, "Cagicake" et "Niu niu."—On the Macuata (northern) coast of Vanua Levu (Seemann! n. 661).

The Niu niu, or as it is more commonly termed, Cagicake, is found in the depth of the forest, where it shows its feathery crown above the surrounding trees, forming what St. Pierre poetically called "a forest above a forest," and what the Fijians less skilfully wished to express by the name of Cagicake, literally, "above the wind." Before I had seen the fruit the natives described it to me as being exactly the same shape and colour as that of the Niu sawa, but only very much smaller in size; and in this they were pretty correct. Whilst the fruit of the Niu sawa is as large as a walnut, that of the Cagicake is about the size of a coffee berry. The trunk is smooth, unarmed, and about eight inches in diameter, furnishing capital material for rafters, which the natives declare are so durable that they last for ever. The leaves are pinnatifid, ten to twelve feet long, and the lowermost segments being narrower, and at least three or four times as long as the uppermost, hang down in long fringes. When in the dusk of the evening I first encountered this singular Palm on the Macuata coast of Vanua Levu, it was this peculiarity that attracted my attention, otherwise I should have taken it to be a Niu sawa. It was pitch-dark before the tree was felled and dragged out of the forest in which it grew, when passing my fingers over the surface of the segments. I felt a thick marginal and elevated vein, which at once assured me that an undoubtedly new addition had been made to my collection. The disproportionate length of the lower segments, and the thick marginal vein pointed out, though they had been first discovered in the absence of regular daylight, are amongst the most striking peculiarities, and ought to be seized upon by those giving a popular description of this Palm; the upper segments are four feet long and three inches broad. The spadix, like that of the Niu sawa, is much branched, and may be said to be a miniature imitation of it. The Palm is found both in Vanua Levu and Ovalau, and doubtless also in Viti Levu, for a Palm which grows in the interior of the latter islands, and is termed about Namosi "Tankua," must, from the description given to me by natives, be identical with the Cagicake. According to the superstitious notion of the inland tribes of Viti Levu the diminutive fruit of the Tankua and those of the Boia, a plantain-like Scitamineous plant, form the chief food of the Veli, spirits half fairy, half gnome, with a fair complexion and diminutive body. The Tankua is their cocoa-nut, the Boia their plantain, and the Yaqoyaqona (*Piper Macgillivrayi*, Cas. DC.), their kawa plant, none of which mortals can destroy or injure without exposing themselves to the danger of being severely punished by those dwellers in the forests, the Veli.

IV. **Pritchardia**, Seem. et Herm. Wendl. in Bonplandia, vol. ix. (1861) p. 260, et vol. x. (1862) pp. 197, 310. t. 15. Flores hermaphroditi, sessiles. Spathæ ∞, cylindricæ, subcompletæ. Perigonium exterius campanulatum, 3-denticulatum, interius 3-phyllum, phyllis basi truncato-cordatis cum staminum cylindro connatis, deciduis, præfloratione valvata. Stamina 6, subæqualia; fila-

mentis in tubum brevem connatis, antice liberis lanceolatisque; antheris oblongo-lanceolatis dorso affixis. Ovarium 3-loculare, ovulis basi affixis. Styli apicales, uniti. Drupa baccæformis, 1-cocca, endocarpio tenui. Albumen æquabile, per chalazam et raphem in latere ventrali lævissime impressum. Embryo dorsale, paululum supra basim positum.—Arbores erectæ, inermes, frondibus flabelliformibus, palmatisectis, petiolis inermibus; spadibus lateralibus, longe pedunculatis, paniculato-duplicato-vel triplicato-ramosis.

This genus has been named in honour of William T. Pritchard, Esq., F.R.G.S., (author of 'Polynesian Reminiscences,') who during the time of my visit was H.B.M. Consul in Viti, and to whom, more than to any one else, I am mainly indebted for the opportunities enjoyed for exploring the group and collecting materials for the present 'Flora.' Three species of it are at present known, for besides that enumerated below, there are in tropical Polynesia two others, viz. *P. Martii*, Herm. Wendl. in Bonpl. l. c. (*Livistona* (?) *Martii*, Gaud. Bonite, t. 58 et 59), and *P. Gaudichaudii*, Herm. Wendl. in Bonpl. l. c. (*Livistona* (?) *Gaudichaudii*, Mart.), both natives of the Hawaiian Islands.

1. *P. pacifica*, Seem. et Herm. Wendl. l. c. (Tab. LXXIX.); frondium segmentis circ. 90; baccis magnitudine fructus *Pruni spinosæ*.—Seem. in 'Correspondence relating to the Fiji Islands,' (Parliamentary Papers), p. 70, et in Bonpl. vol. x. p. 153, et 310, t. 15. *Corypha umbraculifera*, Forst. Plant. Escul. p. 49, et Prodr. p. 88 ex parte, non Linn.—Nomina vernac. Vitiensia, "Viu," "Sakiki" v. "Niu Masei;" Tonguense, teste Forster et Cook, "Biu."—Vanua Levu and Viti Levu (Seemann! n. 659). Also collected in the Tongan (U. S. Expl. Exped.!) and Samoan Islands (U. S. Expl. Exped.!). Cultivated in European and Australian gardens, where it was first introduced by me.

The Palm seldom attains more than thirty feet in height. Its trunk is smooth, straight, and unarmed, and at the base from ten to twelve inches in diameter. The crown has a globular shape, and is composed of about twenty leaves, the petioles of which are unarmed, three feet four inches long, and densely covered at the base with a mass of brown fibres. The blade of the leaf is rounded at the base, fan-shaped, four feet seven inches long, three feet three inches broad, and when young, as is the petiole, densely covered with whitish-brown down, which, however, as the leaf advances in age, gradually disappears. From the axils of the leaves issue flowers, enveloped in several very fibrous flaccid spathes, which rapidly decay, and have quite a ragged appearance even before the flowers open. The inflorescence never breaks out *below* the crown, as it does in the Niu sawa (*Veitchia Joannis*, Wendl.). The spadix is three feet long, stiff and very straight, bearing numerous minute hermaphrodite flowers, of a brownish-yellow colour. The fruit is perfectly round, about half an inch in diameter; and, when quite matured, it has exactly the colour of a black-heart cherry, the mesocarp having a slight astringent taste. The seeds germinate freely, and out of a handful thrown carelessly into a Wardian case in Fiji, more than thirty had begun to sprout when they reached New South Wales, where they were taken care of in the Botanic Gardens, and duly distributed amongst the various establishments forming collections of rare and beautiful Palms—for such this species certainly is. The leaves are made into fans, "Iri masei" or "ai Viu," which are only allowed to be used by the chiefs, as those of the Talipot (*Corypha umbraculifera*, Linn.) formerly were in Ceylon. The common people have to content themselves with fans made of *Pandanus caricosus*. Hence, though there is not a village of importance without the Sakiki, or, as it is termed in the Somosomo dialect, which suppresses the letter *k*, Sarii, there are never more than one or two solitary specimens to be met with in any place, the demand for the leaves being so limited, that they prove sufficient for the supply. The fans are from two to three feet across, and have a border made of a flexible wood. They serve as a protection both from the sun and rain; during a shower of rain the fan is laid almost horizontally on the head, the water being allowed to run down behind the back of the bearer. From this the Fijian language has borrowed its name for umbrella, a contrivance introduced by Europeans, terming it "ai viu," that being one of the names by which fans are known. The leaves are never employed as thatch, though their texture would seem to recommend them for that purpose; the trunk, however, is occasionally used for ridge-beams.

Though there are, at the British Museum, no specimens or drawings of the plant which Forster (Pl. Escul. p. 49, n. 17) describes as *Corypha umbraculifera*, there can be little doubt that it is *Pritchardia pacifica*, which in Viti is called "Viu," and by the Tonguese, who have no *v* in their language, "Biu." Forster's words are:—"Hujus folium semel vidi in Waitahu, sive Christianæ insula Archipelagi Marchionis Mendozæ; Palmam ipsam deinde, sed minus frequentem in Tongatabu, Amicorum insula reperit Cookius (*vide* Itiu. Nov. vol. i. p. 332) incolis 'Biu' dictam, qui nuces ejus globosas parvulas intus edules habent."

There can also be little doubt that the Palm which F. D. Bennett ('A Whaling Voyage round the Globe:' London, 1840, p. 345), found in the Marquesas Islands, and calls *Corypha umbraculifera* is the same of which Forster saw a leaf. "This Palm," says Bennett, "so truly Oriental in its appearance, does not obtain at any of the Polynesian Islands we visited, except Santa Christina, Marquesas, where there are several topes, or groves, of the species growing in the interior of the valleys. The natives call it 'Vahána.' It resembles the common Fan Palm, or Palmyra (*Borassus flabelliformis*), of the East Indies, and attains the height of thirty-five feet. The trunk is slender, has a white bark, and bears at the summit a tuft of broad fan-shaped leaves, from the base of which hang clusters of small globular nuts. The dried leaves have uniformly a yellow colour; they are applied by the Marquesans only to aristocratic purposes, as coverings for the huts or burial-places of their chiefs; although they do not refuse to sell them to European sailors, who value them, under the name of 'trab,' for the manufacture of hats. The kernel of the nuts is eaten as a native delicacy." Bennett adds that it also grows in Timor, and is there used for making toddy, but in this instance he probably confounds *Pritchardia* with the true *Corypha umbraculifera* of Linnæus. Langsdorff also found this Palm in the Marquesas, but I am not aware whether any specimens were preserved. It is a singular ethnological fact, that throughout the Polynesian Islands this Palm is held to be exclusively the property of the aristocracy, and not allowed to be devoted to common purposes by the lower classes, like the species which it so much resembles.

EXPLANATION OF PLATE LXXIX., representing *Pritchardia pacifica*. Fig. 1, a leaf (*much reduced*); 2, spathæ and spadix (*much reduced*); 3, portion of spadix (*nat. size*); 4, flower; 5, calyx; 6, corolla; 7, petal; 8, stamens and pistil; 9 and 10, stamens; 11, pistil; 12, portion of branch with ripe fruit; 13, drupe; 14, the same after the outer rind has been removed; 15, section of the same; 16, albumen with embryo cavity and hilum; 17, 18, 19, different sections of the same; Fig. 4, 5, 6, 7, 8, 9, 10, 11, and 13-19, *magnified*.

V. **Cocos**, Linn. Gen. n. 1223; Endl. Gen. n. 1772. Flores monoici, in eodem spadice, spatha simplici lignosa, fusiformi v. clavata, ventre aperta et lanceolata cincto sessiles, bracteati; ♂ in parte superiore ∞, ♀ in inferiore frequentiores. Fl. ♂: Calyx 3-phyllus, foliolis lanceolatis carinatis, basi sæpius connatis. Corolla 3-petala, petalis membranaceis v. carnosiusculis, erectis v. conniventibus. Stamina 6, e toro basilari; filamenta subulata, subæquilonga; antheræ lineares, subsagittatæ, erectæ. Ovarii rudimentum minimum v. 0. Fl. ♀: Calyx 3-phyllus, foliolis suborbicularibus v. ovatis, imbricato-convolutis; corolla 3-petala, petalis membranaceis suborbicularibus imbricato-convolutis, ut plurimum calyce inclusis. Ovarium ovatum v. depresso-globosum, loculis 2 rudimentariis 1-loculare. Stylus brevissimus v. 0; stigmata 3, pyramidato-triquetra, primum conniventia, demum revoluta. Drupa ovata elliptica v. ovato-subtrigona, 1-sperma, mesocarpio crasso fibroso, putamine osseo, basi 3-poroso. Albumen æquabile v. obsolete radiatum, amygdalinum v. cartilagineum. Embryo intra porum basilaris.—Palmæ; caudice excelso v. mediocri, inermi, annulato v. cicatricato, interdum nonnihil flexuoso, sæpius petiolorum basibus persistentibus squamato v. coronato, intus molli, spongioso; frondibus omnibus terminalibus, sæpius vastis, pinnatis, petiolis basi fibroso-pannosa amplexicaulibus, nonnunquam spinoso-serratis, pinnis reduplicatis, sæpius aggregatis, subrecto-patentibus v. crispis, crassiuscule membranaceis, glabris; spadicum inter bases frondium exteriorum sessilium patentium rhachi teretiuscula, scrobiculata, in ramos plurimos simplices divisa; spatha mucronata, dorso longitudinaliter sulcata; floribus masculis ochroleucis v. flavescentibus, femineis virescentibus, fructibus quandoque maximis, sicciusculis, viridibus, fuscis v. rubro-flavescentibus.

1. **C. nucifera**, Linn. Fl. Zeyl. p. 391; Mart. Hist. Palm. p. 23. t. 62, 75, 88. fig. 3-6; t. 100, fig. 4; caudice flexuoso, inæqualiter annulato, basi incrassato; frondibus patentibus, segmentis lineari-lanceolatis acuminatis, subconcinis; floribus ♀ subglobosis; drupis maximis, ovato-trigonis v. subglobosis. Nomen vernac. Vitiense, "Niu dina."—Common on the coasts of most Vitian Islands (Seemann!) Also throughout tropical Polynesia, and the littoral parts of tropical Asia, Africa, and America.

The Cocoa-nut is now found in every part of the tropics, though never much beyond them, chiefly on

the seacoast; some varieties, however, have been met with far inland, for instance, at Merida, in Yucatan, by Heller; at Patna, in Bengal, by J. Hooker; and at Concepcion del Pao, in South America, by Humboldt and Bonpland. But there is reason to believe that at one time its geographical range was much more limited; indeed, we know that even in our days it has been extended to the West Coast of Africa; and the great puzzle has been, whence did it originally spring? Though having paid considerable attention to this subject, I am not acquainted with any theory, nor have been able to start one myself, which would be in unison with the part the Cocoa-nut at present plays in different countries. It is generally assumed that the Isthmus of Panamá, or the country thereabouts, was the cradle of this singular production, and that it thence floated to Polynesia and Asia. The reason for this assumption is that all the other species of the genus *Cocos* belong to the New World as inland species, and that it is reasonable to suppose this littoral one (*Cocos nucifera*) is also endemic to America. But it should not be forgotten that there are several genera of Palms with representatives about the native country of which there is no doubt, in both hemispheres: for instance, the Oil Palms (*Elaëis*) in Africa and America, and the common Fan Palms (*Chamærops*) in Europe, Asia, and America. Moreover, whilst the Asiatics and Polynesians have discovered innumerable uses of the Cocoa-nut tree, the American natives have made no such progress, but consume the fruit as an occasional luxury only. This would almost seem to prove that the acquaintance of the latter with the tree dates from a comparatively recent period, and that of the former from a more remote one, an argument unfavourable to America being regarded as its native country.

On turning to Polynesia we find whole islands covered with Cocoa-nut, and in some groups the entire population relying upon it as their staff of life. It has all the appearance of being perfectly at home, but there is one circumstance that strikes us as very curious. The light-skinned Polynesians are assumed to be of a Malay stock, and to have migrated somewhere from Eastern Asia. How comes it to pass that they are ignorant of the art of preparing toddy from the unexpanded flower-branches of the Cocoa-nut Palm,—a beverage of so ancient a date that the oldest language of Asia has a term for it, toddy being a corruption of the Sanskrit word *tade*? Did these Polynesians leave the cradle of their race before the Cocoa-nut tree had found its way to it? or are we to assume that they have migrated with the trade-wind rather than against it; that Malayan Asia was peopled from Polynesia rather than Polynesia from Malayan Asia? Toddy may be extracted from other Palms besides the Cocoa-nut, and from time immemorial has been obtained from several indigenous Asiatic species (*Caryota*, *Arenqa*, etc.) Had the Polynesians therefore once known the process, they would probably never have forgotten so easy a way of obtaining sugar, vinegar, yeast, and a pleasant drink, the strength of which may be regulated by time to any man's taste. So either the Polynesians could never have come from Eastern Asia, or else, after spreading over the South Sea, ages must have elapsed before the Cocoa-nut made its appearance in those waters, so that the process of toddy-making (there being no other suitable Polynesian Palms to operate upon) had been entirely forgotten, and even disappeared from native traditions. Under such circumstances, it behoves us to suspend our final judgment whether Polynesia be or be not the native country of the Cocoa-nut.

As already stated, Western Africa has in our times only become familiar with the *Cocos nucifera*, and I have not been able to learn anything regarding its history on the eastern coast of that continent, except that in Madagascar, in common with many other things supposed to have been imported by Malay pirates, it bears a *Malayan* name.

But how about Asia, where such forests of these Palms now gird the coast, and where they seem to grow with almost greater vigour than in America or Polynesia? Can that have been the cradle of the nut? There are weighty reasons for hesitating in a reply. The littoral parts of Ceylon are now densely covered with this tree, and it looks more at home there than I have ever seen it in any part of the world. Yet both tradition and history affirm that at one time the Cocoa-nut was unknown in Ceylon. Not far from Point de Galle there is carved on a rock the gigantic effigy of a native prince, Kottah Rayah, to whom is ascribed the discovery of the properties of the Cocoa-nut, which before his time were unknown, as was also the tree. Moreover, the oldest chronicle of Ceylon, the 'Marawansa,' the historical value of which is now fully admitted, is absolutely silent about everything relating to the Cocoa-nut, whilst it never fails to record, with tedious minuteness, every accession of other fruit-trees made to the plantations by native princes. Now, is it probable that a fruit like the Cocoa-nut, which is often tossed about the ocean for months without losing its germinating power from the effects of salt water,—is it probable that if such a fruit had been indigenous to any part of Asia, it should have reached Ceylon only in a comparatively recent historical period?

These and similar puzzles having engaged my attention ever since I brought out my 'Popular History of Palms,' I was somewhat prepared for the question, "Was the Cocoa-nut known to the ancient Egyptians?" which Goodwin started in the 'Parthenon,' when he said:—"The Cocoa-nut Palm is not now found in Egypt, nor do the ancient writers mention it as among the products of that country. It is well known to be exceedingly abundant in most tropical regions near the sea, and it occurs on the Arabian coasts. The origin of the name is involved in obscurity, but it has been thought to be derived from the

Portuguese word *macoco* or *macaco*, a monkey, the end of the nut having three black scars, which give it somewhat the resemblance of a monkey's face. I think it may be shown that this fruit was known in very early times in Egypt, and that the name is derived from a word in the old language of that country. In the collection of 'Egyptian Monuments,' just published by Brugsch, there is an inscription (pl. xxxvi.) from the tomb of a functionary who lived in the reign of Tothmes I., *circa* B.C. 1650. It gives a list of the trees which grew in the garden of this person, with the numbers of each kind. Twenty species of trees are mentioned. There were ninety Sycamores, thirty-one Perseas, five Fig-trees, three Acacias, twelve Vines, eight Willows, ten Tamarisks, and others which cannot be clearly identified. Appended to the name of each tree is a determinative hieroglyphic representing a bush or tree. In three cases the determinative is a manifest Palm-tree. In the first of these cases the name is represented by a single hieroglyphic, a bunch of dates, of which the sound is known (from being phonetically written in other texts) to be *baner*; it is the Coptic *benne*, the Date-palm (*Phœnix dactylifera*). The number of trees of this kind in the garden was a hundred and seventy. In the next case the name is written phonetically *mama*. This was, in all probability, the Doum-palm (*Hyphæne cucifera*), which is common in Egypt. There were a hundred and twenty of these trees. Of the third Palm, our horticulturist had only a single specimen. Its name is written phonetically *mama-en-khanent*. Brugsch calls it *Hyphæne Argun*, which is the name of an African species of Palm. I believe it to have been the Cocoa-nut tree, for the reasons which follow. In the first Sallier Papyrus, page 8, there is a sort of poetical apostrophe to the god Thoth, the patron of scribes. In this the writer addresses his deity thus:—'O thou Palm-tree (*mama*) of sixty cubits in height, upon which are *kuku* (with determinative of seed or fruit); with *khanini* (same determinative) within the *kuku*; with water within the *khanini*.' Here it is evident that the Palm-tree mentioned is the same as that in Brugsch's inscription, viz. the Palm of *khanent* or *khanini*. The *kuku* is evidently its fruit; the *khanini* must be the kernel or flesh, within which is the well-known Cocoa-nut milk. The height of the tree answers well, as the ordinary growth of the Cocoa-nut Palm is stated to be from sixty to ninety feet. The Doum-palm is described by Pliny (xiii. 18) under the name of Cuci (*kuki*, *κουκι*), which is in effect the same word as *kuku*. But the fruit of the Doum-palm differs from the Cocoa-nut in having no juice inside it. In Coptic, *κουκε* means bark; and perhaps this word may have been applied to the nuts of both Palms, from the barky husk with which they are surrounded. The Copts had also the Grecized word *κουκουναρια* for fir-cones. Perhaps the Greek *κοκκος* may be radically the same word, though the Greeks only applied it to much smaller fruits, or berries. We need not, then, go to the Portuguese for the derivation of Cocoa, seeing that the identical name was applied to Palm-nuts by the Egyptians in the fourteenth century B.C., the date of the Sallier Papyrus. That the Cocoa-nut was a rarity in Egypt we may see from there being but one tree of the kind in the old gardener's collection, while he had above a hundred each of the native Palms. For this reason also, as well as for the peculiar and refreshing character of its fruit, it appeared to the poetical scribe a worthy symbol of his patron deity."

Setting aside the argument advanced in the 'Parthenon' for an affirmative answer, I should reply—There is no reason why the Cocoa-nut should not have been cultivated at Thebes more than three thousand years ago. Some varieties of the nut will grow far inland, and Thebes is not so very far distant from the sea to preclude such a contingency: the climate would also admit of it. Again, if the Cocoa-nut could be drifted in modern times by the prevailing winds and marine currents from Western America to Eastern Asia, there is no reason why it should not have done the same three thousand years ago, when the distribution of land and water must have been pretty much the same as it is now, and the direction of the winds and currents was doubtless not different from what we find in our days. It is therefore not unlikely that the Cocoa-nut, if known in Asia three thousand years ago, might have found its way to Egypt,—even Solomon's fleet having brought home curiosities of every description from Ceylon and other parts,—and might have been cultivated by a gentleman attached to horticulture. But I am not quite prepared to confirm the venture that the *Mama-en-khanent* of the catalogue of the Egyptian garden was the Cocoa-nut. The determinative appended to the hieroglyphic is very rude, and all one could conscientiously say is, that in outline it looks very much like either a Palm or a Musa. But in taking into consideration that the apostrophe in the Sallier Papyrus, page 8, applies to this tree, it may be granted that we have to deal with a Palm, the Musa fruit having no water inside. But the presence of water inside the fruit would not settle the question whether we have the real Cocoa-nut before us. What is popularly termed the "water" is common to all Palms when the fruit is sufficiently young, and disappears on approaching maturity. The water—to keep to the term—would probably not be noticed in *small* fruit; and the fact that it was specially alluded to in the apostrophe would seem to imply that the author was speaking of a *large* fruit. The height of the tree mentioned in the papyrus (sixty cubits) tallies well with that usually attained by the Cocoa-nut tree *in the tropics* and *near the sea*; but it may be questioned whether that Palm would attain its full dimensions in a place situated like Thebes. I have seen the tree struggling for existence at the very edge of the equinoctial region, even in its favourite haunts in the neighbourhood of the sea—for instance, the Sandwich Islands and the Gulf of California. There are no other points a botanist could lay hold of, and I may therefore be permitted to guess what other Palm can possibly be meant by the *Mama-en-khanent*. The Palms of Egypt are the Date and the

Doum (*Phœnix dactylifera* and *Hyphæna Thebaica*), both of which are disposed of by the writer in the 'Parthenon.' But there is a Palm in Nubia, and probably also in Upper Egypt, the Deleb (*Borassus Æthiopum*, Mart.), which has a fruit quite as large as some of the middle-sized kinds of Cocoa-nut, and the ventricose trunk of which has evidently been the prototype of the *columns* seen in Egyptian temples; the Date-palm, from which the capitals were copied (as is evident in the great temple of Edfou), having no such swelling in the trunk. There is a considerable quantity of water in the fruit of the Deleb-palm; and as its height also agrees with that mentioned in the apostrophe, the balance of evidence would rather seem in favour of this tree as that meant by the *Mama-en-khanent*. This same Palm has already been mistaken for the Cocoa-nut tree; it is the Palm of Timbuctoo, which Humboldt, misguided by erroneous information, thought to be *Cocos nucifera*, until, in a paper read before the Linnean Society, I showed it to be *Borassus Æthiopum*.

The oil of the Cocoa-nut Palm, or Niu dina, has long been one of the articles of export from Viti; nevertheless, it is difficult to arrive at any definite result about the average annual quantity shipped. The Wesleyan mission, in negotiating with an island trader for the transport of the oil received from the natives as contributions to its funds, were ready to guarantee that at least sixty tuns should pass through his hands. This, at the rate of £20 per tun, the average value of the oil on the spot, would give £1200 per annum—a sum tolerably well agreeing with that usually advertised on the wrapper of the 'Wesleyan Missionary Notices' as the Fijian share towards the support of the Society. Exact data for forming an opinion of the quantity shipped by the actual traders are altogether wanting. On consulting with several about this subject, they pretty nearly all agreed in fixing three hundred tuns as the utmost limit of the annual export of the whole group, =£6000 on the spot. Hitherto, there has been great waste in the making of oil, the native process being of a primitive description. To remedy this evil, Captain Wilson and M. Joubert, of Sydney, set up proper machinery on their estate at Somosomo, after one of the partners had familiarized himself with the latest improvement in that branch of industry in Ceylon. Cocoa-nut oil congealing at a temperature of about 72° Fabr., and the thermometer during the cool months often falling below that degree, a proper amount of warmth must be kept up whilst the operation of pressing the pulverized kernels is going on, in order to extract the largest quantity of oil from the least number of nuts. Wilkes, upon the authority of one of the scientific men attached to his expedition, states that there were only two varieties of Cocoa-nut, a green and a brown. Closer attention to the subject would have shown this to be a mistake; not only the colour, but also the average size and shape of the fruits, the height of the trees, and the insertion of the leaflets, or rather segments, offer marks of distinction between the numerous varieties with which the islands are studded. The most striking kind is the one having fruits not much larger than a turkey's egg, and bearing more than a hundred of them in each bunch. Several trees were noticed at Kadavu, about Yarabale, a narrow isthmus, where canoes are dragged across from sea to sea. The curious phenomenon of a Cocoa-nut Palm becoming branched by the division of the trunk, has occasionally been witnessed in Fiji; and two interesting instances of it are given in Williams's 'Fiji and the Fijians,' where one of the trees is described with five branches. In Samoa Mr. W. Pritchard saw a tree with two heads, regarded with just pride by the natives who possessed it, and cut down during a war by their enemies. As in other parts of Polynesia, the trunk is made into small canoes, or supplies materials for building and fencing; stockades of it are impenetrable to bullets. The leaves are made into different kinds of mats and baskets; yam-houses are occasionally thatched with them, but these roofs do not last much longer than a year. The spathe enclosing the flowers is used for torches; the fibres surrounding the nut are made into "sinnet," used for fastenings of all kinds. The young flesh is delicious eating, and the "water" contained in the nuts a refreshing drink, which, as the fruit advances, undergoes a gradual change, for all of which there are distinctive names. New-comers soon fix upon a certain stage most agreeable to their palate, and on indicating it to the natives they will readily pick it out by knocking with their fingers on the outside of either the husked or the unhusked nut, and be guided by the sound. This process requires long practice, and, though trying hard, I did not succeed in learning at least the sound of that stage I preferred to others. The ripe nuts are grated and used for puddings, or given to fowls and pigs. Some persons have a predilection for nuts when just in the act of germinating—a taste which the Asiatic shares in eating the young Palmyras, and the African the seedlings of the *Borassus ? Æthiopum*, Mart. It is to be regretted that so few plantations of Cocoa-nut trees are formed by white settlers. The annual value of a fruit-producing tree is never less than one dollar; and how easily might 10,000 nuts be set in the ground, and the value of an estate be permanently raised! Every part of the smaller islands and the sea-borders of the larger are localities suitable for this purpose. Only Bau, Viwa, and the districts adjacent, form an exception: the trees, as soon as they have reached a certain height, become diseased; their leaves look as if dipped in boiling water, and their fruits are few in number, poor, and often drop off before they arrive at maturity; a thick layer of marl, forming the subsoil of those districts, seeming to oppose that ready drainage which the Cocoa-nut tree requires, and which it enjoys in so eminent a degree on the white beaches of sand and decomposed corals.

VI. **Sagus**, Rumph. Amb. vol. i. p. 72; Endl. Gen. n. 1741. Flores monoici, in eodem spadice ramoso, absque spatha communi ∞ incompletis vaginato, in amentis compressis distichis, bractea et bracteola cupularibus cincti. Fl. φ : Calyx 3-denticulatus. Corolla 3-petala. Stamina 6 v. 12; filamenta compressiuscula, basi dilatata; antheræ lineares, erectæ. Ovarii rudimentum 0. Fl. φ : Calyx 3-denticulatus. Corolla campanulata, 3-fida. Staminum urceolus 6-dentatus, antheris effœtis, sagittatis. Ovarium 3-loculare. Stigmata 3, subulata, connata. Bacca squamis retrorsis loricata, 1-sperma. Albumen ruminatum. Embryo supra fossam umbilicalem dorsalis.—*Palmæ* caudice crasso, mediocris altitudinis, intus molli, rubella; frondibus terminalibus robustis, pinnatis, subcrispis, petiolorum basibus margine in fibris fissilibus, spadibus magnis inter frondium bases pendulis, ramosis, perennantibus; floribus fuscescentibus, coriaceis, persistentibus; fructibus strobili-formibus, nitidis, fuscis v. castaneis, parce flavescenti-carnosis, seminibus durissimis.—*Cœlococcus*, Herm. Wendl. in Bonplandia, 1862, p. 199.

Dr. George Bennett, of Sydney, found a Sago Palm on Rotuma, north of Viti, which may possibly be identical with the following species, but as no specimens seem to have been preserved, this point is altogether doubtful.

1. **S. Vitiensis**, Herm. Wendl. in Appendix to Seem. Viti, p. 444 (Tab. LXXX.); baccis maximis, albumine æquabili depresso-globoso, fovea rotundata magna reniformi a basi usque in medium et supra depressa excavato, embryone subverticali.—*Cœlococcus Vitiensis*, Herm. Wendl. in Bonplandia, 1862, p. 199.—Nomina vernac. Vitiensia, "Sogo" et "Niu Soria."—In swamps, Viti Levu (Seemann! n. 658), Vanua Levu, and Ovalau.

The Niu soria or Sogo is a genuine Sago-palm, growing in swamps on Viti Levu, Vanua Levu, and Ovalau, and was discovered by Mr. Pritchard and myself when on our first visit to Chief Kuru-duadua. By asking the natives respecting the various Palms of the islands, they described one which I was led to consider as the sago-yielding tree, and hence made inquiries at all the places we called, but did not obtain a sight of it until we reached Taguru, on the southern coast of Viti Levu, and thence westward it was encountered in abundance. Fine groves, several miles in extent, were seen by us on the various branches and deltas of the Navua river. It was afterwards ascertained to grow on Ovalau; and Mr. Waterhouse, when accompanying Colonel Smythe, found an extensive grove of it on the north-eastern parts of Vanua Levu. The natives of Ovalau term the Palm Niu soria, those of Viti Levu, Sogo (pronounced "Songo"); the latter name reminding one of "Sago" or "Sagu," by which some species of *Sagus* are known in other islands inhabited by the Papuan race; and rendering the discovery of this Palm ethnologically as interesting as it is important commercially, by adding another raw product to the export list of the islands, and botanically, by extending the geographical range of sago-yielding Palms 1500 miles further south-east than it was previously known to exist. The natives of Fiji were unacquainted with the nutritious qualities residing in the trunk, until Mr. Pritchard and myself extracted the sago from it.

The Sogo grows in swamps, and the natives occasionally take advantage of the open places among the groves to plant taro, or even clear Sogo swamps for that purpose. The dimensions of the finest specimens were accurately measured. The largest trees felled were from forty to fifty feet high, and their trunks, in the thickest parts, from three feet nine inches to four feet four inches in circumference. The trunk is very straight, and densely covered with aerial roots, six to twelve lines long, all having the peculiarity of being directed upwards. The crown generally consists of about sixteen living leaves in all stages of development, and there are mostly five or six dead ones still adhering to it. The pinnatifid leaves are of a dark green, seventeen feet long; whilst the leaflets, gracefully drooping at the tips, are from three and a half to four feet long, and three and a half inches broad. The petiole is covered with spines, which at its base are arranged in connected rows extending from side to side, and towards the top in horseshoe-shaped collections. The spines are brown, and from one and a half to two and a half inches long. When the tree has attained maturity there appears a terminal panicle about twelve feet high, and divided into twenty or more branches. These branches measure eight feet in length, and are again divided into about fourteen branchlets (each averaging from fourteen to sixteen inches). The fruit, in outer appearance resembling an inverted pine-cone, is beautifully polished and of a yellowish-brown, much lighter than that of *Sagus Rumphii*, Mart. The Palm forms a prominent feature in the landscape, its foliage fluttering like gigantic plumes in the wind, and outbidding the Cocoa-nut in gracefulness of outline and movement; the bold look of the flowers suddenly starting from the extremity of the trunk, and proclaiming, as it were by signal, that the

time has arrived when nature has completed her task of laying up stores of nutritious starch, and that unless the harvest is at once gathered in, nothing will remain of the produce of years save the receptacle in which it was treasured up. Even the old dead trees, standing like so many skeletons amongst a host of young living ones, present an interesting appearance, reminding one of the posts with their many arms over which the wires of electric telegraphs are carried. Mr. Pritchard and myself felled six trees, and carried two logs to Lado, where we made sago of one of them by grating and washing the yellow-white substance with which the inside was filled. The term "spongy" does not well apply to this substance; it has rather the consistency of a hard-baked loaf, and that taken from the base of the tree has a sweet and pleasant taste; towards the top it was more insipid. For the purpose of collecting sago it is of the highest importance that the tree should be cut down just at the time when the flowers begin to show themselves; if felled sooner the tree has not attained its proper development, and the quantity of farinaceous matter will not be so great as at the period indicated; if, on the other hand, the cutting down is deferred until the fruit has been formed, a considerable diminution of the quantity of sago meal will be observed; and the longer such a postponement takes place, the less chance there is of collecting a remunerative amount, as the tree, after it has borne flower and fruit, which, unlike the Cocoa-nut Palm, it does only *once* during the term of its existence, speedily dies. The trees are easily felled, only the outer layers of wood possessing any hardness, the central parts being as soft as bread, so that a few strokes with a good axe will bring the largest tree to the ground.

EXPLANATION OF PLATE LXXX., representing *Sagus Vitiensis*.—Fig. 1, portion of leaf of young plant; 2, portion of spadix; 3, male flower; 4, stamens; 5, ripe fruit; 6 and 7, different views of kernel; 8, (this figure has been introduced by mistake); 9 and 10, kernel cut longitudinally (Fig. 10 showing the embryo); Figs. 3 and 4, *magnified*; the others, *natural size*.

ORDO XCIII. PANDANACEÆ.

I. **Typha**, Tournef. Inst. t. 301; Linn. Gen. n. 1040; Endl. Gen. n. 1709. Flores monoici. Spica ♂, culmum terminans, continua v. spathis caducissimis interstincta. Stamina ∞, e spadice pullulantia, setis stipata; filamenta filiformia, flaccida, simplicia v. apice brevissime 2-3-furcata; antheræ basifixæ, oblongæ, 2-loculares, 4-locellatæ. Spica ♀ infra ♂ continue culmum obvestiens. Ovaria ∞, immediatim e rachi oriunda et juxta parvas ejusdem protuberantias spicata, setis ∞ subclavatis (ovariis abortivis) stipata, primum sessilia, tandem in stipite setis consito elevata, 1-locularia. Ovulum 1, ex apice loculi pendulum, anatropum. Stylus simplex, ovario continuus, stigmate unilaterali linguæformi. Fructus subdrupaceus, minimus, epicarpio membranaceo, tandem hinc fisso, endocarpio lignoso, cum testa cohærente. Semen inversum, basi cum endocarpio connatum, situm erectum mentiens. Embryo cylindricus, in axi albuminis carnosî, extremitate radiculari incrassata, supera.—Herbæ paludosæ; radicibus repentibus, culmo enodi; foliis alternis, linearibus, strictis, basi dilatata vaginantibus; spica terminali clavata, compacta.—Gärtn. vol. i. p. 8. t. 2; Richard in Ann. du Mus. vol. xvii. t. 5. f. 8, 9; Archives de Bot. vol. i. p. 193. t. 5; Nees, jun. Gen. Plant. fasc. ii. t. i.

1. **T. angustifolia**, Linn. Sp. 1377; Kurz in Seem. Journ. of Bot. 1867, p. 95; foliis linearibus, inferne subcanaliculatis, caulem florigerum superantibus; spica ♂ a ♀ remota.—Smith, Brit. p. 959; Willd. Sp. Pl. vol. iv. p. 198; Eng. Bot. t. 1456; Flor. Dan. t. 815; M. Bieb. Fl. Taur. Cauc. vol. ii. p. 379; Ledeb. Fl. Ross. vol. iv. p. 249; Dcne. Descr. Herb. Timor. p. 38; R. Br. Prodr. p. 538; Reichb. Germ. p. 11; Koch, Syn. Fl. Germ. p. 681; Roxb. Fl. Ind. vol. iii. p. 567; Kunth, Berol. vol. ii. p. 304; ejusd. Enum. Pl. vol. iii. p. 91; De Vriese in Pl. Jungh. vol. i. p. 106; Hassk. Fl. Bot. Zeit. 1842, Beibl. vol. ii. p. 12; Blanco, Fl. de Filip. p. 687; Miq. Fl. Ind. Bat. vol. iii. p. 173. *T. elatior*, Bœnningh. in Reichb. Germ. p. 11; Boreau in Guill. Arch. vol. ii. p. 399; Kunth, Enum. Pl. vol. iii. p. 90. *T. minor*, Curt. Lond. fasc. iii. t. 62. *T. Damiatica*,

Ehrenb. in Hort. Berol. 1834. *T. angustata*, Bory, mss. *T. Javanica*, Schnitzl. in Zoll. Cat. 77. *T. Shuttleworthii*, Koch et Sond. in Koch, Syn. Fl. Germ. ed. 2. p. 785; Pl. Preuss. vol. ii. p. 3. *T. Brownei*, Kunth, Enum. Pl. vol. iii. p. 92. *T. latifolia*, Forst. Prodr. n. 336; non Linn. —Nomen vernac. Vitiense, “De ni ruve.”—In swamps, Island of Kadavu (Seemann! n. 646). Also found in Norfolk Island, New Zealand, Australia, and nearly all other parts of the world.

II. **Pandanus**, Linn. f. Suppl. p. 64; Endl. Gen. n. 1711. Flores dioici. Fl. ♂: Spadix compositus, thyrsoides. Stamina ∞ , conferta; filamenta filiformia; antheræ 2-loculares. Fl. ♀: Spadix simplex. Ovaria ∞ , dense conferta, libera v. in phalanges connata, 1-locularia. Ovulum 1, e placentæ parietalis basi adscendens, anatropum. Stigmata sessilia, distincta. Drupæ fibrosæ, in phalanges connatæ, putamine osseo, 1-loculares. Semen 1, e basi placentæ parietalis erectum, testa membranacea; raphe filiformi, obsoleta. Embryo in basi albuminis dense carnosissimi minimus, orthotropus, extremitate radiculari umbilicum attingente infera.—Plantæ acaules v. caudice arboreo stricto, sæpius stolonifero; foliis phyllodineis, 3-fariam imbricatis, elongato-lineari-lanceolatis, amplexicaulibus, margine sæpius spinosis; spathis confertis, sæpe coloratis, ex axilla spadices exserentibus.—R. Br. Prodr. 341; Jacq. Fragm. t. 14. f. 2; Roxb. Corom. t. 94–96; Mirbel in Ann. Mus. vol. xvi. t. 17; Schott, Melet. p. 15. *Arthrodactylis*, Forst. Char. Gen. n. 57. *Keura*, Forsk. Ægypt. p. 172.

1. **P. caricosus**, Rumph. Herb. Amb. vol. iv. p. 154; Kurz in Seem. Journ. of Bot. 1867, p. 100; humilis, cæspitosus v. caulescens; folia subflaccida, sursum subplana, marginibus costaque subtus a medio spinulosa, saturate v. lutescente viridia; syncarpia echinata, solitaria, cernua, ovalia v. subglobosa, pugni magnitudine, brunnei v. fusco-brunnei; drupæ siccæ, granuloso-scabræ.—Spreng. Syst. vol. iii. p. 897; Kunth, Enum. vol. iii. p. 98; Hassk. Cat. Bog. p. 60?; Miq. Fl. Ind. Bat. vol. iii. p. 163. *P. atrocarpus*, Griff. Notul. Monocot. p. 160.—Nomina vernac. Vitiensia, “Kiekie” et “Voivoi.”—In swampy forests, Viti Levu and Ovalau (Seemann! n. 650). Also found in the Indian Archipelago and the Moluccas.

The Voivoi or Kiekie is an almost stemless species, with leaves ten to twelve feet long, which delights in swampy parts of the forests, and is occasionally cultivated. Fans, baskets, and the finest mats—even those on which newly-born babes, naked as they are for more than a twelvemonth, are carried—are made of its bleached leaves. Occasionally neat patterns are worked in, by introducing portions of the material dyed black, whilst the borders of highly-finished mats are tastefully ornamented with the bright red feathers of the Kula,—a parroquet (*Coriphilus solitarius*, Latham), not found in the groups eastward of Fiji, and therefore highly esteemed by the inhabitants of those islands. The bleached leaves are also employed for decorating the body, being tied by the men over their head-dress (sala), around their breast, upper part of the arms, wrists, and above the calves. The custom is not restricted to any particular class of natives, but freely practised by all, serfs, commoners, and chiefs, when they go to war, or wish to look smart.

2. **P. verus**, Rumph. Herb. Amb. vol. iv. p. 139, t. 74 (mala); Kurz, l. c. p. 125; arboreus v. divaricato-decumbens, ramosus, 15–20-pedalis; folia marginibus costaque subtus spinis albidis rectis horride armata, strictiuscula, acuminatissima, albido-glaucæ v. glaucæ; spathæ marginibus carinaque spinulosæ; stamina racemosa, connata; syncarpia hominis capitis magnitudine v. majora, solitaria, dein aurantiaca; drupæ per 8 v. ∞ , in phalanges apice tessellato-convexiusculas connatæ; stigmata oblique trigona, parvula.—*Kaida Taddi*, Rheede, Malab. vol. ii. f. 6. *Keura odorifera*, Forsk. Reg. Arab. p. 172. *Arthrodactylis spinosa*, Forst. Gen. n. 75. *Pandanus odoratissimus*, Linn. f. Suppl. p. 424; Roxb. Pl. Corom. vol. i. p. 65. t. 94–96; ejusd. Fl. Ind. vol. iii. p. 738; Kunth, Enum. Pl. vol. iii. p. 94; Miq. Fl. Ind. Bat. vol. iii. p. 156; Griff. Notul. Monocot. p. 159. t. 174. *P. spiralis*, Blanco, Fl. de Fil. p. 777; R. Br. Prodr. p. 341?; Kunth, Enum. vol. iii. p. 100?. *P. Blancoi*,

Kunth, Enum. vol. iii. p. 583. *P. fascicularis*, Lamk. Encycl. vol. i. p. 372; Willd. Sp. Pl. vol. iv. p. 646; Kunth, Enum. Pl. vol. iii. p. 98. *P. littoralis*, Jungh. Topogr. Naturw. Reise durch Java, p. 61; Miq. Fl. Ind. Bat. vol. iii. p. 158. *P. leucanthus*, Hassk. Fl. (Bot. Zeit.) 1842; Beibl. vol. ii. p. 14. *P. Milleri*, Roxb. Fl. Ind. vol. iii. p. 739; Hort. Beng. p. 71; ejusd. Icon. ined. vol. xv. t. 4. *P. tectorius*, Soland. Prim. Fl. Ins. Pacif. (ined.) p. 350, et in Parkins. Drawings of Tahit. Plants (ined.) t. 113. *Hasskarlia leucacantha*, Walp. Ann. vol. i. p. 753.—Nomina vernac. Vitiensia, “Balawa” et “Vadra.”—Very common throughout Viti (Seemann! n. 649). Also in the Hawaiian (Seemann!), Society (Banks and Solander!), Tongan (Cook!), and most other Polynesian islands. Widely diffused through India and the Indian Archipelago.

Mats, with which the floors of houses and sleeping-places are thickly covered, are made of two kinds of screw-pines: the finest, of those of the Voivoi (*Pandanus caricosus*, Rumph.); the coarsest, of the leaves of the Balawa (*Pandanus verus*, Rumph.). The Balawa, or Vadra, as it is termed in some districts, is a tree twenty-five feet high, indicative of poor soil, growing in exposed positions, and being one of the first plants appearing on newly-formed islands. Its singular habit has often been dwelt upon. The smooth white branches, with their dense heads of foliage, not inaptly compared to the arms of a huge candelabrum; the strong aerial roots, covered with minute spines, and serving as so many props; the curious corkscrew-like arrangement of the foliage, the leathery, sword-shaped spiny leaves themselves; the long spikes of male, and the shorter branches of female flowers, their delicious perfume strongly recalling to mind that of the vegetable ivory of South America; finally, the bright orange-coloured drupes, formed into large heads of fruit, to say nothing of their insipid taste, appreciated only by natives, are all so essentially different from what a European traveller is accustomed to in his own country, that his attention is involuntarily arrested, and he hardly ever fails to record it.

III. **Freycinetia**, Gaud. Freyc. p. 431. t. 41–43; Endl. Gen. n. 1712. Flores pseudo-polygami. Fl. ♂: Spadix simplex, typhoideus. Stamina ∞; filamenta filiformia; antheræ 2-loculares. Fl. ♀: Spadix simplex. Ovaria ∞, staminibus effœtis stipata, in phalanges connata, 1-locularia. Ovula ∞, in placentis 3 parietalibus linearibus, 2–3-seriata, e funiculis brevibus adscendentia, anatropa. Stigmata sessilia, distincta. Baccæ carnosulæ, ∞-spermæ, ex ovariis ∞ connatis ∞-loculares, nunc ovariorum parietibus pereuntibus 1-loculares. Semina ∞, parietalia, e funiculis brevibus erecta; testa membranacea, raphe laterali carnosâ, strophiolæformi. Embryo in basi albuminis dense carnosî minimus, orthotropus, extremitate radiculari umbilico proxima, infera.—Plantæ caudice arborescente, sæpissime radicante v. scandente; *Pandanorum* habitu.—Schott, Melet. p. 16; Endl. Fl. Norf. p. 24; Blume, Rumph. p. 156. t. 39–43; Kurz in Seem. Journ. of Bot. 1867, p. 133.

Besides the species enumerated below, there occur in tropical Polynesia the following, viz. 1, *F. arborea*, Gaud. Bot. Freyc. t. 41 (*F. scandens*, Hook. et Arn., non Gaud.), from the Sandwich Islands (Seemann!); 2, *F. Baueriana*, Endl., from Norfolk Island (Bauer); 3, *F. demissa*, R. Br. et Benn., (*Pandanus demissus*, Sol. Prim. Fl. Ins. Pacif. p. 352 (ined.)), from Tahiti (Banks and Solander! in Herb. Mus. Brit.); and 4, *F. graminifolia*, Seem., from New Caledonia (Vieillard! in Herb. Kew.). All the Vitian species belong to Brown and Bennett's second section of the genus (*Pericarpia omnia basi coalita, apicibus elongatis fibrosolignosis in phalanges partiales varie connatis*).

1. **F. Vitiensis**, (sp. nov.) Seem. in Bonpl. 1861, p. 260 (Tab. LXXXIII.); foliis lineari-lanceolatis, versus apicem attenuatis, spinulosis, minute lepidotis; fl. ♂ ign.; pedunculis ♀ setosis 3-cephalis; spadibus subglobosis, oligocarpiis; baccis ovatis, acuminatis.—Voma Peak, Viti Levu (Seemann! n. 647).

One of the smaller species. Leaves linear-lanceolate-shaped, clad on the midrib of the back of the leaf and on the edge towards the point with minute spines. Blade about 3 inches long and 6–9 lines broad. Female spikes in threes at the end of the branches. Flowers both of male and female unknown.

EXPLANATION OF PLATE LXXXIII., representing *F. Vitiensis*, Seem.—Fig. 1, a half-ripe berry; 2, the same, cut across:—both magnified.

2. **F. Pritchardii**, (sp. nov.) Seem. (Tab. LXXXIV.); foliis linearibus, longiuscule attenuatis, versus apicem spinulosis; fl. ♂ ign.; pedunculis ♀ inermibus 3-cephaliis; spadicibus ovato-oblongis; baccis obovato-oblongis.—Voma Peak, Viti Levu (Seemann! n. 696).

This species, which I have named in honour of W. T. Pritchard, Esq., who was with me when I discovered it, is allied to *F. Storckii*, but differs in having unarmed peduncles, etc. Leaves 10–12 inches long, 5–7 lines broad. Peduncle of ♀ flowers divided into three branches, convex at back, flat (?) in front.

EXPLANATION OF PLATE LXXXIV., representing *F. Pritchardii*, Seem.—Fig. 1, a half-ripe berry, magnified.

3. **F. Storckii**, (sp. nov.) Seem. in Bonpl. 1861, p. 260 (Tab. LXXXV.); foliis linearibus, longiuscule attenuatis, versus apicem spinulosis; fl. ♂ ign.; pedunculis ♀ minute aculeatis bi-cephalis; spadicibus ovato-oblongis; baccis ovato-acuminatis.—Island of Taviuni, near the lake (Seemann! n. 695).

This is allied to *F. demissa*, Br. et Benn., which has also spinulose peduncles; but in Banks and Solander's specimens from Tahiti, upon which *F. demissa* is founded, the berries are different in shape (more cylindrical), and the female peduncle is divided into three or four branches; the leaves seem also to be much larger and longer. Leaves of *F. Storckii* 20–24 inches long, 8–10 lines broad.

EXPLANATION OF PLATE LXXXV., representing *F. Storckii*, Seem.—Fig. 1, half-ripe berry; 2, the same, cut across:—both magnified.

4. **F. Milnei**, (sp. nov.) Seem. in Bonpl. 1861, p. 260 (Tab. LXXXVI.); foliis linearibus, longiuscule attenuatis, versus apicem et basin spinulosis, basi 2-auriculatis; fl. ♂ ign.; pedunculis ♀ inermibus 3-cephalis; spadicibus oblongis; baccis subobovato-oblongis.—Nomen vernac. Vitiense, teste Milne, "Vukavuka."—Vanua Levu (Milne! Seemann! n. 648).

According to Milne, the fruit is eaten by the natives. Leaves 2 feet and more long, 1½–2 inches broad. Female spadix 2½–3 inches long.

EXPLANATION OF PLATE LXXXVI., representing *F. Milnei*, Seem.—Fig. 1, a half-ripe berry; 2, the same, cut across:—both magnified.

ORDO XCIV. AROIDEÆ.

I. **Amorphophallus**, Blume, Diar. Bat. 1825; Schott, Prodr. Aroid. p. 130; ejusd. Gen. n. 31. tab. 31. Spadix appendice corrugato-conoidea tandem marcescenti amorpha. Stylus longissimus, teres, abrupte exsertus, deciduus. Stigma amplum, valvato-2–3-lobum. Antheræ vertice 2-porosæ e loculis 2-porosis, tandem in rimulas transversaliter dehiscentes confluentibus. Organa neutra 0. Semen . . .—Tuber magnum. Folium solitarium, hysternanthium, petiolo tereti elongato maculato triceruri, segmentis laminæ oblique oblongis acuminatis inæqualibus. Pedunculus parum e terra prominens. Spatha maxima, coriacea, campanulata, limbo undulata. Spadicis appendix fungosa, varie tandem ac irregulariter profunde rugosa.—*Arum*, Roxb. *Rythion*, Mart. *Caudarum*, Reichnb.

1. **A. campanulatus**, Blume in Decaisne, Timor, p. 38, et in Rumph. vol. i. p. 139 et 33; petioli verrucoso-aspero; spatha spadicem apice conoideo-tumidum subæquans.—*Dracontium polyphyllum*, Forst. Pl. Escul. n. 29; Prodr. n. 330; non Linn.—Nomen vernac. Vitiense, "Daiga;" Tahitiense, "Theve," teste Solander, "Teva," teste Ellis.—Island of Taviuni (Seemann! n. 652).

The Daiga is always found on dry ground, and appears in the spring of the year, together with arrowroot, turmeric, and ginger. Its foliage consists of a single leaf, which rises from a roundish tuber to the height of from two to four feet, having a petiole full of soft prickles, and a blade spreading

out somewhat like an umbrella, and divided into numerous, deeply cut segments. The flowers are not put forth until the leaf is beginning to die off, and emit an offensive carrion-like odour. The acrid properties of this plant are turned to singular account in Polynesia. Turner ('Nineteen Years in Polynesia,' p. 286), speaking of the punishments inflicted in Samoa, says one of them was to take five bites of its pungent root, which was like filling the mouth five times with cayenne pepper, and that it was considered cowardly to shrink from the punishment on which the village court might decide, and so the young man would go boldly forward, sit down before the chief, bite the root five times, get up, and walk away with his mouth on fire. According to Tahitian tradition, says Ellis ('Polynesian Researches,' vol. ii. p. 43), "at first the heavens joined the earth, and were only separated by the Teva [the Vitian 'Daiga'], till their god, Ruu, lifted up the heavens from the earth." The Samoans (says Turner, 'Nineteen Years in Polynesia,' p. 245), "believe that once upon a time the old heavens fell down, and that people had to crawl about like the lower animals. After a time the Arrowroot and another similar plant [again the Vitian 'Daiga'], pushed up the heavens. The place where these plants grew is still pointed out, and called the Te'enga-langi, or heaven-pushing place." The Fijians recommend the place where this plant grows as a safe refuge when the end of the world approaches, the Daiga being in their opinion a "Vasu" to heaven (Vasu ki lagi). A Vasu, it should be added in explanation, is, according to widely-spread Polynesian custom, a nephew who holds the movable property of his mother's brothers at his almost absolute disposal, having the power to do whatever he pleases with it. Some Vasus even venture so far as to dispose of the very lands belonging to their maternal uncles. There are Vasus to every family, town, and kingdom. A Vasu to heaven is the climax of the whole system, cleverly employed in the charming Fijian story of the Princess Vilivilitabua. The root of the Daiga is acrid, but after being freed from that property, esteemed on account of its nutritious qualities. Being thought to assist fermentation, some of it is mixed with the leaven of bread; for the Fijians, though not growing any grain, or importing flour, prepare what they call "Madrai," or bread, from the fruits of the Ivi (*Inocarpus edulis*, Forst.), Kavika (*Eugenia Malaccensis*, Linn.), Banana, Plaintain, Breadfruit, mangrove, and the roots of the Taro (*Colocasia antiquorum*, Schott, var. *esculenta*, Schott), Kawai (*Dioscorea aculeata*, Linn.), Via mila (*Alocasia Indica*, Schott), Via kana, and the Daiga. A hole, having the shape of an inverted cone, is dug in the ground, and having been lined with leaves, the different materials are put in, covered with leaves, earth, and stones, to undergo fermentation, and become fused into a homogeneous mass. Two or three, ay, even nine months are allowed for that process. When taken out, the dough emits a sour fetid smell. It is then either baked on hot stones, or steamed in large earthenware pots; but the taste is such that few foreigners acquire a partiality for it, and the natives themselves infinitely prefer our bread and biscuit to their own madrai. Yet it is most fortunate that in a country where numerous kinds of fruits and edible roots, however abundant at certain seasons, are subject to such rapid decay, the natives are acquainted with a simple process, by means of which they are able to store up their provisions, and thus effectually guard against extreme want in a land of plenty.

II. **Colocasia**, Schott, Melet. vol. i. p. 18; Prodr. Aroid. p. 137; Gen. n. 37. tab. 37. Spathæ tubus diu vegeto-persistens, lamina lanceolata (flava). Spadix liber, spatha brevior, parte ♀ ovarodiis immixtis obsitus, parte ♂ a ♀ organis neutris remota, appendice conoidea, interdum obsoleta. Ovaria in stylum brevissimum attenuata, stigmatate depresso hemisphærico minore connata (stigmata ergo non contigua), placentis parietalibus ∞-ovulatis, ovulis horizontalibus hemiorthotropis. Synandria breviter stipitata, loculis apice implicatis exinde vertice aperientibus. Baccæ spathæ tubo disrumpente obtectæ, virides, non deciduæ. Semina minutissima, oblongula, horizontalia, epidermide succulenta, testa ob sulcos longitudinales parallelos striato-costata. Germinatio remota, cotyledone dilatata apice reniformi.—Folia peltata, simultanea, supra æquata. Spadix suavolens.

1. **C. antiquorum**, Schott, Melet. vol. i. p. 18; foliis glaucescenti-virentibus, lamina peltato-ovata, inferne 2-fida; scapis ∞ ex eadem axilla, petiolis brevioribus; spathæ lamina lanceolata aurea; clava acutata.

Var. *β. esculenta*, Schott.—*Arum esculentum*, Linn.; Forst. Pl. Escul. 27; Prodr. n. 328.—Nomen vernac. Vitiense, "Dalo;" N. Zeland., Tahitiense, et Rarotonguense, "Taro;" Hawaiense, "Kalo."—Viti Levu, on the banks of the Rewa and Navua rivers, wild, or at least naturalized.

Cultivated throughout the Viti group (Seemann!). Also cultivated in New Zealand, the Tongan, Hawaiian, Samoan, and Society Islands.

The Taro, or, as the Fijian language has it, the Dalo, is grown in Viti on irrigated or on dry ground, perhaps more on the latter than on the former. The water is never allowed to become stagnant, but always kept in gentle motion. When planted on dry ground, generally on land just cleared, a tree or two with thick crowns are left standing in every field, which, as the natives justly conclude, attracts the moisture, and favours the growth of the crop. When the crop is gathered in, the tops of the tubers are cut off, and at once replanted. The young leaves may be eaten like Spinach; but, like the root, they require to be well cooked in order to destroy the acridity peculiar to Aroideous plants. The Fijians prefer eating the cooked Taro when cold—a taste which few Europeans share with them; on the contrary, the latter relish them quite hot, and, if possible, roasted. A considerable number of varieties are known,* some better adapted for puddings, some for bread (madrai), or simply for boiling or baking. The outer marks of distinction chiefly rest upon the different tinge observable in the corm, leaf, stalks, and ribs of the leaves—white, yellowish, purple. That called "*Kurilagi*," was pointed out as having been eaten with a whole tribe of people. The story sounds strange, but as a number of natives were present when it was told, several of whom corroborated the various statements, or corrected the proper names that occurred, its truth appears unimpeachable. In the interior of Viti Levu, about three miles N.N.E. from Namosi, there dwelt a tribe, known by the name of Kai-na-loca, who in days of yore gave great offence to the ruling chief of the Namosi district, and, as a punishment of their misdeeds, the whole tribe was condemned to die. Every year the inmates of *one* house were baked and eaten, fire was set to the empty dwelling, and its foundation planted with *kurilagi*. In the following year, as soon as this Taro was ripe, it became the signal for the destruction of the next house and its inhabitants, and the planting of a fresh field of Taro. Thus, house after house, family after family, disappeared, until Ratuibuna, the father of the present chief Kuruduadua, pardoned the remaining few, and allowed them to die a natural death. In 1860, only one old woman, living at Cagina, was the sole survivor of the Na-loca people. Picture the feelings of these unfortunate wretches, as they watched the growth of the ominous Taro! Throughout the dominions of the powerful chief whose authority they had insulted, their lives were forfeited, and to escape into territories where they were strangers would, in those days, only have been to hasten the awful doom awaiting them in their own country. Nothing remained save to watch, watch, watch, the rapid development of the *kurilagi*. As leaf after leaf unfolded, the corms increased in size and substance, how their hearts must have trembled, their courage forsaken them! And when at last the foliage began to turn yellow, and the Taro was ripe, what mental agonies, what torture, they must have endured!

III. **Alocasia**, Schott in *Œstr. Bot. Wochenbl.* vol. ii. p. 59; *Prodr. Syst. Aroid.* p. 144; *ejusd. Gen. n.* 40. tab. 40. Spathæ tubus vegeto-persistens; lamina cymbiformis. Spadix appendiculatus, spatha paulo brevior, inferne ovariis (ovarodiis interdum) medio floribus neutris, infra apicem synandriis, dense obsitus. Ovaria stylo brevi, placenta fundifixa, ovulis paucis (sub 6) erectis breviter funiculatis instructa. Stigma depresso-hemisphæricum, diametro quam ovarium minore. Synandria breviter stipitata, loculis sub vertice aperientibus. Fructus spathæ tubo irregulariter, ab apice disrupto et revoluto involucratus. Baccæ rubræ, diu sistentes. Semen depresso-hemisphæricum, breviter funiculatum, epidermide crassula obductum, testa lævigata, germinatione admotiva vaginam brevissimam ostendente.—Rhizoma elatum. Lamina juvenulæ stirpis magis peltata, adultæ vix peltata. Costæ et venæ utrinque elevato-prominentes. Spadices suaveolentes.

Besides the species enumerated below, there is in tropical Polynesia *A. macrorrhiza*, Schott (*Arum costatum*, *Sol. Prim. Fl. Ins. Pacif.* (ined.), p. 307, ex parte, et in *Parkins. Drawings of Tahit. Plants* (ined.), tab. 85, from the Society Islands (Banks and Solander!), of which Solander says that there are six varieties cultivated in those islands, but he regards it as identical with *A. Indica*, which is also found in that group as well as in the Hawaiian.

1. **A. Indica**, Schott, *Œstr. Bot. Wochenbl.* vol. iv. p. 410; *Synops. Aroid.* p. 46; sarmentosa; sarmenta apice tuberifera; petioli longi; lamina folii stirpis adultæ ad basin fere usque bipartita,

* The different kinds of Dalo (Taro) are, Basaga, Bega, Dalo ni Vanua, Karakarawa, Keri, Kurilagi, Mumu, Quiawa, Sikaviloa, Sisiwa, Soki, Toakula, etc.

margine repanda, petiolo brevior, costa venisque albidis; spadix spatham lineari-cymbiformem æquans? appendix reliqua spadice parte longior.—*Arum macrorrhizon*, Forst. Plant. Escul. p. 27; Prodr. n. 329, ex parte. *Colocasia Indica*, Kunth. *Colocasia pruinipes*, C. Koch, App. 1854, p. 4. *Caladium giganteum*, Blume, fide Hassk. Hort. Bogor., p. 56. Nomina vernac. Vitiensia, “Via mila,” “Via gaga,” “Via sori,” et “Dranu.”—On river banks and in swampy places on the outskirts of woods, islands of Taviuni, Viti Levu, and Vanua Levu (Seemann! n. 651).

The Via mila, always growing in swamps, is a gigantic species, often twelve feet high; the trunk or corm of which—the edible part—is, when fully developed, as large as a man’s leg: a single leaf weighing three and a half pounds. The petiole was found to be four feet long, and ten inches in circumference at the base; the blade of the leaf three feet two inches long, two feet six inches broad, and thirteen feet six inches in circumference! The plant emits a nauseous smell, amply warning, as well as the various popular names it bears, against any incautious contact with it. Besides the name of Via mila, which signifies “acid Via,” we have that of Via gaga, or poisonous Via. What may be the meaning of Via sori, and Dranu, occasionally applied to it, I have not been able to find out. In order to remove the acid properties, the trunk is baked, or first grated, and then treated as madrai, or bread, in the manner explained above; yet, notwithstanding all precautions, the natives are frequently ill from eating it.

Mann, in his ‘Enumeration of Hawaiian Plants,’ p. 205, confounds this species with *Colocasia antiquorum*, Schott, var. *esculenta*, when he says:—“There is a form [of the just-named species] which grows high up in mountain valleys, known as ‘Apii,’ which has very large leaves and a small and useless corm.” I saw this plant on some of the mountains of Oahu, and thus alluded to it in my ‘Narrative of the Voyage of H.M.S. Herald,’ vol. ii. p. 84:—“The fleshy trunks of the ‘Ape,’ an Aroidea, with leaves measuring from eight to twelve feet in circumference, after having been roasted, and thus deprived of acidity, are eaten by the natives of the Sandwich Islands.” Forster (Plant. Escul. p. 27) also alludes to it.

IV. **Rhaphidophora**, Hassk. Cat. Plant. Bog. p. 58; Schott, Prodr. Aroid. p. 377; ejusd. Gen. n. 77. tab. 77. Spadix sessilis, flosculis hermaphroditis ubique obsessus. Pistilla apice hebetato-convexa, stylo plus minusve conico producto, stigmatibus rotundato demum oblongulo. Ovaria incomplete 2-locularia (hemiphragmatibus 2 oppositis acie non contiguis), loculamentis ∞-ovulatis. Ovula longe funiculata, anatropa, e placenta septifixâ, superposite exserta, in utramque cavitatem directa. Antheræ ultra pistilla productæ. Baccæ epicarpium supremam partem operculi modo rejicientes, reliqua parte remanente. Semen ellipsoideum, albuminosum. Embryo axilis.—Frutices scandentes, radicantes. Petioli in geniculum usque sulcati, ultra medium rarius ad apicem vaginati, vagina alba, marcescenti-decidua. Lamina fol. integerrima in pinnatisectum usque, foraminibus manifestis v. 0. Pedunculi solitarii. Spatha flava. Baccæ epicarpio glauco, intus aurantiacæ.

1. **R. Vitiensis**, (sp. nov.) Schott in Seem. Bonplandia, vol. ix. p. 367; vaginæ stipulares et bracteales stupose decompositæ; petiolus 7–14-pollicaris, in juventute ad apicem fere usque vaginatus; folii lamina ambitu oblongo-ovata v. oblonga, basi subcordata, profunde, ad costam fere, pinnatisecta, 7–8 pollices longa, 5–10 pollices lata, segmentis utrinque 5–12, patentibus v. patentissimis, infimis supremisque exceptis, subæqualibus, linearibus, apice sensim breviterque dilatato truncatis et latere superiore oblique falcato-acuminatis, vena nerviformi solitaria percursis, venis auxiliariis costalibus crebris, omnibus tenuissimis; pedunculus bipollicaris v. paullo longior; spatha sub-6-pollicaris, acuminato-cuspidata; spadix subtripollicaris; stigma sessile.—*Scindapsus Forsteri*, Endl. in Ann. Wien. Mus. vol. i. p. 161. *Dracontium pertusum*, Forst. Prodr. n. 331, non Mill. Nomen vernac. Vitiense, “Waloa.”—Common in most Vitian Islands (Seemann! n. 654). Also found in Tana, New Hebrides (Forster!).

“Observatio I. Proxima *R. pinnatæ*, Timorensi, cui fol. lamina basi haud cordata, minus profunde secta, segmenta e lata basi apicem versus manifeste angustata, venæ auxiliares costales crassiores rarioresque.

“Observatio II. An planta Rumphii eadem ac Timorensis?”

“Observatio III. *R. pinnata* oræ orientalis tropicæ Australiæ a beato Cunningham collecta, ob segmenta angusta vix truncata potius acuminata, angusta diachymatis portione connexa et venas auxiliares costales paucas, distincta species esse videtur, *R. Cunninghamsi* nuncupanda.”—Schott, l. c.

2. **R. Storckiana**, (sp. nov.) Schott in Seem. Bonplandia, vol. x. p. 346; petioli 7–10-pollicares, vagina petiolari ad basin geniculi usque producta; lamina fol. 10–11 pollices longa, 3–3½ pollices lata, oblongo-elliptica, basi cuneata, apice subsensim angustata, acuta, apiculo brevi aucta, venis et venastris ∞, subæquitenuibus, approximatis, parallelis, patentibus, marginem versus sursum arcuatis, basi costæ decurrentibus; spatha tripollicaris et ultra acuta; spadix spatha paullo brevior.—Island of Ovalau (Storck! n. 911).

“Affinis *R. Peepla*, Schott, tamen differre videtur petiolis longioribus, vagina ad basin geniculi terminata, fol. lamina inferne cuneatim angustata, apice acuta tantum et brevissime apiculata, nec acuminata.”—Schott, l. c.

V. **Cuscuaria**, Rumph.; Schott, Prodr. Aroid. p. 397; ejusd. Gen. n. 80. tab. 80. Spatha cymbæformis, ad basin usque hians, tandem decidua. Spadix sessilis, flosculis hermaphroditis onustus. Stamina 4, filamentis late linearibus; antheræ haud exsertæ, loculis apiculatis connectivo longioribus. Ovarium 1-loculare, 1-ovulatum, stylo manifesto, abrupte e verticis centro exserto conoideo brevi, stigmate hæmisphærico, stylo tenuiori impeltato. Ovulum basifixum, anatropum, breviter funiculatum, dorso parietem inferiorem (in spica) versus spectante.—Ramuli spadicigeri abbreviati, internodiis brevissimis. Petioli vagina sensim angustata, ad geniculum non protensa, marcescenti-decomposita, aucti. Lamina integerrima, densissime ac tenuissime venosa. Pedunculi solitarii.

1. **C. spuria**, (sp. nov.) Schott in Seem. Bonplandia, vol. ix. p. 367; petiolus 9–10 pollices longus, vagina inferne lata, apicem versus angustata, infra geniculum desinente auctus; geniculum longulum $\frac{3}{4}$ -pollicare, subincrassatum; lamina fol. 14–15 pollices longa, 5½–6 pollices inferne lata, oblonga, modice inæquilatera, basi abrupte rotundata, imo breviter cuneata, apicem versus sensim leviterque angustata, exitu subabrupte rotundata, brevissime cuspidulata, venis venastrisque copiosissimis rectiusculis subæquicrassis in pseudoneurum marginale patentissime anastomosantibus.—Viti Levu (Seemann! n. 655).

VI. **Cyrtosperma**, Griff. Itin. Notes, vol. iii. p. 149; Schott, Prodr. Aroid. p. 402; ejusd. Gen. n. 84. tab. 84. Spatha vix contorta, tota longitudine tandem aperta, marcescenti-persistens. Spadix cylindricus. Flosculi 6-meri. Ovarium 1-loculare, 2-ovulatum, ovulis parietifixis, collateralibus, infra medium loculamenti exsertis, fere longule funiculatis, anatropis, micropyle ampla fundum versus spectante. Pericarpium abortu monospermum. Semen curvatum, reniforme, marginato-cristatum. Albumen carnosum? Embryo hippocrepicus.—Folia omnia hastata; petioli ut pedunculi aculeis armati.

1. **C. edulis**, (sp. nov.) Schott in Seem. Bonplandia, vol. ix. p. 367; petioli 15–16-pollicares, inermes; lamina fol. hastata, lobis acuminato-acutatis, juvenulæ subæqualibus, vetustæ inæqualibus, lobo medio pollices circiter 7–8 longo, 12 lato, linea valde arcuata apicem versus angustato, posticis inæqualibus inæquilateris extrorsis v. valde extrorsis, oblique oblongo-ovatis, ovato-oblongis v. sublanceolato-oblongis, apicem versus gradatim angustatis, exitu obtusulis apiculatis, 8–10 pollices longis, 4½–5½ pollices latis; costis (posticis) fere horizontaliter exsertis, infima parte in sinu amplo denudatis, exitu vix bicruri.—Nomen vernac. Vitiense, “Via Kana.”—Viti Levu, in swamps, and also cultivated (Seemann! n. 653).

The corms are baked and eaten, their flavour being considered by the natives to be superior to that of the *Via mila* (*Alocasia Indica*, Schott).

ORDO XCV. LEMNACEÆ.

I. **Lemna**, Linn. Gen. n. 1038; Hegelm. in Seem. Journ. 1865, p. 111. Frondes e rimis 2 lateralibus innovantes, 1-rhizæ. Inflorescentiæ ex iisdem rimis lateralibus oriundæ, 3-floræ, spatha tenui membranacea fultæ. Fl. ♂ 2, 1-andri; anthera profunde 2-loba, 4-locularis, rimis 2 dehiscens. Fl. ♀: Ovarium 1, urceolatum, 1-loculare, 1-ovulatum; ovulum erectum hemianatropum v. atropum, integumentis 2. Fructus utriculus 1-spermus, indehiscens. Semen horizontale aut erectum, membrana duplici, albumine carnosio; embryo centralis, radícula superiore aut vaga.

1. **L. minor**, Linn. Sp. 1376; Hegelm. l. c. p. 112; frondes ovatæ v. ovato-subrotundæ, leviter convexæ, crassiusculæ, sessiles, apice obtusiusculæ; ovulum et semen erectum, hemianatropum.—Nomen vernac. Vitiense, “Kala.”—Common in stagnant pools of Viti Levu (Seemann! n. 657). Also collected in New Zealand, Tasmania, New Holland, and most other parts of the world.

2. **L. melanorrhiza**, (sp. nov.) F. Muell. et Kurz in Seem. Journ. 1867, p. 115; frondes convexiusculæ (texturæ *L. polyrrhizæ*) oblongæ v. subrotundæ, subtus spongiosæ, 1-2-rhizæ, radiculis nigrescentibus v. brunneis.—Nomen vernac. Vitiense, “Kala.”—Common in stagnant water of Viti Levu (Seemann! n. 656). Also found in Western Australia.

I should add that Dr. Hegelmaier a few years ago communicated the name and description of this species to me, which he also regarded as new; but during my absence from Europe, Mr. Kurz published his paper on Australian *Lemnaceæ* in my ‘Journal of Botany,’ and thus forestalled Dr. Hegelmaier,—the editor for the time being not being aware that I had previously received Dr. Hegelmaier’s name and description.

ORDO XCVI. SCITAMINEÆ.

Besides the genera represented in Viti, there are found in tropical Polynesia *Phrynium*, with one species, viz. *P. dichotomum*, Roxb. (*Thalia cannaformis*, Forst. Prodr. n. 3, et ic. [ined.], t. 1), from Malicolo, New Hebrides, and thence extending to the East Indies (Roxburgh!) and the Archipelago (Staunton! Buchanan!); and *Hedychium*, with one undescribed species, collected (in fruit only) in the mountains of New Caledonia (Deplanche! n. 120).

I. **Musa**, Tournef. Inst. p. 3; Linn. Gen. n. 1477; Endl. Gen. n. 1648. Perigonium epigynum, 2-labiatum; labium inferius tubulosum, postice usque ad basin fissum, apice 5-lobum, superius concavum, nanum amplexens. Stamina 5, sexto postico abortivo. Ovarium inferum, 3-loculare. Ovula in loculorum angulo centrali ∞, 2-seriata, horizontalia, anatropa. Stylus crassus; stigma infundibuliformi-clavatum, breviter 6-lobum. Bacca oblonga, angulata, 3-locularis; seminibus ∞ in pulpa nidulantibus, sæpius effætis farcta. Semina depressiuscule subglobosa, testa crustacea, atra, ad umbilicum impressa. Embryo orthotropus, fungiformis, in axi albuminis subfarinosi, extremitate radiculari umbilicum attingente, centripeta.—Herbæ giganteæ; trunco e petiolorum vaginis longissimis, scapum radicalem solo apice liberum floriferum velantibus conflato; lamina foliorum amplissima, valide nervosa; floribus in axilla spatharum confertis, ebracteatis.

A great many different kinds of *Musa* were found cultivated in different parts of tropical Polynesia when Europeans first became familiar with them. In Tahiti alone Banks and Solander saw twenty-eight, which Solander (Prim. Fl. Ins. Pacif. [ined.] p. 344) enumerates under two different headings, those named collectively “Fei” by the natives (including five kinds), and those named collectively “Maya” by the natives

(including twenty-three kinds). G. Forster (Plant. Escul. p. 31) thinks the name "Maya" (which he spells "Meiya") may be identical with the Malayan "Medji," by which name *M. mensaria*, Rumph. (*M. sapientum*, Linn.?) is known. "The Fei, or Mountain Plantain, beaten into a pulp and diluted with cocoa-nut milk or water till brought to the consistency of arrowroot as ordinarily prepared in England, was formerly much used in the Society Islands. Large quantities were usually prepared for every festival; a kind of cistern was made, with a framework of wood and a lining of leaves, which, when filled, was a sufficient load for six men to carry. Seven or eight of these were sometimes filled and carried on men's shoulders to one feast. The mode of preparing their made-dishes was seldom, according to our ideas, the most cleanly, and we rarely partook of their dressed food, excepting it had been cooked as brought from the garden, or prepared by our own servant." (Bennett.)

Bananas and Plantains—understanding by the former those *Musas* the fruit of which may be eaten raw, by the latter those which have to undergo some process of cooking before eating—are known in Viti by the collective name of "Vudi." There are about eighteen different kinds (I prefer using this term, for the boundary between species and variety has never been determined with accuracy in this genus)—all of which bear distinctive names.* With the exception of one, the Soaqa (*Musa uranoscopus*, Rumph. [*Troglodytarum*, Linn.]), none are found wild, and even this wild one is occasionally met with in plantations. It grows spontaneously in the depth of the forests, often in ravines, and is distinguished from all congeners by its bunches, instead of hanging down, being perfectly upright, and presenting a dense collection of orange-coloured fruits. The Polynesians, always ready to account, by some plausible story, for any deviation from a normal type, have not failed to exercise their ingenuity here. The Samoans assure us that once upon a time all the Bananas and Plantains had a great fight, in which the Soaqa (their Soa'a) came off victorious, and proudly raised its head erect; whilst the vanquished became so humiliated by the defeat sustained, that they were never able to hold up their heads again. An important addition to their stock the Fijians received in the Vudi ni papalagi (*i. e.* foreign Banana), our *Musa Chinensis* or *Cavendishii*, which the late John Williams, better known as the Martyr of Eromanga, brought in a Wardian case from the Duke of Devonshire's seat at Chatsworth to the Samoan or Navigator Islands, whence again, in 1848, the Rev. George Pritchard carried it to the Tongan or Friendly Islands, as well as to the Fijis. Its introduction has put an effectual stop to those famines which previously to this event were occasionally experienced in some of these islands. Never attaining any greater height than six feet, and being of robust growth, the Cavendish Banana is but little affected by the violent winds which cause such damage amongst plantations of the taller kinds of *Musa*, and this advantage, coupled with its abundant yield and the fine flavour of its fruit, have induced the natives to propagate it to such an extent that, notwithstanding its comparatively recent introduction, the Vudi ni papalagi numbers amongst the most common Bananas of the country. The fruit of the different *Musas* is variously prepared by the native cooks. Split in half, and filled with grated cocoa-nut and sugar-cane, Bananas make a favourite pudding (vakalolo), which, on account of its goodness and rich sauce of cocoa-nut milk, has found its way even into the kitchen of the white settlers. Wilkes has already mentioned that the natives, instead of hanging up the fruit until it becomes mellow, bury it (occasionally, it should be added) in the ground, which causes it to appear black on the outside, and impairs the flavour. The fresh *Musa* leaves are used as substitutes for plates and dishes in serving food or for making temporary clothing, the dry instead of paper for cigarettes (suluka). In place of the finger-glasses handed round at our tables after dinner, Fijians of rank are supplied with portions of the leafstalk of the Plantain,—not a superfluous luxury in a country where forks are dispensed with except at cannibal feasts.

1. *M. sapientum*, Linn. Spec. n. 1477; caudice maculato; spadice pendulo, glabro; spathis fl. ♂ ovatis, deciduis; fl. fertil. persistentibus, obtusiusculis, inferioribus interne viridibus; sepalis interioribus inæqualibus; baccis oblongis, utrinque attenuatis, subfalcatis, 3-gonis, 3-ocularibus (flavis); seminibus globoso-turbinatis, tuberculatis.—Nomen vernac. Vitiense, "Vudi." "Banana" of the colonists.—Cultivated throughout Viti.

To this species probably belongs *Musa mensaria* of Rumph. Amb. vol. v. p. 131, a name which as the oldest would take precedence when this genus comes to be properly worked up.

2. *M. Cavendishii*, Paxton, Mag. of Bot. vol. iii. p. 81, cum ic.; caudice humili (4–5 ped.

* The following are the different kinds known to me:—Vudi ni papalagi (*Musa Chinensis*, Sweet [*Cavendishii*, Paxt.]), Soaqa (*Musa uranoscopus*, Rumph. [*Troglodytarum*, Linn.]), Balawa ni Rakiraki, Bati, Dreli, Buli, Droledrole, Gonegone, Leve ni Ika, Mudramudra, Soqo, Tumoutala, Ura, Vudi dina, Vudi Kalakala, Vudi ni Toga, Waiwai Leka, Waiwai Salusalu, Waiwai Vula, and Sei.

alt.); foliis oblongo-lanceolatis, obtusis; spadice pendulo, hirsuto; spathis ovatis (purpureis), deciduis; baccis ovato-oblongis, angulatis.—*M. Chinensis*, Sweet. *M. regia*, Rumph. Amb. vol. v. p. 131. Nomen vernac. Vitiense, "Vudi ni papalagi" (*i. e.* foreign *Musa*).—Much cultivated throughout Viti.

3. *M. paradisiaca*, Linn. Spec. n. 1477; caudice extus viridi; spadice glabro, pendulo; fl. ♂ persistentibus; spathis acutis (violaceis); baccis 3-gonis, falcatis.—Nomen vernac. Vitiense, "Vudi."—Much cultivated throughout Viti.

4. *M. uranoscopus*, Rumph. Amb. vol. v. p. 137. t. 61. f. 2; foliis angustatis; spadice erecto, apice demum fl. deciduis denudato incurvo; baccis obovoideo-ellipsoideis, parvis (rufis v. aurantiacis).—*M. Troglodytarum*, Linn. Spec. n. 1478. Nomen vernac. Vitiense, "Soaqa;" Samoense, "Soa'a."—In woods of Viti Levu and Taviuni; occasionally cultivated (Seemann! n. 619).

II. *Alpinia*, Linn. Gen. n. 4, excl. sp.; Endl. Gen. n. 1632. Calyx tubulosus, latus, apice rumpens. Corollæ tubus brevis; limbi laciniæ exteriores æquales, erectiusculæ, interiores laterales, denticuliformes v. 0; labellum magnum, explanatum, integrum v. 2-3-lobum. Filamentum lineare, ultra antheræ muticæ emarginatæ loculos haud productum. Ovarium inferum, 3-loculare. Ovula in loculorum angulo centrali ∞, horizontalia, anatropa. Stylus filiformis, inter antheræ loculos transiens; stigma capitato-3-gonum. Capsula baccata, 3-locularis, indehiscens. Semina ∞ v. abortu pauca, arillata.—Herbæ radicibus crassis, tuberosis, horizontalibus, caulibus pluribus, perennantibus; foliis bifariis, lanceolatis; vagina fissa, ligulata; inflorescentia caulem terminante, paniculata v. laxe racemosa aut spicata.

1. *A. Vitiensis*, (sp. nov.) Seem. (Tab. LXXXVII.); foliis breve petiolatis, lanceolatis, acuminatissimis, marginatis, utrinque glabris, subtus albido-punctatis; racemis terminalibus subpaniculatis; pedicellis villosopubescentibus; calycibus truncatis; corollæ lobis lateralibus obovatis, dorsali oblongo obtuso (cæteris longiore), labello obovato obtuso.—Taviuni. (Seemann! n. 621.)

Allied to *A. Allughas*, Rose. Petiole, beyond the ligule, $\frac{1}{2}$ – $1\frac{1}{2}$ inch long. Blade of leaf 14–16 inches long, 2– $2\frac{1}{2}$ inches broad. Racemes terminal, about 2 inches long, and shorter than the lowermost leaf-like bract; the rachis bearing short peduncles, each with 2–3 flowers.

EXPLANATION OF PLATE LXXXVII., representing *A. Vitiensis*, Seem.—Fig. 1, a flower; 2, the same open, with calyx removed; 3, top of ovary; 4, filament; 5, cross-section of ovary.

2. *A. Boia*, (sp. nov.) Seem. (Tab. LXXXVIII.); foliis elongato-oblongis acuminatis amplissimis, glabris; spicis distichis paniculatis; calycibus truncatis; corollæ lobis lateralibus oblongis, dorsali obovato, labello integro.—Nomen vernaculum Vitiense, "Boia."—Viti Levu, on the road from Navua to Namosi, in woods. (Seemann! n. 620.)

A gigantic species recalling to mind the larger Heliconias and Musas, and in native superstition supposed to be the plantain of the Veli (spirits of the woods), which cannot be touched by mortals with impunity. Leaves several feet long, 9–18 inches broad, with purplish petioles. Inflorescence a large panicle composed of distichous spikes, the rachis of which is closely surrounded by truncate bracts. Corolla of a pale rose-colour. Anthers and stigma glabrous. Seed obovate, covered almost entirely with a whitish arillus.

EXPLANATION OF PLATE LXXXVIII., representing *Alpinia Boia*, Seem.—Fig. 1, lower portion of a small leaf; 2, upper portion of ditto; 3, portion of inflorescence; 4, flower-bud; 5, open flower; 6, corolla forced open; 7, cross-section of fruit; 8 and 9, seeds; 10, seed without the arillus:—Fig. 4, 5, 6, 9, and 10 magnified.

III. *Amomum*, Linn. Gen. n. 2; Endl. Gen. n. 1626. Calyx tubulosus, apice 3-fidus.

Corollæ tubus brevis; limbi lacinia exterioris laterales postica angustiores, interiores laterales 0; labellum maximum, explanatum. Filamentum complanatum, lateribus apiceque ultra antheram muticam productum, lobulis 2 auctum, lobo terminali 2-fido. Ovarium inferum, 3-loculare. Ovula in loculorum angulo centrali ∞ , horizontalia, anatropa. Stylus filiformis, inter antheræ loculos receptus; stigma infundibuliforme. Capsula sæpius baccata, 3-locularis, loculicido-3-valvis. Semina ∞ , arillata.—Herbæ radicibus articulatis, repentibus; foliis bifariis, membranaceis; vaginis fissis; inflorescentia radicali, spicata, laxè imbricata.

1. **A. Cevuga**, (sp. nov.) Seem. (Tab. LXXXIX.); caule elongato folioso, foliis brevi-petiolatis lineari-lanceolatis (1–1¼ ped. longis, 2–3 unc. latis) longe acuminatis glabris; scapis radicalibus ∞ -floris, bracteis oblongis v. obovato-oblongis obtusiusculis (purpureis); calyce bracteola calyciformi pilosa inclusa; corollæ (pallide roseæ) lobis lateralibus oblongis patentibus, dorsali spathulato-obovato cæteris longiore, labello subrotundato margine subundulato; antheris stigmatibusque pilosis.—Nomen vernac. “Cevuga.”—Namosi, Viti Levu (Seemann! n. 624).

The leaves are 12–15 inches long, and 2½–3 inches broad, and used by the natives for making into necklaces (taubes) and for scenting the cocoa-nut oil with which they grease their naked bodies. We used them as an ingredient of curry.

EXPLANATION OF PLATE LXXXIX., representing *A. Cevuga*, Seem.—Fig. 1, scape; 2, flower; 3, the same after removal of calyx and corolla; 4, filament:—all, with exception of Fig. 1, magnified.

IV. **Curcuma**, Linn. Gen. n. 6; Endl. Gen. n. 1623. Calyx tubuloso-3-dentatus. Corollæ tubus sursum dilatatus; limbi lacinia exterioris interioribus lateralibus conformes; labellum majus, patens. Filamentum petaloideo-dilatatum, carinatum, apice 3-lobum, lobo intermedio anthera 2-calcarata terminato. Ovarium inferum, 3-loculare. Ovula in loculorum angulo centrali ∞ , horizontalia, anatropa. Stylus filiformis; stigma capitatum. Capsula 3-locularis, loculicido-3-valvis. Semina ∞ , arillata.—Herbæ acaules, radicibus palmato-tuberosis, perennantes; foliis herbaceis; petiolis vaginantibus, bifariis; scapo simplici, laterali v. centrali; spica simplici, erecta, comosa, inferne bracteis saccatis subimbricata; floribus flavescentibus, intra quamvis bracteam ternis quinisque approximatis, bracteolatis.

1. **C. longa**, Linn. Spec. n. 3; Rosc. in Trans. Linn. Soc. vol. viii. p. 355; tuberibus palmatis longis, intus saturate aurantiacis; foliis longe petiolatis, late lanceolatis, utrinque attenuatis, totis viridibus; spica terminali; bracteis spathulatis.—Roxb. Asiat. Research. vol. xi. p. 340; Bot. Reg. t. 886. *Amomum Curcuma*, Jacq. Vind. vol. iii. t. 4. Nomen vernac. Vitiense, “Cago.”—Viti Levu, Vanua Levu, Taviuni, etc. (Seemann! n. 622). Also found in Tahiti, according to Solander, and Easter Island, according to Forster. Common in the East Indies and the Archipelago.

The Cago grows abundantly in all the lower districts. The whites use the rhizome in the preparation of curry, and the natives the powder of it as food, or more commonly to daub over the bodies of women after childbirth and those of dead friends—a custom also prevailing in the Samoan group, according to Mr. Pritchard. In the few districts that have as yet not been brought under the immediate influence of the Foreign Consuls or the missionaries, the heathen widows are painted with it before strangulation. In fact, turmeric powder is with the Fijian what rouge and similar preparations are with us—a cosmetic. Promoting, in their opinion, health and beauty, it is put on with no sparing hand by the women, and pointed remarks are made about too great a proximity if a man be unfortunate enough to have some stains of turmeric on his body or scanty dress. The manufacture of turmeric is similar to that of arrowroot, and is generally managed by the women. The receiving pits, dug in the ground, are lined with herbage, so as to retain the juicy parts. The grated rhizome is afterwards placed in the body of a canoe, and rolled up and strained through a fine basket lined with fern leaves. It is then carried away in bamboos, and for several days exposed to the air, when the fluid is gently poured off, and a sediment, the Rerega of Fiji, or turmeric of commerce, is found at the bottom.

V. **Zingiber**, Gært. Fruct. vol. i. p. 33. t. 12; Endl. Gen. n. 1622. Calyx tubulosus, hinc fissus. Corollæ tubus brevis; limbi laciniæ exteriores æquales, interiores laterales 0; labellum 3-lobum. Filamentum supra antheram muticam in rostrum simplex incurvatum elongatum. Ovarium inferum, 3-loculare. Ovula in loculorum angulo centrali ∞ , horizontalia, anatropa. Stylus filiformis, filamento obvolutus; stigma infundibuliforme. Capsula subbaccata, 3-locularis, loculicido-3-valvis. Semina ∞ , arillata, in pulpa nidulantia.—Herbæ radicibus tuberosis articulatis repentibus, perennantes; caulibus annuis; foliorum membranaceorum distichorum vaginis inclusis; spicis strobiliformibus, radicalibus v. rarius terminalibus, solitariis, e bracteis imbricatis unifloris compositis.

1. **Z. Zerumbet**, Rosc. in Linn. Soc. Trans. vol. viii. p. 348; spicis radicalibus; bracteis ovatis, obtusis; laciniis corollæ erectis, acutis, nectario 2-lobato.—*Amomum Zerumbet*, Willd. Spec. vol. i. p. 6. *Zingiber spurium*, Koenig, ex Dryand. in Linn. Soc. Trans. vol. ii. p. 213; Jacq. Hort. Vindob. vol. iii. t. 54. Nomen vernac. Vitiense, “Beta;” Tahitiense, teste Solander, “Obui” v. “Abuhi;” Hawaiense, teste Hillebrand, “Olena.”—Abundant throughout the lower districts of Viti (Seemann! n. 623). Also found in Tahiti (Banks and Solander!) and Sandwich Islands (Macrae! Hillebrand!). Common in the East Indies.

This species of ginger abounds in the lower districts of the group, where it is called “Beta.” The rhizome, though less pungent than that of the species exported from China, has been found to make tolerably good preserves, and answers all the other purposes for which genuine ginger (*Zingiber officinale*, Linn.) is commonly employed. During our journey we often used it with turmeric, a few leaves of another aromatic Zingiberaceous plant termed “Cevuga” (*Amomum Cevuga*, Seem.), and a few fruits of the bird’s-eye pepper (*Capsicum frutescens*, Linn.), for making curry, which, all the ingredients being fresh, proved of excellent flavour.

VI. **Canna**, Linn. Gen. n. 1; Endl. Gen. n. 1646. Calyx 3-phyllus. Corollæ limbus exterior 3-fidus, interior 2-labiatus; labio superiore 2-3-partito v. abortu 0, inferiore indiviso. Filamentum petaloideum, anthera marginali. Ovarium inferum, 3-loculare. Ovula in loculorum angulo centrali ∞ , horizontalia, anatropa. Stylus petaloideus; stigma lineare, margini adnatum. Capsula membranacea, papilloso-muricata, 3-locularis, loculicido-3-valvis. Semina ∞ , subglobosa, testa coriacea, dura. Albumen corneum. Embryo orthotropus, axilis, cylindricus, albuminis longitudine, extremitate radiculari albumen perforante, umbilicum attingente, cotyledonis apice subinflexo.—Herbæ perennes; caule simplici; foliis longe petiolatis, late ovatis; spica terminali laxa; floribus bracteatis.

1. **C. Indica**, Linn. Syst. Veg. ed. Pers. p. 49; foliis ovatis, utrinque acuminatis, nervosis; corollæ limbo interiore 3-fido, laciniis lanceolatis, strictis.—Rosc. in Trans. Linn. Soc. vol. viii. p. 388. Nomen vernac. Vitiense, “Gasau ni ga” (*i. e.* Duck’s reed); “Indian shot” of the colonists.—Common on roadsides, about houses, etc., in the lower parts of Taviuni, Gau, and most other Vitian Islands (Seemann! n. 625, Milne!). Also found in the Hawaiian (Barclay! Macrae! Diell!), Samoan (Powell!), and Tongan Islands (Barclay!), in the East Indies and the Archipelago, and tropical America.

This species, which is indigenous to America, was not found by Banks and Solander or the Forsters in any part of tropical Polynesia; but since their time it has become a common weed in most of the Polynesian islands, as it has also in the Indian Archipelago, India, and Southern China.

ORDO XCVII. ORCHIDEÆ.

(AUCTORE H. G. REICHENBACH, FIL.)

SUBORDO I. MONANDRÆ.—Flores typici monandri.

TRIBUS I. OPHRYDEÆ, R. Br.—Anthera cum columna connata.

I. **Habenaria**, Willd. Sp. vol. iv. p. 44. Sepala æqualia. Tepala simplicia, subæqualia seu 2-partita. Labellum heteromorphum, varie evolutum. Columna erecta seu decumbens. Antheræ loculi antice in canales longiores breviores extensi, glandulas nudas efferentes. Labium stigmaticum nunc medio adnatum, nunc liberum, in crura lateralia stigmatica extensum.—Typus *Platantheræ*.

§ 1. *Tepala integra.*

1. **H. tradescantifolia**, (sp. nov.) Reichb. f.; gracilis, caule basi vaginato, superius congesto folioso; foliis lanceolatis, acuminatis, caule superne vaginis paucis brevibus vaginatis, apice longius racemoso; bracteis lanceolatis, acuminatis, ovaria rostrata subæquantibus; sepalo dorsali oblongo, 1-nervi; sepalis lateralibus subæqualibus deflexis; tepalis ovato-triangularibus, basi lata sessilibus; labello usque supra basin 3-fido; laciniis lineari-subulatis, media lacinia longiori; calcari filiformi, apice dilatato, acuto, ovarium pedicellatum non seu vix æquante; antherarum canalibus uncinatis, cruribus breviusculis adnatis. Ovalau and Taviuni.—(Seemann! n. 608, ex parte.)

Planta gracilis vultu *Peristylis gracilis*, notis certe *Habenariæ arenariæ*, Lindl., proxima, quæ tamen diphylla. Sepala et tepala uninervia.

§ 2. *Tepala bifida.*

2. **H. superflua**, (sp. nov.) Reichb. f.; caule basi ample vaginato, sursum dense folioso; foliis lineari-ligulatis, acuminatis aristatisve, superius vaginato, demum racemoso; bracteis ovaria subæquantibus; sepalis triangularibus, aristatis, lateralibus deflexis; tepalis lineari-subulatis, erectis, antice in lacinulam rectangule porrectam linearem obtusam brevem extensis; labelli 3-partiti partitionibus lineari-subulatis, subæqualibus; canalibus porrectis, brevibus; cruribus ligulatis porrectis.—“Flores virides.” Seemann, mss.—Ovalau and Taviuni (Seemann! n. 608).

3. **H. supervacanea**, (sp. nov.) Reichb. f.; caule basi parce ac tenue vaginato, superne folioso; foliis congestis, cuneato-oblongis, acuminatis, dein parce vaginato, apice racemoso; bracteis amplis, oblongis, acuminatis, 3-nerviis, flores excedentibus; sepalis oblongis, acuminatis, lateralibus deflexis; tepalis bipartitis; lacinia postica lineari-acuminata, lacinia antica multo breviori, acuminata, arrecta; labelli partitionibus linearibus, acutis, partitione media longiori; calcari cylindræo, apice incrassato, ovarium pedicellatum æquante; canalibus brevibus, subcurvis; cruribus stigmaticis porrectis.—Viti, exact locality not specified (Græffe!).

Similes sunt *Habenaria salaccensis*, Bl., et *H. macrostachya*, Lindl. Illa gaudet lacinia antica tepalorum deorsum curvata; hæc lacinia seu partitione utraque æquilonga.

TRIBUS II. OPERCULATÆ, Reichb. f.—Anthera demum a columna libera, secedens saltem.

SUBTRIBUS I. NEOTTEÆ, (Lindl.) Reichb. f.—Anthera secedens, basi sua persistens. Pollen sectile seu pulvereum.

II. **Vrydagzynea**, Bl. Jav. Orch. p. 60. Sepala æqualia, recte in ovario insidentia. Tepala subæqualia, angustiora. Labellum fornicatum, basi columnæ adnatum seu liberum, calcaratum filis

geminis apice patelligeris in calcaribus. Rostellum minute bidentatum, a lamina stigmatica bifida apice tumida liberum.—*Habitus Goodyeræ*.

1. **V. purpurea**, Bl. l. c. et t. 20; labelli ligulati linea media unicristata, filis glanduliferis in calcari cylindraceo didymo rectis.—*Heteria purpurea*, Miq. Flor. Nederl. Ind. p. 726.—Viti Levu (Seemann! n. 618). Also collected in Java.

Caulis senior longe radicans, superne foliatus. Vaginæ amplæ, breves, membranaceæ, in petiolum brevem laminæ lanceolatæ acutæ extensæ, demum rufæ, hinc undulatæ. Racemus densiflorus. Bracteæ herbaceæ; lanceæ uninerviæ pilosæ. Ovarium hinc minutissime verrucosum (an semper?). Sepala oblonga, apice attenuata, subretusa. Tepala rhombeo-lineararia, retusa, uninervia. Labellum fornicatum, 3-lobum, lobis lateralibus obtusangulis, lobo medio calceolari oblongo. Calcar cylindraceum, subdidymum, ovarium prope dimidium æquans, filis teretibus adnatis apice liberis patellas carnosas terminales ferentibus. "Flores albi. Costa foliorum alba."

III. **Anecochilus**, Bl. Bijdr. p. 411. Sepala subæqualia, lateralia oblique descendencia. Tepala angustiora, sub sepalo impari. Labellum basi calcaratum seu saccatum, verrucis geminis intus in calcari, elongatum. Columna brevis, lamellis variis geminis antice sub stigmatibus. Rostellum bicuspe.—*Habitus Goodyeræ*.

1. **A. longiflorus**, (sp. nov.) Reichb. f.; flore elongato, sepalis tepalisque ligulatis, mento gibbo subconico, labello basi columnæ adnato, calcari conico parvulo, lamina angusta elongata crenulata, apice cordiformi acuta, carinis elevatis ternis per discum, callis ligulatis bidentatis in calcari.—*Dossinia marmorata*, Lindl. Cl. Seemann in sched. Forsan cl. Seemann deceptus fuit infausta quadam Lindleyana confusione (in scriptis Societatis Linnæanæ ac in 'Gardeners' Chronicle' deposita) *Macodis Petolæ* cum *Anecochilo setaceo* et "Dossiniæ" cum *Anecochilo Roxburghii* (cf. etiam herbarium Hookerianum, ubi beatus optimus Black errorem correxit, postquam legit quæ habui in Otto, Hambg. Gartz., 1859, vol. xv. p. 67).—Somosomo, Island of Taviuni (Seemann! n. 601; Græffe!).

Planta spithamæa, habitu (floribus exceptis) *Physuri vaginati*, Hook. Vaginæ foliorum amplæ. Laminæ bene angusteque petiolatæ, cuneato-rotundatove oblongæ, acutæ, nervis ternis inferne valide proslitentibus. Racemus brevis, vagina una alterave. Bracteæ ligulatæ, acuminatæ, nervo uno valido, limbo ciliatæ, hinc illic extus parcissime pilosulæ. Ovaria calva visa. Perigonium videtur calvum. Sepala lineari-ligulata, acuta, lateralia basi libera angulata. Tepala lineari-falcata, nunc apice paulo dilatata. Columna brevis, genetica, sed in rostellum valde longum lineare bicuspidatum extensa. "Flores sordide albi."

V. **Rhamphidia**, Lindl. Contrib. Orch. Ind. in Proc. Linn. Soc., 1857, p. 182. Perigonium posticum. Sepala subæqualia, lateralia (superiora) gibbosa. Tepala angustiora. Labellum saccat-naviculare, cum columna plus minus connatum. Columnæ rostellum forcipatum; crura stigmatica omnino lateralia. Lacinie membranaceæ sub rostello. (Hæc juxta analyses scrupulosas *Rhamphidiæ rubentis*, Lindl., et *rubicundæ*. Num reliquæ omnes species hujus sint generis, nescimus.)—*Habitus Goodyeræ*.

1. **R. rubicunda**, (sp. nov.) Reichb. f.; labello naviculari acutiusculo, apice utrinque lobulo acutangulo inflexo, callis linearibus retusis 4-seriatis in fundo—*Goodyera rubicunda*, Lindl. Bot. Reg., 1830; Misc. p. 92.—Viti Levu (Græffe!). Also in Upolu, Samoan Islands (Græffe!), and in the Philippine Islands.

Caulis spithamæus usque pedalis. Vaginæ amplæ cucullatæ, superiores laminigeræ. Laminæ petiolatæ, lanceolatæ seu oblongæ, acuminatæ, sicæ rufæ. Caulis superne laxè hispidulus, vaginis acuminatis quibusdam distantibus. Racemus pluriflorus, haud nimis densiflorus. Bracteæ lineari-setaceæ, uninerviæ, ciliatæ, puberulæ, flores subæquantæ. Ovaria fusiformia, tomentosa. Sepalum impar triangulum; sepala lateralia ovata, acuta. Tepala linearia. Planta sicca tota rufida.

Ill. b. Lindley in Contrib. l. c. hæc habet: "This is certainly a plant of the same genus as *Goodyera procera*, and no *Aetheria*, as Professor Reichenbach supposes." Equidem, in *Seemannia Bonplandia*, vol. iii. p. 214, plantam pro *Aetheria* proposueram. Jam mihi vix placet, nunc de difficillimis *Goodyeraceis* sententias proferre, cum plures adhuc mihi sint melius investigandæ, ac misera specimina concedunt. Ill. Lindley, ubi protulit, quæ indicavi, labellum solum inspexit. *Goodyera procera* tamen, ut omnes *Goodyeræ*, stigma habet confluens. *Rhamphidia rubicunda*, uti *Rhamphidia rubens*, crura duo stigmatica inter se remota tenet.

V. **Tropidia**, Lindl. Bot. Reg. f. 1618. Sepala oblonga, lanceolata, lateralia ima basi in mentum obliquum extensa. Tepala sepalo supremo æqualia. Labellum naviculare, apice dilatatum, intus 3-carinatum. Columna breviuscula, apice subæqualis, rostello bifido, a sepalo dorsali libera. Anthera oblonga. Pollinia 4, pulverea (?), in caudicula lineari. Glandula subquadrata.—Habitus *Elleanthi* (Evelynæ).

1. **T. effusa**, (sp. nov.) Reichb. f.; paniculæ rhachi fractiflexa; bracteis bipectinatis, ovatis, acutis, 7-nerviis, ovaria pedicellata florida subæquantibus; sepalis tepalisque lanceis, acuminatis! mento obtusangulo, parvo; labello naviculari 3-nervio apice lanceo-reflexo; columna brevi.—Somomo, Island of Taviuni (Seemann! n. 612); Viti Levu (Græffe!).

Descripseri specimen Herbarii Kewensis, quod satis bene convenit cum speciminibus duobus Græffeanis. Specimen quod ego teneo Seemannianum racemum simplicem habet, sed videtur esse ejusdem plantæ.—"Flores flavi." Caulis pedalis, foliis cuneato-oblongis acuminatis.

VI. **Corymbis**, Thouars, Orch. t. 37, 38. Sepala oblonga, lateralia nunc connata. Tepala subæqualia. Labellum naviculare, apice dilatatum, intus bicarinatum. Columna clavata, apice dilatata, rostello bifido, sepalo summo adnato, post anthesin elongata. Anthera ovata. Pollinia 4, pulverea (?) in caudicula lineari. Glandula quadrata.—Habitus præcedentis, inflorescentia ramosa.

1. **C. veratrifolia**, Reichb. fil. in Flora, 1865, p. 183.—*Hysteria veratrifolia*, Reinw. in Flora, 1825, vol. ii. p. 5. *Rhyncanthera paniculata*, Bl. (Tab. LXXVIII.) (ovario false triloculari). *Macrostylis disticha*, Kuhl et v. Hasselt, Orch. *Corymbis disticha*, Lindl. Folia Orchid. vol. i. e. p.—Viti Levu and Ovalau (Seemann! n. 603; Barclay!). Also in the Malay Archipelago, and in India.

Planta arundinacea. Folia disticha, cuneato-oblonga, acuminata, multinervia, plicata. Paniculæ axillares. Bracteæ distichæ, triangulæ, acutæ.

SUBTRIBUS II. **EUOPERCULATÆ**, Reichb. f.—Anthera incumbens, mobilis, tota demum decidua.

Pollen ceraceum seu pulposum seu pulverium.

a. **ARETHUSEÆ**, (Lindl.) Reichb. f.—*Pollen pulposum seu pulverium*.

VII. **Epiphanes**, Bl. Bijdr. p. 421. Perigonium externum connatum, sepala lateralia altius, profundius fissa, sepalum dorsale cum tepalis alte connatum. Labellum explanatum, columnæ pedi producto articulate impositum. Columna arcuata basi in pedem producta. Anthera terminalis, 4-locellaris. Pollinia farinaceo-pulposa semilunata. Fovea immediate sub androclinio.—Tuber crassum, horizontale. Caules crassuli, vaginati, apice racemosi.—Vultus *Orobanchoides*.

1. **E. micradenia**, (sp. nov.) Reichb. f.; labello flabellato apice minutissime tuberculato.—Island of Ovalau, in woods, very rare (Seemann! n. 610).

Tuber crassum, subfusiforme. Caulis supra tuber radicibus filiformibus. Pedunculus teres, quatuor quinque usque pollices longus, vaginis ochreatis acutis brevissimis. Racemus pauciflorus. Bracteæ triangulæ, ovariis pedicellatis multo breviores. Tubus perigonalis sat longus. Sepalum dorsale et tepala labium trifidum, sepala inferiora labium bilobum sistencia. Columnæ compages mihi haud adeo lucida.

Videtur corpus clavatum apice utrinque unidentatum, apterum, fovea certe sub androclinio. "Flores brunneo-purpurei."—*Epiphanes pallens* (*Didymoplexy pallens*, Griff. *Apetalon minutum*, Wight! etc.) longe recedit labelli cristis.

VIII. **Pogonia**, Juss. Gen. p. 65. Sepala et tepala subæqualia, libera, recte inserta. Labellum liberum, expansum; disco lamellato, cristato, puberulo. Columna clavata, apicibus lobulata, androclinio immerso. Anthera subcarnosa, 4-locellaris. Pollinia quaterna, pulposa, minuta, lobulata. Rostellum vix productum. Fovea oblonga seu cordiformis.

1. **P.** sp.—In dark woods, Island of Taviuni (Seemann! n. 604).

Huc referenda sunt folia cordata rotunda acuta multinervia, nervulis trabeculatis plurimis, superne multum, infra vix hispido. Novem nervi inferne carinati. Valde accedit ad *Pogoniam plicatam*, Lindl., nisi ipsa. Floribus deficientibus nihil certi proferri potest.

b. **VANDÆ**, Lindl.—*Pollen ceraceum cum glandula viscida, vulgo mediante caudicula.*

The following genus of this group is represented in tropical Polynesia, though not yet found in Viti, viz. :—

AGROSTOPHYLLUM, Bl. t. 53; Bijdr. p. 368. Sepala ligulata, subæqualia, lateralia in mentum plus minus extensum descendunt. Labellum plus minus saccatum, nunc medio constrictum. Columna clavata. Anthera in androclinio inornata immersa, octolocellaris. Pollinia octona, clavata, basi attenuata in glandula communi. Fovea sub androclinio.—Plantæ distichifoliæ seu subbulbosæ. Genus haud bene adhuc notum. Speciem Græffeanam subdubius huc refero; pollet perigonio externo medium usque connato, mento subevanido.

A. megalurum, (sp. nov.) Reichb. f.; distichifolium, caule ancipiti (?), vaginis ancipitibus margine libero membranaceo adnatis, juxta laminæ insertionem utrinque auriculatis, laminis a cuneata basi utrinque rotundato-dilatatis, lineari-ligulatis, apice tricuspидatis, inflorescentia spiciformi elongata, foliis floralibus in fibras solutis (hinc nomen), bracteis ovatis subacutis ovaria subæquantibus, sepalis semiconnatis, trinerviis, tepalis ligulatis obtuse acutis, labello pandurato ligulato lævi, non corollino, columna clavata, androclinii loculo postico unidentato, rostello erecto semilunato exciso obscure angulis externis ac medio unidentato, hinc tridentato.—Inflorescentia mihi haud liquet. Spithamæa est et omnino in quovis articulo fibras plurimas profert—fasciculos vasorum ex foliis floralibus solutis. Adstant flores bini seu terni, bracteati. Antheræ locellos haud bene intellexi.—Upolu, Samoan Islands (E. Græffe!).

Et inseratur hic species Indica.

A. callosum, (sp. nov.) Reichb. f.; distichifolium, caule ancipiti (?), vaginis ancipitibus margine libero membranaceo adnatis, infra laminæ insertionem æqualibus nec auriculatis lamina a basi subæquali lineari-ligulatis apice attenuatis, apice quasi obtusatis, revera tridentatis, dentibus lateralibus obtusatis, dente medio mucronato, inflorescentia capitata, foliis floralibus servatis, semiovato-triangulis, bracteis oblongis obtuse acutis ovaria semiaquantibus, mento obtusangulo, sepalis oblongis obtuse acutis, liberis), tepalis subæqualibus, labello oblongo ventricosissimo limbis involutis, callo depresso tricarinato in basi linea transversa abrupto, antice in carinam brevem medianam excurrente; columna utrinque basi angulata, androclinio postice denticulato.—O. 201, Sikkim (Hooker!).—In herbario Lindleyano exstat analysis delineata, quæ longe recedit ab illa quam ego confeci. Nescio, quomodo res sit explicanda.

IX. **Tæniophyllum**, Bl. Bijdr. p. 355. Sepala et tepala subæqualia, recte inserta. Labellum naviculare (calcaratum seu ecalcaratum). Columna brevissima, androclinio maximo immerso. Anthera bilocularis. Pollinia quaterna, in caudicula filiformi. Glandula minuta.—Herbæ aphyllæ, radicibus pro planta maximis *Angræca* aphylla quædam simulantes.

1. **T. Seemanni**, (sp. nov.) Reichb. f.; pedunculo paucifloro, ovariis appresse nigro-hispidis; sepalis oblongis extus linea media carinatis lævibus glabrisque; tepalis ligulatis obtusis curvatis, labello brevissime unguiculato, basi sagittato saccato naviculari omnino ecalcarato.—Nomen vernac. Vitiense, "De ni caucau."—Moturiki and Ovalau (Seemann! n. 593; Storck! n. 907).

Radices adventitiæ depressæ, flexuosæ, elongatæ. Flores parvuli, viriduli, molles, haud facile examinandi.—*Tæniophyllum fasciola*, Reichb. (*Epidendrum fasciola*, Forster!) gaudet labello bene calcarato.

X. **Thrixspermum**, Lour. Fl. Coch. (ed. Berol.) p. 635. Sepala æqualia. Tepala subæqualia. Labellum in pede columnæ affixum, expansum seu connivens, in calcar extensum seu tantum foveatum, antice apice incrassatum seu convolutum. Pollinia rotunda, mollia, in caudicula uniglandulosa.—Distichifolium.

§ 1. *Pedunculus bracteis ancipitibus bipectinatus.*

T. Græffei, (sp. nov.) Reichb. f.; labello rhombeo, obtusangulo (convoluto?), apice inflexo (arrecto?), tumido, lobuloso, calloso. Folia disticha, in caule caulescenti lineari ligulata, apice bidentata, valde coriacea, tres quatuor usque poll. longa, ultra dimidium poll. lata. Vaginæ nervosæ. Radices adventitiæ tenues, flexuosæ. Pedunculi elongati, arrecti, medio hinc vagina parva vaginati, apice bipectinati; bracteis triangulo navicularibus. Ovaria pedicellata bracteas excedentia. Sepala oblonga, obtuse acuta. Tepala linearia, subacuta. Flores parvuli, illis *Thrixspermi adversi* vix multo majores.—Upolu, Samoan Islands (Græffe!).

§ 2. *Pedunculus teres, bracteis planis.*

1. **T. Godeffroyanum**, (sp. nov.) Reichb. f. Xenia, vol. ii. p. 122 (Tab. XC.); caule subnullo; foliis cuneato-oblongis, acute minute ac inæqualiter 2-lobis; pedunculis elongatis, apice racemosis; labelli laciniis lateralibus oblique quadratis; lacinia media semiovata, pilosula, sacco obtuso.—Vanua Levu (Harvey! Seemann! n. 600, Græffe!).

Planta statura multum ludens; specimina Seemanniana macra, Græffeana multo majora. Radices adventitiæ latæ, vittæformes, quasi lomentaceæ, quod sæpe constrictæ, calvæ, truncis valde adpressæ, siccæ flavæ, rugosæ. Folia nunc terna in uno caule sicca bene pergameneo-carnosa, nunc bene inæqualiter biloba. Pedunculi sæpe in eodem caule plures, usque ad octo, graciles, vaginis quaternis, retusis, abbreviatis, superne racemosis. Bracteæ triangulæ, parvæ, in rachi nunc flexuosa, nunc recta, sæpius secundiflora. Sepala et tepala oblonga, obtusa. Pes columnæ longe porrectus. Columna gracilis, lamina transversa sub fovea. Anthera vertice conica, utrinque filo pendulo apice clavato. "Flowers bright yellow." Seemann, mss.—Planta insigni mercatori Hamburgensi, Cæsari Godeffroy, navium exercitu maria remotissima aranti, inscripta. *Obs.* Fructus in uno specimine Græffeano fusiformes, utrinque porrecti, quasi bipectinati; an ita semper?

EXPLANATION OF PLATE XC., representing *Thrixspermum Godeffroyanum*, Reichb. f.—Fig. 1, flower-bud; 2, open flower; 3, lip and column; 4, column; 5 and 6, pollinia:—all magnified, but figures 3 and 4 are incorrectly rendered.

XI. **Saccolabium**, Bl. Bijdr. p. 292; Lindl. Orch. p. 220. Sepala et tepala subæqualia, in ovario recta. Labellum expansum, exarticulatum, calcaratum, calcari vacuo. Anthera bilocularis. Pollinia gemina, sphærica, postice fissa. Caudicula linearis. Glandula 1, rotundula.—Plantæ distichifoliæ.

1. **S. Bertholdi**, (sp. nov.) Reichb. f.; caulescens; foliis ligulatis, apice obliquis, inæqualibus; pedunculo folia subæquante, racemoso, multifloro, densifloro; sepalis oblongis, lateralibus oblique curvatis; tepalis flabellato-retusis; labelli laciniis lateralibus brevibus, subquadratis, antice argutis; carina utrinque intus cum margine parallela, lacinia media oblonga, apiculata, incrassata; calcari cylindræo, subclavato, ovarium pedicellatum subæquante; androclinio excavato, postice 1-dentato; rostello porrecto, argute 2-dentato; anthera alta, galeata; caudicula lineari, apice rhombea; appendiculis parvis, geminis, inter pollinia sphærica.—Namara, Viti Levu (Berthold Seemann! n. 595, Græffe!).

Caulis calamo corvino crassior. Vaginæ siccæ rugosæ. Folia spithamæa, sesquipollicaria quoad latitudinem, certe pulchre coriacea, sicca bene nervosa. Pedunculus arrectus, basi brevi vaginatus, superne dense racemosus. Florum fabrica valde accedit ad illam florum *Saccolabii gracilis*, Lindl., quod caule, foliis, inflorescentia longe recedit.

XII. **Sarcanthus**, Lindl. Coll. Bot. t. 39. Sepala et tepala prope æqualia. Labellum trifidum

seu trilobum, calcaratum, calcari septato. Columna erecta, semiteres. Anthera 2-ocularis. Pollinia 2, subsphærica, postice fissa, glandula caudiculaque una.—Folia disticha plana v. teretia.

1. **S. Nagarensis**, (sp. nov.) Reichb. f.; panicula ampliuscula; ramis abbreviatis; bracteis ovatis, acutiusculis, concavis, ovaria pedicellata subæquantibus; sepalis oblongis; tepalis subæqualibus, retusiusculis; labello trifido; laciniis lateralibus quadrato-bidentatis, intus carina transversa, lacinia media triangula, callo 5-sulcato, oblongo, in fundo sub columna; callis geminis in basi laciniæ mediæ; calcari conico-cylindræo, didymo-sulcato, sepala externa semiæquante; septo obliquo, diviso; columna crassa, brevi; androclinio marginato, antice emarginato.—Island of Nagara on old trees (Seemann! n. 594).

“Caulescent, climbing on old trees, and throwing out long aerial roots. Leaves fleshy (they were unfortunately lost). Outer sepals green, spotted with pale brown dots. Lip and column white.” Seemann, mss.—Folium ex memoria cl. Seemann cuneato-obovatum, apice inæquale delineavit. Paniculæ vultus tibi exacte partem inflorescentiæ *Galeolæ* in mentem revocat. Rhachis crassa. Vaginæ ramorum valde amplæ, semiovatæ, acutæ. Rami multiflori, tri- usque quadripollicares. Flores valde crassi, illis *Saccolabii densiflori* æquales.

Obs. Exstant etiam specimina Buke Levu, Kadavu, Seemann! n. 581, quæ forsan sunt *Sarcanthi* seu *Saccolabii*, quæ tamen a *Dendrobiis*, ad quorum exercitum adscriptæ a cl. Seemann, abhorrent. Vultus est *Epidendri globosi*, Sw. Caules tenues, fractiflexi. Vaginæ valde arphyllacæ. Folia subtereti-falcata, usque ultra duos poll. longa. Inflorescentiæ minutæ (vix dimidium poll. longæ), multifloræ. Flores desunt.

XIII. **Calanthe**, R. Br. in Bot. Reg. p. 578. Sepala et tepala subæqualia, libera. Labellum cum columna plus minus connatum, expansum, indivisum seu trifidum, calcaratum v. ecalcaratum. Pollinia octona, clavata, quaternatim glandulæ affixa.—Herbæ terrestres; rhizomate brevi; foliis amplis, plicatis; inflorescentia racemosa.

The following species occurs in the Society Islands:—*C. gracillima*, Lindl. Folia Calanthe, n. 26; racemo gracillimo puberulo; bracteis triangulo-acuminatis; ovariis pedicellatis, longe brevioribus; sepalo summo oblongo, acuto; sepalis lateralibus cuneato-ovatis, apiculatis; tepalis oblongis, acutis; labello trifido; laciniis lateralibus lineari-ligulatis, retusis, antrorsis; isthmo elongato; cruribus anticis divaricatis, extus retusis; callo baseos depresso, semilunato; carunculis acutis, pluribus antepositis; carinula antejecta.—*C. veratrifolia*, Hook. et Arn. Bot. Beech. p. 71.

1. **C. ventilabrum**, (sp. nov.) Reichb. f.; racemo densifloro; bracteis deciduis; ovariis pedicellatis, calvis; sepalis oblongis, acuminatis; tepalis oblongis, obtusis; labelli trifidi laciniis posticis semiovatis rotundisve, abbreviatis; lacinia antica rhombea, obtusangula, emarginata, nunc cum apiculo interjecto; carinulis valde brevibus, quinque radiantibus in basi; calcari inflato, obtuso, ovarii pedicellati dimidium non æquante.—Somosomo, Island of Taviuni (Seemann! n. 606).

Folia sesquipedalia, parte petiolari bene lata; lamina usque pedis tertiam lata, oblonga, acuminata; nervis validis quinque, tenuibus innumeris. Pedunculus spithamæus, basi vagina ampla cucullata acuminata amictus. “Flores flavi, modo *Gossypii Nankinensis*.” Affinis *Calanthe speciosæ*, Lindl.

2. **C. hololeuca**, (sp. nov.) Reichb. f.; racemo . . . ; bracteis . . . ; ovariis pedicellatis, calvis; sepalis tepalisque oblongis, apiculatis; labello bene adnato, oblongo, trifido; laciniis basilaribus semiovatis, antrorsum angulatis; lacinia media oblonga, paulo undulata, obtuse apiculata; carina transversa in ima basi; calcari cylindræo, clavato, ascendenti, incurvo, ovarium pedicellatum non æquante.—Namosi, Viti Levu (Seemann! n. 607).—“Flowers, pedicels, and bracts white.”

Folium sesquipedale, a basi longe petiolari cuneato ligulato acuminatum, nervis validis quinque tenuibus plurimis. De inflorescentia nihil dicam, cum non nisi unicum florem acceperim.—“Flowers, pedicels, and bracts white.” Seemann, mss.

XIV. **Appendicula**, Bl. Bijdr. p. 297. Sepala subæqualia, lateralia tamen in perulam calcar mentientem extensa. Tepala sepalo summo subæqualia. Labellum unguiculatum. Columna nana; rostello vulgo erecto, bifido. Anthera octolocellaris. Pollinia octona, quaterna in caudicula ccreacea, glandula (semper?) communi.—Herbæ distichifoliæ.

Obs. Juvat hic addere speciem sequenti simillimam, in herbariis vulgarem, ob misera specimina adhuc indescriptam. Jamjam tria habeo bona specimina, unde licet descriptionem sufficientem conferre.

A. xytriophora, (sp. nov.) Reichb. f.; elatior; vaginis nervoso-striatis; foliis oblongis, apice trifidis, papyraceis, apicem versus serrulatis; laciniis apicis omnibus liberis; bracteis oblongis, apiculatis, floribus brevioribus; labello oblongo, apiculato, linea carinata marginante, postice confluyente supra totum discum, ante apicem abrupta; columna bicorni.—. . . Philippines? (Cuming! n. 2149.) Nunc ramosa, forsitan apice casu quodam deciso. Folia sequentis, duplo minora. Racemi terminales, nunc alii axillares in foliis summis, multiflori. Bracteæ demum deflexæ. Ovarium brevi-pedicellatum. Mentum perulaceum, obtusum. Sepalum dorsale et sepala lateralia oblonga, obtusa, triuervia, hæc tamen in saccum perulaceum extensa. Tepala angustiora, breviora, obtusiora, vulgo uninervia. Columna postice in processum ligulatum, antice in processum linearem seu triangulum apice bicuspidatum extensa.

1. **A. bracteosa**, (sp. nov.) Reichb. f.; elatior; vaginis nervoso-striatis; foliis oblongis, obtusis, papyraceis (siccis quidem), apicem versus crenulatis, apice trifidis; lacinia media breviori, mucronata; laciniis lateralibus triangulis, incumbentibus; racemis elongatis; bracteis oblongis, acutis, flores nunc æquantibus; labello pandurato, acuto, basi subsagittato; columna 5-corni.—Namosi, Viti Levu, on trees (Seemann! n. 592). Also collected in Upolu, Samoan Islands, 2000 feet above the sea (Græffe!).

Rhizoma brachypus, polyrrhizum. Radices villosæ. Caules congesti, usque sesquipedales, pleistophylli. Folia sicca bene viridula, poll. duos prope longa, dimidium poll. lata. Nunc ex axillis foliorum vetustorum ramuli prosiliunt. Racemi erecti seu porrecti. Flores illis *Appendiculæ albæ*, Bl. similes. Ovaria pedicellata, perigonio tenui longiora. Mentum modicum, obtusum, haud perulaceum. Sepala ligulata, quinquenervia. Tepala multo latiora, quinquenervia, crenulata. Labellum omnino læve! Androclinium tridentatum. Dentes rostellii præterea duo, alte fissi, antrorsum ascendentem. Hinc columnam quinquicornem dixi. Capsulæ fusiformes, intus pulchre pellitæ. (Moneo hæc a b. optimo Swartzio nec ab hodiernis detectum fuisse! Qui Latinæ expers est linguæ, id apud Swartzium quærat.)

c. EPIDENDRÆ, Lindl.—*Pollen ceraceum, cum caudiculis ceraceis.*

XV. **Phajus**, Lour. Coch. vol. ii. p. 329. Sepala æqualia, recte in ovario inserta. Tepala subæqualia. Labellum ima basi saccatum seu calcaratum, expansum, circa columnam volutum. Columna clavata. Anthera 8-locellaris. Pollinia mollia, duo corpora 4-gemina materiei pollinicæ adhærentia. (Raro pollinia non 4-gemina sed 3-gemina, serie una monstrose connata.)—Herbæ pseudobulbæ seu caulescentes, foliis arundinaceis, racemis vulgo speciosis, bracteis membranaceis, sepalis tepalisque deciduis, indigoferis.

The following is an additional Polynesian species:—

P. Græffei, (sp. nov.), Reichb. f.; folio longi-petiolato, acuto; pedunculi parce vaginati bracteis oblongis deciduis de racemo distantifloro; sepalis oblongo-ligulatis, obtusis; tepalis subæqualibus, latis, obtusis; labello flabellato, lato, antice trilobo; lobis lateralibus obtusangulis, integerrimis; lobo antico paulo producto, lobulato; toto disco papillis furfuraceo; calcari brevissimo, angulum abruptum minutum efficiente; columna clavata, apice triloba, elongata, antice furfuracea; pedicellis fructuum elongatis.—2000' supra mare, Upolu, Samoan Islands (Græffe!).

1. **P. Blumei**, Lindl. Orch. p. 127; foliis longi-petiolatis, oblongo-lanceolatis; pedunculi vaginati bracteis oblongis, deciduis; sepalis tepalisque lanceis, acutis; labello circa columnam vولو, 3-lobo; lobis lateralibus obtusangulis, lobo medio semiovali acuto; carinis duabus angulatis in disco parce velutino; columna crassa, antice puberula.—De Vriese, Illustrat. t. 8. et t. 11. f. 8; Blume, Fl. Jav. (Choix), tab. introductoria (1!) et 5 D.—Between the Namosi and Navua rivers, Viti Levu (Seemann! n. 586! Græffe!).

Planta Javanica dicitur culta et est vulgo triandra. Nostra, quam spontaneam natam credo, monandra, quantum judicare audeo ex floribus duobus mancis Seemannianis et specimine Græffeano.—“Petals outside white, inside brownish-purple; lip outside dirty white, inside yellowish shaded with purple.” (Seemann.)

XVI. **Spathoglottis**, Bl. t. 76; Bijdr. p. 400. Sepala subæqualia, lateralia columnæ pedem ac labelli basin descendunt. Tepala sepalo impari subæqualia. Labellum de columnæ basi præcincta subarticulatum (3-partitum). Columna arcuata (basi angulata). Anthera 8-locellaris. Pollinia 4-gemina.—Herbæ pseudobulbosæ. Folia arundinacea. Racemi speciosi. Bracteæ scariosæ, persistentes. Flores non indigoferi, perigonio persistenti.

S. plicata, Bl. l. c.; labelli partitionibus posticis ligulato-retusis, divaricatis, erectis; partitione media basi minute hastiformi, pilosa, in unguem contracta, apice dilatata, biloba; carinis geminis disco basilari; callis conicis extus excavatis, basi subconnatis, apice barbatis geminis in ima basi partitionis mediæ inter angulos expansionis hastatæ, tumore in parte anterioris unguis.—*Bletia angustifolia*, Gaud. Voy. autour du Monde des Corvettes l'Uranie et la Physicienne, t. 32, p. 421, omnino huc videtur pertinere. *Spathoglottis plicata*, Griff. Post. Pap. Jahr. vol. iii. cccxi. ii. p. 8. *S. lilacina*, Griff. l. c. vol. iii. Flores seu purpureo-lilacini seu albi. Comparandi gratia additur. Specimina mea: Malacca (Griffith! Cuming!); Singapore (Jagor!); Pulo Pinang, Ile de Honton Cawang (Delessert!); Ile de Waigioo, Terre des Papous (Lesson!); Java (Blume! Zollinger! Junghuhn!).

1. **S. pacifica**, (sp. nov.) Reichb. f.; labelli partitionibus posticis ligulatis, incurvis, antrorsis, partitione media anguste lanceolata (utrinque semiovata), antice reniformi, emarginata; carina depressa, abrupta a basi laciniæ pulchre pilosa, antice 2-dentata, nuda in basi portionis reniformis venas punctulato-incrassatas proferentis.—*Limodorum unguiculatum*, Seem. in Syn. Vit. p. 12.—Amongst ferns and herbage, Vanua Levu (Seemann! (flowers pink) n. 585), Moturiki (flowers white) (Seemann!), Lakeba (Harvey!). Also collected in Uvea (Græffe!).

Planta speciosa; foliis subangustioribus; sepalis magis ovatis, extus cum ovario pedicellato tomentosis. Flores lilacini seu albi.

Obs. Haud felix fuit cl. Seemann, ubi hanc dixit *Limodorum unguiculatum*, Labill. Hæc gaudet buccis in columnæ basi quadrata magnis (in hac subevanidis triangulis); labelli partitionibus posticis spathulatis, obtusis; labelli ungue æquali utrinque tomentoso:—tandem, quod maximi, labello pulchro conico calcari donato. Est *Spathoglottis unguiculata*, Reichb. fil.

XVII. **Eria**, Lindl. Bot. Reg. p. 904. Sepala inæqualia, lateralia triangula seu perulam efficientia, mentum descendunt. Tepala angustiora. Labellum expansum in menti apice. Columna libera, brevis. Androclinium immersum. Pollinia octona, corpora quadrigemina ope telæ polliniferæ cereæ variæ efformantia.—Habitus *Dendrobiorum*.

§ 1. **CONCHIDIUM**, Lindl. (Griff.), Contrib. Ind. Orch. vol. ii. p. 46.—*Spicata, parvifloræ, ebulbes*.—*Phreatia*, Lindl.

Inserantur hic:—

1. *E. richardiana*; foliis pergameneis, lato-ligulatis, apice inæquali-bilobis; racemis folia excedentibus; rhachi anantha parce vaginata; floribus densis, subsecundis; bracteis triangulis, pedicellos vix superantibus; mento obtusangulo; sepalis triangulis, obtusis; tepalis lato-ligulatis, obtusis; labello rhombeo, obtuso, trinervi; androclinio tridentato; ovariis maturioribus fusiformibus.—*Oberonia micrantha*, A. Rich. Sert. Astrol. tab. 3, p. 7.—Nov. Irlandia.

2. *E. gladiata*, Reichb. f.; foliis lato-ligulatis, pergameneo-coriaceis, apice inæquali-bilobis; racemis folia superantibus seu æquantibus; rhachi anantha, parce vaginata; racemo densifloro; bracteis triangulo-setaceis, flores æquantibus; mento obtusangulo, perulaceo, producto; sepalis extenso-triangulis; tepalis angustioribus, acutis; labello trulliformi; basi trinervi; androclinii rostello longe producto, bifido.—*Oberonia gladiata*, A. Rich. Sert. Astrol. tab. 2, p. 6.—Folia vernixia, pedalia, duos poll. bene lata.

3. *E. myosurus*, Reichb. f. apud Seemann, Viti; foliis coriaceis, linearibus, apice inæquali-bilobis; racemis folia non æquantibus; rhachi tenui, anantha, parce vaginata; racemo rarifloro; bracteis triangulo-setaceis, ovaria pedicellata æquantibus; sepalis triangulis, mento subevanido; tepalis ligulatis; labello rhombeo, nervis subevanidis; rostello obtuse bilobo.—Hæc verissima est planta Forsteriana, *Epidendrum myosurus*, Forst.! Prodr. n. 317. *Oberonia myosurus*, Lindl. Orch. p. 16; Lindl. Folia Orchid. *Oberonia*, n. 51.—Planta tenella. Folia usque quinque poll. longa, duas tresve lineas lata. Hanc si speciem

inspexisset ill. b. Lindley, vidisset quanti rostellum bifidum sit habendum, quod præterea et in *Eriis*, sensu Lindleyano legitimis occurrit.—Society Islands (Forster!), Navigator Islands (“from Mons. C. F. Tonnerre,” Hance!).

Obs. *Eria* (*Phreatia*) *myosurus*, Reichb. f. in Bonplandia, 1857, dicenda *Eria stachyurus*.

Thelasis carinata, Bl. Choix (Fl. Jav.) = *Eria carinata*.

Phreatia elegans, Lindl. = *Eria elegans*.

Phreatia minutiflora, Lindl. = *Eria minutiflora*.

Phreatia Microtidis, Lindl. = *Eria Microtidis*.

Phreatia Tahitensis, Lindl. = *Eria Tahitensis*.

1. ***E. stenostachya***, (sp. nov.) Reichb. f.; foliis cuneato-ligulatis, pergamencis, apice inæqualibilibis; pedunculis folia excedentibus seu æquantibus, apice per sesquipollicem racemosis; bracteis linearibus, angustis, 1-nerviis, pedicellos æquantibus; sepalis triangulis, acutis; mento modico; tepalis minoribus; labello unguiculato, cordato, oblongo, acuto; androclinio 5-dentato.—Buke Levu, Island of Kadavu (Seemann, n. 589).

2. ***E. sphærocarpa***, (sp. nov.) Reichb. f.; foliis pergameneis, lato-ligulatis, apice inæqualibilibis; racemis folia subæquantibus; rhachi anantha parce vaginata; floribus densissimis; bracteis a lanceolata basi setaceis, flores haud æquantibus; mento subevanido obtusangulo; sepalis triangulis obtusis; tepalis lato-ligulatis, obtusis; labello rhombeo, obtuso, trinervi; androclinio 5-lobo, lobo postico 3-dentato; ovariis maturioribus sphæricis.—Folia ultra pedalia, sesquipollicaris latitudinis. Planta egregia et videtur species optima.—Viti, locality not specified (Græffe!).

§ 2. **DENDROLIRIUM** (Bl.), Lindl. Contrib. to Ind. Orchid. p. 48; Journ. Proc. Linn. Soc., Aug. 1858.—

Caules valde abbreviati; flores majusculi, dense lanati.

3. ***E. aeridostachya***, Reichb. f. apud ill. Lindl. loco jam citato, p. 48; caule brevi, monophyllo seu diphylo; folio oblongo-ligulato, acuto; racemo pedunculato, longe cylindræo, plurimifloro, densifloro; rhachidibus ac sepalis extus papillis plurimis ferrugineis, sepalo dorsali oblongo; sepalis lateralibus æqualibus in perulam elongatam apice tumidam extensis; tepalis a basi latiori curvato-ligulatis, oblique acutis; labello ligulato, apice obtuse acuto, basi corniculis geminis erectis.—Viti (Seemann! n. 609). Also collected in Java.

Pedunculus oritur ex propria vagina juxta pseudobulbum phyllophorum, porrectus, incurvus. Vagina sicca cinnamomeæ; folium valde coriaceum, basi petiolato-angustata, latitudine multum varia. Rhachis pedunculi parce fasciculis papillarum tecta. Videntur papillæ anthesi progrediente increcere. Specimen Seemannianum multo magis ferrugineum, quam illud Zollingeri.

§ 3. **UROSTACHYA**, Lindl. l. c. 46, mire definita: “and finally *Urostachya*, which includes the species that will go into none of the preceding sections;” *caulescentes, racemis paniculisve, lana in labelli axeos nulla.*

4. ***E. rostriflora***, (sp. nov.) Reichb. f.; caule valido elongato apice, bene foliato; foliis cuneato-lanceolatis, apice obtusatis cum apiculo; racemis multifloris; bracteis semilanceolatis, deflexis; ovariis pedicellatis, subpollicaribus; mento obtusangulo, minuto; sepalis triangularibus elongatis; tepalis subæqualibus, labello a basi cuneata ovato, medio apicem usque triangulo (si mavis oblongo-triangulo, basi utrinque obtusangulo); linea incrassata utrinque cum margine parallela.—Namosi, Island of Viti Levu (Seemann! n. 615).

“Flores viriduli.” Caulis spithamæus, basi tumidus, vaginis cinnamomeis nervosis indutus. Folia sicca duriuscula, nervis inferne bene prominulis. Specimen meum cum esset ac sit satis mancum, analysin in Museo Kewensi confeci.

d. MALAXIDÆ, Lindl.—Pollen ceraceum, sine caudiculis.

XVIII. **Liparis**, Rich. Orch. Eur. f. 10. Sepala æqualia, recte inserta. Tepala angustiora. Labellum expansum, nunc columnæ basi adnatum, nunc liberum (vulgo basi bituberculatum). Columna

gracilis, arcuata. Anthera bilocularis. Pollinia quaterna, collateralia, libera. Vultus *Malaxidii* foliis mollibus membranaceis seu coriaceis.

1. **L. longipes**, Lindl.; Wall. Plant. As. Rar. vol. i. p. 31. t. 35; pseudobulbis teretiusculis, elongatis, diphyllis; foliis cuneato-ligulatis, acutis; racemo elongato; bracteis triangulo-setaceis, ovaria pedicellata subæquantibus; sepalis ligulato-triangulis; tepalis lineari-filiformibus; labello oblongo, acuto, ecalloso; columna 3-dentata.

Huc videtur pertinere planta, Viti (Seemann! n. 614). Flores tamen misere putridi. Species genuina provenit in India orientali.

XIX. **Malaxis**, Sw. Act. Holm. 1800, p. 233. t. 3 P. Sepala æqualia, recte inserta. Tepala subæqualia. Labellum subæquale seu expansum, superum, raro inferum. Columna nana. Anthera bilocularis. Pollinia quaterna, per paria incumbentia.—Vitienses distichifoliæ, ensifoliæ, inflorescentia terminali.

§ OBERONIA.—*Folia ensiformia, equitantia.*

1. **M. glandulosa**, Reichb. f.; Walp. Ann. vol. vi. p. 215; caule distiche folioso; foliis latius triangulis, acutis; racemo elongato, subverticillato; rachi hispidula; bracteis membranaceis lanceo-subulatis, ciliatulis; ovariis pedicellatis, hispidulis, præcipue supra costas; sepalis triangulis, margine et dorso hispidulis; labello basi columnam amplexo, naviculari, apice inflexo, hinc dentato. *Epidendrum equitans*, Forst.! Prodr. n. 316. *Oberonia glandulosa*, Lindl. Fol. Oberonia, p. 37. Possideo typum Forsterianum ex herbario Moldenhaueri.—Upolu, Samoan Islands (Græffe!).

Credo huc referre nos debere specimina Navua et Namara, Viti Levu, Seemann! n. 588, Harvey! licet statura elatiore, foliis crassioribus aberrantia. *Malaxis equitans*, Blume, recedit labello spathulato, bifido.

Obs. Altera *Malaxis* § *Oberonia* est n. 587, Namara, Viti Levu (Seemann). Videtur esse *Malaxis Tahitensis*, Reichb. f. in Walp. Ann. vol. vi. p. 208; *Oberonia*, Lindl. Folia Orchid. Oberonia, p. 4; *Oberonia iridifolia*, Hook. Bot. Mag. t. 4517.

XX. **Microstylis**, Nutt. Am. vol. ii. p. 196. Sepala æqualia, recte inserta. Tepala vulgo angustata. Labellum sepalis conforme seu difforme. Columna brevis, biauris. Anthera subdorsalis, bilocularis. Pollinia quaterna, parallela.—Habitus *Liparidis*.

1. **M. purpurea**, Lindl. Gen. et Sp. p. 20; caule folioso; foliis congestis, petiolatis, oblongis, acutis; racemo mediocri; sepalis ovatis, acutis; tepalis linearibus, acutis; labello hastato, ovato, triangulo.—Mihi omnino huc pertinere videntur specimina Viti, 613, Dr. Seemann, licet bene deflorata.

2. **M. platychila** (sp. nov.) Reichb. f.; caule basi bulboso; bulbo tereti, conico; foliis petiolatis, oblongis, acutis; inflorescentia longissima, racemosa; bracteis pedicellos subæquantibus, linearibus, acutis, deflexis; ovariis 6-gonis; sepalis oblongis, plurinerviis, basi connatis; tepalis cuneato-ovatis, obtusis, 1-nerviis; labello transverso, utrinque obtuso; lobo antico minute prosiliente; carinis 4, in disco elevatis; columna minuta, bicorni.—“The whole plant has a purplish hue.” (Seemann.)—Somosomo, Island of Taviuni and Kadavu (Seemann! n. 590).

XXI. **Bulbophyllum**, Thouars, Af. t. 93-110. Sepala subæqualia seu omnino inæqualia, lateralialia in mentum descendentia. Tepala minora. Labellum elastice articulatum. Columna vulgo bicornis. Pollinia quaterna, inæqualia, per paria oblique collateralialia.—Pseudobulbosæ, foliis ligulatis, racemis infra bulbos egredientibus.

1. **B. longiflorum**, Thouars, Af. t. 98; pseudobulbis 4-gonis; folio petiolato, oblongo, obtuso; inflorescentia umbellata; sepalo dorsali triangulo setaceo, sepalis lateralibus longe extensis, oblongo-

linearibus, acutis; tepalis oblongis, acuminato-setaceis, ciliatis; labello carnosio, compresso, ligulato; columnæ cornubus lateralibus ascendentibus, serratis.—*Epidendrum umbellatum*, Forst.! Prodr. n. et Icon. (ined.) tab. 243. *Cirrhopetalum Thouarsii*, Lindl. Bot. Reg. p. 832, in text. et vol. xxiv. p. 11; Bot. Mag. t. 4237. *Zygoglossum umbellatum*, Reinw. Bot. Zeit. 1825, vol. ii. p. 4. Flores brunnei ac ochroleuci.—Viti (Seemann! n. 598). Also collected in Mauritius, Madagascar, Moluccas, and Tahiti.

XXII. **Dendrobium**, Sw. Nov. Act. Ups. vol. vi. p. 82. t. 5. f. 5. Sepala inæqualia, lateralia in mentum angulatum extensa. Tepala sepalo impari plus minus æqualia. Labellum cum pede columnæ articulatum seu basi adnatum. Columnæ pars libera brevis, apice circa androclinium dentata vel lobata. Anthera mitrata. Pollinia quaterna, contigua.—Habitus *Epidendrorum* seu *Pleurothallidum*.

§ 1. STRONGYLE, Lindl. in Paxt. Fl. Gard. vol. i. p. 134.—*Folia teretia*.

1. **D. crispatum**, Sw. Act. Holm. 1800, p. 247; caulibus pendulis, patenti-ramosis, ∞-articulatis, apice 1-phyllis; foliis teretibus, acuminatis; racemis lateralibus; sepalis triangulis, lateralibus in mentum angulatum extensis; tepalis subæqualibus, angustioribus; labello a basi cuneato, ligulato, medio trilobo; lobis lateralibus angustis, angulatis; lobo medio porrecto, crenulato, crispulo; carinis geminis, a basi in medium ibi uti basi confluentibus; columnæ androclinio 3-fido.—*Epidendrum crispatum*, Forst. Prodr. p. 315.—Viti Islands (Seemann! n. 579).

Cl. Lindley pro *D. teretifolio* habuit *D. striolatum*, Reichb. f. (*D. Milligani*, F. Müll.) et *Dendrobium teretifolium*; R. Br. verum appellavit *D. calamiforme*, G. Lodd.—“Quatuor usque quinque pedes longum, pendulum.” “Sepals pale yellow, at the base shaded with purple.”

§ 2. PLANIFOLIA, Reichb. f.; Walp. Ann. vol. vi. p. 282.

A. STICHOPHYLLUM.—*Caulis gracilis, plurifolius*.

a. EUDENDROBIUM.—*Racemi 1-2-flori, laterales*.

2. **D. biflorum**, Sw. Act. Holm. 1800, p. 246; caule teretiusculo, subsimplici, arundinaceo, polyphylo; vaginis rugulosis; laminis a latiori basi ligulato-attenuatis, apice inæquali-bilobis; racemis abbreviatis, lateralibus ima basi vaginatis, bifloris; sepalis tepalisque lanceo-setaceis; mento subnullo; labello cuneato, dilatato, antice 3-dentato; dentibus lateralibus triangulis, brevioribus, integerrimis, dente medio producto, triangulo, bipectinato ciliato, fimbriato.—*Epidendrum biflorum*, Forst. Prodr. n. 318.—Viti Levu (Seemann! n. 582).

Flores, quos obtinui a cl. Seemann, miserrimi analysi non subjecti. Labellum descripsi juxta iconem Lindleyanam. Specimina herbarii Holmiani videntur potius *Dendrobii acuminatissimi*, Lindl. (*Grastidii acuminatissimi*, Bl.!), et foliis longe acuminatis, multo angustioribus, primo intuitu facillime distinguuntur. Legis etiam in dorso chartæ alterius, “specimen in Java lectum Upsala misit Dr. et Prof. Thunberg, 1822.”

Obs. 1. *Dendrobium* persimile, floribus, eheu! carens.—Somosomo, Island of Taviuni (Seemann! n. 583!).

Obs. 2. *Dendrobium* affine *D. calcarato*, Lindl.—Voma Peak, 4000 ped., Viti Levu (Seemann! n. 580).—Habitu *Epidendri Vincentini*. Caules superne fastigiato-ramosi. Vaginæ juniores pulcherrime verrucosæ. Folia cuneato-linearibus, oblique biloba. Ovaria nitide castanea. Columna brevis, crassa. Sepala, tepala, labellum, ne quis roget! Desiderantur. Planta tenuis, elegans, usque spithamæa, foliis fere pollicem longis.

b. STACHYOBIMUM.—*Racemi multiflori*.

3. **D. Mohlianum**, (sp. nov.) Reichb. f.; in v. Mohl et v. Schldt. Bot. Zeitg. 1862. p. 1214; Bonplandia, vol. x. 1862, p. 334. t. 16 (Tab. XCI.); caule gracili; vaginis nigropunctatis; foliis oblongo-ligulatis, apiculatis; racemis congestis; sepalo dorsali triangulo; tepalis oblongis, obtuse acutis; sepalis lateralibus in calcar amplum triangulo-extinctoriiforme extensis; labello longe cum columnæ pede connato, ligulato, apice libero dilatato saccato; sacci limbo inflexo, minute denticulato; columnæ androclinio 3-corni, cornubus lateralibus retusis.—Species pulchra, floribus cinnabarinis,

illustri Hugoni de Mohl dicata.—Buke Levu, Island of Kadavu, et Voma Peak, 4000 ped. Island of Viti Levu (Seemann! n. 578).

EXPLANATION OF PLATE XCI., representing *Dendrobium Mohlianum*, Reichb. f.—Fig. 1, lateral view of a flower; 2, lip seen from above; 3, lateral view of a flower from which the sepals and tepals have been removed; 4, upper portion of the column:—*all magnified*. Analyses made by Dr. Reichb. fl.

4. **D. Tokai**, (sp. nov.) Reichb. f. in Otto, Hamb. Gartenz. 1865, p. 293 (Tab. XCII.); caule teretiusculo, nitido; vaginis nervoso-striatis; foliis cito deciduis, oblongo-ligulatis, apice angulato-bilobis; racemis axillaribus subterminalibusque, longe exsertis, laxis, ∞ -floris; bracteis triangulis, minutis, ovariis pedicellatis multo minoribus; floribus elongatis; mentis obtusangulis, parvulis; sepalis ligulatis, acutis; tepalis subæqualibus; labello medio 3-fido; laciniis lateralibus subquadratis triangulisve, obtusangulis, lacinia antica longe producta, obovata, obtuse seu acute apiculata; carinis geminis (nunc ternis), a basi in discum humilibus; columnæ brevis lobis apicularibus lateralibus retusis, lobo postico subulato; anthera puberula.—Nomen vernac. Vitiense, teste Williams, “Tokai.”—On rocks, Ovalau (Seemann! n. 584, Græffe!).

Flores speciosi, illis *Lycastidis aromaticæ* æquales, numerosi, “straminei, labello sordide albo, venis purpureis.”

EXPLANATION OF PLATE XCII., representing *Dendrobium Tokai*, Reichb. f.—Fig. 1, column and lip; 2, lip; 3, column; 4, pollinia:—*all magnified*.

5. **D. catillare**, (sp. nov.) Reichb. f.; caule strenuo, ima basi bulboso, ceterum æquali, lucido, superne striato, ∞ -articulato; foliis tenue pergameneis, lineari-ligulatis, apice inæquali acute bilobis; racemis paucifloris, brevibus; bracteis ovatis, nervosis, sat magnis; ovariis pedicellatis, incurvis, superne hexapteris; sepalis ligulatis, acutis, lateralibus in perulam ovario æqualem retusam supra basin antice fissam extensis; tepalis sepalo summo æqualibus; labello lineari antice dilatato, rhombeo; callis geminis, retrorsis, semiovatis, contiguis basin versus; columnæ androclinii lobis lateralibus crenulatis, lobo postico acuminato, infima columnæ basi triangulo foveata.—Buke Levu, Island of Kadavu, 4000 feet (Seemann! n. 591).—“Flowers white.” (Seemann, mss.)

B. BOLBODIUM, Lindl. l. c.—*Caulis brevis, pseudobulbosus, apice foliatus*.

6. **D. prasinum**, Lindl. in litt. ad ill. A. Gray, Aug. 1, 1851, et Contrib. Ind. Bot. Journ. Proc. Linn. Soc. Aug. 1858, *Dendrobium*, n. 101; pseudobulbis conicis pauciarticulatis; foliis solitariis, cuneato-ligulatis, obtuse acutis; floribus terminalibus; sepalis ligulatis, acutis; mento conico, cylindræo, retrorso; tepalis cuneato-ovatis, acutis; labello naviculari, a basi minute hastata rhombeo, acuminato; columna brevi, crassa; postico dente incurvo; auriculis lateralibus denticulatis (?).—Viti Islands, 2000 feet above the sea (Agati! Seemann! n. 596).—(Licet Orchidearum monographus ne vestigium hujus plantæ a cl. collectore accepi.)

Hæc juxta iconem a dom. Agati confectam a me Londini iteratam. Flos prasinus. *Eria* sp. aff. *E. braccata*, Lindl.; Seem. Syn. Pl. Vitiens. p. 13, fide Seem.

XXIII. **Chrysoglossum**, Bl. Bijdr. p. 337. t. 7. Sepala inæqualia; sepalum dorsale tepalis subæquale; sepala lateralia in angulum conicum seu in calcar spurium extensa. Labellum ostio antico sepalorum lateralium confluentium adnatum, plus minus unguiculatum, lamelligerum. Columnæ androclinium marginatum ac latere angulatum seu lobatum. Anthera 2-ocularis. Pollinia gemina, globosa, depressa.—Habitus *Calanthis*.

1. **C. vesicatum**, (sp. nov.) Reichb. f.; calcari spurio cylindræo, apice inflato, obtuso.—Island of Taviuni, on trees (Seemann! n. 611).

Planta tenuis, habitu *Nephelaphylli*. Rhizoma repens. Radices adventitiæ tenues, pilosulæ. Pseudobulbi teretes (?), vix poll. alti. Folium solitarium, cuneato-oblongum, acutum, tenue, papyraceum, nervis

ternis validis, plurimisque tenuioribus, usque sex poll. longum, duos latum. Pedunculus terminalis, tenuis, vagina una acuminata mediana, apice distanter racemoso biflorus, floribus illos *Nephelaphylli pulchri* æquantibus. Bracteæ triangulæ, setaceæ, acuminatæ. Ovaria longius pedicellata, pedicellis bracteas subæquantibus. Sepalum impar triangulo acuminatum, trinerve; tepala oblonga, acuminata, sublongiora, trinervia; sepala lateralia sepalo dorsali ceteroquin subæqualia, sed in calcar cylindræ apice obtusato inflatum extensa. Labellum unguiculatum; lamina trifida; lacinia laterales triangulæ, extus nunc sinuatæ, semper divaricatæ; lacinia media ab isthmo brevissimo transverse obtusangulo quadrata emarginata; carinulæ geminæ utrinque in basi laciniarum lateralium; carinæ tenues, longiores, apice confluentes in disco lacinia anticæ. Columna clavata. Androclinii limbus trilobus; lobi laterales trianguli; lobus medius porrectus, latus, tridentatus; denticuli utrinque juxta foveam; fovea cordiformis, cruribus geminis stigmaticis valde evolutis. Anthera depresso-ovata, utrinque apiculo inflexo, ac appendice lobulata mediana. Pollinia depressa, spherica, lobulo adventitio parvo. In calcaris cylindri parietem superiorem carina de columnæ basi descendit. "Flores viriduli, labello albo-flavo," Seem. mss.—Adest specimen majus, quod habet pedunculum longiorem defloratum pluriflorum, folio in bulbo stipante nullo. Sed cum sit valde adultum, fasciculi vasorum nudi basin pedunculi circumstantes videntur folium dejectum. Hic pedunculus trivaginat- us octoflorus fuisse videtur.

ORDO XCVIII. AMARYLLIDÆ.

I. **Crinum**, Linn. Gen. n. 405, excl. sp.; Endl. Gen. n. 1276. Perigonium corollinum superum; tubo elongato, gracili; fauce haud ampliata; limbi 6-partiti laciniis subæqualibus, erectis, patentibus v. reflexis. Stamina 6, summo tubo inserta; filamenta filiformia, patentia v. declinata; antheræ lineares, versatiles. Ovarium inferum, 3-loculare. Ovula ∞ , in loculorum angulo centrali 2-seriata, horizontalia, anatropa. Stylus filiformis, inclinatus; stigma obtusum v. obsolete 3-lobum. Capsula membranacea, depresso-spherica, 3- v. abortu 1-2-locularis, irregulariter rumpens. Semina pauca v. solitaria, angulato-subglobosa, sæpe in bulbillos carnosos mutata.—Herbæ, bulbo radicali, columnari v. spherico; foliis multifariis; scapo solido; umbella multiflora; spatha bivalvi; pedicellis bracteis ramentaceis interstinctis.

1. **C. Asiaticum**, Linn. Sp. p. 419; Kunth, Enum. vol. v. p. 547 (excl. quib. syn.); bulbo magno, longe columnari, in collum producto; foliis lanceolatis (3-4-pedalib.), basi convoluto-fasciculatis; scapo laterali; spatha sphacelata; phyllis badiis laceris apice rotundatis, ramentis linearibus immixtis; umbella 10-12- v. ∞ -flora; floribus candidis, subodoratis (vix semipedal.); tubo limbum subæquante; laciniis exterioribus apice incurvo-mucronatis.—Bot. Mag. t. 1073. *C. Asiaticum*, var. *toxicarium*, Bot. Mag. t. 2121; Rumph. Amb. vol. vi. t. 69. Nomen vernac. Vitiense, "Viavia."—On the sea-coast of the large Vitian Islands (Seemann! n. 640). Common in the East Indies and the Archipelago. Perhaps also in the Tongan Islands, but Forster has left no materials to show what his doubtful *C. Asiaticum* is.

ORDO XCIX. DIOSCOREÆ.

I. **Dioscorea**, Plum. Gen. t. 26; Linn. Gen. n. 1122; Endl. Gen. n. 1201. Flores dioici. Perigonium herbaceum, tubo triptero cum ovario connato, limbo supero 6-partito, persistente. Stamina 6, basi perigonii inserta; filamenta subulata; antheræ subglobosæ. Ovarium 3-loculare. Ovula in loculis 2, superposita, anatropa. Styli 3, distincti; stigmata obsolete. Capsula membranacea, 3-locularis, 3-angularis, compressa, angulis salientibus loculicido-dehiscens. Semina in loculis 2, compressa, membranaceo-alata. Embryo minimus, in albuminis cartilaginei cavitate majore prope umbilicum situs.—Herbæ perennes v. suffrutices volubiles; rhizomate tuberoso; foliis petiolatis, alternis v. oppositis, plerumque cordatis v. hastatis, nervosis, venosis, sæpius integerrimis, interdum palmatifidis; floribus axillaribus, spicatis v. racemosis.—*Helmia*, Kunth, Enum. vol. v. p. 414.

The staple food is the same all over Polynesia, being derived, with the total exclusion of all grain and pulse, from the Yam, the Taro, the Banana, the Plaintain, the Breadfruit, and the Cocoa-nut; but the bulk of it is furnished, in the different islands, by only *one* of these plants. In the Hawaiian group the Taro takes the lead, whilst the Cocoa-nut is looked upon as a delicacy, of which the women were formerly altogether deprived. In some of the smaller coral islands the inhabitants live almost entirely upon Cocoa-nuts. The Samoans place the Breadfruit at the head of the list. Again, the Fijians think more of the Yam than of the others, though all the other plants just mentioned grow in their islands in the greatest perfection and in an endless number of varieties. A striking proof of how much the Yam engages their attention is furnished by the fact of its cultivation and ripening season being made the foundation of their calendar; and that only such of the eleven months, into which their year is divided, bear no names indicative of it, in which the crop requires no particular attention, or has been safely housed. A version of this calendar has been published by Wilkes in 'The Narrative of the United States Exploring Expedition,' and is placed in juxtaposition with one dictated to me by an intelligent Bauan chief, and the consular interpreter, Mr. Charles Wise. The names given by me, as well as their succession, do not quite agree with those given by Wilkes. This discrepancy is partly explained by Wilkes having taken down his list from the lips of Europeans imperfectly versed in Fijian, and by his adopting a loose way of spelling. The names of the months may also be different in different parts of the group. The subject, however, requires still further investigation. If, as has been averred, the Fijians invariably commenced the months with the appearance of the new moon, there would soon have been a vast difference between the lunar and the solar year. To guard against the irregularity that would thus have been introduced into the seasons, and to make the lunar year correspond with the solar, it would have been necessary either to intercalate a moon after every thirty-sixth moon, or to allow a greater period of time for one of the eleven months into which the Fijian year is divided. The latter seems to have been effected by the *Vula i werewere* (clearing month). Hazelwood ('Fijian and English Dictionary,' Viwa, 1850, p. 180) allows four months, May, June, July, and August, for it; but this cannot be correct, as it would derange the others. By restricting it to two or thereabouts, June and July, a proper arrangement is effected. I place the *Vula i werewere* first in my list instead of the month answering to January, because it is the commencement of the agricultural operations and natural phenomena upon which the calendar is based.

Fijian Calendar.

ACCORDING TO SEEMANN.

1. *Vula i werewere* = June, July, clearing month; when the land is cleared of trees and weeds.
2. *Vula i cukicuki* = August; when the yam-fields are dug and planted.
3. *Vula i vavakadi* = September; putting rees to Yams to enable them to climb up.
4. *Vula i Balolo lailai* = October; when the Balolo (*Palolo viridis*, J. E. Gray), a remarkable Annelidan first makes its appearance in small numbers.
5. *Vula i Balolo levu* = November; when the Balolo (*Palolo viridis*, J. E. Gray), is seen in great numbers; the 25th of November generally is the day when most of these animals are caught.
6. *Vula i nuqa lailai* = December; a fish called "nuqa" comes in in isolated numbers.
7. *Vula i nuqa levu* = January; when the nuqa fish arrives in great numbers.
8. *Vula ni sevū* = February; when offerings of the first-dug Yams (*ai sevū*) are made to the priests.
9. *Vula i Kelikeli* = March; digging up Yams and storing them in sheds.
10. *Vula i gasau* = April; reeds (*gasau*) begin to sprout out afresh.
11. *Vula i doi* = May; the Doi (*Alphitonia zizyphoides*, A. Gray), a tree plentiful in Fiji flowers.

ACCORDING TO WILKES.

1. *Vulai were were*, weeding month.
2. *Vulai lou lou*, digging ground and planting.
3. *Vulai Kawawaka*.
4. *Bololo vava Konde*.
5. *Bololo lieb*
6. *Numa lieb*, or *Nuga lailai*.
7. *Vulai songa sou tombe sou*, or *Nuga levu*; reed blossoms.
8. *Vulai songa sou seselieb*, build Yam-houses.
9. *Vulai Matua*, or *Endoye doye*; Yams ripe. (N.B.—*Vulai Endoye doye* probably is meant for *Vula i doi*; the Doi is a tree [*Alphitonia zizyphoides*, A. Gray].—B. Seemann.)
10. *Vulai mbota mbota*.
11. *Vulai kelekele*, or *Vulai mayo mayo*; digging Yams.

The Yam principally cultivated is the *Dioscorea alata*, Linn., which has a four-sided climbing stem without prickles. The natives distinguish a number of varieties, all of which are known by the collective name of "Uvi." Some have large, some small roots, of either a white or more or less purplish tinge; and upon these differences, as well as their shape and time of maturity, the distinctions are founded. These varieties are called Dannini, Keu, Kasokaso, or Kasoni, Voli, Sedre, Lokaloka, Moala, Uvi ni Gau, Lava, Namula, Rausi, Balebale, etc. At Navua, in Viti Levu, Chief Kuruduadua showed us a lot of Yams six feet long and nine inches in diameter, perfectly mealy, and every part good eating; and specimens, eight feet long, and weighing one hundred pounds, are by no means rare in the group. Skilful growers maintain that in order to produce large and abundant roots the settings ought to be put into hard and unprepared soil. According to their notion the Yam ought to meet with resistance, or, as they sometimes express themselves, it must get angry ere it will put forth its whole strength. I even heard of a bet won by a woman who pursued this simple plan, and who fully made good her word, that she would produce a root large enough to feed twenty people; whilst the man who bet with her could only raise one that would not have fed one-third of that number, though he took great pains to pulverize and prepare the soil for the reception of the setting. The general signal for planting is the flowering of the Drala (*Erythrina Indica*, Linn.). As soon as its blossoms begin to appear, which happens about July and the beginning of August, all hands busy themselves about it. The land having already been cleared during the previous months, hillocks, about two feet high and four or five feet apart, are thrown up; these hillocks are known by the name of "Buke," whence the highest mountain in Kadavu, for the first time ascended on the 6th of September, 1860, by Mr. Pritchard and myself, and resembling them in shape, takes its name of Buke Levu, or large Yam-hillock. There are no spades or any other iron implement for digging; all is done with staves made of mangrove-wood, and the bare hands. Pieces of old Yams are set on the top of these hillocks, and within a short space of time they begin to sprout out. In less than a month they require reeds for climbing, after which little else is needed than keeping the ground free from weeds. About February the first Yams begin to ripen, and in the heathen districts offerings of them are made to the priests. In March and April the principal crop comes in, and is stored in sheds thatched with Cocoa-nut leaves. As the season advances the contents of these sheds require at least a monthly overhauling; the roots exhibiting any kind of decay have to be removed to prevent their contaminating the healthy ones. Yams are eaten baked, boiled, or steamed, and the natives can consume great quantities of them. Whole cargoes have occasionally been taken with profit to New South Wales and New Zealand, and whaling and trading vessels never touch at Viti without laying in a good supply.

There is another species, the Kawai (*D. aculeata*, Linn.), also planted on artificial hillocks, though not so high as those for the Yam. The stem of this creeper is round and full of prickles, but it is not accommodated with reeds as that of the last-mentioned species. It ripens about June; on the 27th of that month all the leaves were dead. According to the natives it never flowers or fruits, and I looked in vain over many a field in hopes of being able to disprove the statement. It is propagated by planting the small tubers or roots, which, like the old ones, are oblong, of a brownish colour outside, and a pure white within. When cooked, the skin peels off like the bark of the Birch-tree, as Wilkes expresses it. The root is very farinaceous, and when well cooked looks like a fine mealy potato, though of superior whiteness. The taste recalls to mind that of the Aracacha of South America; there is a slight degree of sweetness about it which is very agreeable to the palate. Altogether the Kawai may be pronounced one of the finest esculent roots in the world, and I strongly recommend its cultivation in those parts of the tropics still without it.

Several species of wild Yam, such as the Tikau, Tivoli, and Kaile, trail in graceful festoons over shrubs and trees of nearly every wood. The Tivoli (*D. nummularia*, Lam.) has a prickly stem like that of the cultivated Kawai, and climbs very high; its roots are long, cylindrical, and as thick as a man's arm. When engaged in the forest the natives will often dig up these roots with a stick, roast, and eat them on the spot, when they taste extremely well. The Kaile (*D. sativa*, Linn.) somewhat resembles the Tivoli in look, and is often found entwined with it, but its stems and branches are round and unarmed, and its roots, being acrid, require to be soaked in water previous to boiling. The dish prepared from them has the appearance of mashed potatoes, and is made so thin that it can only be eaten with spoons, which are either furnished by the leathery leaves of the Spoon-tree or Tatakia (*Acacia laurifolia*, Willd.), or any other substantial leaf that happens to be at hand.

The Kaile tokatolu (*D. pentaphylla*, Linn.) is sometimes cultivated, according to Mr. Storck, and the tuber is good eating. I have not been able to get specimens of the wild Yam which the natives term "Tikau," but it is stated in the 'Fijian Dictionary' (p. 323 and 324) to be different from the Tivoli, and the name to be used in some dialects of the group instead of the generic name of "Uvi." Can it be the same as *D. pentaphylla*? or is it an additional species? The following is a key to the Vitian species:—

- Caule inerme—
- Alato *D. alata.*
- Tereti *D. sativa.*

Caule aculeato—	
Foliis oppositis	<i>D. nummularia.</i>
Foliis alternis—	
Integris	<i>D. aculeata.</i>
Digitatis	<i>D. pentaphylla.</i>

1. **D. alata**, Linn. Spec. n. 1462; Kunth, Enum. vol. v. p. 387; caule alato; foliis oppositis, ovato-oblongis, cuspidatis, cordato-sagittatis (lobis baseos obtusiusculis), glabris, 5-7-nerviis, nervis extimis 2-partitis; spicis ♂ verticillato-spicatis.—Wight, Icon. t. 810.—Nomen vernac. Vitiense, “Uvi.”—Cultivated throughout Viti (Seemann! n. 627). Also in the Society (Forster! Banks and Solander!) and Tongan Islands (Capt. Cook), in India and the Indian Archipelago.

2. **D. sativa**, Linn. Spec. n. 1463; Hort. Cliff. t. 28; non Kunth, Enum.; glabra, bulbifera, ramis teretiusculis; foliis sparsis, cordato-subrotundato-ovatis, acuminato-cuspidatis, 9-nerviis, nervo utroque extimo 2-fido, membranaceis, epunctatis; spicis ♂ axillaribus, simplicibus v. compositis; floribus solitariis, perigonii 6-partiti segmentis lanceolatis, acutiusculis; staminibus 6, basi segmentorum insertis, minutis, erectis; antheris oblongis, basi affixis; spicis ♀ subternis, folium superantibus; capsulis oblongis, utrinque rotundatis, pergameneis glabris.—Benth. Fl. Hongk. p. 368. *D. bulbifera*, Forst. Prodr. n. 376; Wight, Icon. t. 878; non Linn. *D. latifolia*, Benth. in Niger Flora, p. 535. *Helmia bulbifera*, Kunth, Enum. vol. v. p. 435.—Nomen vernac. Vitiense, “Kaile;” Tahitiense, teste Solander, “Hoei;” Hawaiiense, teste Barclay, “Hoy.”—Common in woods of most Vitian Islands (Seemann! n. 626). Also collected in the Hawaiian (Barclay!), Society (Banks and Solander!), Tongan (Capt. Cook!), and Marquesas Islands (Barclay!). Widely distributed over tropical Australia, Asia, and Africa.

Bentham (Fl. Hongk. l. c.) has already pointed out that the correct name of this plant is *D. sativa*, Linn., not Kunth, but in that place he has omitted to add as a synonym his own *D. latifolia*, which in no respect differs from it. The Hawaiian and Tahitian names of the plant are identical with the Sundaic “*Hoei opas*.” There seem to be two varieties of this plant, which Mr. Storck indicates in one of his communications to me—Kaile dranu and Kaile gaga.

3. **D. nummularia**, Lam. Encycl. vol. iii. p. 231; Kunth, Enum. vol. v. p. 386; caule basi aculeato; foliis oppositis ovatis v. ovalibus, scarioso-mucronatis, basi subcordatis aut passim rotundatis, 5-nerviis, infra glaucescentibus; spicis axillaribus aggregatis, terminalibus verticillato-paniculatis; alis capsularum hemisphaericis.—Rumph. Amb. vol. v. t. 162. Nomen vernac. Vitiense, “Tivoli.”—Viti Levu, growing wild in woods (Seemann! n. 628). Also found in India and the Archipelago.

4. **D. aculeata**, Linn. Spec. n. 1462; Kunth, Enum. vol. v. p. 398; caule aculeato, tereti; foliis alternis, cordatis, acuminatis, 7-9-nerviis, venis transversis subsimplicibus; spicis ♂ paniculatis.—*Ubiium aculeatum*, Desf. Rumph. Amb. vol. v. t. 126; Rheede, Mal. vol. vii. p. 71. t. 37.—Nomen vernac. Vitiense, “Kawai.”—Cultivated in most Vitian Islands (Seemann! n. 629). Also in the Indian Archipelago.

5. **D. pentaphylla**, Linn. Spec. n. 1462; Kunth, Enum. vol. v. p. 396; ramis aculeatis, angulatis, puberulis; foliis sparsis, digitato-3-5-sectis, pilosiusculis, segmentis lanceolatis, acuminato-cuspidatis; racemis ♂ axillaribus solitariis v. geminis, simpliciter v. triplicato-compositis; perigonii bibracteolati laciniis ovato-lanceolatis, acutiusculis, subæqualibus, subconico-conniventibus; staminodiis squamæformibus, subspathulatis.—*D. digitata*, Müll. Dict. n. 6 (fide Willd.).—Nomen vernac. Vitiense, “Kaile tokatolu.”—Island of Ovalau (Seemann! n. 630). Sometimes cultivated, according to Storck. Also collected in the Hawaiian (H. Mann) and Society Islands (Banks and Solander! Forster!). Common in the Indian Archipelago.

ORDO C. SMILACEÆ.

The genus *Rhipogonum* may perhaps occur in Norfolk Island, a sterile specimen being referred to it by Endlicher under the provisional name of *R. dubium*.

I. **Smilax**, Tournef. Inst. t. 481; Linn. Gen. n. 1120; Endl. Gen. n. 1184. Perigonium corollinum, 6-phyllum, patens, deciduum, foliolis exterioribus latioribus, æstivatione imbricatis. Stamina 6, perigonii foliolis basi inserta; filamenta filiformia v. 0, libera; antheræ lineares, basifixæ. Ovarium 3-loculare. Ovula in loculis 1, apici anguli affixa, orthotropa. Stylus brevissimus; stigmata 3, crassiuscula, patentia. Bacca 1-3-locularis, 1-3-sperma. Semina globosa, testa membranacea, albida, cum nucleo conferruminata, umbilico basilari magno colorato. Embryo antitropus, minimus, in extremitate albuminis cornei umbilico opposita inclusus, extremitate radiculari centrifuga.—Suffrutices sempervirentes, scandentes; radicibus tuberosis v. fibrosis; caule sæpissime aculeato; foliis alternis petiolatis, cordatis v. hastatis, nervosis, reticulato-venosis; stipulis intrapetiolaribus, cirrhiferis, sæpius acutis; floribus supra receptaculum globosum v. cylindricum sessilibus, subcapitatis v. pedicellatis, umbellatis, pedicellis haud articulatis, umbellulis pedunculatis, axillaribus, racemosis corymbosisve, rarius solitariis v. geminatis.

Besides the species enumerated below, we have in tropical Polynesia 1, *S. purpurata*, Forst. Prodr. n. 373, Labill. Austr. Caled. t. 22, from New Caledonia (Forster! Anderson! Vieillard! n. 1379 et 1383, Deplanche!) and Isle of Pines (Sir E. Home! Milne! Macgillivray!); 2, *S. orbiculata*, Labill. Austr. Caled. t. 23, from New Caledonia; and 3, *S. Hawaiensis*, (sp. nov.) Seem. in Herb. Mus. Brit.; inermis, glabra, caule teretiusculo, foliis cordato-ovatis acuminatis 5-nerviis, umbellis fl. ♂ axillaribus 2, pedunculis primariis bracteatis, secundariis ebracteatis, petalis spathulato-linearibus, antheris linearibus, fl. ♀ fructibusque ignotis.—Hawaiian Islands (Menziess! in Herb. Mus. Brit.). The inflorescence of the male flowers is exactly that of *S. Zeylanica*, as figured by Wight (Icon. t. 2057); there is a common forked peduncle, each branch bearing an umbel; the petiole is as long as the common peduncle.

1. **S. (?) trifurcata**, (sp. nov.) Seem.; inermis, glabra; caule teretiusculo; foliis ovatis, acuminatis, 3-nerviis; pedunculis axillaribus solitariis compressis, apice 3-furcatis; receptaculis cylindricis bracteolatis; fl. ign.—Island of Ovalau (Seemann! n. 631, ex parte in Mus. Brit.).

This species was inadvertently mixed with *Pleiosmilax Vitiensis*, from which it may be at once distinguished by the trifurked peduncles and singular cylindrical receptacles. None of the specimens have any flowers, so that the genus is doubtful; the habit is quite that of *Smilax* and *Pleiosmilax*. Petiole 12 lines long, with 2 tendrils at base; blade of leaf 4-5 inches long, and 2½-3 inches broad. There are 3 very prominent ribs, and 2 very obscure marginal ones. The peduncle is somewhat compressed and as long as the petiole, being divided into 3 cylindrical receptacles, which are about 5 lines long, and densely covered with minute bracts.

II. **Pleiosmilax**, (gen. nov.) Seem. Journ. of Bot. 1868. p. 193. t. 81. Flores diclini. Fl. ♂: Perigonium corollinum, 6-phyllum, patens, foliolis æqualibus, æstivatione imbricatis. Stamina duplo v. triplo perig. foliolorum numero; filamenta filiformia, libera; antheræ ovatæ v. oblongæ, basifixæ. Fl. ♀: Perigonium maris. Stamina 6 sterilia (v. sæpius 0?). Ovarium 3-loculare. Ovula in loculis 1. Stigmata 3. Bacca 3-locularis, 3-sperma. Semina elliptica.—Frutices sempervirentes, scandentes; radicibus tuberosis v. fibrosis; caule inermi v. aculeato; foliis alternis petiolatis, cordatis v. ovatis, nervosis, reticulato-venosis; stipulis intrapetiolaribus cirrhiferis; floribus umbellatis, umbellis axillaribus, ♂ racemosis, ♀ solitariis; baccis nigris.—*Smilacis* sp. Auct.

This genus differs from *Smilax* principally in having twice or thrice as many stamens as perigonal leaves. Three species are at present known, viz. 1, *P. Vitiensis*, Seem. l. c.; 2, *P. Sandwichensis*, Seem. l. c. (*Smilax Sandwichensis*, Kunth, Enum. Plant. vol. v. p. 253; *S. pseudochina*, Hook. et Arn. Bot. Beech. ?; nomen

vernac. Hawaiense, teste Barclay, "Aka-ava"), collected in Oahu (Seemann! Macrae! Hillebrand!) and Atoi (Barclay!), where it is used by the natives for tying the rafters of their houses; and 3, *P. Menziesii*, Seem. l. c. t. 81, caule teretiusculo petiolisque dense aculeato; foliis ovato-oblongis, acuminatis, 7-nerviis, supra inermibus, subtus ad costas aculeatis; umbellis ♂ racemosis, rachidibus inermibus bracteatis, bracteis ovatis acuminatis, pedunculis compressis ebracteatis, receptaculis globosis, perig. foliolis 6 oblongo-linearibus; umbellis ♀ solitariis, pedunculis aculeatis.—Sandwich Islands (Menzies! in Herb. Mus. Brit.). A very singular species. The branches, petioles, peduncles of female flowers, and the ribs of the lower side of the leaves are covered with spines, much more minute and dense than they are in many species of *Smilax*.

1. ***P. Vitiensis***, (sp. nov.) Seem. l. c. (Tab. XCIII.); inermis, glabra; caule terete; foliis subcordatis v. ovato-oblongis, acuminatis, 3-5-nerviis, coriaceis; pedunculis ♂ 2-3-fidis, perigonii foliolis 6 ovato-oblongis acuminatis 1-nerviis, antheris ovatis; pedunculis ♀ solitariis; baccis globosis (nigris) 3-spermis.—Nomina vernac. Vitiense, "Kadrage," "Wa rusi," et "Na kau wa."—Islands of Ovalau, Vanua Levu, Viti Levu, and Kadavu (Seemann! n. 631, ex parte).

This is closely allied to *P. Sandwichensis*, but the leaves are somewhat differently shaped and have fewer ribs, and the anthers are different in shape and size. The leaves of the lower part of the stem are very large (Fig. 1), often measuring a foot in length and nine inches across. The male umbels are arranged on short forked peduncles, and the middle umbel is always the largest and longer than the petiole; whilst the female umbels are on simple peduncles, which are shorter than the petiole. Female flower is unknown. The berry is round and black, and contains three seeds. The creeper is found throughout the group, especially on land that has at one time been cleared, and might be gathered in quantities if there were any demand for it. In the London market it would be unsaleable at present. It belongs to that section of Sarsaparillas distinguished by pharmacologists as the "non-mealy," the most valued representative of which is the Jamaica sort. Moreover, it has no "beard," or little rootlets. The natives of Ovalau, Viti Levu, and Vanua Levu, name it "Kadrage" and "Wa rusi;" those of Kadavu, "Na kau wa," literally, "the woody creeper." It is said to be common also in the Samoan and Tongan groups, and prepared Sarsaparilla occasionally imported to the two last mentioned has found no market, the indigenous being preferred to the foreign. Curious to add, in Fiji it is not, as with us, the rhizome that is used, but the leaves, which are chewed, put in water, and strained through fibre, like the root of the Yaqona or Kawa (*Piper methysticum*, Forst.), before being taken.

EXPLANATION OF PLATE XCIII., representing *Pleiosmilax Vitiensis*, Seem.—Fig. 1, one of the leaves of the lower portion of a plant; 2, a branch with male flowers; 3, a male flower; 4, a portion of branch with ripe fruit:—all, except Fig. 3, natural size.

ORDO CI. LILIACEÆ.

Besides the genera enumerated below, there is in tropical Polynesia the genus *Dracæna*, of which one species (*D. aurea*, Hor. Mann) is found in the Hawaiian Islands. *Allium Ascalonicum*, Linn., is cultivated in Viti, and succeeds well, the natives terming it "Varasa."

I. ***Cordyline***, Comm.; R. Brown, Prodr. p. 280; Endl. Gen. n. 1166. Perigonium corollinum, campanulatum, limbo 6-fido, patente. Stamina 6, perigonii fauci inserta; filamenta subulata, antheræ versatiles, basi 2-fidæ. Ovarium 3-loculare. Ovula ∞, anatropa. Stylus filiformis; stigma 3-lobum. Bacca globosa, 3-locularis. Semina in loculis ∞, v. abortu solitaria, umbilico strophio-lato. Embryo axilis, extremitate radiculari centripeta.—Plantæ caudice frutescente, interdum elato, foliis in apice caudicis congestis, elongato-lanceolatis, nervoso-striatis, petiolatis v. sessilibus, panicula terminali e spicis v. racemis alternis multifloris, floribus bibracteolatis, bracteola altera interiore, sessilibus v. pedicellatis, perigonio cum pedicello articulato.—J. Hooker in Gardn. Chron., 1860, p. 792. *Dracænæ* sp., Linn.; Forst. *Charlwoodia*, Sweet, Fl. Austr. t. 18.

Besides the three species of *Cordyline* found in Viti, we have in tropical Polynesia *C. Baueri*, Hook. fil; (*C. australis*, Endl. Fl. Norf. n. 29; *Dracæna australis*, Hook. Bot. Mag. t. 283, non Forst. Prodr.; *D. obtecta*, Grah.), from Norfolk Island. The different species are known amongst the light-skinned Polyne-

sians by the collective name of "Ti," which in the Hawaiian or Sandwich Islands dialect becomes "Ki," and in some of the narratives of early voyagers is erroneously spelled "Tea." The statement, repeated even in recent publications, that the roots of some of these plants are a good substitute for Chinese tea, is erroneous. In Viti, however, the name "Ti" is only preserved for one species, viz. *Ti kula* (*C. Jacquinii*).

1. **C. Jacquinii**, Kunth in Act. Acad. Berol. 1842, p. 30; Enum. vol. v. p. 23; radice tuberosa; caule fruticoso, simplici, apice folioso; foliis petiolatis, lanceolatis, acuminatis, in petiolum angustatis, membranaceo-rigidis, coloratis; panicula terminali, erecta, simplici; floribus breviter pedicellatis racemosis (lilacinis), laciniis perigonii æquilongis, exterioribus 3-, interioribus 1-nerviis; stigmatibus 3-fido.—*Dracæna terminalis*, Jacq. Coll. vol. ii. p. 354; ejusd. Icon. vol. ii. t. 448 (excl. syn. Rumph.); Red. Liliac. t. 91. *D. ferrea*, Linn. Syst. Veg. 275. *Convallaria fruticosa*, Linn. Syst. Nat. (ed. 10), p. 984? Nomen vernac. Vitiense, "Ti Kula."—Frequently cultivated as an ornamental plant throughout Viti (Seemann! n. 635); perhaps not truly wild. Also cultivated in most other Polynesian Islands.

There are grown in Viti several varieties of this beautiful plant, some of which have been recently introduced from other Polynesian Islands. The native name "Ti Kula" means the Ti-plant, which has leaves like the Kula,—the Kula being a paroquet (*Coriphilus solitarius*, Latham). The roots are large and tuberous, and eaten by the natives.

2. **C. sepiaria**, (sp. nov.) Seem. (Tab. XCIV.); radice etuberosa; caule elato, arborescente, ramoso; foliis lineari-lanceolatis viridibus firmis; panicula terminali erecta; floribus sessilibus (albidis); laciniis perig. obovato-oblongis inæquilongis; bracteolis subulatis minutis perig. 5-plo brevioribus.—Nomen vernac. Vitiense, "Vasili Kau."—In woods, Viti Levu and Taviuni (Seemann! n. 634); frequently used for by the natives for hedges.

This species differs from *C. terminalis* in the shape of its leaves, very minute bracts, and tall stem. The roots are not tuberous as those of *C. terminalis* are. The trunk is as tall as fourteen feet. The leaves, given to goats, sheep, and cattle, are linear-lanceolate, 1½–2 feet long, and 3–4 inches broad.

EXPLANATION OF PLATE XCIV., representing *C. sepiaria*, Seem.—Fig. 1, flower-bud; 2, open flower; 3, pistil; 4, cross section of ovary:—*all magnified*.

3. **C. terminalis**, Kunth in Act. Acad. Berol. 1820, p. 30; ejusd. Enum. vol. v. p. 25; radice tuberosa; caule fruticoso simplici; foliis petiolatis, oblongo-lanceolatis, utrinque acuminatis, firmis, supra glaucis subtus purpureo-variegatis; panicula terminali, erecta, simplici, ramis divaricatis; floribus subsessilibus, solitariis, racemosis (albis v. purpureis).—*Terminalis alba*, Rumph. Amb. vol. iv. p. 79. t. 34. fig. 1. *Asparagus terminalis*, Linn. Spec. p. 450 (excl. *Terminalis rubra*, Rumph.). *Dracæna terminalis*, Reich. Plant. p. 72; Forst. Plant. Escul. p. 32 et Prodr. n. 152; Park. Icon. (ined.) t. 38, 39. *Cordyline Eschscholtziana*, Mart. in Schult. Syst. vol. vii. p. 347, 1677. *C. Ti*, Schott in Bot. Zeit. 1828, p. 575. *C. heliconiaefolia*, Otto et Dietr. Gartenz. 1835, p. 34.—Nomina vernac. Vitiensia, "Qui" v. "Masawe;" Hawaiiense, "Ki;" Tahitense, "Ti."—Cultivated throughout Viti (Seemann! n. 636). Also in the Hawaiian (Seemann!) and Society Islands (Banks and Solander!)

This is not truly wild in Viti, but is much cultivated by the natives under the names of "Qui," "Masawe," and "Vasili Toga;" and, judging from one of these names (Vasili Toga = Tonga), it may perhaps have been imported from the Tongan or Friendly Islands. The root is tuberous, and often weighs from ten to fourteen pounds, and after being baked on heated stones, much resembles in taste and degree of sweetness that of stick-liquorice. The Vitians chew it, or use it to sweeten puddings. They were ignorant of the art of extracting an intoxicating liquor from it, known to the Hawaiians. The leaves are excellent fodder for goats, sheep, rabbits, and cattle, and are used for this purpose by the white settlers. Solander says (Prim. Fl. Ins. Pacif. p. 248), that six varieties of it were known to the Tahitians, which he attempts to classify under two heads, the white-flowering and the purple-flowering. But he evidently confounds with it *C. Jacquinii*, and perhaps also the species which I have named *C. sepiaria*. Nevertheless, there is

a white and a purple flowered variety of the genuine *C. terminalis*, of both of which Parkinson has made excellent coloured drawings. In the Hawaiian Islands (as stated in my 'Narrative of the Voyage of H.M.S. Herald,' vol. ii. p. 83), *C. terminalis* is used for hedges, and the leaves for thatching and for wrapping up bundles of food, charcoal, etc.; the leaves also serve among the native women as a medium for communicating ideas, which appears to be somewhat similar to the system of quipos employed by the ancient Incas.

II. **Geitonoplesium**, A. Cunn. in Bot. Mag. t. 3131; Endl. Gen. n. 1163. Perigonium corollinum, 6-partitum, patens, æquale, glabrum. Stamina 6, basi laciniarum inserta; filamenta filiformia, apice curvata, conniventia; antheræ basifixæ, sagittatæ. Ovarium 3-loculare. Ovula pauca, amphitropa. Stylus filiformis, 3-sulcus; stigma simplex. Bacca globosa, 1-sperma. Semina subglobosa, testa coriacea, atra, umbilico ventrali nudo. Embryo subexcentricus, curvatus, extremitate radiculari incrassata infera.—Suffrutices volubiles, foliis elliptico-lanceolatis nervoso-striatis, floribus cymosis v. umbellatis, terminales axillaresque, pedicellis cum perigonii basi attenuata articulatis, baccis nigris.—*Luzuriaga*, R. Brown, Prodr. p. 281, non Ruiz et Pav.

1. **G. cymosum**, A. Cunn. in Bot. Mag. t. 3131; ramis teretibus, ramulis striatis lævibus; cymis terminalibus 2-partitis.—*Luzuriaga cymosa*, R. Brown, Prodr. p. 282.—Nomen vernac. Vitiense, "Wa Dakua" (*i. e.* the Dammara creeper, because the leaves of the plant are somewhat like those of *Dammara Vitiensis*, the Vitian "Dakua.")—Kadavu, Viti Levu (Seemann! n. 638). Also collected in New Holland, Norfolk Island, and the Isle of Pines, off New Caledonia (Sir E. Home!).

C. Koch (Walp. Ann. vol. vi.) holds the narrow-leaved form of this plant to be specifically distinct, and names it *G. angustifolium*.

III. **Dianella**, Lam. Illustr. t. 250; Endl. Gen. n. 1160. Perigonium corollinum, 6-partitum, æquale, patens. Stamina 6, imo perigonio inserta; filamenta curvata, apice incrassata, stuposa; antheræ basifixæ, lineares, strictæ. Ovarium 3-loculare. Ovula ∞ , anatropa. Stylus filiformis; stigma simplex. Bacca globosa, ∞ -sperma. Semina ovalia, testa crustacea atra splendente, umbilico nudo. Embryo rectus, minimus, in basi albuminis.—Herbæ perennes v. suffrutices, radice fibrosa, foliis gramineis elongatis, basi semivaginantibus, floribus paniculatis, baccis cæruleis, pedicellis cernuis, juxta apicem articulatis, basi bracteola unilaterali stipatis.

Besides the species enumerated below, we have in tropical Polynesia, *D. ensifolia*, Red., Wight, Icon. t. 2053; (*D. odorata*, Blume; *D. Sandwichensis*, Hook. et Arn.), from the Society (Banks and Solander!) and Hawaiian Islands (Barclay! Macrae!), and an undescribed species from New Caledonia and Isle of Pines (Capt. Cook! M'Gillivray!), viz. *D. Austro-Caledonica*, Seem., mss. in Herb. Mus. Brit.; caulescens; foliis sublanceolato-linearibus planis (8 lin. lat.), marginibus carinaque lævibus; paniculæ ramis dichotomis patulis ramulisque arcuato-recurvatis; floribus longe pedicellatis; foliolis perigon. inter. 5-nerviis; filamentis villosis.—Leaves short for the genus, 6–9 inches long. A scrap collected by Forster, and preserved at the British Museum, is pasted on the same sheet which contains his specimen of *Anthericum Adenantha*.

1. **D. intermedia**, Endl. Prodr. Fl. Norf. p. 28; Bauer, Illust. Plant. Norfolk, t. 178; Kunth, Enum. vol. v. p. 53; foliis radicalibus congestis lineari-lanceolatis elongatis (1–5 ped. long.), carina marginibusque denticulato-asperis, basi complicata scapoque angulato lævibus; paniculæ ramis ramulisque arcuatis; pedicellis nutantibus, perianthium subsuperantibus, perigon. foliol. interioribus 5-nerviis.—*D. (?) obscura*, Kunth, Enum. vol. v. p. 65. *D. (?) Forsteri*, Endl. in Ann. Wien. Mus. vol. i. p. 162. *Anthericum Adenantha*, Forst. Prodr. n. 149, et Icon. (ined.) t. 96. *Conanthera (?) Forsteri*, Spreng. Syst. vol. ii. p. 91. *Phalangium Adenantha*, Poir. Encycl. vol. v. p. 252.—Island of Kadavu (Seemann! n. 639). Also collected in New Caledonia (Forster! Capt. Cook!

anno 1775), Isle of Pines (M'Gillivray!), Tongan Islands (D. Nelson!), New Zealand (Banks and Solander!), and Norfolk Island.

IV. **Astelia**, Banks et Soland.; Endl. Gen. n. 1051. Flores abortu polygamo-dioici. Perigonium 6-partitum, semiglumaceum, persistens. Stamina 6, imo perigonio inserta. Ovarium 3-loculare v. dissepimentis incompletis 1-loculare, placentibus parietalibus 3. Ovula ∞ . Stylus 0; stigmata 3, obtusa. Bacca 1-3-locularis, ∞ -sperma.—Herbæ habitu fere *Tillandsiæ*, et sæpius pariter in arborum truncis vivis v. emortuis pseudo-parasiticæ; radice fibrosa, foliis radicalibus imbricatis, lanceolato-linearibus v. ensiformibus, carinatis v. ecarinatis, sæpius utrinque v. subtus adpresse villosis, basi sericeo-lanatis, caule 0 v. brevi planifolio, floribus racemosis v. paniculatis, rariusve subsolitariis, pedicellis haud articulatis, unibracteatis, floribus extus sericeis.—*Hamelinia*, A. Rich. Fl. N. Zeal. p. 158. t. 24. *Funkia*, Willd. in Berl. Mag. vol. ii. p. 19. *Melanthium*, Forst. in Comm. Gött. vol. ix. p. 30. t. 6.

This genus is represented in New Zealand and Australia by several species, and in the Hawaiian Islands by *A. Menziesiana*, Smith, collected by Menzies, and by *A. veratroides*, Gaud., collected by D. Nelson and Macrae.

1. **A. montana**, (sp. nov.) Seem. (Tab. XCV.); caule sericeo-lanato; foliis e basi ovato elongato-linearibus, 3-nerviis, margine recurvis, supra glabris lucidis, subtus ad nervos marginesque villosis; floribus racemoso-paniculatis, perigon. foliolis linearibus; antheris ovatis acuminatis; baccis ovatis 3-locularibus.—Nomen vernac. Vitiense, "Misi."—Summit of Buke Levu Mountain, Island of Kadavu, on trees (Seemann! n. 641).

Stem covered with white silky wool. Leaves from 2-3 feet long, and $1\frac{1}{2}$ -2 inches broad, with three primary veins, glabrous with the exception of the margin and veins. Panicle supported at base by large leaf-like bracts, cordate at base. Flowers greenish. Ovary 3-celled.

The leaves are arranged like those of many epiphytical *Bromeliaceæ*, and acting as a kind of rain gauge, the centre of the plant is always filled with water, which, on our ascent of Buke Levu, we found sufficiently fresh to make tea with, as described in my 'Viti,' p. 214.

EXPLANATION OF PLATE XCV., representing *Astelia montana*, Seem.—Portion of the entire plant; panicle; 3, flower; 4, stamens; 5, berry; 6, seed:—*Figs. 3-6 magnified.*

ORDO CII. COMMELYNACEÆ.

I. **Commelyna**, Dill. Hort. Elth. p. 93; Endl. Gen. n. 1028, ex parte. Perigonii exterioris foliola 3, extus calycina, persistentia; interiora 3 v. 2, petaloidea, unguiculata, decidua, tertio sæpius dissimili v. abortivo. Stamina 6 v. pauciora, 3 fertilia; filamenta glabra, in connectivum reniforme dilatata; antheræ loculis divaricatis, connectivum marginantibus, 3 (v. 2-4), dissimiles, cassæ. Ovarium 3-loculare, loculis pauciovulatis. Stylus filiformis, simplex; stigma indivisum. Capsula 3-locularis, loculicido-3-valvis, valvis medio septiferis, loculis lateralibus 2-ovulatis, dorsali 1-ovulato. Semina subquadrata.—Herbæ diffusæ v. erectæ, foliis ovatis v. lanceolatis; floribus fasciculatis involucre v. nudis vage paniculatis.

1. **C. Pacifica**, Vahl, Enum. vol. ii. p. 168; caulibus repentibus, glabris; foliis breviter petiolatis, oblongis, subovato-oblongis et oblongo-lanceolatis, superioribus sessilibus, supra margineque scabriusculis, subtus glabris; vaginis antice oreque ciliatis; spathis oppositifoliis, cordato-ovatis, acuminatis, complicatis, glabris, plerumque ciliolatis; pedunculis in spatha geminis, 3-4-floris; exserto, glabro v. hirtello; floribus polygamis; sepalo exteriori impari subsessili, subrotundo-ovato.

—*C. Virginica*, Forst. Prodr. n. 26, non Linn. *C. agraria*, Kunth, Enum. vol. iv. p. 38. *C. polygama*, Schlecht. in Ehrenb. Pl. Ins. St. Thom. n. 137. *C. Cajennensis*, Rich. in Act. Soc. Hist. Nat. Paris, vol. i. p. 106.—A common weed throughout Viti (Seemann! n. 642). Also collected in the Tongan (D. Nelson! Forster! Barclay!) and Sandwich Islands (Mann and Brigham!), New Caledonia (Capt. Cook! M'Gillivray!). Common in tropical America.

Horace Mann regards it as an introduced plant in the Hawaiian Islands, but it is probably indigenous there, as it was found by the early explorers of Polynesia in many of the South Sea Islands.

II. **Aneilema**, R. Br. Prodr. p. 270. Flores subregulares. Sepala 6, libera, 3 exteriora navicularia, immutata, persistentia, 3 interiora majora, petaloidea, subæqualia, decidua. Stamina 6, quorum nunc 3, nunc 2–4 effeta, antheris crassis difformibus instructa, interdum 4, quorum 2 sterilia. Antheræ fertiles 2-loculares, conformes; loculis parallelis, connectivo angusto junctis. Ovarium sessile, 3-loculare; ovulis in quolibet loculo 2–5, superpositis. Stylus elongatus; stigma simplex. Capsula 3-locularis, 3-valvis; valvis medio septiferis; loculis 2-oligospermis. Semina superposita, sessilia, angulata, hilo brevi affixa.—Herbæ ramosæ, erectæ v. diffusæ et repentes, foliis vaginatis; pedunculis terminalibus, corymboso-dichotomo- v. paniculato-ramosis, bracteatis; floribus solitariis, pedicellatis; pedicellis basi bracteolatis; filamentis plerumque imberbibus, rarius aliquis v. omnibus barbatis.—*Anilema*, Kunth, Enum. vol. iv. p. 64. *Aphilax*, Salisb. in Trans. Hort. Soc. vol. i. p. 261.

1. **A. Vitiensis**, (sp. nov.) Seem. (Tab. XCVI.); caule adscendente glabro; foliis brevi-petiolatis, ovatis v. ovato-oblongis, attenuatis, utrinque lævibus et glaberrimis; vaginum ore ciliatis; floribus dichotomo-paniculatis; sepalis exter. ovatis obtusis, interioribus obovatis; ovario pubescente.—Viti Levu (Seemann! n. 643).

In look nearest *A. laxa*, R. Br., and *A. acuminata*, R. Br., but at once distinguished by the shape of the leaves and their entire smoothness, as well as the character of the inflorescence. Entire plant about 1½–2 feet high; petiole proper shorter than the sheath. Blade of leaf 3–4 inches long, 9–18 lines broad. Petaloid sepals pale blue.

EXPLANATION OF PLATE XCVI., representing *Aneilema Vitiensis*, Seem.—Fig. 1, flower-bud; 2, flower; 3, pistil; 4, sepals and pistil; 5, ovary, cut across:—all magnified. The stamens of fig. 2 not quite reliable, as the specimen was imperfect.

ORDO CIII. JUNCACEÆ.

Luzula campestris, DC. (*Juncus campestris*, Linn. Forst. Prodr. n. 154), may be expected to exist in Viti, as it has been found in the Society (Forster!) and Hawaiian Islands (Macrae!), and New Zealand and Tasmania.

I. **Flagellaria**, Linn. Gen. n. 450; Endl. Gen. n. 1054; J. D. Hook. in Kew Misc. vol. vii. p. 198. t. 6. Perigonium coloratum, 6-partitum, persistens; laciniis 2-seriatis. Stamina 6, hypogyna; filamenta filiformia, libera; antheræ oblongæ, medio dorso affixæ, 2-loculares, longitudinaliter dehiscentes. Ovarium sessile, liberum, 3-loculare. Ovula in loculis 1, basilaria, sessilia, anatropa. Stigmata 3, sessilia, filiformia, patula. Drupa pisiformis, stigmatibus coronata, 1–3-sperma; epicarpio carnoso ab endocarpio osseo solubili. Semina subglobosa v. oblonga; testa membranacea, tenui; umbilico basilari; chalaza terminali late orbiculari. Embryo lenticularis, minimus, albuminis farinacei foveolæ basilari semi-immersus, extremitate radiculari punctiformi

umbilicum attingente, infera.—Herbæ perennes, caule erecto v. sarmentoso; foliis sparsis, basi vaginantibus; vaginis connatis, caulem velantibus; lamina lanceolata, nervosa, basi contracta, apice interdum in cirrhum spiralem desinente; floribus paniculatis, bracteolatis, viridibus v. albis.—*Joinvillea*, Gaud. Bonit. t. 39, 40.

Besides the two Polynesian species enumerated below, there is in the Hawaiian Islands *F. ascendens*, Seem. (*Joinvillea ascendens*, Gaud. Bonit. t. 39, 40, f. 1-7), and, from a communication received from Mr. Storck, an additional species in Viti, of which, however, no specimens have come to hand.

1. **F. elegans**, Seem.; erecta; foliis late elongato-lanceolatis, longe acuminatis, creberrime plicatis et longitudinaliter nervosis; nervis primariis minute scaberulis, venulis transversis convexis; vagina fissa, marginibus membranaceis superne in auriculas obtusas utrinque dilatata; paniculæ ramis puberulis; perigon. segmentis ovato-subulatis; drupis coccineis.—*F. (Chortodes) plicata*, J. D. Hook. in Kew Misc. vol. vii. p. 200. t. 6. *Joinvillea elegans*, Gaud. Bonit. t. 39, 40. f. 7-26 (sine descript.).—Viti Levu (Seemann! n. 645). Also collected in Aneitum, New Hebrides (M'Gillivray!), Kanala, New Caledonia (M'Gillivray!), and Isle of Pines (Milne and M'Gillivray!)

2. **F. Indica**, Linn. Sp. p. 475; caule scandente; foliis lanceolatis, basi in petiolum brevem contractis, apice cirrhiformi-spiralibus, integerrimis, glabris, nitidis, ∞ -nerviis (4-12 poll. long.), vegetioribus, supra basin subcordato-rotundatis ($\frac{1}{2}$ -2 poll. lat.); paniculis terminalibus.—*Palmijuncus lævis*, Rumph. Amb. vol. v. t. 59. f. 1; Rheede, Malab. vol. vii. t. 53. Nomina vernac. Vitiensia, "Wa Sila" (v. "Sili"?) et "Duruka" (v. "Turuka"?).—Forests of Taviuni and Viti Levu (Seemann! n. 644; Ovalau (Storck! n. 910).

The ears of this plant are eaten by the natives.

ORDO CIV. CYPERACEÆ.*

There is a great number of undetermined *Cyperaceæ* from tropical America in the British herbaria. *Schænus arundinaceus*, Sol. in Forst. Prodr. n. 491 (sine descript.), from New Caledonia (Forster!, Capt. Cook, anno 1774), is identical with *Asterochæte arundinacea*, Kunth; whilst *Schænus elevatus*, Sol. in Forst. Prodr. n. 494 (sine descript.), from Tahiti (Banks and Solander!), is identical with *Cladium leptostachyum*, Nees.

I. **Lepironia**, Rich. in Pers. Ench. vol. i. p. 70; Endl. Gen. n. 986. Spiculæ ∞ -floræ, ∞ -gamæ. Paleæ ∞ , in rhachilla brevissima imbricato-fasciculatæ, 1-andræ. Flores σ ; stamina 3-6. Ovarium stylo 2-fido, deciduo. Caryopsis crustacea, globosa v. compressa, poroso-rugulosa.—Herbæ paludosæ, Juncorum habitu; culmis simplicissimis, foliis teretibus farctis, septis transversis nodosis, spiculis infra culmi apicem in capitulum bracteolatum v. nudum aggregatis, nunc in spicam lateralem squamis cartilagineis artissime imbricatis bracteatum, strobiliformem dispositis.

1. **L. mucronata**, L. C. Rich. in Pers. Syn. vol. i. p. 70; Kunth, Enum. vol. ii. p. 366; A. Rich. in Dict. Class. vol. ix. p. 297.—*Scirpus coniferus*, Poir. Encycl. vol. vi. p. 756; ejusd. Suppl. vol. v. 90 (v. s.). *Restio articulatus*, Retz. Obs. vol. iv. p. 15. *Chondrachne articulata*, Brown,

* An *Eriocaulon*, closely allied, if not identical with *E. australe*, R. Brown, was collected by M'Gillivray! in the Isle of Pines, off New Caledonia.

Prod. p. 220.—In swamps, Viti Levu (Seemann! n. 667). Also found in New Holland and the East Indies.

II. **Scleria**, Berg. Endl. Gen. n. 964. Spiculæ diclinæ, ♂ ∞-floræ, ♀ 1-floræ. Fl. ♂: Paleæ distiche v. ∞-fariam imbricatæ. Perigonium 0. Stamen 1, v. rarissime 5. Fl. ♀: Glumæ ∞, ∞-fariam imbricatæ, sensim majores. Paleæ 2, integræ, suboppositæ. Perigonium 0. Discus varius, subcylindricus, lobatus v. annularis, persistens. Ovarium stylo continuo, 2-3-fido. Caryopsis ossea, subglobosa, lageniformis v. lenticularis, lævis v. tessellata, paleis patentibus cincta.—Herbæ perennes, habitu vario.

1. **S. margaritifera**, Willd. Spec. vol. iv. p. 321; Kunth, Enum. vol. ii. p. 341; culmis 3-quetris, angulis scabris; foliis linearibus, planis, submembranaceis, 3-nerviis, margine scabris; vaginis 3-quetris, vix alatis; ligula abbreviata, rotundata; paniculis axillaribus et terminalibus, ramosis, pedunculatis, pyramidalibus; bracteis setiformibus; floribus masculis 3-andris; spica ♀ floribus 3 ♂ terminata; achenio lapideo, subgloboso, fusciscenti, umbonato, lævi, lacteo-albido, nitido; disco 3-lobo, haud ciliato; lobis ovatis, obtusis.—*Carex lithospermus*, Forst. Prod. n. 339.—Ovalau (M'Gillivray! Seemann! n. 677). Also found in Tana (W. Anderson! Forster!), Aneitum (M'Gillivray!), Isle of Pines, off New Caledonia (M'Gillivray!), and Samoa (Sir E. Home!).

2. **S. lithosperma**, Willd. Spec. vol. iv. p. 316; Kunth, Enum. vol. ii. p. 349; glaucâ; culmis gracilibus, 3-quetris, glabris; foliis anguste linearibus, elongatis, margine scabris; vaginis 3-quetris, faciebus pilosiusculis, angulis glabris; ligula abbreviata, rotundata; pedunculis axillaribus et terminalibus, simplicibus vel ramosis, oligostachyis; spicis geminis et ternis, quasi per spicam interruptam dispositis, masculis femineis intermixtis; floribus ♂ monandris?; achenio lapideo, ovato-elliptico, acutiusculo-umbonato, 3-gono, lævi, lacteo-albo, nitido, ad basim margine angusto ferrugineo adnato cincto; disco obsolete 3-lobo, haud ciliato.—*Scirpus lithospermus*, Linn. Spec. ed. 1. p. 51 (Rheede, vol. xii. t. 48). *S. tenuis*, Retz. Obs. vol. iv. p. 13; Willd. Spec. vol. iv. p. 316. *S. glaucescens*, Presl in Rel. Hænk. vol. iii. p. 202.—Taviuni (Seemann! n. 676). Also collected in Wallis Island (Sir E. Home!), and Tonga (Barclay!).

III. **Gahnia**, Forst. Gen. n. 26, excl. sp.; Endl. Gen. n. 982. Spiculæ 1-floræ, flore ♂ terminali. Paleæ ∞-fariam imbricatæ. Perigonium 0. Stamina 3-6; filamentis demum elongatis. Ovarium stylo 3-fido; stigmatibus indivisis v. 2-3-fidis. Caryopsis ossea, putamine æquabili, nucleo lævi v. transversim pluries constricto.—Herbæ culmis foliosis; foliis elongatis, asperis, involutis, paniculis compositis, foliatis.—*Lampocarya*, R. Brown, Prodr. p. 238. *Morelotia*, Gaud. ad Freyc. p. 416, t. 28.

There are several species of this genus in tropical Polynesia, besides the one represented in Viti. In the Society Islands we have the typical *G. schænoïdes*, Forst. (*Schænus spilocarpus*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 207), collected there by Banks and Solander, and subsequently by the Forsters; in Aneitum (M'Gillivray!) a species closely allied to *G. aspera*, Spreng., but apparently new; in the Sandwich Islands *G. Beecheyi*, Horace Mann, collected by Barclay!; *G. Gaudichaudii*, Steud. (*Morelotia gahniæfolia*, Gaud. Freyc. t. 28), collected by David Nelson! and Macrae!; and *G. globosa*, Horace Mann (*Morelotia gahniæformis*, Hook. et Arn. Bot. Beech. p. 98, non *M. gahniæfolia*, Gaud.), collected by Barclay!

1. **G. aspera**, Spreng. Syst. vol. ii. p. 114; tetrandra; spica composita, foliata; partialibus subindivisis; spiculis congestis; squamis intimis obtusis lævibus.—*Lampocarya aspera*, R. Brown, Prodr. p. 238.—Vanua Levu (Seemann! n. 672). Also found in New Holland (R. Brown!).

IV. **Rhynchospora**, Vahl, Enum. vol. ii. p. 229; Endl. Gen. n. 907. Spiculæ paucifloræ,

♂ ∞ -gamæ. Paleæ ∞ -stiche imbricatæ. Perigonii setæ rigidæ, denticulatæ. Stamina 3. Ovarium stylo 2-fido. Caryopsis basi styli discreta, longirostris.—Plantæ inflorescentia varia, paniculata, corymbosa v. spicato-capitata.

Schænus arundinaceus, Sol. in Forst. Prodr. n. 491 (*sine descript.*), from New Caledonia (Forster!), is a species of this genus, closely allied to *R. thyrsoides*, Nees (*R. scleroides*, Hook. et Arn.), of the Sandwich Islands (Macrae!)

1. **R. aurea**, Vahl, Enum. vol. ii. p. 291; Kunth, Enum. vol. ii. p. 293; culmo 3-angulari, foliato; foliis planis, rigidis, carina margineque scabris; cymis diffusis, ramosissimis; spicis lanceolatis, 1-4-floris; flore inferiore ♂; superioribus ♂; achenio pyriformi, cutis piscinæ instar scabrato, interdum obsolete transversim undulato, ferrugineo, nitido; rostro vix longiore, conico, per sulcum exarato, concolori, apice scabriusculo, basi soluto; setis 7, scabris, fructum superantibus.—*Scirpus corymbosus*, Linn. Amœn. Acad. vol. iv. p. 303; ejusd. Spec. vol. i. p. 76. *Schænus corymbosus*, Pers. Syn. vol. i. p. 59. *S. Surinamensis*, Rottb. Gram. p. 68. t. 21. f. 1. *Chætosporea aurea*, Humb. Bpl. et Kunth, Nov. Gen. vol. i. p. 231. *Schænus floridus*, Rudge, Guian. p. 15. t. 18 (fide Brown). *R. florida*, Dietr. Spec. vol. ii. p. 71. *Calyptrostylis Rudgei*, Nees ab Esenb. in Linnæa, vol. ix. p. 295. *Cephaloschænus divergens*, Nees ab Esenb. in Linnæa, vol. ix. p. 296. *Rhynchospora corymbifera*, Nees ab Esenb. in Linnæa, vol. ix. p. 297. *R. Surinamensis*, Nees ab Esenb. l. c.—Viti, exact locality not specified (Sir E. Home!). Also in tropics of both hemispheres.

V. **Hypolytrum**, Rich. in Pers. Ench. vol. i. p. 70, excl. sp.; Endl. Gen. n. 988. Spiculæ ♂. Paleæ 2-4, bracteæ contrariæ, marginibus interdum antice v. postice, nonnunquam, utrinque inter se coalitæ. Stamina 2-3. Ovarium stylo 2-fido, deciduo. Caryopsis crustacea, ovoidea, compressa, apice suberoso-incrassata, mutica.—Herbæ Fuirenæ v. Cladii habitu; culmis foliosis, spicis cuneatis v. turbinatis, undique imbricatim bracteatis, per paniculas cymosas v. corymbiformes squarrosas dispositis.—*Albikia*, Presl in Reliq. Hænk. vol. i. p. 284.

H. dissitiflorum, Steud., collected in the Hawaiian Islands (Menzies!), is closely allied to the following species.

1. **H. latifolium**, Rich. in Pers. Syn. vol. i. p. 70; culmis 3-angularibus, foliatis; foliis culmo longioribus, late linearibus, planis, 3-nerviis, rigidulis, marginibus nervoque medio subtus spinulososerrulatis; corymbis in apice culmi paniculato-dispositis, foliis distinctis; spicis (floriferis) cylindraceo-oblongis; squamis apice rotundatis, submucronatis, dorso sub-3-nerviis; propriis liberis, carina ciliatis; staminibus 2; fructu ovato-subrotundo, cum styli basi conica acuta confluyente, obsolete lacunuloso.—*H. giganteum*, Wall. Cat. n. 3404; Nees ab Esenb. in Wight, Bot. p. 93, et in Linnæa, vol. ix. p. 288. *Tunga diandra*, Roxb. Fl. Ind. vol. i. p. 184. *Schænus nemorum*, Vahl, Symb. vol. iii. p. 8 (Rheed. Mal. p. 12. t. 58); ejusd. Enum. vol. ii. p. 227. *Hypælyptum nemorum*, Beauv. Fl. vol. ii. p. 13. t. 67. *H. diandrum*, Dietr. Spec. vol. ii. p. 365. *Albikia scirpoides*, Presl in Rel. Hænk. vol. i. p. 185. t. 35.—In swamps, Ovalau (M'Gillivray! Seemann! n. 666). Also common in tropical Asia and Africa.

VI. **Fimbristylis**, Vahl, Enum. vol. iii. p. 285; Endl. Gen. n. 998. Spiculæ ∞ -floræ, ♂. Paleæ undique imbricatæ, infima vacua. Perigonium 0. Stamina 3. Discus membranaceus, integer, vix manifestus. Ovarium stylo 2-3-fido; basi bulboso-incrassata persistente. Caryopsis crustacea, nuda v. granulato-echinulata, compressa v. 3-gona, disco sphacelato exiguo stipata.—Stirpes; culmis enodibus, basi foliatis v. vaginatis; foliis angustis, sæpius canaliculatis, marginibusque asperis, spiculis solitariis, capitatis v. in umbellam inæqualiter radiatam dispositis, involuero abbreviato bracteæformi v. foliaceo suffultis.

1. **F. communis**, Kunth, Enum. vol. ii. p. 234; glauca; glabra v. villosa-pubescentia; culmis teretiusculis (?), sulcatis; foliis anguste linearibus, planis; umbella composita vel decomposita, pterumque pauciradiata; involucri 2-5-phyllo; spicis ovato-lanceolatis, ovatis vel ellipticis, acutis; squamis latissime ovatis, breviter mucronatis, dorso viridibus, lateribus superne magis minusve intense castaneo-fuscis, glabris; stylo 2-fido, fimbriato-ciliato; achenio 2-convexo, umbonato, subtiliter cancellato, stramineo-albido vel fusco, margaritaceo-nitido.—*F. diphylla*, Vahl, Enum. vol. ii. p. 289. *F. striata*, Labill. Austr. Cal. p. 79. t. 16. f. 2.—Taviuni (Seemann! 675). Also found in New Caledonia, New Holland, tropical Asia, and Africa.

2. **F. arvensis**, Vahl, Enum. vol. ii. p. 291; Kunth, Enum. vol. ii. p. 237; cæspitosa; culmis strictis, compressis, superne 3-angularibus, glabris; vaginis pubescentibus; foliis brevibus, anguste linearibus, margine scabriusculis; umbella simplici vel composita; radiis valde inæqualibus, 1-5-stachyis, glabris; involucri 1-2-phyllo; umbella brevior; spicis ovato-oblongis, acutis, centralibus sessilibus; squamis ovato-ellipticis, sub apice rotundato mucronatis, ferrugineis, superne canescenti-puberulis; staminibus 3; stylo 2-fido, fimbriato-ciliato; achenio obovato, umbonato, turgide lenticulari, externe convexiore, subtilissime impresso-punctulato, fusco, nitido.—*Scirpus arvensis*, Retz. Obs. vol. iv. p. 11. *S. tranquebariensis*, Roth, Cat. vol. iii. p. 6; ejusd. Nov. Spec. 29 (fide specimen in Herb. Reg. Berol.). *S. cinereo-fuscus*, Willd. Herb. n. 1259. fol. 3. *S. pallescens*, Willd. Herb. n. 1269. fol. 2 (forma monostachya). *F. marginata*, Labill. Nov. Caled. p. 11. t. 16.—Ovalau and Taviuni (Seemann! n. 674). Also collected in New Caledonia, the East Indies, and Mauritius.

VII. **Elæocharis**, R. Brown, Prodr. p. 224; Kunth, Enum. vol. ii. p. 139. Spicæ ∞-, rarius paucifloræ. Squamæ undique imbricatæ, conformes, paucissimæ inferiorum vacuæ. Calyx; setæ 6, interdum plures vel pauciores, sæpissime retrorsum hispidæ, rarissime 0. Stamina 3, rarius pauciora. Stylus 3-, rarius 2-fidus, basi dilatatus. Achenium 3-angulare v. lenticulare, basi styli persistente coronatum.—Herbæ; culmi vaginati, aphylli, monostachyi.

1. **E. articulata**, Steud. Syn. Glum. vol. ii. p. 81; rhizomate repente; culmis teretibus superne approximate interstinctis, sterilibus fertiles æquantibus acutis; spica cylindrica culmo angustiore; squamis obovato-cuneiformibus subtiliter striatis pallidis, 2 infimis ovatis obtusis evidentius striatis; achenio obovato-lenticulari crenulato-costulato, infra rostrum constricto.—*Limnochloa articulata*, Nees ab Esenb. Cyper. Bras. p. 100. *Scirpus articulatus*, Salzm. Nomen vernac. Vitiense, "Kuta."—Vauua Levu, in swamps about Bau Bay (Seemann! n. 678). Also found in Brazil.

Used by the natives for making a very fine and elastic kind of matting.

VIII. **Kyllingia**, Linn. f. Suppl. p. 11; Kunth, Enum. vol. ii. p. 127. Spicæ compressæ, 1-2-floræ, flore superiore ♂, rarius 3-floræ. Squamæ distichæ, fertiles carinatæ, steriles (2 interiores) parvæ. Setæ squamulæque 0. Stamina 1-3. Ovarium lateribus compressum. Stylus 2-fidus, deciduus. Achenium lateribus compressum, apicatum.—Herbæ; culmi basi foliato, rarissime aphylli. Folia graminea, capitulis solitariis, rarius geminis v. ternis, compactis, involucratis.

1. **K. monocephala**, Linn. Suppl. p. 104; Kunth, Enum. vol. ii. p. 129; repens; culmis erectis, triangularibus, basi foliatis; foliis membranaceis, planis, apicem versus margine carinaque ciliolato-spinulosis; capitulo solitario, globoso, denso; involucri 3-4-phyllo, longissimo; spicis 1-floris; squamis 2 superioribus subæqualibus, compresso-navicularibus, superne incrassato-cristatis, crista spinuloso-ciliata, acutato-mucronatis, purpureo-punctulatis, 7-nerviis superiore altius inserta; staminibus 2; achenio elliptico, lateribus compresso, apicato, subtilissime punctulato, stramineo-

flavido.—*Schaenus coloratus*, Linn. Spec. vol. i. p. 64. *Thryocephalon nemorale*, Forst. Gen. 65. *Scirpus cephalotes*, Jacq. Hort. Vind. vol. i. p. 42. t. 97. *Kyllingia triceps*, Forst. Prodr. n. 31 et Icon. (ined.) t. 15. *Schaenus coloratus*, Soland. Prim. Fl. Ins. Pacif. (ined.) p. 207.—In swampy places, common throughout Viti (Seemann! n. 670, et n. 671; Græffe! n. 55). Also collected in the Society (Banks and Solander! Forster! Barclay!), Tongan (Home!), and Samoan Islands (Sir E. Home!).

IX. **Mariscus**, Vahl, Enum. vol. ii. p. 373; Kunth, Enum. vol. ii. p. 115. Spicæ 1-2, rarius 3-5-floræ. Squamæ distichæ; interiores vacuæ. Setæ squamulæque 0. Stamina 3. Ovarium 3-angulare. Stylus 3-fidus, deciduus. Achenium 3-angulare, in excavatione rhacheolæ receptum, sæpe mucronulatum. Culmi 3-angulares, basi foliati. Capitula v. spicæ compositæ, nunc solitaria, nunc fasciculato-congesta, nunc per umbellas disposita.—Differt a Cyperi sectione stylo 3-fido instructa nonnisi numero florum. Limites inter Cyperum, Mariscum, et Kyllingiam omnino artificiales, et genera minime conjungenda sunt (Brown, Prod. p. 219).

1. **M. flavus**, Kunth, Enum. vol. ii. p. 118; repens; culmo 3-angulari, glabro; foliis culmum subæquantibus, rigidulis, carinato-planis, margine scabris; spicis compositis subquinis, sessilibus, oblongo-ellipticis; involucri 5-phylo, longissimo; spicis propriis arcte confertis, oblongo-lanceolatis, acutatis, 2-floris; squamis fertilibus obtusis, mucronulatis, sub-11-nerviis, fuscescenti-lutescentibus, lineolis punctulisque ferrugineis conspersis, carina viridi; achenio (immature) 3-angulari.—*M. Mexicanus*, Willd. Herb. n. 1423; Link, Jahrb. vol. iii. p. 90. *M. lævis*, Humb. Bpl. et Kunth, Nov. Gen. vol. i. p. 214. *M. sylvestris*, Humb. Bpl. et Kunth, l.c. in corrig. 377. *M. lævigatus*, Rœm. et Schult. Syst. vol. ii. p. 243. *M. Hænkei*, Presl in Rel. Hænck. vol. i. p. 181.—Common in swampy ground, in most Vitian islands (Seemann! n. 669; Sir E. Home! Græffe! n. 55; M'Gillivray!). Also collected in the Tongan Islands (Sir E. Home!). Diffused over tropical America and Australia.

2. **M. phleoides**, Nees in lit. ex Steud. Glum. vol. ii. p. 62; culmo 3-quetto basi nodoso folioso; foliis linearibus margine scabris culmum æquantibus; involucri sub-8-phylo longissimo; spicis ∞ , subsessilibus cylindricis; spiculis lanceolatis compressis 1-floris; squamis 2 inferioribus subæqualibus 3-que acute carinatis, carina serrulato-scabris.—*Cyperus phleoides*, Horace Mann, Enum. Hawaiian Plants, p. 208.—In swamps, Viti Levu (Seemann! n. 668). Also collected in the Hawaiian Islands (Macræ!).

X. **Cyperus**, Linn; Kunth, Enum. vol. ii. p. 2. Spicæ ∞ -floræ. Squamæ distiche imbricatæ, omnes floriferæ, æquales, interdum nonnullæ inferiorum minores, vacuæ. Setæ squamulæque 0. Stamina 3, rarius 1 v. 2. Stylus 3-, rarius 2-fidus, deciduus. Achenium 3-angulare v. rarius compressum, sæpe basi persistente styli mucronatum.—Herbæ. Culmi foliati, rarius aphylli. Folia graminea, plerumque plana, spicis fasciculatis capitatis v. umbellatis, umbellis simplicibus, compositis v. supradecompositis.

A number of species belonging to this genus are found in the various Polynesian Islands.

1. **C. pennatus**, Lam. Ill. t. 144; Kunth, Enum. vol. ii. p. 80; virescenti-glaucus; culmo 3-gono, glabro, basi foliato; foliis culmum æquantibus v. superantibus, rigidis, planis, margine scabris; umbella composita, 6-8-radiata; radiis apice brachiato-ramosis; ramis (5-7) glabris, undique spicis oblongo-lanceolatis compressiusculis 6-10-floris patentissimis obsitis spicasque referentibus divaricatas; involucri 5-6-phylo, longissimo; rhacheola flexuosa, alternatim excavato-alata; squamis ovato-ellipticis, navicularibus, superne carinatis, sub apice brevissime mucronatis, 9-11-nerviis, subcoriaceis, pallidis, dorso ferrugineo-lineolatis; achenio obovato, 3-angulari, apicato, nigro-castaneo, squama

duplo 3-plove brevior.—*C. canescens*, Vahl, Enum. vol. ii. p. 355 (excl. syn. Rheede). *C. (Pycneus) Ow huensis*, Nees ab Esenb. in Meyen. Herb. *C. racemosus*, Wight in Wall. Cat. n. 3359 b.; Wight. Cyp. n. 39. *C. pallidus*, Willd. Herb. n. 1364. *C. holciflorus*, Presl in Rel. Hænk. vol. i. p. 173. *C. stupeus*, Sol. in Forst. Prodr. n. 496 (sine descript.); et Prim. Fl. Ins. Pacif. (ined.) p. 209. *Mariscus albescens*, Gaud. in Freyc. It. Bot. p. 415. *Cyperus parviflorus*, Vahl, Enum. vol. ii. p. 352. Nomen vernac. Vitiense, teste Storck, “Davaira duna (dina?).”—Island of Ovalau and Lado (Storck! n. 912). Also collected in the Hawaiian (Macræ!), Tongan (Sir E. Home!), and Society Islands (Banks and Solander!).

2. **C. strigosus**, Linn. Spec. 69; Kunth, Enum. vol. ii. p. 87; culmo 3-angulati, glabro; foliis culmo longioribus, planis, margine scabris; umbella composita, ∞-radiata; radiis divaricatis, apice digitato-ramosis, 2-phyllis; ramis undique spicis linearibus compressiusculis 6–7-floris patentissimis dense obsitis; involucri sub-10-phylo, longissimo; squamis remotis, oblongis, carinato-navicularibus, sub apice obtuso instructis denticulo mucronuliformi, obsolete nervosis, carina viridi, lateribus flavescentibus; rhacheola alata; achenio oblongo, 3-angulati, apicato, punctulato-scabrato, squama vix dimidio brevior.—*C. Michauxianus*, Schult. Mant. vol. ii. p. 123. *C. odoratus*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 209 (et Forst. Prodr. n. 27?).—Viti, locality not specified (Sir E. Home!). Also found in the Hawaiian (Barclay!), Marquesas (Barclay!), Society (Banks and Solander!), and New Hebrides group (M’Gillivray!).

There is no authentic specimen of Forster’s *C. odoratus* at the British Museum.

ORDO CV. GRAMINEÆ.

Major-General Munro not having published yet his list of Hawaiian grasses, which he has in hand, I am precluded from giving in this place a general summary of the *Gramineæ* of tropical Polynesia. The collective Vitian name for Grasses is “Co” (pronounced “Tho”), also used for Weeds generally.

I. **Andropogon**, Linn. n. 1145, excl. sp.; Endl. Gen. n. 950. Spiculæ 2-floræ, flore inferiore neutro 1-paleaceo, superiore hermaphrodito v. unisexuali, 2 v. 3, intermedia sessilis, fertilis, reliquæ pedicellatæ, steriles. Glumæ 2, tandem induratæ, muticæ. Paleæ 2, glumis breviores, inferior floris perfecti mutica v. in aristam producta, superior minor, mutica, quandoque 0. Squamulæ 2, truncatæ, plerumque glabræ. Stamina 1–3. Ovarium sessile, glabrum. Styli 2, terminales; stigmata plumosa. Caryopsis intra glumas libera.—Gramina, rhachi spicata v. paniculata; spicis solitariis, conjugatis, fasciculatis v. paniculatis.

“*Andropogon*. Tana,” Forst. Prodr. n. 562, belongs to the section *Heteropogon*, and is most probably *H. hirtus*, Pers. *H. polystachys*, Schult. is found in the Sandwich Islands, (Macræ!); and *Andropogon Vachellii*, Nees, in Aneitum (M’Gillivray!) The Lemon grass, a species of *Andropogon*, which the natives term “Coboi,” is cultivated in the Islands.

1. **A. refractus**, R. Br. Prodr. vol. i. p. 202; Kunth. Enum. vol. i. p. 493; panicula spathis alternis; spicis conjugatis, submuticis, refractis; ligula membranacea, imberbi; glumis acuminatis, glabris.—*A. Tahitense*, Hook. et Arn. Bot. Beech. p. 71.—In sunny, dry places, Viti Levu, Lakeba, etc. (Seemann! n. 685). Also collected in Aneitum, New Hebrides (M’Gillivray!).

2. **A. aciculatus**, Retz. Obs. fasc. v. p. 22; Kunth, Enum. vol. i. p. 505; Willd. Sp. vol. iv. p. 906 (Rumph. vol. v. p. 13. t. 5. f. 1); panicula contracta, erecta; pedunculis 3-floris; fl. ♂ binis, pedi-

cellatis, acuminatis; fl. ♀ sessili, aristato. (Retz.)—*A. acicularis*, Roem. et Schult. Syst. vol. ii. p. 812; Roxb. Fl. Ind. vol. i. p. 262. *A. amethystinum*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 346; Rheede, p. 12. t. 43. *A. Javanicum*, Nees in Steud. Syn. Glum. vol. i. p. 396. *Rhaphis trivialis*, Lour. Coch. p. 676; Trin. Icon. p. 1. t. 8, 9. *Centrophorum Chinense*, Trin. Fund. p. 106. t. 5. *Chrysopogon aciculatus*, Trin. Fund. p. 188. *C. trivialis*, Nees in Nov. Act. xvi. 171.—In dry, sunny places, Vanua Levu, Lakeba, Ovalau (Seemann! n. 686). Also collected in the Society (Banks and Solander!), Hawaiian (Barclay! Macrae!), and Marquesas Islands (Barclay!), and in Wallis Island (Sir E. Home!).

II. **Eulalia**, Trin. (non Kth.); Benth. Fl. Hongk. p. 420. Rhachis partialis inarticulatus, tenuis, subfiliformis. Spiculæ pilis sericeis involucretae, alternatim geminae, 1-floræ, flore inferiore neutro, 1-paleaceo; superiore ♂. Glumæ 2, subæquales, muticæ. Paleæ 2, glumis breviores, inferior floris ♂ apice in aristam producta, superior mutica. Squamulæ 2, integræ, glabræ. Stamina 3. Ovarium sessile, glabrum. Styli 2, terminales, elongati; stigmata plumosa. Caryopsis libera, elliptica, glabra.—Gramina erecta v. basi prostrata, foliis pl. min. lanceolato-linearibus, rhachi ramosa racemosa, spiculis geminis, nunc altera sessili, nunc utraque pedicellata.

1. **E. Japonica**, Trin. Act. Petr. 1833, p. 332; culmo frutescente tereti simplici glabro (3-6-pedali); foliis lineari-filiformibus serratis glabris striatis; costa media crassa; racemis subsemiverticillatis longissimis alternis; spiculis 2-linealibus omnibus pedicellatis; pedicello altero duplo brevior utroque glabro; glumis subæqualibus acutis glabris, pilis ad basin calycis glumas subæqualibus; arista torta glumis paulo longiore.—*E. densa*, Munro in Seem. Bot. Herald, p. 434. *Saccharum polydactylon*, Thunb. Fl. Jap. p. 42 (1784). *S. densum*, Nees ab Esenb. in Hook. Journ. of Bot. 1850. *S. prægrande*, Steud. Syn. Glum. vol. i. p. 408. *S. floridulum*, Labill. Austr. Cal. p. 13. t. 18. *S. spontaneum*, Forst. Prodr. n. 32. *S. fatuum*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 213, et in Parkins. Drawings of Tahit. Plants (ined.), t. 9. *Erianthus floridulus*, Schult. Mant.; Kunth, Enum. vol. i. p. 479. *E. Japonicum*, Kunth, l. c. *Ripidium Japonicum*, Trin. Nomina vernac. Vitiensia, "Gasau" et "Vitavita."—In swamps, Taviuni, Viti Levu, and Vanua Levu (Seemann! n. 691). Also collected in Tahiti (Banks and Solander! U. S. Expl. Exped!), Aneitum (M'Gillivray!), Samoa (U. S. Expl. Exp.!), Tonga (U. S. Expl. Exp.!), and New Caledonia.

This cane is used by the natives for arrows and for Yam sticks. The leaves make an excellent thatch for houses.

III. **Saccharum**, Linn. Gen. n. 73; Endl. Gen. n. 939. Spiculæ 2-floræ, basi sericeo-pilosæ, flore inferiore neutro, 1-paleaceo, superiore ♂. Glumæ 2, subæquales, muticæ. Paleæ 3, minutæ, muticæ, inæquales. Squamulæ 2-3-lobæ, interdum in tubum connatæ. Stamina 1-3. Ovarium sessile, glabrum. Styli 2, terminales, elongati; stigmata plumosa. Caryopsis libera.—Gramina elata, ramosissime paniculata; spiculis geminatis, altera sessili, altera pedicellata, omnibus fertilibus, basi articulatis.

1. **S. officinarum**, Linn. Sp. n. 79; panicula effusa; floribus 3-andris; glumis obsolete 1-nerviis, dorso longissime pilosis.—Kunth, Enum. vol. i. p. 474. Nomen vernac. Vitiense, "Dovu."—Cultivated by natives and white settlers, and in some places apparently wild (Seemann!).

The Sugar-cane, called Dovu in Fijian, grows, as it were, wild in various parts of the group, and a purple variety, attaining sixteen feet high and a corresponding thickness, is cultivated to some extent. No foreigners have as yet set up mills, nor are the natives at present acquainted with the process of sugar-making; they merely chew the cane, and employ the juice for sweetening their puddings. The Sugar-cane is termed in Tahiti, Marquesas, Tonga, Raratonga, and Savage Island "To." In the Hawaiian

group it is known by the name of "Ko;" in Rotuma by that of "Thou;" in Aneitum by that of "Nettoh;" in New Caledonia by that of "Nti;" and in the Malayan Archipelago by that of "Tubbu." The unmixed Papuan races have names for the plant, in which the etymological root "To" cannot be recognized.

IV. **Imperata**, Cyrill, Icon. t. 11. Kunth, Enum. vol. i. p. 477. Spiculæ 2, alterna sessilis, alterna pedicellatâ, omnes fertiles, basi articulatae, 2-floræ. Glumæ 2, membranaceæ, subæquales, muticæ, externe pilis longissimis sericeis obsitæ. Flos inferior 1-paleaceus, hyalinus; flos superior hermaphroditus. Paleæ 2, minutæ, hyalinæ, muticæ. Stamina 2. Ovarium glabrum. Styli 2, elongati. Stigmata plumosa. Squamulæ 0. Caryopsis libera (?).—Panicula contracta, spicæformis, cylindræa, spiculis externe pil. longios. seric. obsitis.

1. **I. arundinacea**, Cyrill, l. c.; Rumph. Amb. vol. vi. t. 7. fig. 2.—*Saccharum cylindricum*, Lam. Encycl. vol. i. p. 588. t. 40. fig. 2. *Lagurus cylindricus*, Linn. Spec. p. 120. *Saccharum Thunbergii*, Retz, Obs. fasc. v. p. 17. *Imperata cylindrica*, Beauv. Agrost. vol. vii. t. 5. fig. 1. *Saccharum Kœnigii*, Retz, Obs. fasc. v. p. 16. *Imperata Kœnigii*, Beauv. Agrost. p. 165. *Saccharum spicatum*, Burm. Herb. S. *Sisca*, Cav. Icon. vol. iii. t. 292.—Vanua Levu (U. S. Expl. Exped.!). Also found in Aneitum, and Isle of Pines, off New Caledonia (M'Gillivray!); and distributed over Southern Europe, Northern and Western Africa, the East Indies, and South America.

V. **Eleusine**, Gært. Fruct. vol. i. p. 8. t. 1; Endl. Gen. n. 841. Spiculæ 2-6-floræ, floribus 2-stichis, omnibus ♂. Glumæ 2, carinatae, muticæ, superior inferiorem amplectens. Paleæ 2, muticæ, inferior carinata, superior 2-carinata. Squamulæ 2, emarginato-2-lobæ. Stamina 3. Ovarium sessile. Styli 2, terminales; stigmata plumosa. Caryopsis libera (epicarpio membranaceo, solubili).—Gramina annua, foliis planis; spicis digitato-fasciculatis; spiculis 1-lateralibus.

1. **E. Indica**, Gært. Fruct. vol. i. p. 8. t. 1; Lam. Ill. vol. i. p. 203. t. 48. f. 3; Mich. Flor. vol. i. p. 64; Humb. Bpl. et Kunth, Nov. Gen. vol. i. p. 165; Trin. Icon, p. 6. t. 71; culmo compresso; basi ramoso; foliis glabris; ligula pilosa; spicis digitatis, strictis; spiculis sub-6-floris. (Kunth.)—*Cynosurus Indicus*, Linn. Sp. p. 106 (Rheede, p. 12. t. 69); Willd. Sp. vol. i. p. 417; Forst. Prodr. n. 45. *Panicum compressum*, Forsk. Descr. p. 18 (teste Vahl, Symb. vol. ii. p. 21). *Eleusine distans*, Mœnch. *Paspalum dissectum*, Kniphof. Cent. p. 11. n. 74.—On roadsides, throughout Viti (Seemann! n. 683; Sir E. Home!). Also collected in the Samoan (U. S. Expl. Exped.!), and Society Islands (U. S. Expl. Exped.!), Tahiti (Banks and Solander! Wiles and Smith!), Sandwich (Barclay! Macrae!), Tongan (Barclay! Sir E. Home!), New Hebrides (M'Gillivray!), Isles of Pines (M'Gillivray!).

VI. **Centotheca**, Desv. Journ. Bot. vol. iii. p. 70; Endl. Gen. n. 877. Spiculæ 3-4-floræ, compressæ, floribus remotis ♂, summis 1-2 tabescentibus. Glumæ 2, carinatae, muticæ, subæquales. Paleæ 2, inferior carinata, mutica, in flore superiore margine versus apicem tuberculata, tuberculis retrorsum setosis; superior brevior, 2-carinata. Squamulæ 2, sinuato-emarginatæ. Stamina 2-3, ovarii stipitulo inserta. Ovarium stipitatum, glabrum. Styli 2, terminales; stigmata plumosa. Caryopsis oblique ovata, compressiuscula, glabra.—Gramen erectum, simplex; paniculæ simplicis ramis fasciculato-semiverticillatis, spiculis racemosis, pedicellatis.

1. **C. lappacea**, Desv. in Journ. de Bot. 1813, p. 70; Kunth, Enum. vol. i. p. 366; Beauv. Agrost. p. 69. t. 14. f. 7; Kunth, Gram. vol. i. p. 317. t. 70.—*Cenchrus lappaceus*, Linn. Spec. 1488; Willd. Spec. vol. i. p. 316. *Poa latifolia*, Forst. Prodr. p. 8. n. 44; Vahl, Symb. vol. ii. p. 18. *Oplismenus? Magellanicus*, Rœm. et Schult. Syst. vol. ii. p. 485. *Holcus latifolius*, Osb. It. p. 247; Linn. Spec. 1486; Willd. Spec. vol. iv. p. 937 (teste Trin.). *Torresia? latifolia*, Beauv. Agrost. p. 165. *Hierochloa? latifolia*, Kunth, Gram. vol. i. p. 21. *Melica lappacea*, Raspail. *Uniola lappacea*,

Trin. in Act. Petrop. 6. vol. i. p. 358.—Common throughout Viti (Seemann! n. 684; Milne and M'Gillivray!). Also collected in the Marquesas (Barclay!), Society (Banks and Solander! W. Anderson! Barclay!), Samoan (Sir E. Home!), Tongan (Barclay!), and New Hebrides group (Milne and M'Gillivray!).

VII. **Schizostachyum**, Nees ab Esenb. in Agrost. Bras. p. 535 (1829); Munro in Trans. Linn. Soc. vol. xxvi. p. 135. Spicula utrinque v. deorsum tantum imperfecta, cylindrica, angusta, plerumque elongata, fertilis supra glumas articulata, spiculis sterilibus plurimis stipata, plerumque 3-4-flora, flosculo 1 tantum fertili. Glumæ plurimæ, fere omnes gemmiparæ, a spicula fertili remotæ. Paleæ omnes imbricatissimæ, 2-3 inferiores vacuæ, steriles, suprema v. penultima sola fertilis, genitalia arcte involvens. Palea superior (nisi in *S. parvifolio*) deest v. ad rudimentum minutum v. lineare redacta. Squamulæ nullæ. Stamina 6, antheris obtusis. Stylus longus, ovarii rostro inclusus, stigmatibus 3 brevissimis. Caryopsis matura (in *S. acutifloro* tantum visa) oblonga, rugosa, obtusa, rostro brevi subito cuspidata.—Gramina arborea v. suffruticosa v. subscandentia, foliis nunc latis nunc angustis; inflorescentia variabili; panicula nunc ampla, decomposita (in *S. acutifloro*), nunc composita, nunc fere simplex, fasciculis interrupte spicatis.

There are two Bambusaceous plants in Viti, only one of which I was able to collect, and respectively termed "Bitu" and "Bitu vatu" by the natives.

1. **S. glaucifolium**, Munro, l. c. p. 137; "culmo humili, 9-pedali;" panicula decomposita; internodiis superioribus 4-3-2 poll. longis, striatis, asperiusculis; ramulis floriferis brevibus, ad nodos fasciculatis, e capitulo denso, $1\frac{1}{4}$ poll. diam., ad quemque nodum sessili, erumpentibus; ramis interrupte glomerato-spicatis; spiculis angustis, cylindricis, pallidis, omnibus sterilibus (in spec. viso); foliis latis, basi angustatis, petiolatis.—*Bambusa glaucifolia*, Rupr. in Act. Acad. Caes. Petr. ser. vi. Sc. Nat. vol. iii. pt. 2. p. 147; Steud. Syn. Glum. vol. i. p. 331. *Bambos Arundo*, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 217. Nomen vernac. Vitiense, Viti Levu, on banks of rivers (Seemann! n. 694). Also collected in the Society (Wilkes!), Hawaiian (Wilkes Exped.!), Samoan (Wilkes Exped.!), and Marquesas Islands (Kyber!).

Stems used for rafts and torches.

VIII. **Thouarea**, Petit Th.; Kunth, Enum. vol. i. p. 173. Spiculæ 2-floræ. Flores sessiles, 2-paleacei, in spiculis 1-2 infer. cujuslibet spicæ superior (exterior) ♀; inferior (interior) ♂; in spiculis superioribus uterque ♂. Gluma superior (exterior) ovato-oblonga, concava, membranacea, floribus brevior; inferior (interior) 0. Fl. ♀: Paleæ 2, subæquales, chartaceæ, muticæ; inferior concava, superiorem 2-nerviam amplectens. Stamina 3. Ovarium glabrum, inter stylos in acumen productum. Styli 2, terminales. Stigmata plumosa, pilis densis longis simplicibus. Squamulæ 2, carnosæ, truncato-submarginatæ, glabræ. Caryopsis elliptica, glabra, haud sulcata, embryo parallele compressa, paleis inclusa. Fl. ♂: Paleæ 2, membranaceæ; inferior ovata, acuta, superiorem 2-carinatum amplectens. Stamina 3. Squamulæ 2.—Culmi repentes, longissimi, ramis erectis brevibus indivisis foliatis; foliis planis; spicis terminalibus solitariis brevibus, spiculis paucis unilateralibus uniseriatis sessilibus, rhachidibus non articulatis.

1. **T. involuta**, R. Brown, Prodr. vol. i. p. 197 in adnot.; spica secunda mutica 4-flora involuta; receptaculo foliaceo concavo.—*Ischemum involutum*, Forst. Prodr. n. 385 et Icon. (ined.) t. 275.—Macuata coast of Vanua Levu (U. S. Expl. Exped.!), and Oneata (U. S. Expl. Exped.!). Also collected in the Society Islands (Forster!) and Tana (W. Anderson!).

IX. **Cenchrus**, Linn. Gen. n. 1149; Endl. Gen. n. 783. Spiculæ 2-floræ, flore inferiore ♂ v. neutro, superiore ♀, nunc 1, nunc 2 v. ∞, intra involucrum ∞-fidum, extus setis stipatum, cum fructu induratum et deciduum congestæ. Glumæ 2, inæquales, membranaceæ. Fl. ♂: hermaphrodito subconformis, interdum paleæ superioris et staminum abortu neuter. Fl. ♀: Paleæ 2, subcoriaceæ, concavæ, inferior superiorem amplectens. Stamina 3. Squamulæ 0. Ovarium sessile. Styli 2, elongati, interdum basi subconnati; stigmata plumosa, pilis simplicibus, denticulatis. Caryopsis compressiuscula, intra paleas libera.—Gramina ut plurimum annua, culmis sæpissime ramosis; foliis planis; spicis terminalibus, simplicibus; spiculis sessilibus; rhachi continua.

1. **C. anomoplexis**, Labill. Austr. Cal. p. 14. t. 19; Kunth, Enum. vol. i. p. 167; involucre sub-10-partito; laciniis subulatis, pilosis; denticulis ad apicem retrorsis, unica cæteris longiore; spiculis solitariis, ternis.—*C. australis*, var. *foliis latioribus*, Spreng. Cur. Post. 33.—In dry places, Ovalau (Seemann! n. 688). Also collected in New Caledonia (M'Gillivray!), Pitcairn Island (Cuming!), and the Hawaiian (Macrae!), Tongan (Sir E. Home!), Samoan (U. S. Expl. Exped.!), and Society Islands (Banks and Solander!).

X. **Oplismenus**, Palis. Fl. Owar. vol. ii. p. 14; Endl. Gen. n. 778. Spiculæ 2-floræ, flore inferiore ♂ v. neutro, superiore hermaphrodito. Glumæ 2, inæquales, concavæ v. subcarinatae, sæpissime aristatæ. Fl. ♂: Paleæ 2, inferior aristata. Stamina 3, interdum palea superiore et staminibus abortivis neuter. Fl. ♀: Paleæ 2, subæquales, inferior acuminata, mucronata, superiorem parinervem amplectens. Squamulæ 2, collaterales, truncatæ. Stamina 3. Ovarium sessile. Styli 2, terminales, elongati; stigmata plumosa, pilis simplicibus. Caryopsis intra paleas libera.—Gramina planifolia; spiculis spicatis; spicis racemosis paniculatisve; rhachi continua.—*Orthopogon*, R. Brown, Prodr. 194. *Echinochloa*, Palis. Agrost. p. 53. t. 11. fig. 2.

1. **O. Burmanni**, Palis. Agrost. p. 54; Kunth, Enum. vol. i. p. 139; Humb. Bpl. et Kunth, Nov. Gen. vol. i. p. 106; culmis ramosis foliisque pubescentibus, ovatis; spicis subquinis; rhachi communi, partialibus glumisque pilosis, aristatis; flore neutro unipaleaceo.—*Panicum Burmanni*, Retz. Obs. 3. p. 10; Willd. Spec. vol. i. p. 339 (excl. syn. Ard.); Roxb. Fl. Ind. vol. i. p. 298; Trin. Ic. p. 17. t. 193. *Panicum hirtellum*, Linn. Amœn. Acad. vol. v. p. 391; Burm. Ind. p. 24. t. 12. f. 1. *Orthopogon Burmanni*, R. Brown, Prodr. vol. i. p. 194. *Panicum bromoides*, Lam. Ill. p. 170; ejusd. Encycl. vol. iv. 742 (Rumph. Amb. vol. vi. t. 5. f. 3). *Panicum album*, Poir. Encycl. Suppl. vol. iv. p. 274. *O. albus*, Rœm. et Schult. Syst. vol. ii. p. 890. *Echinochloa hirtella*, Schult. Mant. vol. ii. p. 269. *O. Humboldtianus*, Nees ab Esenb. in Mart. Bras. vol. ii. p. 264; Presl in Rel. Hænk. vol. i. p. 322. *O. Brasiliensis*, Raddi, Agrost. Bras. p. 400.

Var. β ; foliis purpurascens.—Nomen vernac. Vitiense, "Co damudamu" (*i. e.* the red grass).—Viti Levu (Seemann! n. 679).

Var. γ ; foliis albo-striatis.—Viti Levu (Seemann! n. 680).

Both these varieties are cultivated by the natives in the interior of Viti Levu, on account of their pretty foliage, and they are sometimes seen naturalized, if not actually wild in that island.

2. **O. compositus**, Rœm. et Schult. Syst. vol. ii. p. 484; Kunth, Enum. vol. i. p. 141; spiculis ∞-floris; floribus geminis, hirsutis; glumis ambabus aristatis; exteriori parum majore; interioris arista abbreviata; flosculo neutro mucronulato; foliis lanceolatis.—*Panicum compositum*, Linn. Spec. p. 84; Willd. Spec. vol. i. p. 346 (Houtt. t. 96. f. 1); Trin. Ic. p. 16. t. 187. *P. un-*

guinosum, Sol. Prim. Fl. Ins. Pacif. (ined.) p. 214. *Orthopogon compositus*, Brown, Prodr. vol. i. p. 194. *Digitariae* species, Willd. Enum. p. 91. *Orthopogon remotus*, Trin. *O. compositus*, var. 2-5, Trin. Ic. p. 16. t. 189, 190.—Common throughout Viti (Seemann! n. 681). Also collected in the Society (Banks and Solander! Forster!) and New Hebrides group (Milne and M'Gillivray!), and at Easter Island (Forster!).

XI. **Panicum**, Linn. Gen. n. 76; Endl. Gen. n. 770. Spiculæ 2-floræ, flore inferiore ♂ v. neutro, superiore ♀. Glumæ 2, inæquales, concavæ, muticæ. Fl. ♂: Paleæ 2; stamina 3, interdum palea superiore et staminibus abortivis neuter. Fl. ♀: Paleæ 2, subæquales, concavæ, inferior superiorem parinervem amplectens. Squamulæ 2, collaterales, dolabriformes v. truncato-1-2-3-lobæ. Stamina 3. Ovarium sessile. Styli 2, terminales, elongati; stigmata penicillata, pilis simplicibus denticulatis.—Gramina planifolia; floribus spicatis paniculatisve; rhachi continua.—*Digitaria*, Scop. Carn. vol. i. p. 52.

1. **P. sanguinale**, Linn. Spec. p. 84; Kunth, Enum. vol. i. p. 82; Willd. Spec. vol. i. p. 342; Schreb. Gram. t. 16; Engl. Bot. t. 849; Flor. Dan. t. 388; Host. Gram. p. 2. t. 17; Trin. Ic. p. 8. t. 93, 94; spicis digitatis, erecto-patulis, subquaternis v. pluribus; foliis vaginisque subpilosus; flosculis oblongis, margine pubescentibus.—*Syntherisma vulgare*, Schrad. Germ. vol. i. p. 161. *Paspalum sanguinale*, var. *a*, Lam. Ill. vol. i. p. 176; Cand. Gall. vol. iii. p. 16. *Phalaris velutina*, Forsk. Descr. p. 17 (teste Lam.). *Digitaria sanguinalis*, Scop. Carn. n. 72; Willd. Enum. p. 92. *Dactylon sanguinale*, Vill. Delph. vol. ii. p. 69. *Digitaria marginata*, Link, Hort. vol. i. p. 102. *Panicum Linkianum*, Kunth, Gram. vol. i. p. 33. *Syntherisma præcox*, Walt. Carol. p. 76 (ex Mich.). *Digitaria præcox*, Willd. Enum. p. 91. *Cynodon præcox*, Rœm. et Schult. Syst. vol. ii. p. 412.—Common on roadsides in most Vitian islands (Seemann! n. 690; Sir E. Home!). Also collected in the Tongan (Barclay! Home!), Marquesas (Barclay!), and Hawaiian Islands (Barclay!), as well as in the Isle of Pines (M'Gillivray!).

2. **P. trigonum**, Retz. Obs. vol. iii. p. 9; Steud. Glum. vol. i. p. 91; culmo prostrato radicante folioso; foliis angustis glabris; panícula parva erecta, pedunculis raris parum flexuosis 2-floris; glumis inæqualibus obtusis hispidis 1-floris; seminibus 3-gonis.—*P. patens*, Burm. Ind. t. 10. f. 2. *P. pilipes*, Nees ab Esenb.—Ovalau and Vanua Levu (Seemann! n. 693; U. S. Expl. Exped.), Gau (M'Gillivray!). Also collected in Aneitum, New Hebrides, in salt marshes (M'Gillivray!), in Tonga (U. S. Expl. Exped.!) and the East Indies and Ceylon.

3. **P. ambiguum**, Trin. Mem. Petr.; Steud. Syn. Glum. vol. i. p. 61; culmo prostrato ramoso; nodis puberulis; foliis lanceolato-linearibus glabriusculis, subtus minutissime pilosis; racemis (3) alternis interstitiis longioribus; spiculis 2 laxiuscule imbricatis fere bilinearibus ovato-lanceolatis acutis glabris; glumis 5-nerviis inferiore ovata acutissima flosculis $\frac{1}{4}$ – $\frac{1}{3}$ brevioribus; ♀ obtuso aciculato tenuissime punctato.—*Urochloa paspaloides*, Presl, Reliq. Hænk. vol. i. p. 318.—Vanua Levu (U. S. Expl. Exped.!). Also collected in Tonga (U. S. Expl. Exped.!), and in Manila.

XII. **Paspalum**, Linn. Gen. n. 73; Endl. Gen. n. 761. Spiculæ 2-floræ, cum pedicello articulatae, flore inferiore neutro, superiore ♀. Gluma 1 v. rarissime 2, inferior minuta, superior (antica) florem neutrum æquans. Neutr.: Palea membranacea, mutica. Fl. ♀: Paleæ 2, coriaceæ, muticæ, inferior concava, superiorem 2-nervem amplectens. Squamulæ 2, carnosæ, breves. Ovarium sessile. Styli 2, terminales; stigmata aspergilliformia, pilis subsimplicibus, denticulatis.

Caryopsis oblonga, compressiuscula, intra paleas induratas libera.—Gramina; rhachi spicata, continua, spiculis unilateralibus.

1. **P. scrobiculatum**, Linn. Mant. vol. i. p. 39; Kunth, Enum. vol. i. p. 53; Willd. Spec. vol. i. p. 320; Flugge, Monogr. p. 86; Roxb. Flor. Ind. vol. i. p. 281; Trin. Ic. p. 12. t. 143; spicis paucioribus, alternis; rhachi plana, recta, spicularum latitudine; glumis subrotundis, obtusis, glabris; foliis superioribus nudis.

Var. Pedicellis in media rhachi 2-partitis; glumis 3-nerviis.—*P. orbiculare*, Forst. Prodr. n. 35; Brown, Prodr. vol. i. 188; Willd. Enum. p. 89. Nomen vernac. Vitiense, "Co dina" (*i. e.* the genuine grass).—In meadows, Ovalau, Viti Levu, etc. (Seemann! n. 682), Gau (Milne and M'Gillivray!). Also collected in the Tongan (Capt. Cook!), Society (Banks and Solander! Barclay!), and New Hebrides group (Milne! M'Gillivray!).

This grass is much used by the natives for strewing the floors of their houses and public buildings (bures).

XIII. **Olyra**, Linn.; Kunth, Enum. vol. i. p. 68. Spiculæ ♂ et ♀ in eadem panicula; hæ terminales 2-floræ (flore infer. 1-paleaceo, neutro, glumæ simili); illæ 1-floræ; ♂ glumæ 2, membranaceæ, concavæ, inferior acuminato-aristata; superior (rectius palea floris infer. flore super. abortiente?) 2-nervia. Paleæ 0. Stamina 3. Squamulæ 3, subcarnosæ, glabræ. Fl. ♀: Gluma 1 (altera infer. 0) membranacea, concava, acuminato-aristata. Paleæ floris ♀ 2, coriaceæ, paleis breviores; inferior concava, superiorem parinerviam arcte involvens. Stamina 0. Ovarium glabrum. Stylus 1. Stigmata 2, pilosa, pilis ramosis pubescentibus. Squamulæ 3, subcarnosæ, glabræ. Caryopsis glabra, libera, paleis inclusa.—Gramina foliis latis planis membranaceis nervosis; paniculis terminalibus, rarius axillaribus et depauperatis, simplicibus v. ramosis; spiculis cum pedicello articulatis.

1. **O. micrantha**, H.B.K. Nov. Gen. vol. i. 199; foliis oblongis angustato-acutatis, basi rotundato-subcordatis vaginisque glabris, margine glabris; panicula ramosa patula, inferne ♂, superne ♀; ramis verticillatis ramulisque hirtello-pubescentibus; glumis ♀ acuminato-subaristatis; hispidulo-scabris; paleis punctato-scrobiculatis.—Bua or Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.!). Also found in the Orinoco region, S. America.

XIV. **Coix**, Linn. Gen. n. 1043; Endl. Gen. n. 743. Flores monœci, spicati; spiculæ 3, basillares, media sessilis ♀, laterales pedicellatæ neutræ, involucre ovato apice perforato, demum lapidescente inclusæ, ♂ in spica v. panicula ex involucre exserta. Fl. ♂: Spiculæ 2-floræ, flore utroque sessili. Glumæ 2, muticæ, inferior planiuscula, marginibus carinato-alatis, superior 3-gono-concava. Paleæ 2, muticæ, superior 2-carinata. Squamulæ 2, glabræ. Stamina 3. Neutri: Spiculæ minimæ, sæpe ad pedicellum reductæ. Fl. ♀: Spiculæ 2-floræ, flore inferiore neutro. Glumæ 2, carnosæ, concavæ, muticæ. Neutr.: Palea 1. Fl. ♀ perf. Paleæ 2, carnosæ, superior 2-nervis. Squamulæ 0. Stamina effœta, minuta. Ovarium sessile. Stylus 1; stigmata 2-3, elongata, pilosa. Caryopsis subglobosa, demum intra involucrem libera.—Gramen annuum, ramosum, culmo fœcto; foliis latiusculis planis, spicis fasciculatis, pedunculatis.—*Lithagrostis*, Gært. Fruct. vol. i. p. 7. t. 1.

1. **C. Lachryma**, Linn. Spec. 1378; Kunth, Enum. vol. i. p. 20; Rumph. p. 5. t. 75. f. 2; Rheede, p. 12. t. 70; Lam. Ill. t. 750; Willd. Spec. vol. iv. p. 202; culmo superne semitereti, obtuso; floribus nudis; fructibus ovatis.—*C. arundinacea*, Lam. Encycl. vol. iii. p. 422. *Lith-*

agrostis lachryma-Jobi, Gært. Fruct. vol. i. p. 7. t. 1. f. 10. Nomen vernac. Vitiense, "Sila."
—In swamps, Taviuni, and other Vitian Islands (Seemann! n. 692; Sir E. Home!). Also collected in the Samoan (Wilkes!), Society (Wilkes!), and Tongan Islands (Forster!). Common in the East Indies.

XV. **Zea**, Linn. Gen. n. 1042; Endl. Gen. n. 742. Flores monoici, ♂ terminales racemosi, ♀ axillares dense spicati, vaginis aphyllis involuti. Fl. ♂: Spiculæ 2-floræ, floribus 2 perfectis sessilibus. Glumæ 2, concavæ, inferior 3-nervis, superior 2-nervis. Squamulæ 2, collaterales, glabræ. Stamina 3. Fl. ♀: Spiculæ 2-floræ, flore inferiore neutro. Glumæ 2, latissimæ, inferior emarginato-subbiloba. Neutr.: Paleæ 2. Fl. ♀ perf.: Paleæ 2-3, concavæ. Squamulæ et stamina 0. Ovarium sessile, obliquum. Stylus 1; stigmata 2, subulata, pubescentia. Caryopsis reniformis, glumis paleisque cincta.—Gramen annuum, culmo crasso farcto; foliis latis planis, ligula brevi ciliata, racemo masculo simplici vel basi subramoso; spiculis geminis pedicellatis; spicis femineis sessilibus; spiculis multiseriatis, per paria approximatis.

1. **Z. Mays**, Linn. Spec. n. 1378; Kunth, Enum. vol. i. p. 19; Lam. Ill. t. 749; Willd. Spec. vol. iv. p. 200; foliis integerrimis.—*Zea vulgaris*, Mill. Dict. *Mays Zea*, Gært. Fruct. vol. i. p. 6. t. 1. f. 9; Cand. Gall. vol. 3. p. 98. Nomen vernac. Vitiense, "Sila ni papalagi" (*i. e.* the foreign Sila (*Sila = Coix Lachryma*). "Maize or Indian Corn" of the white settlers.—Cultivated by the white settlers.

At the time of my visit, only one kind of Indian Corn,—a small yellow-grained one,—was cultivated by the white settlers, the natives not having as yet taken to growing it. The native name, foreign *Coix Lachryma*, is very expressive, because the Maize much resembles in look the indigenous grass with which they have compared it.

ORDO CVI. LYCOPODIACEÆ.

Of the five genera comprising this Order, four are represented in Polynesia, but only three in Viti, the fourth, *Tmesipteris*, having as yet been found only in the New Hebrides, Norfolk Island, and New Holland. Forster's specimen of *T. Tanensis*, Lab. (*Osmundoides* sp. nov., Forst. Herb.), is at the British Museum, without locality, and, as his 'Prodromus' gives no clue, it is altogether doubtful where the specimen was collected. *Phylloglossum* has not been found beyond the limits of New Zealand, New Holland, and Tasmania.

I. **Lycopodium**, Linn. Gen. n. 1185 (pro parte); Spring, Monogr. Lycop. vol. i. p. 17. Antheridia 1-locularia. Oophoridia 0.—Plurima musciformia, foliis conformibus æquilateris, 8-16-raro 4-fariis, caule amorpho. Antheridia reniformia, subdidyma, raro transversim ovalia, rima transversali apice, raro prope basin, hiantia, indeque specie 2-valvia, pedicello capitato v. capillari brevissimo; gongylis (quaternis) subglobosis, facie contigua 4-quetris. Amenta v. 0 v. teretiuscula.—Ad. Brongn. Hist. Végét. Fossil. vol. ii. p. 2; Spring in Bot. Zeit. 1838, vol. i. p. 148; Endl. Gen. n. 696; Hook. Gen. Fil. vol. ix. t. 88. *Selago* et *Lycopodium*, Dillen. Hist. Musc. pp. 435, 441. *Plananthus* et *Lepidotis*, Pal. Beauv. Prodr. Æthéog. pp. 100, 101.

Besides the species represented in Viti, I have seen at the British Museum the following from tropical Polynesia, viz. 1. *L. verticillatum*, Linn. (both varieties), from the Hawaiian Islands (Menziés! Macrae!); and 2. *L. venustulum*, Gaud. (*L. fastuosum*, Sol. Fl. Ins. Pacif. ined. p. 373), from the Hawaiian Islands (Menziés!) and Tahiti (Banks and Solander!)

1. **L. squarrosus**, Forst. Prodr. n. 479, non Lam.; Spring, Monogr. Lycop. n. 36; caule æqualiter 2-3-dichotomo; divisionibus ultimis funiformi-elongatis; foliis elongatis subverticillatis rectangulari-patentibus lineari-lanceolatis subulato-acutissimis integerrimis planis, marginibus non revolutis, nervo supra prominente, parenchymate non carinato decurrentibus, subconformibus; fructigeris basi ampliatis duplo minoribus; antheridiis cordatis.—Sw. Syn. Fil. pp. 177, 400 (non Fl. Ind. Occ.); Willd.! Sp. Pl. vol. v. p. 27; Blume! Enum. Pl. Jav. vol. ii. p. 265; Hook. et Grev. Enum. Fil. n. 35 (excl. syn. Desv.); Guill. Enum. Pl. Ins. Soc. p. 70. *L. Forsteri*, Poir. Enc. Bot. Suppl. vol. iii. p. 554. *Plananthus squarrosus*, P. Beauv. Prodr. Æth. p. 112.—Viti Levu (Seemann! n. 704). Also collected in Tahiti (Banks and Solander! Forster! Capt. Cook!), Aneitum, New Hebrides (M'Gillivray!), Tobie Island (Barclay!), Java, and Ceylon.

2. **L. carinatum**, Desv. Enc. Bot. Suppl. vol. iii. p. 559; Spring, Monogr. Lycop. n. 44; caule æqualiter 2-3-dichotomo; divisionibus elongatis; foliis elongatis subverticillatis senis et octonis, patulis oblongo-lanceolatis acuminatissimis valde carinatis, margine non revolutis carina acuta decurrentibus, sensim difformibus; fructigeris duplo minoribus demum uncinatis; antheridiis sparsis.—*L. flagellaria*, Bory! in Duperr. Voy. vol. i. p. 248, t. 26 (insufficiens); Hook. et Grev. Enum. Fil. n. 41 (excl. syn. Wall.).—Viti Levu (Seemann! n. 701). Also found in New Ireland, New Guinea, and Java.

3. **L. Phlegmaria**, Linn. Sp. Pl. p. 1564; Spring, Monogr. Lycop. n. 47; caule flaccido æqualiter lineato 1-2-dichotomo; foliis majusculis verticillatis quaternis confertis ex ovato acuminatissimis, basi cordatis subpedicellatis divergenti-patentibus integerrimis, margine revolutis, nervo supra lineatis, basi solutis; amentis longissimis tenuibus moniliformibus 3-4-dichotomis; bracteis antheridia subæquantibus obtusiusculis.—Lam. Enc. Bot. vol. iii. p. 646; Forst. Prodr. n. 478; Sw. Syn. Fil. p. 176; Lour. Fl. Coch. vol. ii. edit. Germ. p. 857; Willd. Sp. Pl. vol. v. p. 10; Gaud. in Freyc. Voy. Bot. p. 281; Desv. Prodr. Fil. n. 24; Bory in Bélanger, Voy. Bot. vol. ii. p. 7; Blume, Enum. Pl. Jav. vol. ii. p. 261; Hook. et Grev. Enum. Fil. n. 58; Guill. Enum. Pl. Ins. Soc. p. 20. *L. mirabile*, Willd. Sp. Pl. vol. v. p. 11; Desv. Prodr. Fil. n. 25; Kaulf. Enum. Fil. p. 5; Bory in Duperr. Voy. Bot. Crypt. p. 244. *L. australe*, Willd. Sp. Pl. vol. v. p. 11; Poir. Enc. Bot. Suppl. vol. iii. p. 541. *L. myrtifolium*, Forst. Prodr. n. 485?; Sw. Syn. Fil. pp. 181, 405; Willd. Sp. Pl. vol. v. p. 12; Poir. Enc. Bot. Suppl. vol. iii. p. 542; Nees ab Esenb. in Act. Acad. Cæs. N. C. vol. xi. p. 1. t. 12. f. 1. *Lepidotis Phlegmaria*, Pal. Beauv.! Prodr. Æth. p. 110. *Stachygynandrum myrtifolium*, Pal. Beauv. Prodr. Æth. p. 113; Rheede, Hort. Mal. p. 12. t. 14; Breyn. Cent. t. 92; Dillen. Musc. t. 61; Turpin in Dict. Sc. Nat. Phlegmaria; Ad. Brongn. Hist. Végét. Fossil. vol. ii. t. 1. f. 3; Nees ab Esenb. l. c.—Ovalau, Matuku, and Viti Levu (Seemann! n. 702, 703, Milne! M'Gillivray! Harvey!). Also collected in Tobie Island (Barclay!), Tahiti (Nelson! Barclay! Forster!), and Hawaiian Islands (Macrae!). Widely diffused over tropical parts of Africa, Asia, and America.

4. **L. cernuum**, Linn. Sp. Pl. p. 1566; Spring, Monogr. Lycopod. n. 65; caule erecto ramosissimo, ramis conformibus; foliis subulatis incurvatis densis, a medio teretibus divergenti-patentibus, dorso sulcatis; amentis sessilibus cernuis, bracteis 8-fariis; antheridiis prope basin hiantibus.—Sw. Syn. Fil. p. 178; Willd. Sp. Pl. vol. v. p. 30; Kaulf. Enum. Fil. p. 15; Schlecht. Adumbr. p. 5; Presl, Reliq. Hænk. vol. i. p. 80; Hook. et Grev. Enum. Fil. n. 34 (excl. syn. *L. curvatum*, Sw.); Spring in Bot. Zeit. 1838, vol. i. p. 163; in Fl. Bras. vol. i. p. 114. *L. marianum*, Willd.!, Sp. Pl. vol. v. p. 31; Poir. Enc. Bot. Suppl. vol. iii. p. 546; Bory! in Duperr. Voy. Bot. Crypt. p. 246. *L. curvatum*, Blume!, Enum. Pl. Jav. vol. ii. p. 266; Gaud.! in Freyc. Voy. Bot. p. 284 (non Swartz). *L. Boryanum*, Rich.! in Voy. de l'Astrolabe, Bot. vol. ii. *L. capillaceum*, Willd. in Herb. *L. bryifolium*, Ventenat in Herb. Deless. *L. Chamæclinis*, Mart. in Hort.

Reg. Monac. 1829, p. 3. Nomen vernac. Vitiense, "Leweninini sa."—Ovalau, Lakeba, Matuku, and most other Vitian Islands (Seemann! n. 700, Milne and M'Gillivray! Sir E. Home!). Also collected in the Hawaiian (Macrae! Barclay!), Society (Forster! Capt. Cook!), and New Hebrides Islands (M'Gillivray and Milne!), and New Zealand and the Isle of Pines (Milne!). Common in the tropics of both hemispheres.

5. **L. nummulariifolium**, Blume, Enum. Pl. Jav. vol. ii. p. 263; Spring, Monogr. Lycop. vol. i. p. 68; caule pendulo, tenui, e foliis continue lineato 3-4-dichotomo; foliis 4-fariis, oppositis, decussatis, oblique affixis, horizontaliter concinnis, subrotundatis, subacutatis, subpedicellatis, pallide marginatis, planis, subtus lineari-nervosis, nervo decurrente; amentis tenuibus, 2-3-dichotomis; bracteis minutis, uncinatis.—*L. rotundifolium* (Herb. Roxb.), Wall. Cat. n. 2183, Hook. et Grev. Icon. Fil. t. 212.—Viti, locality not specified (U. S. Expl. Exped. fide Brack.). Also collected in Eromanga (M'Gillivray! in Herb. Mus. Brit.), and in India and Java.

6. **L. volubile**, Forst. Prodr. n. 482; Spring, Monogr. Lycop. n. 93; caule elongato volubili tenui distiche ramoso, ramis subcuneatis recurvatis 6-7-dichotomis, ramulis elongatis complanatis; foliis rameis dimorphis; lateralibus biseriatis verticaliter affixis falcatis inæquilateris acuminatissimis mucronatis supra convexiusculis subtus nervosis; intermediis minutis, anticis biseriatis subulatis, posticis uniseriatis minimis mucroniformibus; amentis pedunculatis subpaniculato-dichotomis.—Sw. Syn. Fil. pp. 180, 404; Willd.! Sp. Pl. vol. v. p. 13; Poir. Enc. Bot. Suppl. vol. iii. p. 542; Hook. et Grev. Icon. Fil. t. 170; Guill. Enum. Pl. Ins. Soc. p. 20. *L. D'Urvillæi* (?), Rich.! Fl. Nouv. Zél. p. 60 (non Bory).—Matuku (Milne!). Also found in the Society (Forster!) and Hawaiian Islands (Menziess!), New Zealand, and New Holland.

II. **Selaginella**, Spring in Regenb. Bot. Zeit. 1838, vol. i. p. 148; Monogr. Lycop. vol. ii. p. 52. Antheridia 1-ocularia. Oophoridia 3-4-cocca.—Jungermannioideæ v. filicoideæ, foliis plerumque tetrastichis dimorphis, caule tetragono dorso aphylo. Antheridia solenniter erecto-oblonga v. globosa, basi integra, apice hiantia specie bivalvia, minutissima, pedicello brevissimo capillari v. capitato; gongylis quaternariis e globoso tetraquetris. Oophoridia tumida, inæqualiter rumpentia, antheridia magnitudine nunc æquantia iisque intermixta, nunc superantia et solitaria ad basin amentorum; globulis seminalibus (sporis majoribus) 4, raro 1-3, albis reticulatis. Amenta tetragona; bracteæ tetrastichæ.—Spring in Mart. et Endl. Fl. Brasil. vol. i. p. 117; Link, Fil. Sp. Hort. Berol. p. 158. *Stachygynandrum*, Ad. Brongn. Hist. Végét. Fossil. vol. ii. p. 2. t. 12. f. 11. *Lycopodii* sp., Linn. Gen. n. 1185; Endl. Gen. n. 696 (et auct. plurim.) *Selaginoides* et *Lycopodioides*, Dillen. Hist. Musc. pp. 460, 462. *Selaginella*, *Gymnogynum*, *Dyplostachyum*, et *Stachygynandrum*, Pal. Beauv. Prodr. Æthéog. pp. 101-105.

The British Museum Herbarium contains, besides the species represented in Viti, 1. *S. Springii*, Spring, from the Hawaiian Islands (Menziess!), and 2. *S.* sp. nov., also from the Hawaiian Islands (Macrae!). The latter is a very distinct species, in outward look nearest to *S. caulescens*.

1. **S. atro-viridis**, Spring in Gaud. Bonit. mss.; Monogr. Lycop. n. 69; caule elongato sub-ancipite sursum inæqualiter quadrangulari æqualiter folioso dichotomo-deliquestente, ramis curvato-erectis elongato-cuneatis; foliis inferioribus, cathedris superioribus synedris, lateralibus majusculis, posticis rectangularibus verticaliter affixis, lineari-oblongis obtusis subintegerrimis exauriculatis, supra bi-subtus specie trinerviis; intermediis 5-plo minoribus obovatis aristatis subcurvatis convergentibus basi exteriore productis.—*Lycopodium atro-viride*, Wall.! Cat. n. 120; Hook. et Grev.! Enum. Fil. n. 121; Icon. Fil. vol. ii. t. 39. *L. cuspidatum*, Hook. mss. apud Hort. Soc. Lond.; Dillen. Hist. Musc. t. 66. f. 8?—Ovalau and Matuku (Milne and M'Gillivray!) Also found in the East Indian Archipelago and India.

2. **S. Wallichii**, Spring, Enum. Lycop. n. 75; Monogr. Lycop. n. 86; caule elongato inæqualiter anguloso distiche ramoso; ramis cathedris subæqualibus eleganter pinnato-subpyramidatis; ramulis simplicibus pulchre concinnis; foliis cathedris caulinis valde remotis, rameis lateralibus oblongo-lanceolatis falcatis acuminatis integerrimis quidquam erectis, basi superiore attenuatis media adnatis inferiore excisis, supra carinatis et e nervo sulcatis; intermediis 5-6-plo minoribus valde falcatis mucronatis integerrimis convergentibus, basi exteriori productis.—*S. cyatheoides*, Spring, Enum. Lycop. n. 76. *S. Amboinensis*, Spring, Enum. Lycop. n. 74. *S. canaliculata*, Spring in Reg. Bot. Zeit. 1838, vol. i. p. 201. *S. pectinata*, β . *acutissima*, Presl, Bot. Bem. in Abh. d. Boehm. Gesch. d. Wiss. vol. iii. p. 583. *Lycopodium Wallichii*, Hook. et Grev. ! Enum. Fil. n. 106. *L. elegans*, Wallich !, Cat. n. 128. *L. canaliculatum*, Sw. Syn. Fil. p. 184; Willd. ! Sp. Pl. vol. v. p. 43 (non Linn.).—Matuku and Ovalau (Seemann ! n. 707, Milne and M'Gillivray !), and Vanua Levu (Harvey !). Also collected in Eromanga (Milne !), Aneitum (Milne ! M'Gillivray !).

3. **S. Menziesii**, Spring, Monogr. Lycop. n. 125; caule radicante adscendente obtuse tetragono goniotropo pyramidato-ramoso; ramis erectis confertis subdeliquescentibus; foliis cathedris undique dimorphis; lateralibus posticis horizontalibus erectis ovato-lanceolatis falcatis acutis muticis, margine superiore distincte serrulatis, basi ciliatis cordatis, superiore dilatatis, nervo supra obscure sulcato; intermediis 3-plo minoribus orbicularibus v. obovatis aristatis subfalcatis serrulatis obscure nervosis adpressis parallelis, basi cordatis productis, utrinque ciliatis.—*Lycopodium Menziesii*, Hook. ! et Grev. Enum. Fil. n. 131; Hook. ! et Arn. Bot. Beech. Voy. 1841, p. 102. *L. arbuscula*, Hook. et Grev. ! Icon. Fil. t. 200 (non Kaulf.). *L. flabellatum*, Forst. Prodr. n. 483, non alior. (fide spec. in Herb. Mus. Brit.).—Common in most Vitian Islands (Seemann ! n. 705, 706, Harvey ! Nov., 1855, Milne and M'Gillivray !). Also collected in Aneitum (Milne ! and M'Gillivray !), Tahiti (Forster Barclay !), and Hawaiian Islands (Menzies ! Macrae !).

4. **S. ciliaris**, Retz. Obs. vol. v. p. 32; Spring, Lycop. vol. ii. p. 233; caule flaccido, radicante repente, 4-angulari, pleurotropo, distiche ramoso, ramis erecto-patentibus 6-8-ramulosis; foliis remotiusculis, lateralibus anticis ovato-oblongis obtusiusculis muticis, basi et margine superiore ciliatis, basi subintegris, inferiore decurrentibus superiore dilatatis, intermediis 4-plo minoribus acuminatissimis aristatis subfalcatis subciliolatis peltatis cordatis, apicibus secundis; bracteis dimorphis, ciliatis; amentis non resupinatis.—*L. proniflorum*, Lam. Enc. Bot. vol. iii. p. 652. *L. calystachyon*, Hook. et Grev. En. Fil. Add. et Corr. in Bot. Misc. vol. iii. p. 108.—Mountains of the Macuata Coast of Vanua Levu (U. S. Expl. Exped. fide Brack.).

III. **Psilotum**, Sw. in Schrad. Journ. 1800, vol. ii. pp. 109, 132; Spring, Monogr. Lycop. vol. ii. p. 268. Antheridia 3-locularia. Oophoridia 0.—Herbæ perennes, sæpissime epidendræ. Caules subnudi compressi v. angulosi, dichotomo-furcati. Folia minima, squamæformia, subulata, fructifera breviora bifida. Antheridia sparsa, epiphylla, majuscula, polyspora, subtriccoca, septicida, valvis semipartitis medio septiferis. Sporæ flavæ, ovales v. elongato-reniformes, hyalino-pellucidæ, conglobatæ, aqua aspersæ tarde convolvendæ et fovillam minutissimam explodentes.—Sw. Syn. Fil. p. 187. t. 4. f. 5; Desv. Prodr. Fil. in Ann. Soc. Linn. par. vi. p. 192; Hook. et Grev. Enum. Fil. in Bot. Misc. vol. ii. p. 361; Hook. Gen. Fil. t. 84; Bischoff, Bau der Crypt. Gew. t. 11. f. 13; Ad. Brongn. Hist. Végét. Fossil. vol. ii. t. 13. f. 1. *Psilotum ex parte*, R. Br. Prodr. Fl. Nov. Holl. vol. i. p. 164; Endl. Gen. n. 695. *Bernhardia*, Willd. Act. Acad. Erford. 1802, p. 11; Sp. Pl. vol. v. p. 56. *Bernhardia ex parte*, Kaulf. Wesen d. Farrenkräuter, p. 26; Enum. Fil. p. 21. *Hoffmannia*, Willd. in Usteri Mag. vol. vi. p. 17. *Ipphia*, Noronha. *Tristeca*, Pal. Beauv. *Lycopodii* sp., Linn. *Lycopodioidis* sp., Dillen.

P. complanatum, Sw., has been gathered in the Society (Lay and Collie!) and the Hawaiian Islands (Barclay! Hildebrand!), but as yet not in Viti.

1. ***P. triquetrum***, Sw. Syn. Fil. p. 187; Spring, Monogr. Lycop. n. 1; caule rigido basi triquetro apice multidiviso dichotomo, divisionibus ultimis flaccidioribus triquetris alatis marginibus subintegris; foliolis minutis subulatis patulis.—Nuttall, N. Amer. Plants, vol. ii. p. 248; R. Br.! Prodr. Fl. Nov. Holl. vol. i. p. 164; Desv. Prodr. Fil. in Ann. Soc. Linn. par. vi. p. 192; Hook. et Grev.! Enum. Fil. in Bot. Misc. vol. ii. p. 362; Spring in Endl. et Mart. Fl. Bras. vol. i. p. 133; Hook. et Arn.! Bot. Beech. Voy. p. 102. *P. floridanum*, Mich.! Fl. Amer. vol. ii. p. 281; Desv. Prodr. Fil. in Ann. Soc. Linn. par. vi. p. 192. *P. dichotomum*, Link! Fil. Spec. p. 160. *Bernhardia dichotoma*, Willd. in Act. Acad. Erford. 1802, p. 12; Sp. Pl. vol. v. p. 56; Bernh. in Schrad. Journ. 1800, p. 132; Pursh, Amer. vol. ii. p. 655; Kaulf.! Enum. Fil. p. 20. *Bernhardia pedunculata*, Desv.! in Herb. Juss. *Hoffmannia aphylla*, Willd. in Roem. et Usteri Bot. Mag. vol. vi. p. 17. *Ipphia poliquetra*, Noronha in Aub. du Petit-Thouars Mélanges Bot. et Voy. 1811. *Lycopodium nudum*, Linn. Sp. Pl. p. 1564; Lam. Enc. Bot. vol. iii. p. 649; Bory, Voy. vol. i. pp. 214, 283; Forst. Fl. Ins. Austr. Prodr. p. 86. *Tristeca aristata*, Pal. Beauv. in Herb. Deless. *Buchozia furtiflora*, Commers. in Herb. Mus. Par. *Garsaultia minutiflora*, Commers. in Herb. Pal. Beauv. (H. Deless.). Nom. trivial. "Napi-ouapi," incolarum Ins. Sandwich (Gaudichaud); Plum. Fil. Amer. t. 170. f. AA; Dillen. Hist. Musc. t. 64. f. 4; Schkuhr, Krypt. Gew. t. 165 B; Dict. Sc. Nat. art. Bernhardia; Ad. Brongn. Végét. Fossil. vol. ii. t. 6. f. 1.—Matuku, Viti Levu, and most other Vitian Islands, on trees (Seemann! n. 699, Barclay! Harvey! Milne and M'Gillivray!). Also collected in Aneitum (M'Gillivray!), Eromanga (M'Gillivray!), the Hawaiian (Macrae! Barclay! Seemann!) and Society Islands (Forster!). Common throughout tropical Asia, Africa, and America.

2. ***P. flaccidum***, Wall. Cat. n. 45; Spring, Monogr. Lycop. n. 3; caule longissimo flaccido basi subtriquetro mox complanato latissimo pluries furcato-dichotomo; ramulis cauli conformibus pro foliis vix denticulatis; foliolis subulatis valde remotis.—Hook. et Grev. Enum. Fil. p. 4. *P. complanatum*, Blume!, Enum. Pl. Jav. vol. ii. p. 272 (non Sw.). *P. Pervillei*, Decaisne in Herb. Mus. Par.—Ovalau and Viti Levu (Seemann! n. 698). Also found in Tahiti (Barclay!), Singapore, Java, and Madagascar.

ORDO CVII. FILICES.*

(AUCTORE W. CARRUTHERS.)

SUBORDO I. GLEICHENIACEÆ.

I. ***Gleichenia***, Smith, Mem. Acad. Turin, vol. v. p. 419; R. Brown, Prodr. p. 160. Sporangia sessilia, subglobosa, apici v. medio venæ superioris inserta, in soros subrotundos dorsales collecta. Indusium nullum. Nervi laciniarum indivisi v. furcati, ramis liberis.—Filices caudice repente, stipite exarticulato, frondibus dichotomis v. furcatis, subcoriaceis.—*Mertensia*, Willd. Act. Holm. 1804, p. 165. *Mesosorus*, Hassk. Pugill. p. 2. *Calymella*, Presl, Tent. Pter. p. 48. *Sticherus*, Presl, l. c. p. 51. *Dicranopteris*, Bernh. Schrad. Neu Journ. vol. i. 1806, p. 38. *Gleicheniastrum*, Presl, Stip. p. 30.

* I am indebted to Mr. John Smith for the list of Ferns published in 'Bonplandia,' which has been of great assistance in working up the following account.—B. S.

Besides the species enumerated below, we have in tropical Polynesia—1. *G. dicarpa*, R. Brown, Prodr. p. 161, from Isle of Pines (M'Gillivray!), and New Caledonia (Vieillard, n. 1674). 2. *G. circinata*, Sw. Syn. Fil. p. 165 (*G. semivestita*, Lab. Sert. N. Cal. t. 11), from New Caledonia (Labillardière). 3. *G. pinnata* (*Mertensia pinnata*, Kze. Annal. Pter. p. 6), from Sandwich Islands, (Macrae!). A specimen from Thunberg in Herb. Mus. Brit. of his *Polypodium glaucum*, Fl. Jap. p. 338 (*Mertensia glauca*, Sw.), shows that Kunze's species is a good one. The Japan plant is glabrous, with elliptic-oblong branches and oblong obtuse segments, while in *G. pinnata* the rachis is hirsute above, and is sparsely covered with dark scales below, the branches are lanceolate, and the segments linear obtuse. 4. *G. flabellata*, R. Brown, Prodr. p. 161, from Aneitum (M'Gillivray! n. 19) and New Caledonia (Labillardière; Vieillard, n. 1674). 5. *G. Owhyhensis*, Hook. Sp. Fil. vol. i. p. 9, from Sandwich Islands (Macrae!). To these should be added *Stromatopteris moniliformis*, Mett. Ann. des Sc. Nat. 1861, p. 84, t. 3, New Caledonia (Vieillard, 1571).

1. **G. flagellaris**, Spreng. Syst. Veg. vol. iv. p. 25; stipite rachibusque teretibus; fronde dichotome ramosa, glaberrima, subtus pallidior, subcoriaceo-membranacea; ramis apice pinnae geminatas gerentibus; pinnis elongato-lineari-acuminatis; pinnulis adnatis erecto-patentibus linearibus, obtusis, in rachi secundaria decurrentibus.—*Mertensia flagellaris*, Bory in Willd. Sp. Pl. vol. v. p. 74.—Viti Levu (Milne!). Collected also in Aneitum (M'Gillivray! n. 66).

2. **G. dichotoma**, Hook. Sp. Fil. vol. i. p. 12; (*G. Hermannii*, R. Brown, Prodr. p. 161); rachibus semel pluriesve div. trichotome ramosis, teretibus; ramis erecto-patentibus, apice et supra basin partitionum pinnae geminatas gerentibus; pinnis glabris, subtus glaucis, lanceolatis v. elongatis, acuminatis profunde pinnatipartitis; laciniis elongato-oblongis v. linearibus, integerrimis, obtusis, apice emarginato-incisis, basalibus externis plerumque elongatis v. pinnatifidis.—*Filix calmaria*, Rumph. Amb. vol. vi. p. 85. t. 38. *Polypodium dichotomum*, Thunb. Fl. Jap. p. 338; Forst. Prodr. n. 450. *Mertensia dichotoma*, Willd. Act. Holm. 1804, p. 167; Sw. Syn. Fil. p. 163. Viti Levu and Taviuni, (Seemann! n. 791; Harvey!). Also collected in Society Islands (Forster!), in Sandwich Islands (Strickland! Macrae!), Eromanga (M'Gillivray!), Aneitum (M'Gillivray!), Tahiti (Nelson!), Wallis Island (Sir E. Home!), and Navigators' Islands (Sir E. Home!). Also in the tropics of both hemispheres.

This is a widely distributed plant, and many of its local varieties have received distinct names. Among these must be reckoned *Mertensia emarginata*, Brack. U. S. Expl. Exped. Filices, p. 297. t. 42, which is chiefly distinguished from the normal form by the rachis and segments being covered beneath with a rusty tomentum, and by the segments having a distinct emargination.

SUBORDO II. POLYPODIACEÆ.

TRIBUS I. CYATHEÆ.

II. **Cyathea**, Smith, Mem. Acad. Turin, vol. v. p. 416; R. Brown, Prodr. p. 158. Sporangia in receptaculo subgloboso v. clavato, e venæ bifurcatione v. medio orta sessilia, soros hemisphæricos v. subglobosos formantia. Indusia receptaculo substrata, globosa, clausa, apice dehiscentia, ore demum exacte truncato v. magis minusve profunde partito.—Filices plerumque arborescentes, frondibus simplicibus pinnatis v. bipinnatis; nervis furcatis.—*Sphæropteris*, Bernh. Schrad. Journ. vol. ii. 1801, p. 122. *Disphenia*, Presl, Tent. Pter. p. 55. *Schizocæna*, J. Smith, Hook. and Bauer, Gen. Fil. t. 2 and 23.

In addition to the species described below, the following have been found in tropical Polynesia:—1. *C. Aneitense*, Hook. Syn. Fil. p. 26, from Aneitum (M'Gillivray! Milne!). 2. *C. nigricans*, Mett. in Miq. Ann. Mus. Bot. Lugd.-Bat. vol. i. p. 56, from Tahiti (Collie!). 3. *C. Vieillardii*, Mett. Ann. des Sc. Nat. 1861, p. 82, from New Caledonia (Vieillard, n. 1629). 4. *C. canaliculata*, Brack. U. S. Expl. Exped. Filices, p. 282 (vix Willd.), from Tahiti (Brackenridge). 5. *C. affinis*, Sw. Schrad. Journ. 1800, vol. ii. p. 94 (*Polypodium affine*, Forst. Prodr. n. 455), from Pacific Islands (Forster). 6. *C. extensa*, Sw. l. c. p. 93 (*Polypodium extensum*, Forst. l. c. n. 453), from Pacific Islands (Forster). The two last species have

been the subject of so much error that we give a diagnosis of both from the original specimens now in Herb. Mus. Brit.

C. affinis, Sw. l. c. (non Schk. Fil. p. 129, nec Hook. Syn. Fil. p. 27, nec Brack. U. S. Expl. Exped. *Filices*, p. 283); stipite glabro; frondibus bipinnatis, coriaceis, supra opaco-viridibus, infra pallidioribus, supra præter raches costasque sparse hirsutas glaberrimis, infra ad costam nervosque paleis albidis ciliatis squamulosis; pinnis subpetiolatis elongato-oblongis, acuminatis; pinnulis inferioribus subpetiolatis, superioribus sessilibus, lineari-oblongis, acuminatis; segmentis subfalcatis, lineari-oblongis, acuminatis, crenatis, basibus solutis, aliis pinnatifidis, e basi ad mediam soriferis; nervis plerumque bifurcatis 2; soris in furcaturam primariam insidentibus, costæ adpressis; receptaculo globoso; indusio rigide membranaceo, persistente.

C. extensa, Sw. l. c. (Schk. Fil. p. 127, Tab. 132, *a-c*); stipite rachique punctis asperis; frondibus bipinnatis, supra viridibus infra pallidioribus, supra præter raches costasque sparse hirsutas glaberrimis, infra ad costam nervosque paleis albidis magnis rotundato-ovatis ciliatis sparse instructis; pinnis sessilibus oblongo-ovatis; pinnulis sessilibus, elongato-acuminatis; segmentis oblongis, obtusis, serratis, patentibus; nervis furcatis.—Forster's specimen consists of two barren pinnæ attached to the rachis. Dryander had referred two specimens from the Pacific Islands, collected by Forster, to *Polypodium extensum*, Forst., and on the authority of these specimens, R. Brown referred the species to *Alsophila*. These specimens, however, belong to *Alsophila lunulata*, R. Brown, which can easily be distinguished from Forster's *P. extensum* by the larger size of the pinnæ and pinnules, the much smaller serratures of the segments, confined chiefly to the upper part, and the simple bullate scales on the costæ. I have no means of determining whether the species belongs to *Cyathea* or *Alsophila*, and therefore let Swartz's name remain.

Amphicosmia Tahitensis, Moore, Ind. Fil. p. 61. (*Alsophila Tahitensis*, Brack. U. S. Expl. Exped. *Filices*, p. 288. t. 40. fig. 2), was found in Tahiti (Brackenridge).

Hemitelia D'Urvillei, Mett. Linnæa, 1869, p. 160, from Tahiti (D'Urville, Chauvin, Vesco, Vieillard).

1. ***C. propinqua***, Mett. Miq. Ann. Mus. Bot. Lugd.-Bat. vol. i. p. 56; stipite semitereti, basi paleaceo, antice sulcato tuberculato; frondibus subcoriaceis, supra læte, infra pallide viridibus, præter rhaches costasque supra adpresse ferrugineo-hirsutas glaberrimis; pinnis subpetiolatis elongato-oblongis; pinnulis oblongis acuminatis pinnatifiditis; segmentis oblongis, obtusis, subfalcatis, crenatis, basalibus externis minoribus; nervis tenuibus furcatis; soris inter costam et marginem æquidistantibus; indusio globoso, irregulariter rumpente.—*C. affinis*, Brack. U. S. Expl. Exped. *Filices*, p. 283. *C. leucolepis*, Hook. Syn. Fil. p. 26 (in part). *C. affinis*, Hook. l. c. p. 27 (in part).—Vanua Levu (Harvey! Brackenridge). Also from the Soloman Islands (Milne!).

This is a well-marked species, easily distinguished from *C. affinis*, Sw., with which it has been confounded, by the form of the pinnæ, the broader, more obtuse, and less coriaceous segments, and the brown pubescence of the rachis and costa on the upper side.

III. ***Alsophila***, R. Brown, Prodr. p. 158. Sporangia in receptaculo globoso v. oblongo e venæ bifurcatione v. medio orta sessilia, soros sparsos seriatosve, interdum subconfluentes, formantia. Indusia e pilis squamisve laceris receptaculi.—*Filices* plerumque arborescentes, frondibus herbaceis, amplis, bipinnatifidis bipinnatisve, nervis furcatis v. simplicibus.—*Haplophlebia*, Mart. Ic. Pl. Crypt. 64. *Dicranophlebia*, Mart. l. c. 67. *Chnoophora*, Kaulf. Enum. Fil. p. 250. *Trichopteris*, Presl, Tent. Pter. p. 58. *Gymnosphæra*, Blume, Enum. Pl. Jav. p. 242. *Dichorexia*, Presl, Die Gefässb. p. 36. *Lophosoria*, Presl, l. c. p. 37. *Amphidesmium*, Schott, Gen. Fil. t. 1. *Metaxya*, Presl, Tent. Pter. p. 59.

In addition to the species described below, the following occur in tropical Polynesia:—1. *A. Samoensis*, Brack. U. S. Expl. Exped. *Filices*, p. 287. t. 40, from the Samoan Islands (Brackenridge), and Louisiade Archipelago (M'Gillivray!). 2. *A. decurrens*, Hook. Sp. Fil. vol. i. p. 51, from Tahiti (D. Nelson!), Aneitum (M'Gillivray!), Samoan Islands (Brackenridge), and New Caledonia (Vieillard). 3. *A. Novæ Caledoniæ*, Mett. Ann. des Sc. Nat. 1861, p. 82, from Kanala, New Caledonia (Vieillard, n. 1633). 4. *A. Tahitensis*, Brack. U. S. Expl. Exped. *Filices*, p. 288, from Tahiti (Brackenridge).

1. ***A. lunulata***, R. Brown, Prodr. p. 158; Brack. U. S. Expl. Exped. *Filices*, p. 285, t. 39;

stipitibus crassis, rachibusque asperis; frondibus amplis, subcoriaceis, glabris, bipinnatis; pinnulis sessilibus, oblongo-lanceolatis, caudato-acuminatis, basi pinnatis, apice serratis; segmentis lineari-oblongis, falcatis, subacutis, serratis, sterilibus subbiseriatis; rachi supra tomentosa; costis subtus bullato-squamosis; venis prominulis, furcatis, parce setosis; soris plurimis, costæ quam margini propioribus, squamæ destitutis.—*Polypodium lunulatum*, Forst. Prodr. n. 456.—Nomen vernac. Vitiense, “Balabala.”—Viti Levu, Ovalau, Lakeba, and most of the larger islands (Seemann! n. 768; Milne! Brackenridge; M’Gillivray! Harvey!). It has been also found in Aneitum (M’Gillivray!), Friendly Islands (G. Forster! D. Nelson!), and Samoan Islands (Brackenridge).

“The Balabala is common all over the group, especially on the weather side, and its trunk attains the height of about twenty-five feet, and eight or ten inches in thickness. The fronds form a magnificent crown of gigantic dimensions, rendering the plant a noble feature in the landscape. The trunks make excellent posts, lasting an incredibly long time, and possessing moreover the advantage of being almost fire-proof. After a house has been burnt down, they are almost the only trace that remains. It is also customary to make the ridge pole of houses and temples of this Tree-fern, and to surround it with the Wa-Kalou (holy creeper), a species of that curious genus of climbing Ferns, *Lygodictyon*,—partially no doubt from some superstitious notions, but partially also to keep out the wet. The trunks of the Balabala, cut into ornamental forms, are frequently observed around tombs, temples, churches, and bures, presenting a pretty effect. The little sticks which the chiefs carry, stuck under their turban, and with which they scratch their heads, are also made of Balabala. The young leaves are eaten in times of scarcity, while the soft scales covering the stipes of the fronds, are used for stuffing pillows and cushions by the white settlers in preference to feathers, because they do not become so heated, and are thus a real luxury in a sultry tropical night.”—*Seem.*

2. **A. Vitiensis**, Carr. in Herb. Mus. Brit.; rachibus partialibus subteretibus, supra sulcatis hirsutis, subtus sparse muricatis; pinnis ovali-oblongis, acuminatis, supra opaco-viridibus, subtus pallidioribus; pinnulis sessilibus, lanceolatis, pinnatifidis, apice serratis; segmentis oblongis, obtusis, serratis, suberecto-patentibus, præter costas subtus squamosas glaberrimis; squamis rufis, apice ciliatis; nervis prominentibus, numerosis, trifurcatis, ramulis parallelis; soris in furcaturam secundariam insidentibus, costæ quam margini propioribus, squamæ destitutis.—Viti, locality not specified (Sir E. Home!).

This species approaches *A. lunulata*, R. Brown, but is easily distinguished by the darker colour of the frond, the form of the segments, and the crowded parallel nerves with rufous, flat, ciliate scales.

3. **A. truncata**, Brack. U. S. Expl. Exped. *Filices*, p. 289. t. 41; stipitibus rachibusque communibus subteretibus furfuraceis muricatis; frondibus tripinnatis coriaceis; pinnis oblongo-lanceolatis, acuminatis; pinnis secundariis sessilibus, oblongis, obtusis v. acuminatis, pinnatis, apice brevi pinnatifidis; pinnulis petiolulatis, lineari-oblongis, obtusis, basi truncatis, margine reflexo repando-crenatis; rachibus partialibus costisque subtus squamosis; venis plerumque furcatis; soris axillariibus inter costam et marginem æquidistantibus; receptaculo vix elevato.—Viti (Brackenridge; Milne! and M’Gillivray!).

TRIBUS II. DICKSONIÆ.

Besides the species enumerated below, the following members of this tribe are found in tropical Polynesia:—1. *Cibotium glaucum*, Hook. et Arn. Bot. Beech. p. 108 (excl. syn.), Sandwich Islands (Menziess! D. Nelson! Hildebrand! U. S. Expl. Exped.). According to A. Smith, this plant yields the “Pulu Hapu.” 2. *C. Chamissoi*, Kaulf. Enum. Fil. p. 230, Sandwich Islands (Macrae! Seemann! Barclay! Strickland!). 3. *C. Menziesii*, Hook. Sp. Fil. vol. i. p. 84, Sandwich Islands (D. Nelson! Macrae! U. S. Expl. Exped.). 4. *Dennstædtia flaccida*, Bernh. Schrad. Journ. 1800, vol. ii. p. 124 (*Trichomanes flaccidum*, Forst. Prodr. n. 472; *Dicksonia flaccida*, Sw. Schrad. Journ. 1800, vol. ii. p. 90), Pacific Islands (Forster!), Aneitum and Tana (M’Gillivray!). 5. *D. Samoense*, T. Moore, Ind. Fil. p. 307 (*Sitobolium* (errore *Sitolobium*) *Samoense*, Brack.), Savaii, Samoan group (U. S. Expl. Exped.). 6. *D. scandens*, T. Moore, Ind. Fil. p. 307 (*Sitobolium scandens*, Brack.), Tahiti (U. S. Expl. Exped.). 7. *Deparia*

prolifera, Hook. et Arn. Bot. Beech, p. 108, Sandwich Islands (Barclay! Macrae! Strickland! Seemann! Hildebrand!). 8. *D. Moorei*, Hook. Journ. Bot. 1852, p. 55. t. 3 (*Cionidium Moorei*, T. Moore, Gard. Comp. p. 143), New Caledonia (C. Moore!).

IV. **Dicksonia**, L'Hérit. Sert. Angl. p. 30. Sporangia apice nervorum imposita, soros globosos v. transverso-oblongos marginales formantia. Indusium duplex, externum membranaceum v. coriaceum, cucullatum, e lobulo frondis reflexo, alterum equitans. Nervi laciniarum indivisi furcati v. pinnati, ramis liberis.—Filices caudice erecto v. repente sæpissime arborescente, frondibus pinnatis, bipinnatis triplicato-pinnatisque.—*Balantium*, Kaulf. Enum. Fil. p. 228. *Culcita*, Presl, Tent. Pter. p. 135. *Leptopleura*, Presl, l. c. p. 136. *Cystodium*, J. Sm. in Hook. and Bauer, Gen. Fil. t. 96.

1. **D. Brackenridgii**, Mett. Ann. des Sc. Nat. 1861, p. 81, in not.; stipitibus rachibusque hirsutis; frondibus sterilibus tripinnatis, coriaceis, glabris; pinnis lineari-oblongis; pinnulis oblongo- v. lineari-lanceolatis, acuminatis, pinnatifidis, apice serratis; segmentis oblique oblongis, subacutis, serratis, rachibus secundariis supra fulvo-tomentosis; frondibus fertilibus minoribus, quadri-pinnatis, segmentis ultimis contractis, apice subcuspidiformibus, soris pedicellatis.—*D. Berteroana*, Brack. (non Hook.) U. S. Expl. Exped. Filices, p. 277. *D. thyrsopteroides*, Mett.? l. c. p. 81.—Viti Levu and Ovalau (U. S. Expl. Exped.; Milne!). Also found in Aneitum (M'Gillivray!).

2. **D. straminea**, Labill. Sert. Austr. Cal. p. 7. t. 10; stipitibus glabris semiteretibus; frondibus supra decompositis, flaccidis, glaberrimis; pinnis primariis oblongo-lanceolatis acuminatis, secundariis triangulatis, acuminatis, inæquilateralibus, basi bipinnatis, medio pinnatis, apice pinnatifidis v. grosse serratis; segmentis ovatis subpedicellatis; soris parvis, sinibus dentium impositis.—*Dicksonia Torreyana*, Brack. U. S. Expl. Exped. Filices, p. 278. t. 38. *Sitobolium stramineum*, Brack. l. c. p. 273.—Taviuni (Seemann! n. 767; Sir E. Home!, U. S. Expl. Exped.), Ovalau (M'Gillivray!), Vanua Levu (Harvey!). This species has also been found in Aneitum and Eromanga (M'Gillivray! C. Moore! Milne!), and New Caledonia (M'Gillivray!).

This species is very different from *Davallia dubia*, R. Brown (*Dicksonia dubia*, Gaud. and Hook.), in the form of the pinnæ, and especially in the form and extent of the divisions in the segments. A few scattered long hairs occur in some specimens of *D. straminea*, but these are very different from the pubescence of *D. dubia*. The structure of the indusium makes our species an undoubted *Dicksonia*, while a careful examination of R. Brown's specimens, and others from Dr. Von Müller, satisfy us that his species is rather a *Davallia*. But indeed the distinction between the two genera is very unsatisfactory, for morphologically the outer valve in *Dicksonia* is only the lobe of the segment, which is frequently cucullate in *Microlepia*; and the more or less induration of this lobe is scarcely sufficient to establish generic distinctions.

V. **Humata**, Cavan. Descr. Plant. p. 272. Sporangia in receptaculo terminali et verticali v. subterminali et obliquo imposita, soros rotundatos formantia. Indusia suborbicularia v. oblongo-reniformia, basi intus adhærentia.—Filices rhizomate repente, hirsute squamoso; frondibus coriaceis, simplicibus, pinnatifidis, pedato-pinnatifidis v. subternatis, venis simplicibus furcatis v. pinnatis, ramis liberis.—*Pteroneuron*, Fée, Gen. Fil. p. 320. *Pachypleuria*, Presl, Epim. Bot. p. 98.

Besides the species mentioned below, the following occur in tropical Polynesia:—1. *H. pectinata*, J. Smith, Hook. Journ. 1842, p. 425 (*Davallia pectinata*, Sm. Mem. Acad. Turin, vol. v. p. 415), from Tahiti (Banks and Solander! D. Nelson! U. S. Expl. Exped.). 2. *H. pusilla* (*Davallia pusilla*, Mett. Ann. Sc. Nat. 1861, p. 79), from New Caledonia (Vieillard) and Aneitum (M'Gillivray!). 3. *H. rigida*, Carr. ms. in Herb. Mus. Brit. (*Trichomanes rigidum*, Sol. ms. in Herb.), from Ulaietea (Banks and Solander!). 4. *H. multifida*, Carr. ms. in Herb. Mus. Brit., from Aneitum (M'Gillivray!). 5. *H. æmula*, Carr., *Davallia æmula*, Mett. Linnæa, 1869, p. 144, from Aneitum (M'Gillivray! n. 64).

1. **H. heterophylla**, Carr. in Herb. Mus. Brit.; rhizomate ample repente, squamoso; fron-

dibus petiolatis, glaberrimis, coriaceis, sterilibus ovato-lanceolatis, acuminatis, simplicibus, fertilibus lineari-lanceolatis, acuminatis, sinuato-pinnatifidis, segmentis curvatis; indusio reniformi, amplo.—*Davallia heterophylla*, Smith, Mém. de l'Acad. Turin, vol. v. p. 415. *Humata pinnatifida*, Cav. l. c. p. 273. *Davallia pinnatifida*, Sw. Syn. Fil. p. 130.—Viti Levu, on trees (Seemann! n. 759; U. S. Expl. Exped.). Also Society and Samoan Islands (U. S. Expl. Exped.).

2. **H. polyodioides**, Brack. U. S. Expl. Exped. *Filices*, p. 228. f. 32; rhizomate gracili, repente, ramoso, squamis filiformibus dense tecto; frondibus stipitatis, coriaceis, triangulari-oblongis, acuminatis, pinnatifidis, basi cordatis; segmentis oblongis, obtusis, sterilibus apice dentatis infimis pinnatifidis v. margine inferiori lobatis, fertilibus crenato-dentatis; indusio suborbiculari.—*Davallia sessilifolia*, Bl., var. β , Baker, Syn. Fil. p. 89.—Direction Island and Vanua Levu (U. S. Expl. Exped.).

3. **H. Gaimardiana**, J. Smith, in Hook. Journ. 1842, p. 425; rhizomate repente, squamoso; stipite gracili, erecto, paleaceo; frondibus coriaceis, ovato-lanceolatis, pinnatifidis; segmentis lineari-oblongis obtusis v. acutis, infimis sæpe auriculatis; venis furcatis, parallelis; soris submarginalibus, obliquis.—*Nephrodium Gaimardianum*, Gaud. Voy. Freyc. Bot. p. 335. t. 12. f. 1 (1826). *Davallia parallela*, Wall. Cat. n. 251 (1828).—Viti (Milne!). Also from Sandwich Islands (Freycinet; U. S. Expl. Exped.).

4. **H. serrata**, Brack. U. S. Expl. Exped. *Filices*, p. 230; rhizomate repente, squamoso; stipite setoso-paleaceo; frondibus coriaceis, glabris, cordato-ovatis, sterilibus pinnatis, pinnis oblongo-ovatis, inciso-pinnatifidis, laciniis lineari-oblongis dentatis, fertilibus acuminatis, basi tripinnatis, superne bipinnatis; pinnis petiolatis; pinnulis lineari-lanceolatis, acutis, inciso-serratis; rachi costa-que marginatis; soris parvis, sinubus serraturarum insertis; indusio orbiculari, margine æquali.—Viti and Samoan Islands (U. S. Expl. Exped.).

5. **H. botrychioides**, Brack. U. S. Expl. Exped. *Filices*, p. 231. t. 31; rhizomate repente, squamoso; stipite gracili, setoso-paleaceo; frondibus glabris, coriaceis, triangulari-ovatis, sterilibus pinnatis, pinnis sessilibus oblongo-lanceolatis inciso-pinnatifidis, laciniis oblongis obtusis crenulatis, fertilibus bipinnatis, pinnis infimis petiolatis oblongo-lanceolatis, pinnulis linearibus lobato-crenatis; costa marginata; venis incrassatis, furcatis; indusijs coriaceis, reniformibus, crenulas æquantibus.—Viti (U. S. Expl. Exped.; Milne!), and from Aneitum (M'Gillivray!).

VI. **Acrophorus**, Presl, Tent. Pter. p. 93; T. Moore, Ind. Fil. p. xci. Sporangia in receptaculo ex apice v. rarissime furcatura venæ orto imposita, soros globosos formantia. Indusia suborbicularia, basi intus adhærentia, raro confluentia.—*Filices* rhizomate repente, frondibus subcoriaceis, pinnatis v. decompositis, venis pinnato-furcatis v. dichotomis, ramis liberis.—*Leucostegia*, Presl, l. c. p. 94. *Odontoloma*, J. Smith, Hook. Journ. 1842, p. 424.

1. **A. Macraeanus**, Carr. ms.; rhizomate longe repente, squamoso; stipite lævi, angulato; frondibus lineari-lanceolatis, pinnatis, pinnis plurimis alternis membranaceis glabris dimidiato-oblongis obtusis, basi oblique truncato-cuneatis, margine inferiori integerrimo subcurvato, superiori crenato; soris rotundis, submarginalibus; indusio semi-orbiculari.—*Davallia Macraeana*, Hook. et Arn. Bot. Beech. p. 108. *Odontoloma Macraeana*, Brack. U. S. Expl. Exped. *Filices*, p. 226.—Viti (Seemann! n. 766). Also from Sandwich Islands (Macrae!), and Aneitum, New Hebrides (M'Gillivray!).

Brackenridge rightly separates this from *Davallia Boryana*, Presl, which is a smaller and more delicate plant, with the pinnæ very different in form and in the cutting of the upper margin.

VII. **Lindsæa**, Dryand. in Smith De Fil. Gen. Dors., Act. Turin. 1993, p. 413. Sporangia

apicibus venarum imposita, in solum continuum v. interruptum marginem frondis ambeuntem collecta. Receptaculum submarginale. Indusium membranaceum, lineare, continuum v. interruptum, margini frondis parallelum, extrorsum liberum.—Filices rhizomate repente, frondibus simplicibus, pinnatis v. bi-tripinnatis. Venis 1-4- v. flabellato-furcatis, venulis liberis v. angulatim anastomosantibus, ad marginem receptaculo continuo v. interrupto unitis.—*Schizoloma*, Gaud. Voy. de l'Uranie, Bot. p. 378. *Synaphlebiium*, J. Sm. in Hook. and Bauer, Gen. Fil. t. 101. *Isoloma*, J. Sm. in l. c. t. 102. *Diellia*, Brack. U. S. Expl. Exped. *Filices*, p. 217.

Kaulfuss altered this name into *Lindsaya* (Enum. Fil. p. 218), a form adopted by some Continental and British authors.

The very different venation which characterizes the two groups included in this genus, would be sufficiently important to raise these groups to generic value, if it were constant. I have, however, noticed fronds proceeding from the same rhizome in *Synaphlebiium pulchrum*, Brack., having both forms of venation, and specimens of *S. Pickeringii*, Brack., from Viti, accord in every respect with Brackenridge's figures and descriptions, except that they want the single transverse venule uniting the venules of some of the lobes of the pinnule, and on account of which he refers his species to *Synaphlebiium*. Mettenius has observed the same inconstancy in this character in his *L. blanda* (Linnæa, 1869, p. 81), from Java, the venules of which he describes as free, rarely anastomosing.

In addition to the species mentioned below, the following have been observed in tropical Polynesia:—
1. *L. linearis*, Sw. Syn. Fil., from New Caledonia (Vieillard). 2. *L. nervosa*, Mett. Ann. des Sc. Nat. 1861, p. 62, from New Caledonia (M'Gillivray! Vieillard). 3. *L. elongata*, Labill. Sert. Aust. Cal. i. p. 6, from New Caledonia (Sinclair! Labillardière, Vieillard!) and Isle of Pines (Milne!). 4. *L. retusa*, Mett. Fil. Hort. Bot. Lips. p. 105, from New Caledonia (Vieillard). 5. *L. microphylla*, Sw. Syn. Fil. p. 120, from New Caledonia (Vieillard). 6. *L. alutacea*, Mett. Ann. des Sc. Nat. 1861, p. 63, from New Caledonia (Vieillard). 7. *L. M'Gillivrayi*, Carr. ms. in Herb. Mus. Brit., frondibus amplis bipinnatis; pinnis suboppositis, inferioribus elongatis lineari-lanceolatis, superioribus decrescentibus; pinnulis numerosis pedicellatis, dimidiato-subrhomboides, margine superiore et antico minute denticulatis; venulis 1-3-furcatis, liberis; soris omnino marginalibus superiore et antico continuis, indusio membranaceo lineari marginali. From the interior of New Caledonia (M'Gillivray; n. F. 16). 8. *L. erecta*, Mann, Proc. Am. Acad. Sc. 1867, p. 214, from the Sandwich Islands (Hillebrand! U. S. Expl. Exped. Brigham and Mann). 9. *L. falcata*, Mann, l. c., from Sandwich Islands Hillebrand! U. S. Expl. Exped.). 10. *L. pumila*, Mann, l. c. (non Klotzsch), from Sandwich Islands (Hillebrand! U. S. Expl. Exped.).

1. **L. Billardieri**, Carr. ms.; rhizomate brevi, repente, stipitibus tetragonis, stramineo-croceis; frondibus erectis, glabris, lanceolatis, pinnatis; pinnis remotis, petiolulatis, suboppositis, erecto-patentibus, lineari-ensiformibus, obtusis, margine integerrimis, basi cuneatis; costa centrali, venulis angulatim anastomosantibus; soris continuis; indusio inframarginali.—*Schizoloma Billardieri*, Gaud. in Freyc. Voy. Bot. p. 380. t. 17. *S. Agatii*, Brack. U. S. Expl. Exped. *Filices*, p. 216. pl. 30. f. 1.—Viti (Seemann! n. 763; U. S. Expl. Exped.).

2. **L. Pickeringii**, Mett. Linnæa, 1869, p. 81; rhizomate elongato, gracillimo, repente, ramoso, paleis mox denudato stipitibus stramineo-croceis, tetragonis, antice sulcatis; frondibus lineari-acuminatis, pinnatis; pinnis plurimis, subalternis, dimidiato-oblongis, obtusis, margine superiore lobatis, inferiore integerrimis, basi truncato-cuneatis; venis paucis, venulis angulatim anastomosantibus v. liberis; soris in apice v. in anastomosi venularum impositis, indusio reniformi v. oblongo, margine brevioris.—*Synaphlebiium Pickeringii*, Brack. U. S. Expl. Exped. *Filices*, p. 223, pl. 30.—Viti (Seemann! n. 765). Also from Savaii, Samoan Islands (U. S. Expl. Exped.).

3. **L. pulchra**, Carr. mss.; rhizomate elongato, gracili, repente, squamoso; stipitibus tetragonis, stramineis, basi sparse squamosis; frondibus oblongo-lanceolatis, pinnatis; pinnis alternis, patentibus, breviter petiolatis, dimidiato-oblongis, obtusis, margine superiore et antico lobatis, inferiore costiformibus sursum curvatis, basi truncato-cuneatis; venulis angulatim anastomosantibus, raro liberis; soris elongatis, indusio membranaceo, inframarginali.—*Synaphlebiium pulchrum*, Brack. U. S. Expl. Exped. *Filices*, p. 223. *L. stolonifera*, Mett. Linnæa, 1869, p. 81.—Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.). Also from Aneitum (M'Gillivray! n. 18 and 32).

4. **L. Harveyi**, Carr. in Herb. Mus. Brit.; rhizomate cæspitoso; stipitibus stramineis, tetragonis; frondibus pinnatis v. bipinnatis; pinnulis amplis, alternis, dimidiato-oblongis, apice obtusis v. truncatis, basi truncatis, margine superiore et antico lobatis, inferiore integerrimis, costatis; venulis angulatim anastomosantibus; soris elongatis v. linearibus, indusio membranaceo inframarginali.—Viti (Seemann! 764 in part, Harvey!). Also from Aneitum (M'Gillivray! n. 4).

5. **L. Seemanni**, Carr. in Herb. Mus. Brit.; rhizomate repente, squamoso; stipitibus elongatis, semiteretibus, basi sparse squamosis; frondibus bipinnatis; pinnis adscendentibus, linearibus, acuminatissimis, inferioribus bifurcatis; pinnulis erecto-patentibus, alternis subpetiolatis, dimidiato-oblongo-triangulatis, basi truncatis, margine subintegris; venulis angulatim anastomosantibus; soris continuis v. subinterruptis, indusio membranaceo, marginali.—Viti (Seemann! n. 764 in part). Ovalau (M'Gillivray! n. 1). Also from Aneitum (M'Gillivray!).

VIII. **Davallia**, Smith, Mem. Acad. Turin, vol. v. p. 414. t. 9. f. 6. Sporangia in receptaculo marginali apicibus venarum imposita, soros subrotundos v. oblongos formantia. Indusium venæ continuum, marginibus adnatum, vertice extrorsum liberum.—Filices rhizomate repente, frondibus simplicibus pinnatis v. decompositis, venis furcatis v. pinnatis, ramis liberis.—*Wibelia*, Bernh. Schrad. Journ. 1800, vol. ii. p. 122. *Stenolobus*, Presl, Tent. Pter. p. 129. *Prosaptia*, Presl, l. c. p. 165. *Odontosoria*, Fée, Gen. Fil. p. 325. *Scyphularia*, Fée, l. c. p. 324. *Stenoloma*, Fée, l. c. p. 330. *Loxoscaphe*, T. Moore, Hook. Journ. 1853, p. 227.

In addition to the species recorded below, the following have been found in tropical Polynesia:—1. *D. Emersoni*, Hook. and Grev. Ic. Fil. t. 105 (*Prosaptia Emersoni*, Presl, Tent. Pter. p. 166), from Tahiti, Society and Samoan Islands (U. S. Expl. Exped.). 2. *D. Moorei*, Hook., 2nd Cent. of Ferns, t. 53, from New Caledonia (C. Moore!). 3. *D. pallida*, Mett. Linnæa, 1869, p. 142 (*D. Mooreana*, Mast. in Gard. Chron. 1869, non *D. Moorei*, Hook.), from Aneitum (M'Gillivray!). 4. *D. Tahitensis*, Brack. U. S. Expl. Exped. Filices, p. 245, from Tahiti (U. S. Expl. Exped.). 5. *D. leptocarpa*, Mett. Linnæa, 1869, p. 143, Aneitum (M'Gillivray!).

1. **D. contigua**, Sw. Syn. Fil. pp. 130, 339; frondibus coriaceis, cæspitosis, subsessilibus, lineari-lanceolatis, profunde pinnatifidis; segmentis linearibus, obtusis, apice dentatis, soriferis; indusio marginali, gibboso, a cuticula vix modificata formato.—*Trichomanes contiguum*, Forst. Prodr. n. 463. *Prosaptia contigua*, Presl, Tent. Pter. p. 166.—Viti (Seemann! n. 722; U. S. Expl. Exped.), Ovalau (M'Gillivray!). Also from New Hebrides, Aneitum (M'Gillivray!), Tahiti (Banks and Solander! D. Nelson! U. S. Expl. Exped.), Huahine (Capt. Cook, 1775!), and Samoan Islands (U. S. Expl. Exped.).

2. **D. pycnocarpa**, Brack. U. S. Expl. Exped. Filices, p. 242, t. 35. figs. 1 and 2; rhizomate repente, crinito-paleaceo; stipitibus nudis, semiteretibus; frondibus coriaceis, glabris, late ovatis, acuminatis, quinatis v. pinnatis; pinnis suboppositis, lineari-lanceolatis, acuminatis, infimis bi- v. ternatis, sterilibus serratis, basi æquilateralibus acutis, fertilibus dentatis; venis simplicibus v. furcatis, immersis; indusio tubuloso, apice truncato, submarginali.—*D. pentaphylla*, Brack. (non Blume), U. S. Expl. Exped. Filices, p. 241.—Matuku (M'Gillivray!), Ovalau, and Vanua Levu (U. S. Expl. Exped.). Also from Aneitum and Eromanga (M'Gillivray!).

This species is certainly different from *D. pentaphylla*, Blume, and may be distinguished at once by the greater number of the divisions of the frond, the bi- or ternate lower pinnæ, and the obvious veins. We can see no reason for separating the two forms described by Brackenridge as distinct. A large series collected by M'Gillivray shows that the characters on which he depends are not constant.

3. **D. solida**, Sw. Syn. Fil. pp. 132, 375; rhizomate valido, repente, paleis brunneis dense imbricatis vestito; stipitibus nudis, lævibus, erectis, semiteretibus; frondibus coriaceis, glabris, tra-

peziformibus, tri- subquadripinnatis; pinnis acuminatis; pinnulis acutis v. acuminatis, inferioribus pinnatis v. pinnatifidis, segmentis in apicem obtusum dentatum confluentibus, ultimis oblongo-lanceolatis in apicem crenato-serratim confluentibus; indusio lineari v. lineari-oblongo, apice truncato.—*Trichomanes solidum*, Forst. Prodr. n. 475.—Vanua Levu (Harvey!). Also from Wallis's Island (Sir E. Home!), Tahiti (Banks and Solander! D. Nelson! Menzies! Barclay!), Raiatea (G. Bennett!), Tana (M'Gillivray!), and New Ireland (G. Barclay!).

4. **D. Fejeensis**, Hook. Sp. Fil. vol. i. p. 166. t. 55 D; rhizomate valido, repente, paleis brunneis laceris imbricatis tecto; stipitibus subteretibus, hinc sulcatis; frondibus coriaceis, late ovatis, acuminatis, pinnato-decompositis; pinnulis oblongis, acutis, pinnatipartitis, segmentis angusto-linearibus, simplicibus v. bifidis; indusio lineari, apice truncato, in apicem segmentorum immersis.—Viti Levu (Seemann! n. 758; Harvey! Sir E. Home! Milne! Barclay!).

5. **D. epiphylla**, Sw. Syn. Fil. pp. 134, 352; rhizomate valido, repente, paleis fulvo-brunneis imbricatis tecto; stipitibus semiteretibus, hinc sulcatis; frondibus coriaceis, late ovatis, acuminatis, pinnato-decompositis; pinnis alternatis; pinnulis lanceolatis, acuminatis, ultimis ovato-acuminatis, in apicem elongatum crenato-serratim confluentibus; indusio oblongo, apice acuto, libero, in segmentum immerso; alis segmenti in dentem acutum productis.—*Trichomanes epiphyllum*, Forst. Prodr. n. 471. *T. elatum*, Forst. Prodr. n. 472. *Davallia elata*, Sw. Syn. Fil. p. 131.—Viti (Seemann! n. 761; Milne!). Also from Tahiti (Banks and Solander!).

Forster's specimen of his *Trichomanes elatum* in Herb. Mus. Brit. is an almost barren specimen of this species, as was determined by Sir W. J. Hooker (Sp. Fil. vol. i. p. 166). The species is very different from *Davallia elegans*, Sw., with which it has been lately confounded (Hook. Syn. Fil. p. 95). We have seen no specimens of *D. elegans* from Polynesia.

6. **D. Chinensis**, Sw. Syn. Fil. p. 133; rhizomate subrepente; stipitibus erectis, semiteretibus; frondibus ovatis, acuminatis, quadripinnatifidis, subcoriaceis, glaberrimis; pinnis primariis infimis ovato-lanceolatis; pinnulis lanceolatis, inciso-pinnatis; laciniis cuneiformibus, obtusis, apice soriferis; indusio terminali; soris singulis v. geminis.—*Trichomanes Chinensis* Linn. Sp. Pl. ed. i. p. 1099; Osbeck, Ostind. Resa, p. 222. tab. 6. *Adiantum nigrum Chinense etc.*, Pluken. Almag. p. 10. tab. 4. f. 1. *Adiantum tenuifolium*, Lam. Enc. Meth. vol. i. p. 44. *Davallia tenuifolia*, Sw. Syn. Fil. p. 133. *Microlepia tenuifolia*, Mett. Fil. Hort. Bot. Lips. p. 104. *Lindsæa tenuifolia*, Mett. Ann. des Sc. Nat. 1861, p. 64. *Adiantum Chusanum*, Linn. Sp. Pl. ed. i. p. 1095. *Davallia Chusana*, Willd. Sp. Pl. vol. v. p. 475. *Trichomanes cuneiforme*, Forst. Prodr. n. 469. *Davallia cuneiformis*, Sw. Syn. Fil. p. 133. *Davallia didyma*, Hedw. fide Swartz.—Viti Levu and Kadavu (Græffe!). Also from Sandwich Islands (Menzies! D. Nelson! Barclay! Strickland! Hillebrand!), and Aneitum (Milne! M'Gillivray! C. Moore!).

This is a widely distributed species, having been found in China by Osbeck, Lind, Staunton, Fortune, and others, in Java by Horsefield, in India by Wallich, in Ceylon by Moon and Thwaites, in Madagascar by Thomson and Helsenberg, in Mauritius by Sir J. M'Gregor, and in Bourbon by Hardwick. It is a different plant from Forster's *Adiantum clavatum*, Prodr. n. 459 (*Davallia Forsteri*, Carr. ms. in Herb. Mus. Brit.), a species from Dusky Bay, New Zealand, which has been overlooked by recent botanists.

Var. β . *didyma* (*Trichomanes didymum*, Sol. ms. in Herb. Mus. Brit. and Prim. Fl. Ins. Oc. Pacif. (ined.) p. 369. Tahiti (Banks and Solander! Collie! Barclay!). This is a very different-looking plant from the normal form, having long narrow segments and smaller indusia; but there are so many intermediate specimens that we can consider it as only a marked variety.

7. **D. gibberosa**, Sw. Syn. Fil. p. 134; frondibus subcoriaceo-herbaceis, late ovatis, acuminatis, 4-pinnatis; pinnis primariis triangulato- v. ovato-lanceolatis tenui-acuminatis, secundariis triangulato-lanceolatis acutis, tertiariis ovatis obtusis; segmentis linearibus; soris copiosis; indusio solitario suburceolato, ad marginem interiorem infra apicem oblique sito.—*Trichomanes gibberosum*,

Forst. Prodr. n. 470. *Loxoscaphe gibberosa*, T. Moore in Hook. Journ. 1853, p. 227. *Davallia fœniculacea*, Hook. Second Cent. Ferns, tab. 54.—Viti Levu (Seemann! n. 761; Milne!), Ovalau, on trunks of trees in mountain woods (M'Gillivray!). Also from Aneitum (M'Gillivray!), Tahiti (Banks and Solander! D. Nelson! Barclay!), and Pitcairn Island (Herb. Mus. Brit.!).

8. **D. ferulacea**, T. Moore, Ind. Fil. p. 294; rhizomate subcæspitose, horizontali; stipitibus erectis, subteretibus; frondibus ovatis, acuminatis, quadripinnatis v. decompositis; pinnis ovato-lanceolatis; laciniis omnibus angustissimis, lineari-spathulatis, obtusis, plerisque soriferis; soris terminalibus; indusio oblongo-lingulato, segmentis angustiore.—*Davallia trichomanoides*, Hook. (non Blume) Second Cent. Ferns, tab. 64.—Wooded mountains, Viti Levu (Seemann! n. 762; Milne!), Buke Levu, 4000 feet, Kadavu (Græffe!).

This species was inadvertently named *D. fœniculacea* in Bonplandia, vol. ix. p. 261.

9. **D. Denhami**, Hook. Second Cent. Ferns, tab. 47; rhizomate repente, subulato-paleaceo; stipitibus semiteretibus, castaneis, parte inferiore sparse paleaceis; frondibus subchartaceis, elongato-ovatis, acuminatis, bipinnatis; pinnis subpetiolatis, lanceolatis, acuminatis, remotis; pinnulis lineari-lanceolatis, obtusis, subpinnatifidis, basi sessilibus, subdecurrentibus, laciniis brevissimis 1-bidentatis monosoris; indusio pyriformi, parte superiore libera elongata.—Viti Levu (Seemann! n. 754; Milne!).

10. **D. pinnata**, Cav. Descr. Plant. p. 277; rhizomate repente, fibrilloso; stipitibus coriaceis, nudis, erectis, semiteretibus; frondibus lineari-oblongis, obtusis, pinnatis; pinnis linearibus, crenato-dentatis; venis furcatis, apice rami anterioris soriferis; indusio semiorbiculato, herbaceo, margine superiore late rotundato.—*Saccoloma pinnatum*, Presl, Tent. Pter. p. 126.—Viti (Seemann! n. 755; Harvey!).

11. **D. Lapeyrousii**, Hook. Second Cent. Ferns, tab. 56; rhizomate brevi repente; stipitibus brevibus, aggregatis; frondibus herbaceis, lanceolatis, pinnatis, basi angustatis; pinnis numerosis, horizontalibus, semiovatis, falcatis, parte inferiore integra, superiore profunde pinnatifida; laciniis anguste cuneatis, apice truncatis; venis simplicibus v. furcatis; soris infra apicem sitis; indusio reniformi-oblongo, membranaceo.—*Lindsaya Lapeyrousii*, Baker, Syn. Fil. p. 106.—Viti Levu (Milne!). Also from Vanikola or Pitt's Island (C. Moore).

IX. **Microlepia**, Presl, Tent. Pter. p. 124. Sporangia in receptaculo intramarginali apicibus v. furcatulis venarum imposita, soros rotundatos v. transverse oblongos formantia. Indusia membranacea, semiorbicularia, basi et lateribus adhærentia, apice libero truncata v. rotundata.—Filices rhizomate repente v. cæspitose, frondibus pinnatis bipinnatis v. decompositis, venis simplicibus furcatis v. pinnatis, ramis liberis.—*Scyphofilix*, Thouars, Gen. Madagasc. n. 2. *Saccoloma*, Kaulf. Enum. Fil. p. 224. *Neuropteris*, Desv. Mem. Soc. Linn. Par. vol. v. p. 292.

Besides the species mentioned below, there occur in tropical Polynesia:—1. *M. hirta*, Presl, Tent. Pter., from the Sandwich Islands (Nelson! Menzies! Macrae! Barclay! Hillebrand! Seemann!). 2. *M. scoparia*, Carr. ms. (*Lindsaea scoparia*, Mett. Ann. des Sc. Nat. 1861, p. 64), from New Caledonia (M'Gillivray! Vieillard).

1. **M. Speluncæ**, T. Moore, Ind. Fil. p. 93; rhizomate repente; frondibus membranaceis, flaccidis, hirsutis, ovatis v. deltoideis, tri- v. quadripinnatifidis; pinnis inferioribus ovato-lanceolatis; pinnulis lanceolatis, obtusis; laciniis rhombeo-ovatis, obtusis, inciso-lobatis; soris inframarginalibus; indusio glabro v. hispido.—*Polypodium Speluncæ*, Linn. Sp. Pl. ed. i. p. 1093. *Davallia Speluncæ*, Baker in Hook. Syn. Fil. p. 100. *Polypodium nudum*, Forst. Prodr. n. 446. *Dicksonia polypo-*

dioides, Sw. Syn. Fil. pp. 137 et 356. *Davallia polypodioides*, Don, Prodr. Fl. Nep. p. 10. *D. flaccida*, R. Brown, Prodr. p. 157.—Viti Levu (Seemann! n. 751; Milne! Græffe!), Vanua Levu (Harvey!), and Gau (M'Gillivray!). Also from Sandwich Islands (Hillebrand!), New Hebrides (M'Gillivray!), and Navigator Islands (Sir E. Home!).

2. **M. papillosa**, Brack. U. S. Expl. Exped. *Filices*, p. 237. pl. 34; rhizomate erecto; stipitibus lævibus, rigidis, semiteretibus, cæspitosis; frondibus coriaceis, sæpe papillosis, bi- tripinnatis; pinnis primariis et secundariis inferioribus distantibus, petiolatis, subrhombeco-lanceolatis, acuminatis; pinnulis oblongo-lanceolatis, acutis, infimis pinnatifidis, apicem versus inciso-serratis, segmentis lanceolatis, margine dentato-serratis; soris juxta marginem inferiorem dentium impositis; indusio semi-oblongo, apice subdentato.—Viti (Seemann! n. 753), Sandalwood Bay, Vanua Levu (U. S. Expl. Exped.).

3. **M. campylura**, Kunze in Bot. Zeit. 1850, p. 132; rhizomate repente; frondibus magnis, subcoriaceis, tripinnatis, nitidis; pinnis primariis et secundariis alternis; pinnulis ovato- v. oblongo-lanceolatis, acutis v. acuminatis, basi oblique cuneatis, pinnatifidis v. inciso-serratis; laciniis oblongis, dentatis; soris parvis, singulis juxta apicem dentis primarii v. basim dentis axillaris insertis; indusio subscarioso, semi-cyathiformi, apice truncato.—*Davallia inæqualis*, var. γ . *minor*, Hook. Sp. Fil. vol. i. p. 180. t. 58 a; Brack. U. S. Expl. Exped. *Filices*, p. 235. t. 33.—Matuku (Milne and M'Gillivray!). Also from Samoan Islands (U. S. Expl. Exped.).

4. **M. tenuis**, Brack. U. S. Expl. Exped. *Filices*, p. 236; rhizomate repente; stipitibus lævibus, teretibus, hinc sulcatis; frondibus membranaceis, glabris, oblongo-lanceolatis, acuminatis, tripinnatis; pinnis primariis et secundariis alternis, petiolatis, distantibus, apice caudato-acuminatis serratisque; pinnulis subrhombeco-oblongis, acutis, inciso-serratis, basi cuneatis; laciniis lineari-oblongis, obtusis, bi-tridentatis; nervis utrinque prominulis; soris parvis singulis juxta basim dentis; indusio scarioso, oblongo, basi attenuato.—Frequent throughout Viti (Milne! U. S. Expl. Exped.).

TRIBUS III. HYMENOPHYLLÆ.

X. **Hymenophyllum**, Smith, Mem. Acad. Turin. vol. v. p. 418. t. 9. f. 8. Sporangia circa venam ultra frondis marginem in receptaculum subclavatum productam sessilia, indusio frondi continuo bivalvi cincta.—Filiculæ tenellæ, rhizomate repente filiformi, frondibus pellucido-membranaceis, simplicibus, lobatis, pinnatis v. decomposito-pinnatifidis; venis furcatis, ramis liberis.—*Leptocionium*, etc. Presl, Hymenoph. in Abhandl. d. Kön. Böhmischen Gesellsch. 1845, p. 118.

Besides the species described below, the following have been observed in tropical Polynesia:—1. *H. obtusum*, Hook. et Arn. Bot. Beech. Voy. p. 109, from Sandwich Islands (Macrae! Strickland!). 2. *H. lanceolatum*, Hook. et Arn. l. c., Sandwich Islands (Strickland!). 3. *H. recurvum*, Gaud. Freycinet. Voy. Bot. p. 576, from Sandwich Islands (Macrae! Strickland!), and New Hebrides (M'Gillivray!). 4. *H. gracile*, Bory in Willd. Sp. Pl. vol. v. p. 527, from Tahiti (Banks and Solander! Collie!). 5. *H. australe*, Willd. Sp. Pl. vol. v. p. 527 (*H. polyanthus*, Labill.), from New Caledonia (Vieillard!). 6. *H. mnioides*, Baker, Syn. Fil. p. 57, from New Caledonia (Deplanche!). 7. *H. dimidiatum*, Mett. Linnæa, 1868, p. 393, from New Caledonia (Deplanche!). 8. *H. Deplanchei*, Mett. l. c. p. 393, from New Caledonia (Deplanche!).

1. **H. affine**, Brack. U. S. Expl. Exped. *Filices*, p. 265. t. 37; rhizomate filiformi repente; stipitibus brevibus, tenuibus, teretibus, parce villosis; frondibus parvis, ovatis v. oblongis, bipinnatifidis; pinnis imbricato-confertis; laciniis lineari-oblongis, obtusis, simplicibus v. bifidis, spinuloso-serratis; indusio supra-axillari, obovato, basi subimmerso, infra medium usque hivalvi; labiis inte-

gerrimis; receptaculo incluso v. subexserto.—Ovalau, in mountain woods (M'Gillivray! U. S. Expl. Exped.).

2. **H. multifidum**, Sw. Syn. Fil. p. 149; rhizomate filiformi, repente; stipitibus gracilibus, teretibus, glabris; frondibus late ovatis, acuminatis, pinnatis; pinnis alternis patentibus, ovato-oblongis, bi-tripinnatifidis; laciniis angusto-linearibus, obtusis, spinuloso-dentatis; rachi flexuosa, sursum marginata; soris terminalibus v. supra-axillaribus; indusio ovato, bipartito, valvis superne argute serratis; receptaculo incluso.—*Trichomanes multifidum*, Forst. Prodr. n. 473. *H. Feejeense*, Brack. U. S. Expl. Exped. *Filices*, p. 266. t. 37. f. 2.—Viti Levu (Græffe!) and Ovalau (U. S. Expl. Exped.).

3. **H. dilatatum**, Sw. Syn. Fil. pp. 147 et 373; rhizomate gracili, repente; stipitibus basi teretibus, superne subalatis; frondibus ovato- v. triangulato-oblongis, tripinnatipartitis; pinnis primariis alternis subrhomboideis obtusis v. acutis, secundariis ovatis obtusis; laciniis linearibus, obtusis; soris terminalibus; indusio orbiculari, receptaculo magno subexserto.—*Trichomanes dilatatum*, Forst. Prodr. n. 467.—Viti, locality not specified (U. S. Expl. Exped.).

4. **H. flabellatum**, Labill. Pl. Nov. Holl. vol. ii. p. 101. t. 250. f. 1; rhizomate gracili, flexuoso, repente; stipitibus filiformibus, nudis, glabris; frondibus ovato-lanceolatis, superne tripinnatifidis, inferne pinnatis; pinnis ovatis, acutis, segmentis linearibus obtusis integris; soris terminalibus, solitariis; indusio obovato, basi cuneata immerso, bilabiato, labiis rotundatis integerrimis.—*H. nitens*, R. Brown, Prodr. Nov. Holl. p. 159; Hook. et Grev. Icon. Fil. t. 197.—Viti, locality not specified (U. S. Expl. Exped.).

5. **H. formosum**, Brack. U. S. Expl. Exped. *Filices*, p. 208. t. 37; rhizomate gracillimo, repente; stipitibus basi teretibus, superne alatis; frondibus erectis, oblongo-lanceolatis, acuminatis, tripinnatipartitis; pinnis primariis alternis adscendentibus oblongo-acuminatis, secundariis ovatis obtusis subpalmatis; laciniis angusto-linearibus, obtusis, simplicibus v. bifidis; soris paucis, supra-axillaribus; indusio orbiculari inflato, basi in laciniam brevem immerso, bipartito, valvis integerrimis, receptaculo brevi apice capitato.—Viti (Seemann! n. 785). Also from Tahiti (U. S. Expl. Exped.).

XI. **Trichomanes**, Linn. Syst. Nat.; Coroll. Gen. Plant. p. 20. n. 991. Sporangia circa venam ultra frondis marginem in receptaculum filiformem productam sessilia, indusio frondi continuo cyathiformi cincta.—Filiculæ, rhizomate repente v. cæspitose, frondibus simplicibus pinnatis v. decompositis, pellucido-membranaceis, rarissime coriaceis, venis simplicibus furcatis v. pinnatis, ramis liberis.—*Didymoglossum*, Desv. Ann. Soc. Linn. Paris, vol. vi. p. 330. *Lecanium*, etc., Presl, Hymenophyll. in Abhandl. der K. Böhmisch. Gesell. 184, p. 103. t. 1, etc.

In addition to the species described below, the following occur in tropical Polynesia:—1. *T. concinnum*, Mett. Linnaea, 1868, p. 385, from Tahiti (Vieillard, Vasco). 2. *T. assimile*, Mett. l. c. p. 386, from Aneitum (Herres, n. 53). 3. *T. Powellii*, Baker, Syn. Fil. p. 76, from Samoa (Powell). 4. *T. Motleyi*, V. d. Bosch, Nederl. Kruidk. Arch. 1860, p. 145, from New Caledonia (Lenormand, fide Baker, Syn. Fil. p. 73). 5. *T. peltatum*, Baker, Syn. Fil., from Samoa (Powell), and New Caledonia (Vieillard, 2166). 6. *T. Vieillardii*, V. d. Bosch, Nederl. Kruidk. Arch. 1863, p. 207, from New Caledonia (Vieillard). 7. *T. Draytonianum*, Brack. U. S. Expl. Exped. *Filices*, p. 252, from Sandwich Islands (U. S. Expl. Exped.). 8. *T. davallioides*, Gaud. Freyc. Voy. Bot. p. 378, from Sandwich Islands (Dr. Nelson! Macrae! Strickland! Hillebrand!). 9. *T. Sandvicense*, V. d. Bosch, Nederl. Kruidk. Arch. 1860, p. 165, from Sandwich Islands (U. S. Expl. Exped.). 10. *T. lætum*, V. d. Bosch, Nederl. Kruidk. Arch. 1863, p. 213, from New Caledonia (Vieillard). 11. *T. longicollum*, V. d. Bosch, l. c. p. 214, from New Caledonia (Vieillard). 12. *T. pumilum*, V. d. Bosch, l. c. p. 215, from New Caledonia (Vieillard). 13. *T. maximum*, Bl. Enum. Fil. p. 288, from Aneitum (M'Gillivray! Sinclair!), and Navigator Islands (Sir E. Home!).

1. **T. Vitiense**, Baker, Linn. Soc. Journ. vol. ix. p. 338. tab. 8, fig. D; frondibus substipitatis, oblongis, integris vel bifidis, costa centrali sola; venis lateralibus et venulis spuriiis nullis, indusio solitario terminali incluso, ore integro subdilatato.—Viti (Milne!).

2. **T. bimarginatum**, V. d. Bosch, Nederl. Kruidk. Arch. 1861, p. 143; rhizomate gracili, repente, ferrugineo-tomentoso; stipitibus brevibus, complanatis, dense tomentosus; frondibus oblongis v. polymorphis, e basi cuneatis, margine integris v. irregulariter lobatis, costa flabellatim in venas simplices v. furcatas abeunte, interpositis venulis spuriiis in venulam submarginalem confluentibus; soris mediocribus immersis, indusio cylindrico in limbum amplum undulatum subito dilatato.—*T. muscoides*, Brack. U. S. Expl. Exped. *Filices*, p. 249; Hook. and Baker, Syn. Fil. p. 75 ex parte.—Viti, in humid mountain forests, on rocks and the trunks of trees (U. S. Expl. Exped.).

T. muscoides, Sw. Fl. Ind. Occ. p. 1726; Prodr. p. 142, is the same as *T. apodum*, Hook. and Grev. Ic. Fil. t. 117. Original specimens communicated by Swartz are in Herb. Mus. Brit. The species is also faithfully figured by Hedwig (Gen. Fil. t. 3. f. 3) under the name *T. hymenodes*, which is placed by Swartz himself as a synonym of his species (Prodr. p. 142). *T. muscoides*, Hook. and Grev. Ic. Fil. t. 179; Hook. Sp. Fil. vol. i. p. 117; and Syn. Fil. p. 75, is a very different plant, and has been separated by Presl under the name *T. Hookeri* (Hymenophyll. p. 16).

3. **T. saxifragoides**, Presl, Abhandl. d. Böhmisch. Gesell. 1845, p. 131; rhizomate gracili, subtus tomentosus; frondibus flabellato-suborbicularibus, palmato-incisis; segmentis numerosis, lineari-acutis; venis approximatis, irregularibus, distinctis; indusiis 2–4, inclusis, ore dilatato subbilabiato.—Viti (Seemann! n. 786).

4. **T. alternans**, Carr. ms. in Herb. Mus. Brit.; rhizomate filiformi, repente, pilis elongatis fuscis parce vestito; stipitibus perbrevibus, alatis; frondibus erectis, simplicibus, pinnatisectis v. bipinnatisectis; pinnis alternis, erectis; segmentis elongato-linearibus, acutis, subapiculatis, margine integris, hyalinis; soris ad apicem segmentorum secundariorum immersis, cylindricis, basi attenuatis, ore dilatato integro.—Viti (Seemann! with n. 784).

This species is nearly allied to *T. erectum*, Brack., but differs from it in habit, in the form and direction of the segments, and the obvious hyaline margin.

5. **T. erectum**, Brack. U. S. Expl. Exped. *Filices*, p. 250, tab. 36. fig. 1; rhizomate filiformi, repente, *T. parvulum*, Brack. (non Poir.) U. S. Expl. Exped. *Filices*, p. 250, parce rufo-tomentoso; stipite brevi, alato; frondibus erectis, ovato-oblongis, bi- v. tripinnatifidis; pinnis alternis, erecto-patentibus; laciniis angusto-linearibus, emarginatis v. obtusis; indusio supra-axillari, cylindrico, immerso, basi attenuato, ore integerrimo subpatente; receptaculo exserto.—*T. tenue*, Brack. l. c. p. 251.—Viti, on Breadfruit-trees (U. S. Expl. Exped.). The larger form, called *T. tenue* by Brackenridge, from Aneitum (M'Gillivray!)

6. **T. humile**, Forst. Prodr. n. 464; rhizomate repente, dense tomentosus; stipitibus gracilibus, superne alatis; frondibus lanceolatis, acutis, bipinnatifidis; pinnis sæpissime unilateralibus; segmentis linearibus, obtusis, integris; soris solitariis, in laciniis axillaribus; indusio subcylindrico, subexserto, ore amplo undulato vix bilabiato.—Viti (U. S. Expl. Exped.). Also from Society Islands (Forster! Banks and Solander! D. Nelson! Barclay! A. Collie!).

7. **T. Neesii**, Blume, Enum. Fil. Jav. p. 226; rhizomate filiformi, repente; stipitibus alatis v. subalatis, fronde parum brevioribus; frondibus ovatis v. oblongis, tripinnatifidis, laciniis primariis late ovatis v. trapezoideo-oblongis, secundariis obovatis, lacinulis linearibus subelongatis flexuoso-squarrosis crispato-undulatis sinuato-dentatis; soris immersis, obovatis, dorso muricato-dentatis, tubo latiuscule marginato brevi late conico, labiis tubo duplo longioribus sinuato-dentatis.—*Hymeno-*

phyllum Neesii, Hook. Sp. Fil. vol. i. p. 99. *Leptocionium Neesii*, V. d. Bosch, Kruidk. Arch. vol. iv. p. 383.—Viti (Seemann! mixed with n. 783).

8. **T. caudatum**, Brack. U. S. Expl. Exped. p. 256. tab. 36. fig. 5; rhizomate abbreviato, crasso, repente, fulvo-tomentoso; stipite brevi, tereti, scabro; frondibus elongato-lanceolatis, acuminatis, pinnatis; pinnis subalternis, oblongo-lanceolatis, acuminatis, bipinnatifidis, laciniis linearibus obtusis simplicibus v. bifidis; rachi subalata; indusio terminali v. supra-axillari, cylindrico, basi attenuato, subimmerso v. anguste alato, ore patente integerrimo; receptaculo exserto.—Viti (Seemann! n. 783). Also from Tahiti (U. S. Expl. Exped.).

The Vitian plant is more delicate and flaccid, and the serrate apex of the pinnæ more elongated than in Brackenridge's figure. This appears to be the plant to which V. d. Bosch gave the name *T. Asæ Grayi* (Nederl. Kruidk. Arch. 1860, p. 180), and which he subsequently referred to *T. leptophyllum*, A. Cunn. (l. c. 1863, p. 211). He quotes *T. longisetum*, Brack., as the plant on which his species is based. But as the true *T. longisetum*, Bory, occurs in these islands, and as the characters mentioned in Brackenridge's note agree with that plant, there seems to have been some mistake in the labelling of the specimens which V. d. Bosch examined. *T. flavo-fuscum*, V. d. Bosch, l. c. p. 211, from New Caledonia (Vieillard), appears to agree exactly with our plant from Viti, but the distinguishing characters given seem to me insufficient for separating it from Brackenridge's species.

9. **T. filicula**, Bory, in Duperrey Voy. vol. i. p. 283; rhizomate repente tomentosus, gracili; stipitibus brevibus, superne alatis; frondibus ovatis, tripinnatifidis; pinnis ovatis, acutis; pinnulis inferioribus pinnatifidis; segmentis linearibus, obtusis; soris axillaribus; indusio cylindrico, subexserto, ore bilabiato; labiis triangulatis, obtusis.—*Hymenophyllum alatum*, Schk. non Sw. Farrnkr. p. 133. tab. 135 b.—Viti (U. S. Expl. Exped.). Also from Tahiti (Banks and Solander! Barclay! n. 3350).

10. **T. longisetum**, Bory, in Willd. Sp. Pl. vol. v. p. 510 (non Hook.); rhizomate repente, hirsuto; stipitibus erectis, teretibus, glabris; frondibus lanceolatis, tripinnatis; pinnulis dichotomis, capillaceis, sed sub lente observatis membranaceo-marginatis; soris ad laciniarum apicem sitis; indusio cyathiformi, basi attenuato, ore integro truncato.—*T. meifolium*, Kaulf. Enum. p. 265. tab. 2 (non Bory, nec Hook.).—Viti Levu (Græffe!). Also from Aneitum (M'Gillivray! Milne!).

11. **T. cartilagineum**, Vieill. et Panch. in V. d. Bosch; Nouv. Esp. d'Hymenoph. Journ. Bot. Néerland. 1861, p. 363; rhizomate horizontali, polyrrhizo; stipitibus fasciculatis, erectis, basi incrassata hirsutis; frondibus rigidis, firmis, opacis, viridi-fuscescentibus, late ovatis, sursum angustatis, pinnato-bipinnatifidis; pinnis patulis, imbricatis, ovatis v. oblongo-acuminatis; laciniis contiguis, oblongis, lacinulis obtusis rugoso-plicatis dentatis; venulis densis, elongatis, subparallelis; soris in pinnarum laciniis axillaribus; indusio oblongo-cylindrico, ore integro.—*T. rigidum*, Sw., var. β . Brack. U. S. Expl. Exped. Filices, p. 260.—Viti (Seemann! n. 829). Also from New Caledonia (Vieillard and Pancher, fide V. d. Bosch).

The form and texture of the frond, the venation, and the form of the indusium, at once enable us to separate this form from *T. elongatum*, A. Cunn., to which it is nearly allied.

12. **T. dentatum**, V. d. Bosch, Nouv. Esp. d'Hymenoph.; Journ. Bot. Néerland. 1861, p. 363; rhizomate brevi, polyrrhizo; stipitibus fasciculatis, erectis; frondibus membranaceis, ovatis, acuminatis, bipinnatifidis; rachi anguste marginata; laciniis primariis lanceolatis v. oblongo-lanceolatis, secundariis infimis laciniarum inferiorum utrinque remote subpinnatifide incisis, reliquis indivisis, margine dentatis; soris in laciniis secundariis axillaribus, in dente obsolete immersis; indusio cylindrico parumper ventricosus, ore integro v. subbilabiato.—Viti (Seemann! n. 780, Milne!). And from Aneitum (M'Gillivray!).

13. **T. Harveyi**, Carr. in Herb. Mus. Brit.; rhizomate brevi, adscendente, polyrrhizo; stipitibus

fasciculatis erectis, inferne sparse hirsutis, superne nudis; frondibus membranaceis, ovatis, acuminatis, pinnatis; pinnis ovatis, obtusis, pinnatifidis, rachi alatis; segmentis dentatis v. pinnatifidis; venulis sparsis; soris immersis, in dentis apice impositis; indusio turbinato-cylindrico, ore bilabiato.—Viti (Harvey!).

14. **T. Seemanni**, Carr. in Herb. Mus. Brit.; rhizomate brevi, polyrrhizo; stipitibus teretibus, erectis, glabris; frondibus membranaceis, ovatis, acuminatis, pinnatis; pinnis distantibus, ovato- v. oblongo-acuminatis, pinnatifidis; laciniis oblongis, utrinque grosse dentatis; soris in dente obsolete immersis; indusio cylindrico, parumper ventricosus, ore bilabiato.—Viti (Seemann! n. 782, Milne and M'Gillivray!).

15. **T. (Cephalomanes) Australicum**, V. d. Bosch, Nederl. Kruidkund. Archief, 1860, p. 139; rhizomate brevissimo; stipitibus teretiusculis, basi hirsutis; frondibus oblongo-linearibus, acuminatis, pinnatis; pinnis sessilibus, e basi acute cuneata oblongis, obtusis; margine superiore dentato, inferiore acute v. setaceo-dentato; venis pinnatis, furcatis; soris in margine superiore pinnarum apicalium seriatis, amplis, basi immersis; indusio cylindrico, breviter ventricosus, in limbum amplum dilatato.—*C. Wilkesii*, V. d. Bosch, l. c. p. 140. *T. Javanicum*, Auct.—Viti Levu (Seemann; n. 769, Harvey! Græffe!). Also from Aneitum (M'Gillivray!).

The dilated mouth of the indusium at once distinguishes this plant from *T. Javanicum*, with which it has been confounded.

16. **T. polyanthos**, Hook. Sp. Fil. vol. i. p. 138; stipitibus cæspitosis, subrobustis, scabris, subhispidis; frondibus oblongis v. ovato-lanceolatis, pinnatis; pinnis lanceolatis, bi-tripinnatifidis, segmentis lineari-obtusis; soris in laciniis ultimis axillaribus, exsertis, copiosis, magnis, campanulatis, bilabiatis, labiis integris obtusis v. truncatis, patentibus, receptaculis inclusis.—Viti, terrestrial (U. S. Expl. Exped.).

17. **T. exaltatum**, Brack. U. S. Expl. Exped. *Filices*, p. 259; rhizomate cæspitoso; stipitibus rachibusque teretibus, rufo-pilosis; frondibus rigidis, erectis, ovato- v. oblongo-lanceolatis, bipinnatis; pinnis elongato-lanceolatis, inferioribus remotis patentibus, superioribus approximatis erecto-patentibus; pinnis secundariis pinnatifidis v. bipinnatifidis; laciniis linearibus, obtusis; soris supra-axillaribus turbinatis, exsertis, ore integerrimo; receptaculo clavato, vix exserto.—Viti (Seemann! n. 781, Milne! U. S. Expl. Exped.). Also from mountain woods, Aneitum (M'Gillivray!).

This is a larger and more robust plant than *T. apiifolium*, Presl, with broader, blunter segments and shorter indusium. It has a broader frond, and a longer and stouter stipes, than *T. polyanthus*, with an entire mouth to its turbinate indusium.

18. **T. millefolium**, Presl, Hymenophyll. in Abhandl. d. Böhm. Gesell. 1845, p. 135; stipitibus fasciculatis, latiuscule alatis, fronde dimidio brevioribus; frondibus lanceolato-pyramidalibus, decompositis; laciniis primariis late lanceolatis, secundariisque ovatis patulis remotiusculis, tertiariis angustis erectis; segmentis linearibus, angustissime membranaceis; soris subexsertis, indusio cylindrico, limbo reflexo leviter undulato; receptaculo exserto.—*T. maximum*, var. β , Blume, Enum. Fil. p. 228. *T. anceps*, var. β , Hook. Sp. Fil. p. 135. t. 40. f. 3.—Viti (Seemann! n. 783 ex parte, U. S. Expl. Exped.).

SUBORDO IV. PTERIDEÆ.

XII. **Adiantum**, Linn. Syst. Nat. ed. i.; Gen. Pl. n. 782. Sporangia apicibus venarum discretis, in receptaculum reniformi-oblongum v. lineare intumescens imposita, in soros marginales continuos v. interruptos. Indusia margini frondis continua, receptaculo adnata, introrsum libera.

Venæ flabellato-furcatæ v. a costa media furcatæ, ramis liberis.—Filices caudice herbaceo, plerumque repente, frondibus simplicibus pinnatis, pedatis v. supradecompositis.

The following species have been found in tropical Polynesia, in addition to those described below :—
1. *A. Capillus-Veneris*, Linn. Sp. Pl. p. 1096, from the Sandwich Islands (Menzies! Collie! Macrae! M'Gillivray! Hillebrand!), and New Caledonia (Vieillard!) 2. *A. Bennettii*, Carr. in Herb. Mus. Brit.; stipitibus teretibus, ebeneis, nitidis; frondibus ovatis, tripinnatisectis; pinnulis petiolatis, subcoriaceis, supra glabris, infra sparse hirsutis, æquilateralibus, rotundato-reniformibus basi sinu excisis, v. subcuneatis v. cuneatis, antice integris denticulatis; nervis flabellato-dichotomis; soris oblongo lunulatis.— Sandwich Islands (Strickland!). Separated, but not named, from the former species by Mr. J. J. Bennett in Herb. Mus. Brit. 3. *A. Aneitense*, Carr. in Herb. Mus. Brit.; stipitibus semiteretibus, antice canaliculatis, nigris, glaberrimis; frondibus amplis, 3-4-pinnatis, rachibus nigris, antice hirsutis, postice glaberrimis; pinnis lineari-acuminatis; pinnulis glabris, alternis dimidiatis rhomboideo-oblongis obtusis v. in sterilibus subacutis, margine superiore et antico lobatis; soris in lobulo sitis, rotundatis, integerrimis, antice sinu excisis.— Aneitum (M'Gillivray! n. 110). This plant is a near ally of the S. American *A. polyphyllum*, Willd., but may easily be distinguished by the hairy rachis and the form of the pinnæ and pinnules.

1. ***A. lunulatum***, Burm. Fl. Ind. p. 235; stipitibus cæspitosis, gracilibus, atro-fuscis, glabris; frondibus oblongis, obtusis, pinnatis; pinnis alternis, petiolatis, lunulato-oblongis, obtusissimis, suprema cuneata, margine superiore rotundatis lobatis; soris linearibus, interruptis, nunc confluentibus.—*Pteris lunulata*, Retz. Observ. vol. ii. p. 28. t. 4. *A. arcuatum*, Sw. Prodr. p. 122.— Nomen vernac. Vitiense, teste Storck, "Kau-ni-vatu."—Viti Levu, Ovalau, and Moturiki (Seemann! n. 801, Storck! n. 915).

2. ***A. diaphanum***, Blume, Enum. Fil. Jav. p. 215; stipitibus cæspitosis, ebeneis, nudis; frondibus pinnatis v. ad basin 1-3-ramosis; pinnulis petiolatis, dimidiato-oblongis, obtusis, margine inferiore integerrimis subdecurvatis, antico et superiore lobatis; venis furcatis, venulis liberis in pinnulis sterilibus et inter soros fertilium in dentem obtusum desinentibus; soris obreniformibus.—*A. setulosum*, J. Sm. Bot. Mag. Comp. 1846, p. 22.—Viti (Seemann! n. 803, Harvey!). Also from Aneitum (M'Gillivray!).

3. ***A. hispidulum***, Swartz, Prodr. p. 124 et 321; stipitibus cæspitosis, filiformibus, nigris, rachique asperis; frondibus pedato-bipinnatis; pinnulis dimidiato-ovato-rhombeis, sterilibus margine superiore et antico denticulatis, fertilibus crenulatis, utrinque pilosiusculis, striatis, e nervis radiato-dichotomis; soris confertis, subrotundis, indusio hirsuto.—*A. pedatum*, Forst. Prodr. n. 458 (non Linn.). *A. pubescens*, Schkuhr, Fil. p. 108. t. 116; Brack. U. S. Expl. Exped. *Filices*, p. 100.—Viti (Seemann! n. 802, U. S. Expl. Exped.). Also from Aneitum (M'Gillivray!), Tongan Islands (Nelson!), and Tahiti (Barclay!).

Var. β . *divaricatum*, Brack. U. S. Expl. Exped. *Filices*, p. 100; ramis divaricatis; pinnis subflabellatis, oblongis.—Munia, Viti (U. S. Expl. Exped.).

4. ***A. fulvum***, Raoul, Choix de Pl. de la Nouv. Zél. p. 9; stipitibus erectis, antice glabris, ebeneis, postice hirsutis; frondibus ovato-deltaideis, subpedato-3-4-pinnatis, subhirsutis; pinnis lineari-acuminatis, terminali elongata, pinnulis dimidiato-rectangularibus, margine superiore et antico sublobato sorifero, inferiore integro; soris rotundato-reniformibus.—Viti (Milne). Also from New Caledonia (Vieillard).

The Polynesian plant referred to this species is probably only a variety of the previous species.

XIII. ***Hypolepis***, Bernh. Schrad. Neues Journ. Bot. 1806, vol. i. pt. 11. p. 34. Sporangia apicibus venarum imposita, in soros suborbiculares ad marginem sinuum laciniarum frondis collecta. Indusium suborbiculare, submembranaceum, e margine ortum. Venæ simplices vel furcatæ, e costa centrali, venulis liberis.—Filices herbacæ, frondibus magnis 2-3-4-pinnatis, rhizomate late repente.

Besides the species described, the following occur in tropical Polynesia:—1. *H. tenuifolia*, Bernh. Schrad. Neues Journ. vol. i. pt. 2 (1806) p. 34, from Tahiti (Banks and Solander! D. Nelson! Barclay!), Tana (Forster!). 2. *H. dicksonioides*, Hook. Sp. Fil. vol. ii. p. 61, from Tahiti (Nelson!), Isle of Pines (Milne!), Sunday Island (Milne!). 3. *H. rugulosa*, Hook. Syn. Fil. vol. ii. p. 68, from Tahiti (Banks and Solander! D. Nelson!).

1. **H. elegans**, Carr. in Herb. Mus. Brit.; frondibus 3–4-pinnatis, pinnis primariis infimis oppositis ovato-acuminatis, secundariis lineari-acuminatis; segmentis oblongis, acutis, pinnato-lobatis; rachibus primariis et secundariis postice glabris, antice sulcatis, dense hirsutis; costis et venulis utrinque sparse hirsutis; soris pluribus amplis, indusio semiorbiculari membranaceo.—Viti (Milne and M'Gillivray!). Also from Aneitum (M'Gillivray! n. 108) and Lord Howe's Island (M'Gillivray!).

XIV. **Cheilanthes**, Swartz, Syn. Fil. p. 5. 126. Sporangia apicibus venarum imposita, in soros suborbiculares v. elongatos, margini frondis approximatos collecta. Indusium suborbiculare, membranaceum v. subcoriaceum. Venæ simplices v. furcatae, e costa centrali, venulis liberis.—Filices rhizomate fasciculato v. repente, stipitibus et rhachibus ebeneis, frondibus pinnatis v. 2–3-pinnatis.—*Myriopteris*, Fée, Genres d. Polyp. p. 148. *Aleuritopteris*, Fée, l. c. p. 153. *Notholænæ* sp. auct.*

Besides the species hereafter described, the following occur in tropical Polynesia:—1. *C. distans*, Mett. Cheil. p. 25, from New Caledonia (M'Gillivray! Moore! Vieillard!). 2. *C. Sieberi*, Kze. Pl. Preiss. vol. ii. p. 112, from New Caledonia (F. Strange! Vieillard!) and Isle of Pines (M'Gillivray!).

1. **C. hirsuta**, Mett. (non Link) Cheil. p. 25; rhizomate repente, paleis ferrugineis dense vestita; stipitibus hirsutis, denique glabriusculis; frondibus subcoriaceis supra sparse, infra dense pilis articulatis ferrugineis hirsutis, lanceolatis, bipinnatisectis, pinnis suboppositis patentibus ovato-oblongis obtusis, superioribus oblongis; segmentis inferioribus basi attenuatis adnatis ovato-oblongis, pinnatipartitis, superioribus adnatis oblongis obtusis leviter crenatis; soris fuscis, denique confluentibus.—*Pteris hirsuta*, Poir. Enc. Méth. vol. v. p. 719. *Cincinalis hirsuta*, Desv. Berl. Mag. (1811) vol. v. p. 313. *Notholæna hirsuta*, Desv. Journ. Bot. Appl. 1813. vol. iii. p. 93. *Pteris nudiuscula*, R. Br. Prodr. p. 155. *Pellæa? nudiuscula*, Hook. Sp. Fil. vol. ii. p. 151. *Cheilanthes nudiuscula*, T. Moore, Ind. Fil. p. 249. *Notholæna sulcata*, Link, Hort. Ber. vol. ii. p. 367. *N. pilosa*, Hook. et Arn. Beechey Voy. p. 47.—Viti (Seemann! n. 800). Also from Aneitum (M'Gillivray!) and Tahiti (D. Nelson!).

2. **C. tenuifolia**, Swartz, Syn. Fil. p. 129. 332; rhizomate repente; stipitibus rubro-fuscis, inferne paleacco-pilosis, glaberrimis; frondibus rigidiusculis, glaberrimis, ovato-acuminatis v. deltoideo-acuminatis, tripinnatis; pinnis ovato-acuminatis, superne integris, inferne bipinnatis; segmentis sessilibus, e basi inferne cuneatis, superne truncatis, apice una cum lacinulis crenatis; soris

* An error has crept into some modern books in regard to *Notholæna vellea*, of R. Brown ('Prodromus,' p. 146), from a supposition that he considered his plant to be the same as one brought by Masson from Madeira, and described as *Acrostichum velleum*, Ait. Hort. Kew. ed. 1. vol. iii. p. 457, and that he consequently adopted Aiton's trivial name when he placed it in his new genus. An examination of the 'Prodromus' proves that Mr. Brown had not then before him the Madeiran plant, which is obviously different from the Australian one; and, indeed, the diagnosis which he gives of his species excludes Masson's plant. The synonymy of the two species stands thus:—

1. *Notholæna lanuginosa*, Poir. Encyc. Bot. Supp. vol. iv. p. 110 (1816). *Acrostichum lanuginosum*, Desf. Fl. Alt. vol. ii. p. 400. t. 256 (1798). *A. velleum*, Ait. Hort. Kew. ed. 1. vol. iii. p. 457 (1799). *Notholæna vellea*, Desv. Journ. Bot. vol. iii. (2nd ser. vol. i.) p. 92 (1813).

2. *Notholæna vellea*, R. Br. Prodr. p. 146 (1810). *N. Brownii*, Desv. l. c. (1813).

distinctis raro confluentibus, crenis marginis revolutis, membranaceis, indusium continuum v. interruptum formantibus.—*Trichomanes tenuifolia*, Burm. Ind. p. 237. *Adiantum tenuifolium*, Swartz; Schrad. Journ. (1801) vol. ii. p. 85. *Pteris humilis*, Forst. Prodr. n. 421.—Viti (Seemann! n. 799). Also from Aneitum (M'Gillivray!) and some Pacific Islands not specified (Forster!).

XV. **Pellæa**, Link, Fil. Spec. p. 59. Sporangia apicibus venarum imposita, in soros lineares continuos fere laminas ambeuntes collecta. Indusium tenue, pellucidum, continuum, marginibus frondium scariosis formatum. Venæ flabellatæ.—Filices stipitibus fusco-badiis nigrescentibus lucidis, frondibus 1-2-3-pinnatis, pedatis v. palmatis, glabris.—*Platyloma*, J. Sm. Hook. Journ. Bot. 1841, p. 160.

The following species is also found in tropical Polynesia:—*P. ternifolia*, Link, Fil. Sp. p. 59, from Hawaiian Islands (D. Nelson! Menzies! Macrae! Hillebrand!).

1. **P. geraniifolia**, Fée, Gen. Fil. p. 130; rhizomate cæspitoso, glabro; stipitibus teretibus, ebeneis, sparse squamosis; frondibus subcoriaceis, glabris, cordatis, subquinelobo-palmato-partitis; segmentis primariis pinnatipartitis, laciniis deorsum aductis, basalibus maximis, utrinque pinnatipartitis; segmento medio basi cuneatim angustato, laciniis ultimis ovatis acutis integerrimis; soris continuis; margine revoluto membranaceo tectis.—*Pteris geraniifolia*, Raddi, Syn. Fil. Bras. n. 110. *P. Pohliana*, Presl, Tent. p. 145. *P. pedata*, Forst. Prodr. n. 417 (non Linn.). *Cassebeera pedata*, J. Sm. Hook. Journ. 1841, p. 404. *Pellæa pedata*, Fée, Gen. Fil. p. 130.—Viti (Seemann! n. 798). Also from Aneitum, in dry stony places (M'Gillivray!), and from New Caledonia, Nees, Port de France, in a wooded ravine (M'Gillivray!). Found in tropical regions in both the Old and the New Worlds.

XVI. **Pteris**, Linn. Syst. Nat. ed. i.; Gen. Pl. n. 780. Sporangia apicibus venarum in receptaculum nerviforme frondis marginem ambiens combinatis imposita, soros marginales lineares continuos v. interruptos formantia. Indusium marginale membranaceum, introrsum liberum. Venæ simplices v. furcatæ, venulis liberis.—*Monogonia*, Presl, Tent. Pter. p. 146. *Pycnodoria*, Presl, Epim. Bot. p. 100.

In addition to the species described below, the following occur in tropical Polynesia:—1. *Pteris tenuifolia*, Brack. U. S. Expl. Exped. Filices, p. 112, from Tongatabu (U. S. Expl. Exped.). 2. *P. irregularis*, Kaulf. Enum. Fil. p. 189, from Sandwich Islands (Nelson! Menzies! Macrae! Strickland! Hillebrand!). 3. *P. deltea*, Ag. Recens. Pterid. p. 33, from Tahiti (Menzies!). 4. *P. excelsa*, Gaud. Freyc. Voy. Bot. p. 388, from Aneitum (M'Gillivray!), and Sandwich Islands (Hillebrand! Macrae!). 5. *P. tremula*, R. Br. Prodr. p. 154, from New Caledonia (M'Gillivray!), Lord Howe's Island (M'Gillivray!), and Tahiti (Nelson!).

1. **P. longifolia**, Linn. Sp. Pl. ed. 1. p. 1074; rhizomate brevi, repente, apice paleis fuscis vestito; stipitibus semiteretibus, scabris, basi paleaceo-hirsutis; frondibus pinnatis, oblongo-lanceolatis, basin versus sensim decrescentibus, pinnis suboppositis e basi inæqualibus cordatis linearibus attenuatis, sterilibus latioribus serrulatis; nervis furcatis v. simplicibus; soris continuis, margine revoluto integerrimo tectis, loco indusii veri paraphysibus numerosis instructis.—*Pteris tenuifolia*, Brack. U. S. Expl. Exped. Filices, p. 112. Viti (Milne), Matuku (M'Gillivray!). Also from the Friendly Islands (D. Nelson! Barclay! Sir E. Home!). New Hebrides, Aneitum (M'Gillivray!), Tana (Barclay!), and Isle of Pines (M'Gillivray!).

2. **P. Cretica**, Linn. Mant. p. 130; rhizomate repente, paleis fuscis vestito; stipitibus stramineis, trigonis, glabris; frondibus glabris, pinnatis v. pinnatisectis; pinnis remotis, oppositis, superioribus simplicibus sessilibus v. decurrentibus, infimis breviter petiolatis furcatis sterilibus argute serratis; venis simplicibus v. furcatis; soris continuis (apice sterili segmentorum fertiliū serrato);

marginē revoluto integerrimo tectis.—Viti (Milne). Also from Sandwich Islands (Hillebrand! D. Nelson! Macrae!).

3. **P. crenata**, Swartz, Syn. Fil. pp. 96 et 290; rhizomate repente; stipitibus stramineis, lævibus; frondibus ovatis, glabris, inferne bi-subtripinnatisectis; segmentis primariis inferioribus petiolatis, infimis pinnatisectis, superioribus sessilibus vel decurrentibus, tripartitis v. indivisis, secundariis inferioribus subpetiolatis, superioribus decurrentibus, sterilibus oblongis v. oblongo-lanceolatis, margine crenato-serratis, fertilibus linearibus, acuminatis, integerrimis, apice sterili serratis; venis simplicibus v. furcatis; soris continuis, margine revoluto membranaceo tectis.—Viti Levu (Seemann! n. 811, Milne! Harvey!), Matuku (Sir E. Home!), and Gau (M'Gillivray). Also from the Tongan Islands (Captain Cook! D. Nelson!), Eromanga and Aneitum, New Hebrides (M'Gillivray!), New Caledonia (M'Gillivray! C. Moore!), and Upolu, Navigators' Islands (Sir E. Home!).

4. **P. quadriaurita**, Retz, Obs. vol. vi. p. 38; rhizomate breve adscendente; stipitibus fasciculatis, erectis, basi sparse paleaceis; frondibus ovatis, acuminatis, pinnatis; pinnis breviter petiolatis, linearibus, acuminatis, profunde pinnatipartitis; segmentis subapproximatis, basi confluentibus, oblongis v. elongato-oblongis, apice obtuso rotundatis; costis ad basin costularum supra setis spinulosis præditis, nervis furcatis, infimis liberis; soris ad latera laciniarum margine revoluto membranaceo integerrimo tectis.—Viti (Seemann! n. 804, Harvey! Sir E. Home! Milne!). Also from the Tongan Islands (D. Nelson! Sir E. Home!), Aneitum (M'Gillivray!), and Sandwich Islands (Hillebrand!).

5. **P. esculenta**, Forst. Prodr. n. 418; rhizomate repente; stipitibus stramineo-fuscis, glabris; frondibus coriaceis, rigidis, ovato-oblongis, acuminatis, tripinnatisectis; pinnis primariis petiolatis, secundariisque triangulato-acuminatis, segmentis lineari-oblongis, indivisis v. pinnatipartitis, margine tenuissime crenulatis, supra glabris, subtus pilis stuppeis varicosis dense onustis; soris continuis, margine revoluto coriaceo repandulo glabro tectis.—*P. aquilina*, L., δ . *esculenta*, Hook. Sp. Fil. vol. ii. p. 197.—Viti Levu, and most other Vitian Islands (Seemann! n. 809), Lakeba (Harvey!). Also from Aneitum (M'Gillivray!), New Caledonia (C. Moore!), and Sandwich Islands (Macrae! Barclay! Hillebrand!).

“Unlike the Maoris or Tahitians, the Vitians do not use the rhizome of this plant as an esculent.”—**B. SEEMANN.**

XVII. **Litobrochia**, Presl, Tent. Pterid. p. 148. Sporangia apicibus venarum in receptaculum nerviforme frondis marginem ambiens combinatis imposita, soros marginales lunato-lineares interruptos v. continuos formantia. Indusium membranaceum, introrsum liberum. Venæ reticulatæ, in maculas hexagonoideas elongatas v. breves anastomosantes.—*Doryopteris*, J. Sm. Hook. Journ. 1841, p. 404. *Heterophlebium*, Fée, Gen. Polyp. p. 139.

Besides the species enumerated below, the following are found in tropical Polynesia:—1. *L. Vieillardii*, Carr. (*Pteris Vieillardii*, Mett. Ann. Sc. Nat. ser. iv. vol. xv. p. 66), from New Caledonia (Vieillard! M'Gillivray!). 2. *L. aurita*, J. Sm. Hook. Journ. 1841, p. 405, from Tana (M'Gillivray!), and New Caledonia (M'Gillivray!). 3. *L. intermedia*, Brack. U. S. Expl. Exped. *Filices*, p. 107, from the Samoan Islands (U. S. Expl. Exped.). 4. *L. decora*, T. Moore (*Doryopteris*), Brack. l. c. p. 103, from the Sandwich Islands (Hillebrand! U. S. Expl. Exped., Nelson!). 5. *L. decipiens*, Hook. Sp. Fil. vol. ii. p. 209, from the Sandwich Islands (Strickland! Hillebrand! Macrae! Nelson!).

1. **L. tripartita**, Presl, Tent. p. 150; stipitibus castaneis, semiteretibus, superne canaliculatis, glaberrimis; frondibus herbaceis tripartitis, divisionibus primariis lateralibus bipartitis; pinnis oblongo-acuminatis, pinnatis; pinnulis lanceolato-acuminatis, profunde pinnatifidis; segmentis oblongis,

subfalcatis, apice obtuse crenulatis; soris elongatis, margine revoluto membranaceo tectis.—*Pteris tripartita*, Sw. Syn. Fil. p. 100, 293. *Litobrochia divaricata*, Brack. U. S. Expl. Exped. Filices, p. 108.—Island of Yanuca (Storck! n. 913, Sir E. Home! Harvey!), and Gau (M'Gillivray!). Also from Tahiti (Collie!).

2. **L. Milneana**, Baker, Syn. Fil. p. 170; stipitibus erectis, stramineo-brunneis, glaberrimis; frondibus herbaceis, bipinnatis; pinnis elongatis, lanceolatis, acuminatis, pinnatifidis, duabus inferioribus basi exteriori pinnulam minorem gerentibus; segmentis lineari-oblongis, falcatis, apice obtuse crenulatis; soris elongatis, margine revoluto membranaceo tectis.—*Pteris tripartita*, Sw., var. γ , *Milneana*, Hook. Sp. Fil. vol. ii. p. 226, t. 138 B.—Viti (Seemann! n. 805). Also from Solomon Islands (Milne!), Aneitum (M'Gillivray!), and Tahiti (D. Nelson!).

3. **L. comans**, Presl, Tent. p. 149; stipitibus glabris, semiteretibus, pallidis; frondibus herbaceis, glaberrimis, bipinnatis; pinnis lanceolatis, acuminatis, inferioribus basi bipinnatis, laciniis subfalcatis linearibus acuminatis v. acutis, apice attenuato-serratis, basi decurrentibus; soris continuis, margine revoluto membranaceo tectis.—*Pteris comans*, Forst. Prodr. n. 419.—Viti (Seemann! n. 810, Milne!). Also from Aneitum, Tana, and Eromanga (M'Gillivray!), Lord Howe's Island (Milne!), the Tongan Islands (D. Nelson!), and Tahiti (Banks and Solander! Collie!).

4. **L. sinuata**, Brack. U. S. Expl. Exped. Filices, p. 110. t. 14; rhizomate repente; stipitibus lævibus, teretibus; frondibus scandentibus, infra glaucescentibus, tripinnatis; pinnis petiolatis patentibus ovatis acutis, pinnulis oblongo-lanceolatis margine sinuatis, basi obliquis obtuse cuneatis, superioribus coadunatis; venulis infimis arcuato-anastomosantibus, exterioribus numerosis multe reticulatis; soris linearibus, continuis, margine revoluto membranaceo tectis.—Nomen vernac. Vitiense, teste Seemann, "Wa kabo."—Taviuni (Seemann! n. 807, 808, Milne!), and Ovalau (U. S. Expl. Exped.). Also from Aneitum (M'Gillivray!).

"The leaves of this species are used as a potherb by the natives of Viti."—B. SEEMANN.

XVIII. **Lomaria**, Willd. Mag. Nat. Ber. 1809, p. 160. Sporangia in soros lineares geminos paginam totam frondium fertilium contractarum tectos collecta. Indusia linearia, scariosa, continua, margini inserta, versus costam libera. Venæ frondis sterilis simplices v. furcatæ, venulis liberis, frondis fertilis obsoletæ. Filices caudice herbaceo interdum repente v. arborescente, frondibus pinnatifidis v. pinnatis rarissime simplicibus, fertilibus contractis.—*Stegania*, R. Br. Prodr. p. 152. *Lomariidium*, Presl, Epim. p. 154. *Polygramma*, Presl, Epim. p. 156.

In addition to the species described below, the following are recorded from tropical Polynesia:—
1. *L. procera*, Spreng. Syst. Veg. vol. iv. p. 65, from Tahiti (U. S. Expl. Exped.), and New Caledonia (Vieillard). 2. *L. contigua*, Carr. (*Blechnum*, Mett.), from New Caledonia (Vieillard). 3. *L. obtusata*, Lab. Sert. N. Caled. pl. 6, from New Caledonia (Labillardière, Vieillard, M'Gillivray!). 4. *L. gibba*, Lab. Sert. N. Caled. pl. 4 and 5 (*L. ciliata*, T. Moore?), from New Caledonia (Labillardière, Vieillard). 5. *L. vulcanica*, Bl. Enum. Pl. Jav. p. 202, from Tahiti (Nelson!). 6. *L. opaca*, Baker, Syn. Fil. p. 176, from New Caledonia (Vieillard). 7. *L. Lenormandi*, Baker, Syn. Fil. p. 181, from New Caledonia (Vieillard). 8. *L. diversifolia*, Baker, Syn. Fil. p. 181, from New Caledonia (Vieillard). 9. *L. emarginata*, Carr. in Herb. Mus. Brit.; rhizomate repente, una cum stipitibus paleis opaco-fuscis lanceolatis longe acuminatis dense vestito; stipitibus teretibus; frondibus coriaceis, glabris, sterilibus brevipetiolatis pinnatipartitis basi longe attenuatis; pinnis oblongo-linearibus, subfalcatis, basi dilatatis, apice emarginatis, infimis obtuse triangulatis, superioribus in apicem obtusum latum sinuatum confluentibus; venis prominentibus, furcatis, liberis, cum costis rachidibusque subtus setosis; frondibus fertilibus longe petiolatis, pinnatis; pinnis elongatis, linearibus, acutis, superioribus sessilibus basi decurrentibus, inferioribus petiolatis.—From Aneitum (M'Gillivray!). 10. *L. Vieillardii*, Baker, Syn. Fil. p. 175, from New Caledonia (Vieillard).

1. **L. elongata**, Blume, Enum. Pl. Jav. p. 201; rhizomate repente; stipitibus subteretibus, hinc sulcatis, supra lobulos rotundos gerentibus; frondibus coriaceis, glabris, late ovatis, acuminatis,

pinnatis; pinnis sterilibus alternis adnatis elongato-lineari-lanceolatis acuminatis basi decurrentibus, fertilibus elongato-linearibus acuminatis; soris lateris inferioris decurrentibus; indusio crenato-lacero.—*L. punctata*, Blume, Enum. Pl. Jav. p. 201. *L. coriacea*, Brack. U. S. Expl. Exped. *Filices*, p. 122.—Viti (Seemann! n. 797). Also from Tahiti (Barclay!).

2. **L. doodioides**, Brack. U. S. Expl. Exped. *Filices*, p. 124; rhizomate repente, apice paleaceo; stipite semitereti, purpurascente, lævi, frondis sterilis brevi, fertilis elongato; frondibus sterilibus rigidis, lanceolatis, attenuatis, pinnatipartitis, pinnis confertis subfalcatis oblongo-lanceolatis obtusis, margine reflexis minute dentatis; frondibus fertilibus majoribus, pinnatis, caudato-acuminatis, basi attenuatis, pinnis remotis elongato-linearibus acutis; indusio membranaceo.—*L. attenuata*, Hook. Sp. Fil. vol. iii. p. 6 (ex parte, non Willd.).—Viti (Seemann! n. 796. U. S. Expl. Exped.). Also from Aneitum (M'Gillivray!).

3. **L. pilosa**, Brack. U. S. Expl. Exped. *Filices*, p. 125. t. 15; stipite semitereti, punctis elevatis aspero, basi squamigero; frondibus rigidis, deltoideo-ovatis, acuminatis, pinnatis; sterilium pinnis adnatis, suboppositis, oblongo-linearibus, attenuatis, margine revolutis undulatis, basi superne subauriculatis; fertilius elongato-linearibus, obtusis, basi superne lobato-auriculatis; venis prominentibus costisque subtus pilosis; indusio membranaceo, lacero.—Viti, in mountain forests, rare (U. S. Expl. Exped.).

4. **L. filiformis**, A. Cunn. Comp. Bot. Mag. vol. ii. p. 363; rhizomate scandente, paleaceo-squamato; frondibus pinnatis, glabris, pinnis sterilibus lanceolatis serrulatis apice attenuatis basi brevipetiolatis simpliciter v. inæqualiter truncatis, fertilibus elongato-filiformibus rachique crinito-ramentaceis.—*L. propinqua*, A. Cunn. Comp. Bot. Mag. vol. ii. p. 363. *L. pimpinellæfolia*, Hook. f. in Hook. Journ. 1844, p. 412. *Stenochlæna heteromorpha*, J. Sm. Hook. Journ. 1842, p. 149. *S. Feejeensis*, Brack. U. S. Expl. Exped. *Filices*, p. 78. pl. 2. fig. 1.—Sandal-wood, Viti, on trees (U. S. Expl. Exped.).

The small abnormal barren form is the only one yet recorded from Viti. In it the frond is small, nearly sessile, lanceolate, acute above, and with smaller and more distant pinnæ below; the pinnæ are small, oblong, and with a short petiole. The drawing and description of the plant given by Brackenridge agree entirely with this abnormal form. It has not been detected by any one else out of New Zealand, so that it seems to me probable that some error has crept into the labelling of this plant.

5. **L. Milnei**, Carr. in Herb. Mus. Brit.; frondibus membranaceis pinnatifidis; sterilium pinnis suboppositibus elongato-linearibus, apice obtusis, basi inæqualibus, superne liberis, inferne adnatis non-decurrentibus, margine serratis; fertilius inferne petiolatis, superne sessilibus elongato-linearibus, acuminatis; venis numerosis parallelis simplicibus v. furcatis, apice pinnarum flabellatis, soris lateralibus, indusio crenato.—Viti (Milne!).

XIX. **Blechnum**, Linn. Sp. Pl. ed. 1. p. 1077. Sporangia in soros lineares geminos intramarginales costæ approximatos continuos v. rarissime interruptos collecta. Indusia linearia, versus costam libera. Venæ frondium sterilium simplices v. furcatae, venulis liberis, frondium fertilius in receptaculo coalitæ.—*Filices* caudice herbaceo erecto interdum stolonifero, frondibus simplicibus pinnatifidis v. pinnatis.—*Distaxia*, *Mesothema*, *Spicanta*, *Blechnopsis*, et *Orthogramma*, Presl, Epim. pp. 110–121.

The following species occur in tropical Polynesia, in addition to those mentioned below:—1. *B. striatum*, R. Br. Prodr. p. 152, from Aneitum (M'Gillivray!). 2. *B. irregulare*, Carr. ms. in Herb. Mus. Brit.; rhizomate adscendente, paleis nigro-fuscis lanceolato-acuminatis tecto; stipitibus semiteretibus, stramineis, sparse paleaceis; frondibus pinnatifidis, sterilibus pinnis oblongis obtusis basi decurrentibus, margine sinuato-lobatis denticulatis, fertilibus elongato-linearibus sinuato-crenatis; venis furcatis; soris costæ adpressis; indusio membranaceo.—Interior of New Caledonia (M'Gillivray!).

1. **B. orientale**, Linn. Sp. Pl. p. 1077; rhizomate adscendente, paleis pallide fuscis setoso-acuminatis tecto; stipitibus basi paleaceis, glaberrimis; frondibus coriaceis, pinnatisectis; pinnis infimis abortivis ad basin stipitis insertis, superioribus linearibus attenuatis acuminatis integerrimis, margine tenuissime callosis; nervis densis simplicibus v. furcatis; soris costæ adpressis; indusio membranaceo.—*Blechnopsis orientale*, Presl, Epim. p. 117.—Viti (Seemann! n. 795; Sir E. Home! Milne! Græffe!). Also from Aneitum (M'Gillivray!), and Wallis Island (Sir E. Home!).

2. **B. vittatum**, Brack. U. S. Expl. Exped. *Filices*, p. 131; stipite lævi, semitereti, basi paleaceo-crinato; frondibus membranaceis, glabris, oblongo-lanceolatis, pinnatis; pinnis alternis, sterilibus lineari-lanceolatis attenuatis serrulatis, basi dilatatis, fertilibus contractis lanceolato-linearibus acutis basi dilatatis, apice sterilibus; venis simplicibus v. furcatis, parallelis; soris costæ approximatis, continuis; indusio cartilagineo, integerrimo.—Viti, in wet lands (U. S. Expl. Exped.); Ovalau, in mountain woods (M'Gillivray!). Also from New Caledonia (Vieillard).

XX. Doodia, R. Br. Prodr. p. 151. Sporangia in receptaculo ramulis anastomosantibus venarum imposita, soros lineares v. lunulatos costæ parallelas formantia. Indusia plana, introrsum libera.—*Filices* cæspitosis, subcoriaceis, pinnatis; pinnis dentatis, quandoque coadunatis; venis arcuato-anastomosantibus, apicibus liberis, subtus elevatis.—*Woodwardia* sp. auct.

In addition to the species described, the following occur in tropical Polynesia:—1. *Doodia media*, R. Br. Prodr. p. 151, from New Caledonia (M'Gillivray! Vieillard) and Sandwich Islands (Barclay! Macrae!). Mettenius (*Filic. Hort. Lips.* p. 66) erroneously quotes *D. lunulata* as Mr. Brown's name for this species. Perhaps the error crept into his ms. from observing a specimen of the species in Herb. Banks. named *Polypodium lunulatum*, Soland. ms. 2. *D. Kunthiana*, Gaud. in Freyc. Voy. Bot. p. 401, pl. 14, from Oahu (Macrae! Barclay! n. 1221; Bennett!). 3. *D. Milnei*, Carr. in Herb. Mus. Brit.; frondibus ovato-lanceolatis, e medio versus basin et apicem decrescentibus, pinnatis, membranaceis; pinnis sessilibus, superioribus basi inferiore decurrentibus, inferioribus basi superiore liberis, inferiore adnatis, lineari-lanceolatis, acuminatis, margine dense argute serratis, soriferis; soris bi-triseriatis, lunulatis, seriebus primis elongato-lunulatis, serie tertia incompleta.—*D. connexa*, Hook. (in part) Sp. Fil. vol. iii. p. 75.—Distinguished from this species by the form of the pinnæ, the repeated subdivision and abundant reticulation of the veins, and the numerous sori completely covering the pinnæ.—Raoul or Sunday Island (Milne!).

1. **D. Brackenridgei**, Carr. in Herb. Mus. Brit.; stipitibus teretiusculis; frondibus ovato-lanceolatis, pinnatis, apice pinnatisectis; pinnis remotis, subpetiolatis, oblongis, sensim attenuatis, acutis, margine undulatis argute serratis, segmentis lateralibus basi æqualiter dilatatis, terminalibus acuminatis integris; soris biseriatis, costalibus magnis lunulatis, externis minoribus subcontinuis v. incompletis.—*D. Kunthiana*, Gaud. var. β . Brack. U. S. Expl. Exped. *Filices*, p. 138.—Ovalau, mountains, woods (M'Gillivray!); Viti (U. S. Expl. Exped.).

The genus *Sadleria* is confined to the Sandwich Islands. There appear to be two well-marked species: 1. *S. cyatheoides*, Kaulf. Enum. Fil. p. 162 (Chamisso, Seemann! Macrae! etc.), and, 2. *S. squarrosa*, Gaud. Voy. Bonite, pl. 2. fig. 1-6 (Expedition of La Bonite, Hillebrand!).

TRIBUS IV. ASPLENIEÆ.

XXI. Asplenium, Linn. Gen. Pl. ed. 1. n. 783. Sporangia venis transversalibus imposita, in soros lineares collecta. Indusia membranacea, e vena lateraliter orta, versus costam libera. Venæ simplices v. furcatæ, venulis liberis v. interdum arcu transverso marginali conjunctis.—*Filices* rhizomate erecto v. decumbente, interdum stoloniferæ; frondibus coriaceis herbaceis v. membranaceis, simplicibus lobatis pinnatis v. decompositis.—*Onopteris*, Neck. Elem. n. 1721. *Daræa*, Juss. Gen. p. 15. *Cænopteris*, Berg. in Nov. Act. Petrop. vol. ix. *Acropteris*, Link, Hort. Berol. vol. ii. p. 55. *Tarachia*, Presl, Epim. p. 74. *Brachysorus*, Presl, Epim. p. 70. *Hypochlamys*, Fée, Gen. Pol. p. 200. *Neottopteris* J. Sm. Hook. Journ. 1841, p. 409. *Thamnopteris*, Presl, Epicr. p. 68.

In addition to the species described below, the following occur in tropical Polynesia:—1. *A. Milnei*, Carr. in Herb. Mus. Brit.; stipitibus semiteretibus, supra canaliculatis, basi squamosis, superne inter segmenta alatis; frondibus coriaceis, ovatis v. late ovatis, pinnatis; pinnis lanceolatis, apice attenuatis, margine acute serratis, basi cuneatis v. inæqualiter cuneatis; nervis furcatis; soris linearibus, nervorum ramum anticum occupantibus.—Lord Howe's Island (Macrae!). Allied to *A. remotum*, T. Moore. 2. *A. enatum*, Brack. U. S. Expl. Exped. *Filices*, p. 153. t. 21. fig. 1, from Oahu, Sandwich Islands (U. S. Expl. Exped.). 3. *A. tenerum*, Forst. Prodr. n. 431 (Schkuhr, Krypt. Gew. t. 69; *A. elongatum*, Sw. Syn. Fil. p. 79; *A. productum*, Presl, Rel. Hænk. vol. i. p. 42. t. 8. fig. 1), from Dangerous Archipelago (Barclay!), Tahiti (Menzies! Barclay! Nelson!), and Samoa (Powell!). 4. *A. normale*, Don, Prodr. Fl. Nep. p. 7 (*A. multi-jugum*, Wall., var. β . Hook. Sp. Fil. vol. iii. p. 140; *A. pavonicum*, Brack. U. S. Expl. Exped. *Filices*, p. 150. t. 20. fig. 1), from Oahu, Sandwich Islands (Macrae!). 5. *A. Trichomanes*, Linn. Sp. Pl. ed. 1. p. 1080, (*A. densum*, Brack. U. S. Expl. Exped. *Filices*, p. 152. t. 20. fig. 3. The margins of the furrowed rachis of this species in European specimens sometimes thin out into a wing as distinct as in the Sandwich Islands form to which Brackenridge has given this name,) from Oahu, Sandwich Islands (Nelson! Menzies! Macrae! Hillebrand!). 6. *A. Vieillardii*, Mett. Ann. Sc. Nat. ser. iv. vol. xv. p. 72, from New Caledonia (Vieillard. M'Gillivray!). 7. *A. Kaulfussii*, Schlech. Adumb. p. 29, from Oahu, Sandwich Islands (Nelson! Barclay! n. 1223, Macrae! Hillebrand!). 8. *A. caudatum*, Forst. Prodr. n. 432; frondibus pinnatis, rachide paleaceo setoso; pinnis linearibus, acuminatis, pinnatipartitis, basi inæqualiter cuneatis; lobis oblongis, truncate-obtusis, antice obtuse dentatis; soris costalibus.—*A. horridum*, Kaulf. Enum. Fil. p. 173. From Pacific Islands (Forster!), Tahiti (Nelson!), and Oahu (Barclay! Hillebrand!). 9. *A. Aneitense*, Carr. in Herb. Mus. Brit.; stipitibus teretibus, supra subsulecatis, glabris; frondibus lanceolatis, acuminatis, coriaceis, glabris, pinnatis; pinnis breviter petiolatis, elongato-acuminatis, subfalcatis, apice attenuatis, inciso-serratis, basi inæqualiter cuneatis, inciso-lobatis; lobis obovato-cuneatis, apice bifidis, obtuse denticulatis; venis flabellato-furcatis; soris brevibus, oblongis, costalibus v. ad nervos loborum; indusio rigido, coriaceo.—Aneitum (Milne! Feb. 1860, n. 2). Between *A. caudatum*, Forst., and *A. contiguum*, Kaulf. 10. *A. contiguum*, Kaulf. Enum. Fil. p. 172 (*A. falcatum*, R. Br. Prodr. p. 150), from Oahu, Sandwich Islands (Chamisso, Macrae!), and Lord Howe's Island (Milne!). 11. *A. paradoxum*, Bl. Enum. Pl. Jav. p. 179, from Sandwich Islands (Douglas, n. 34, 36). 12. *A. erectum*, Bory in Willd. Sp. Pl. vol. v. p. 510, from Sandwich Islands (Hillebrand!). 13. *A. Menziesii*, Hook. and Grev. Icon. Fil. t. 100, from Oahu, Sandwich Islands (Nelson! Menzies!). 14. *A. Macraei*, Hook. and Grev. Icon. Fil. t. 217 (*A. strictum*, Brack. U. S. Expl. Exped. *Filices*, p. 168. t. 22. fig. 1), from Oahu, Sandwich Islands (Nelson! Menzies! Macrae! Hillebrand!), and Cocos Island (Barclay! n. 2196). 15. *A. spathulinum*, J. Sm. in Hook. Journ. 1841, p. 408 (*A. lobulatum*, Mett. Linnæa. vol. xxxvi. p. 100), from Tahiti (Collie!) and Sandwich Islands (Hillebrand!). This species is recorded from Viti by T. Moore, Ind. Fil. p. 169, and Baker, Syn. Fil. p. 215, but I have seen no specimens. 16. *A. insiticium*, Brack. U. S. Expl. Exped. *Filices*, p. 161. t. 22. fig. 2 (very distinct from the preceding species, *A. spathulinum*, J. Sm.), from Sandwich Islands (Nelson! Hillebrand! U. S. Expl. Exped.). 17. *A. acuminatum*, Hook. and Arn. Bot. Beech. Voy. p. 106, from Sandwich Islands (Nelson! Barclay! n. 1218, Hillebrand!). 18. *A. patens*, Kaulf. Enum. Fil. p. 175, from Sandwich Islands (Chamisso, U. S. Expl. Exped.). 19. *A. polyphyllum*, Presl, Tent. Pterid. p. 108, from Sandwich Islands (Meyen, Macrae!). 20. *A. viridans*, Labill. Sert. Aust. Caled. p. 2. t. 2, from New Caledonia (Labillardière). 21. *A. Adiantum-nigrum*, Linn., var. *acutum*, T. Moore, Ind. Fil. p. 110, from Sandwich Islands (Macrae! Hillebrand!). 22. *A. Poirertianum*, Gaud. Bot. Freyc. p. 321. pl. 13, from Sandwich Islands (Nelson! Strickland! Douglas! Macrae! Hillebrand!). 23. *A. Shuttleworthianum*, Kunze, Farrukr. p. 26, from Kermadec group (Milne!). 24. *A. dissectum*, Brack. U. S. Expl. Exped. *Filices*, p. 170. t. 24, from Sandwich Islands (Menzies! Macrae!). 25. *A. diparioides*, Brack. U. S. Expl. Exped. *Filices*, p. 172, from Oahu, Sandwich Islands (U. S. Expl. Exped.). 26. *A. Novæ-Caledoniæ*, Hook. Ic. Fil. pl. 911, from New Caledonia (Moore! Vieillard).

1. **A. nidus**, Linn. Sp. Pl. p. 1079; stipitibus brevibus, basi paleis lineari-lanceolatis densissime vestitis; frondibus oblongo-lanceolatis, acutis, basi angustatis, junioribus et sterilibus herbaceis, fertilibus coriaceis; venis creberrimis, tenuissimis, internis; soris tertiam v. quartam partem latitudinis occupantibus.—*Neottopteris nidus*, J. Sm. in Hook. Journ. 1841, p. 409. *Thamnopteris nidus*, Presl, Epim. p. 68.—Viti (Seemann! n. 813, in part; Sir E. Home! Milne!). Also from Aneitum, New Hebrides (M'Gillivray! C. Moore!), Tahiti (Banks and Solander!), New Caledonia (Vieillard), and Sandwich Islands (Strickland! Barclay! n. 1230, Macrae!).

2. **A. Amboinense**, Willd. Sp. Pl. vol. v. p. 303; rhizomate repente, squamis nigris acuminatis dense vestito; stipitibus brevibus, squamosis; frondibus coriaceis, glabris, lanceolatis, acumi-

natis, basi angustatis, margine integris et subrevolutis; costa juxta apicem prolifera; venis subpatis, simplicibus, rarius furcatis; soris approximatis; indusio coriaceo, integerrimo.—Brack. U. S. Expl. Exped. *Filices*, p. 147. pl. 19. fig. 2. *A. Sundense*, Bl. Enum. Fil. p. 175. *A. vittæforme*, Cav. Prælect. p. 255.—Ovalau, Viti, on rocks and trunks of trees at an altitude of 2000 feet (U. S. Expl. Exped. Milne!).

3. **A. Feejeense**, Brack. U. S. Expl. Exped. *Filices*, p. 147; stipitibus angularibus, basi paleis lineari-lanceolatis vestitis; frondibus membranaceis, glabris, elongato-lanceolatis, attenuatis, basi angustatis, apice proliferis, margine subrepandis; venis furcatis, interdum simplicibus; soris remotiusculis, a costa usque prope marginem excurrentibus; indusio angusto-lineari, integerrimo.—*A. scolopendrioides*, T. Moore, Ind. Fil. p. 165 (ex parte).—Viti, on trees and moist rocks (U. S. Expl. Exped.). Also from Samoa (U. S. Expl. Exped.), and from Aneitum, New Hebrides (M'Gillivray!).

4. **A. remotum**, Moore, Ind. Fil. p. 100; frondibus glabris, membranaceis, pinnatis; pinnis divaricatis, alternis, remotis, lineari-lanceolatis, attenuatis, serrulatis, basi inæqualibus cuneatis, rachi hinc sulcata; venis simplicibus furcatisve, divaricatis; soris approximatis, confluentibus; indusio lineari, coriaceo, integerrimo, recurvo.—*A. distans*, Brack. U. S. Expl. Exped. *Filices*, p. 155. *A. multilineatum*, Hook. Sp. Fil. vol. iii. p. 102.—Viti (Milne!). Also from Samoa (U. S. Expl. Exped.).

5. **A. salignum**, Blume, Enum. Pl. Jav. p. 175 (Mett. Fil. Hort. Lips. t. vii., non Hook. Fig. Sp. Fil. vol. iii. t. 165); rhizomate erecto, paleis membranaceis pallide fuscis acuminatis tecto; stipitibus supra depresso-canaliculis, denique glabris; frondibus ovato- v. elongato-oblongis, acuminatis, glabris, pinnatis; pinnis distantibus, petiolatis, basi cuneatis v. subinæqualiter cuneatis, elongato-lanceolatis, apice attenuatis, margine tenuissime calloso integerrimis v. subrepandulis; nervis furcatis; soris elongatis, marginem non attingentibus, crassiusculis.—Viti (Seemann! n. 817).

The plant from Viti (Daernal) referred by Baker (Syn. Fil. p. 199) to *A. Sumatranum*, Hook., belongs probably to this species.

6. **A. induratum**, Hook. Second Cent. Ferns, t. 68; rhizomate repente, radicante; stipitibus squamis subulato-setaceis atris basi laciniatis tectis; frondibus erectis, lanceolatis v. elongato-lanceolatis, rigido-chartaceis, olivaceo-viridibus, pinnatis; pinnis sessilibus, horizontalibus, oblongis v. semiovatis, basi superne productis, apice obtusis, crenato-serratis; venis furcatis; soris biserialibus, linearibus; indusio coriaceo.—Viti (Seemann! n. 820); interior of Viti Levu (Milne).

7. **A. falcatum**, Lam. Encyc. Méth. vol. ii. p. 306; rhizomate repente, paleis nigrescentibus lanceolatis acuminatis vestito; stipitibus sordide rufescentibus, basi paleaceis; frondibus opaco-viridibus, infra pallidis, oblongis, acuminatis, pinnatis; pinnis petiolatis, trapezio-ovato-lanceolatis, acuminatis, incis, apice producto-serratis, basi inæqualiter cuneatis, serraturis dentatis; nervis repetito-furcatis; soris elongato-linearibus, e costa ad marginem extensis.—*A. polyodon*, Forst. Prodr. n. 428.—Viti (Seemann! n. 814 and 815; Harvey!), Matuku (Sir E. Home!). Also from Tongan Islands (Nelson! Sir E. Home! Barclay!), Tahiti (Collie!), New Caledonia (M'Gillivray!), Isle of Pines (M'Gillivray!), Norfolk Island (Paterson!).

Forms of this very variable plant from Viti, with larger pinnæ, have been referred to *A. macrophyllum*, Sw.

8. **A. resectum**, Smith, Icon. Ined. t. 72; rhizomate repente; stipitibus atropurpureis nitidis; frondibus membranaceis, glabris, oblongis, acuminatis, basi truncatis, pinnatis; pinnis patentibus, petiolatis, e basi inferiore dimidiatis abscisso-cuneatis, superiore oblique truncatis, trapezio-oblongis, obtusis v. acuminatis, margine inæqualiter serratis; nervis distantibus, furcatis; soris superioribus

numerosis, inferioribus paucis.—Viti (Seemann! n. 820, 821). Also from Aneitum (M'Gillivray!) and Tahiti (Barclay! n. 5333).

9. **A. cuneatum**, Lam. Encyc. Méth. vol. ii. p. 309; rhizomate repente, paleis nigricantibus subulatis vestito; stipitibus semiteretibus, supra sulcatis; frondibus membranaceis v. subcoriaceis, oblongis v. ovatis, acuminatis, bipinnatis; pinnis primariis petiolatis ovatis apice acuminatis attenuatis v. obtusis, secundariis rhomboideo-ovatis, basi cuneatis, apice obtusis, obtuse dentatis; nervis furcatis, manifestis; soris linearibus, in mediam loborum positis.—*A. affine*, Sw. Syn. Fil. p. 84.—Viti (Milne! Harvey!). Also from Aneitum (M'Gillivray!) and Sandwich Islands (Hillebrand!).

10. **A. laserpitiifolium**, Lam. Encyc. Méth. vol. ii. p. 310; rhizomate repente, squamis pellucidis lineari-lanceolatis tecto; stipitibus semiteretibus, opaco-purpurascens; frondibus chartaceis, nitidis, nervis strigosis ovato-acuminatis, tri- v. subquadripinnatis; pinnis primariis et secundariis ovato-lanceolatis acuminatis, tertiariis obovato-cuneatis, basi attenuatis, apice obtusis, acute dentatis; nervis repetito-furcatis, ramis densis flabellatis; soris ad basin loborum positis.—*Tarachia laserpitiifolia*, Presl, Epim. p. 83.—Viti (Seemann! n. 822; Milne! Græffe!) Also from Aneitum (M'Gillivray!), New Caledonia (Vieillard), Isle of Pines (M'Gillivray!), and Ulaietea (Nelson!).

11. **A. obtusilobum**, Hook. Icon. Plant. pl. 1000; rhizomate stolonifero; stipitibus cæspitosis, compressis, alatis, glabris v. sparsim stellato-pilosis; frondibus erectis, ovato-lanceolatis, basi truncatis, pinnatis; pinnis basi cuneatis, obtusis, pinnatisectis, segmentis patentibus lineari-cuneatis obtusis integris v. bifidis; nervis furcatis, ante apicem evanescentibus; soris omnino marginalibus.—Viti (Seemann! n. 784). Also from Aneitum (Milne!) and Tana (C. Moore).

12. **A. bipinnatum**, Brack. U. S. Expl. Exped. *Filices*, p. 344, in corrig. (*A. furcatum*, p. 170); stipitibus compressis, basi paleaceis; frondibus lineari-lanceolatis, bipinnatis; pinnis suboppositis, pinnatipartitis, laciniis lineari-spathulatis obtusis, infimis summisque bipartitis; rachi compressa, alata; soris submarginalibus.—*A. rutæfolium*, Presl, β . *furcatum*, T. Moore, Ind. Fil. p. 163. *A. prolongatum*, Hook. Second Cent. Ferns, pl. 42.—Ovalau, Viti (Græffe!, U. S. Expl. Exped.). Also from Vonicalle Island (C. Moore!).

13. **A. Seemanni**, Carr. in Herb. Mus. Brit.; rhizomate stolonifero; stipitibus fasciculatis, semiteretibus, subulatis, basi paleaceis; frondibus lineari-lanceolatis, acuminatis, bipinnatis; pinnis primariis suboppositis ovatis obtusis, secundariis apice simplicibus, dichotome 1-2-3-furcatis, segmentis linearibus, truncatis v. obovatis; nervis simplicibus; soris marginalibus, segmento latioribus.—Viti (Seemann! n. 760 and 828).

Nearly related to *A. dichotomum*, Hook., from Borneo.

14. **A. multifidum**, Brack. U. S. Expl. Exped. *Filices*, p. 171. pl. 23; stipitibus lævis, angulatis, sulcatis, squamosis; frondibus membranaceis, tripinnatis; divisionibus primariis alternis, imbricatis, oblongis, acuminatis; pinnulis oblongis, obtusis, pinnatipartitis, laciniis linearibus obtusis, inferioribus bi-trifidis; rachi parce squamosa; soris semioblongis, submarginalibus; indusio integerimo.—Ovalau, Viti (U. S. Expl. Exped.). Also from Tahiti, Society Islands (U. S. Expl. Exped.).

15. **A. dubium**, Brack. U. S. Expl. Exped. *Filices*, p. 172; rhizomate repente; stipitibus angulatis, parce paleaceo-hirsutis; frondibus membranaceis, glabris, deltoideo-ovatis, bi-tripinnatis; pinnis suboppositis, patentibus, oblongo-lanceolatis; pinnulis lineari-oblongis, inciso-pinnatifidis, laciniis linearibus, obtusis; rachi compressa, marginata; soris?—Sandalwood Bay, Viti (U. S. Expl. Exped.).

XXII. **Diplazium**, Swartz in Schrad. Journ. 1800, vol. ii. p. 61. Sporangia venis furcatis imposita, in soros lineares geminatos superiores sæpe simplices dorso venarum venularumque collecta. Indusia e vena orta, in soris geminatis bilateralia, unum versus costam alterum versus costulam liberum, in soris simplicibus unilateralia. Venæ simplices v. furcatae, venulis liberis v. conniventibus.—*Filices rhizomate erecto v. subarborescente, frondibus herbaceis v. coriaceis, simplicibus pinnatis v. decompositis.*—*Lotzea*, Klotzsch et Karst. in Linnæa, 1847, p. 358. *Callipteris*, Bory, Voy. vol. i. p. 282. *Anisogonium*, Presl, Tent. Pterid. p. 115. *Microstegia*, Presl, Epim. p. 90.

In addition to the species described below, the following occur in tropical Polynesia:—1. *D. Solandri*, Carr. in Herb. Mus. Brit. (*Asplenium tenerum*, Sol. ms., non R. Br.), from Society Islands (Banks! Menzies!). Distinct from *D. grammitoides*, Presl, to which Moore has referred it (Ind. Fil. p. 329). 2. *D. pallidum*, T. Moore, Ind. Fil. p. 335, from Aneitum (M'Gillivray! n. 30). 3. *D. dilatatum*, Bl. Enum. Pl. Jav. p. 194, from Aneitum (M'Gillivray!). 4. *D. harpeodes*, T. Moore, Ind. Fil. p. 330 (*D. falcatum*, Brack. non Liebm.), from Samoa (U. S. Expl. Exped.). 5. *D. Sandwichense*, Presl, Tent. Pterid. p. 114, from Sandwich Islands (Meyer). 6. *D. alternifolium*, Bl., var. *oblongifolium*, Hook. Sp. Fil. vol. iii. p. 240, from Aneitum (M'Gillivray, Milne, n. 298). 7. *D. sororium*, Carr. (*Asplenium*, Mett. Ann. Sc. Nat. ser. iv. vol. xv. p. 73), from New Caledonia (Vieillard). 8. *D. Arnottii*, Brack. U. S. Expl. Exped. *Filices*, p. 144, from Sandwich Islands (Nelson! Menzies! Macrae! Hillebrand!). 9. *D. melanochlamys*, T. Moore, Ind. Fil. p. 332, from Lord Howe's Island (Milne! n. 36, M'Gillivray! n. 702). 10. *D. Brackenridgii*, T. Moore, Ind. Fil. p. 324 (*D. speciosum*, Brack. non Bl.), from Samoan Islands (U. S. Expl. Exped.).

1. **D. tenerum**, Presl, Epim. p. 84; rhizomate brevi, repente; stipitibus semiteretibus, supra sulcatis glabris, basi paleaceis; frondibus subcoriaceis, ovatis, acutis, pinnatis; pinnis petiolatis, versus apicem confluentibus, alternis, lineari-oblongis, acuminatis, inciso-lobatis, basi inæqualiter subcuneatis; lobis subrotundis, dentatis, rachibus petiolis costisque paleis linearibus vestitis; soris plurimis; indusio membranaceo, lineari, integerrimo; rachi interdum prolifera.—*D. extensum*, J. Sm. in Hook. Journ. 1841, p. 407 (partim). *D. bulbiferum*, Brack. U. S. Expl. Exped. *Filices*, p. 141. t. 18. fig. 1. *D. Brackenridgii*, Baker (non Moore) in Syn. Fil. p. 234.—Viti (Seemann! n. 825; Milne).

2. **D. decussatum**, J. Sm. Comp. Bot. Mag. 1846, p. 28; rhizomate repente, ramoso; stipitibus semiteretibus, supra sulcatis, paleaceo-hirsutis; frondibus membranaceis, glabris, oblongo-lanceolatis, acuminatis, pinnatis; pinnis sessilibus, alternis, oblongo-lanceolatis, acuminatis, pinnatifidis; laciniis oblongis, obtusis, crenatis; rachi costa venisque paleaceo-hirsutis v. subglabris; soris obliquis; indusio membranaceo.—*D. congruum*, Brack. U. S. Expl. Exped. *Filices*, p. 141. t. 18. fig. 2. Viti (U. S. Expl. Exped.). Also from Samoan Islands (U. S. Expl. Exped.) and Sandwich Islands (Macrae! Hillebrand!).

3. **D. proliferum**, Kaulf. Enum. Fil. p. 182; stipitibus robustis, erectis, sæpe muricatis; frondibus amplis, pinnatis (v. in var. β . bipinnatis); pinnis oblongo-lanceolatis, grosse serratis v. lobatis, axillis pinnarum superiorum interdum bulbiferis; venis numerosis, pinnatis, parallelis, irregulariter conniventibus; soris linearibus, parallelis.—*Asplenium proliferum*, Lam. Encyc. Méth. vol. ii. p. 307. *Callipteris prolifera*, Bory, Itin. vol. i. p. 253. *Asplenium decussatum*, Swartz, Syn. Fil. pp. 75, 260. *Anisogonium decussatum*, Presl, Tent. Pterid. p. 116.—Viti (Seemann! n. 818; Sir E. Home!). Also from New Ireland (Barclay! n. 3556), New Hebrides (Moore!), and Tahiti (U. S. Expl. Exped.).

Var. β . *bipinnata*, Moore, Ind. Fil. p. 218; pinnis basi pinnatis, sursum pinnatifidis, apice grosse serratis; segmentis oblongis, acutis, subfalcatis.—*Digrammaria robusta*, Fée, Gen. Fil. p. 118.—Viti (Sir E. Home! Milne! U. S. Expl. Exped.). Also from Samoa (Powell!).

4. **D. esculentum**, Swartz, Syn. Fil. p. 92; trunco erecto, subarborescente; stipitibus robustis, erectis, villose pilosis; frondibus membranaceis, oblongo-lanceolatis, acuminatis, bipinnatis,

rare pinnatis; pinnis petiolatis, oblongis, acutis, pinnulis breviter petiolatis lineari-oblongis acuminatis crenato-pinnatifidis; segmentis serrulatis; venis pinnatis, conniventibus; soris linearibus, numerosis.—*Hemionitis esculenta*, Retz. Obs. Bot. vol. vi. p. 38. *Asplenium esculentum*, Presl, Rel. Hænk. vol. i. p. 45. *Anisogonium esculentum*, Presl, Tent. Pter. p. 116. *Microstegia esculenta*, Presl, Epim. p. 91. *Asplenium ambiguum*, Swartz, Syn. Fil. pp. 81, 274. *Digrammaria ambigua*, Hook. et Bauer, Gen. Fil. t. 56 C (non Presl). *Diplazium ambiguum*, Hook. Journ. 1857, p. 343. *Callipteris ambigua*, Moore, Ind. Fil. p. 216. *Diplazium malabaricum*, Spreng. Syst. vol. iv. p. 69. *Callipteris malabarica*, J. Sm. in Hook. Journ. 1841, p. 409.—Viti (U. S. Expl. Exped.).

5. **D. arborescens**, Sw. Syn. Fil. p. 92; rhizomate repente, paleis nigrescentibus dense onusto; stipitibus sordide stramineis, superne glabriusculis; frondibus coriaceis, glabris, ovato-oblongis, acuminatis, bipinnatis; pinnis breviter petiolatis; pinnulis brevissime petiolatis, basi truncatis v. adnatis, pinnatifidis, lineari-lanceolatis; venis pinnatis; soris elongatis; indusio membranaceo, integerrimo.—*Callipteris arborescens*, Bory, Voy. p. 283.—Viti (U. S. Expl. Exped.). Also from Hawaii (Mann) and Tahiti (U. S. Expl. Exped.).

6. **D. melanocaulon**, Brack. U. S. Expl. Exped. *Filices*, p. 144; stipitibus nigris, lævibus, angulatis, basi incrassatis, paleis vestitis; frondibus glabris, supra atro-viridibus, subtus pallidis, bipinnatis; pinnis stipitatis, oblongo-lanceolatis, attenuatis; pinnulis alternis, sessilibus, oblongis, acuminatis, pinnatifidis, basi truncato-cuneatis; laciniis oblongis, falcatis, subacutis, serrulatis; rachi communi flexuosa; soris brevibus, decussatis.—Viti (Seemann! n. 824; M'Gillivray! Harvey! Milne! Sir E. Home! U. S. Expl. Exped.).

7. **D. coriaceum**, Carr. in Herb. Mus. Brit.; stipitibus angulatis, supra sulcatis, glabris; frondibus coriaceis, glabris, supra nigro-viridibus, subtus viridibus, bipinnatis, ovato-acuminatis; pinnis elongato-triangulatis, petiolatis, apice acuminatis, serratis; pinnulis oblongo-lanceolatis, acuminatis, pinnatifidis; segmentis oblongis, subfalcatis, acute serratis; venis simplicibus, rare furcatis, crassis, supra prominulis, subtus sulcatis; soris brevibus; indusio membranaceo, margine integro.—Viti (Seemann! n. 827, in part).

This form was referred by Mr. Smith to his *D. brevisorum*, but it can be readily distinguished by the form of the sorus, which is almost invariably situated on a simple vein, and occupies nearly half the width of the segment; when the vein is forked the sorus is continued some distance along the anterior branch. The sori at the base of the lower segments are diplazioid. The indusium is not ciliated.

8. **D. polyodioides**, Bl. Enum. Pl. Jav. p. 194; trunco erecto, paleis lanceolatis longe acuminato-setosis dense tecto; stipitibus punctato-asperis, demum glabriusculis; frondibus membranaceis, glabris, ovatis, bipinnatis; pinnis ovato-lanceolatis, acuminatis; pinnulis petiolatis v. subsessilibus, lanceolatis, acutis, basi truncatis, pinnatifidis; segmentis falcato-oblongis, acutis, serrulatis; nervis simplicibus, patentibus, parallelis; soris oblongis; indusio membranaceo, integerrimo. Viti (Seemann! n. 826). Also from Tahiti (Nelson!).

9. **D. Vitiense**, Carr. ms.; frondibus amplis, herbaceis, bipinnatis; pinnulis petiolatis, lanceolatis, acuminatis, obtuse lobatis; rachide pubescente; venis pinnatis; soris numerosis; indusio membranaceo.—*Asplenium (Anisogonium) Vitiense*, Baker, Syn. Fil. p. 245.—Viti (Daernel).

XXIII. **Didymochlæna**, Desv. Berl. Mag. vol. v. p. 303. t. 7. fig. 6. Sporangia venis simplicibus imposita, in soros elliptico-oblongos juxta venæ extremitatum utrinque geminatos collecta. Indusium soris geminis commune, venæ subexcentrice impositum, circumcirca liberum. Venæ flabellato-furcatae, venulis liberis.—*Filices* caudice arborescente; frondibus bipinnatis, coriaceis, pin-

nulis dimidiatis, subecostatis, articulatis.—*Monochlæna*, Gaud. Voy. Freyc. p. 340. *Ceranium*, Reinw. Syllog. Pl. Nov. vol. ii. p. 2. *Tegularia*, Reinw. l. c. p. 3.

1. **D. lunulata**, Desv. Mém. Soc. Linn. vol. vi. p. 282; stipitibus dense paleaceis; frondibus amplis, coriaceis, glabris, oblongis, bipinnatis; pinnulis subsessilibus, e basi inferiore dimidiatis, superiore truncatis, subtrapezoideo-oblongis, obtusis, denticulatis, costa oblique percursis; nervis subflabellatis, sterilibus apice ad basin dentium incrassatis; soris oblongis, venula antica impositis, indusio coriaceo persistente.—*Adiantum lunulatum*, Houtt. Syst. Pl. xiii. p. 252. t. 100. fig. 1. *Aspidium truncatum*, Sw. Syn. Fil. p. 52. *Didymochlæna truncatula*, J. Sm. Hook. Journ. vol. v. p. 196. *D. sinuosa*, Desv. Berl. Mag. vol. v. p. 303.—Viti (Seemann! n. 751).

XXIV. **Polystichum**, Roth, Tent. Fl. Germ. vol. iii. p. 69. Sporangia receptaculo ex medio v. rare apice venularum imposita, in soros globosos collecta. Indusia orbicularia, peltata, margine undique libera. Venæ e costa pinnato-furcatæ v. furcatæ, venulis liberis.—Filices caudice brevi erecto, frondibus simplicibus pinnatis v. bi-tripinnatis rigidis coriaceis, margine plerumque mucronato-serratis.—*Peltochlæna*, Fée, Gen. Polyp. p. 289. *Cyclopeltis*, J. Sm. Ferns Brit. and For. p. 165. *Hemicardion*, Fée, Gen. Polyp. p. 282.

In addition to the species described, the following occur in tropical Polynesia:—1. *P. vestitum*, Presl, Tent. Pter. p. 83, from the Pacific Isles (Forster!), Tutu Island, New Hebrides (C. Moore!). 2. *P. Hillebrandii*, Carr. ms., from Sandwich Isles (Hillebrand!), distinguished from *P. aculeatum*, Roth, by the more coriaceous frond, the pinnules entire or with a single tooth on either side, and with an acute spinulose apex, the rachis and nerves furnished with long toothed scales, and the orbicular indusium with a tumid centre. 3. *P. Haleakalense*, Brack. U. S. Expl. Exped. Filices, p. 204. Oahu (Macrae! U. S. Expl. Exped.).

Aspidium adiantæforme, Forst. Prodr. n. 449 (*P. coriaceum*, Schott), said to be from the Pacific Isles, is most probably from New Zealand.

1. **P. semicordatum**, T. Moore, Ind. Fil. p. 103; stipitibus semiteretibus, basi paleis ferrugineis lanceolatis obsitis, superne puberulis; frondibus subcoriaceis, glabris, elongato-lanceolatis, pinnatis; pinnis patentibus sessilibus, basi cordatis auriculatis, auricula sursum spectante elongato-oblongis, deorsum spectante magna falcata; linearibus acuminatis subintegris, inferioribus remotis paullulum abbreviatis, superioribus approximatis sensim decrescentibus, supremis cum terminali confluentibus nervis 2-3-furcatis; soris 1(-3)-seriatis, infra apice venularum impositis, indusio fugace.—*Aspidium semicordatum*, Sw. Syn. Fil. p. 45. *Lastrea semicordata*, Presl, Tent. Pterid. p. 77.

2. **P. aristatum**, Presl, Tent. Pterid. p. 83; rhizomate brevi; stipitibus villosiusculis, basi squamatis; frondibus ovato-deltaideis v. deltaideo-lanceolatis, valde coriaceis, glabris, subtus incano-nitentibus, tri- v. quadripinnatis, pinnulis basi adnatis v. stipitatis ovato-oblongis, serratis v. pinnatifidis, serraturis mucronatis; soris medio venularum insertis, indusiis orbicularibus.—*Polypodium aristatum*, Forst. Prodr. n. 448. *Aspidium aristatum*, Swartz, Syn. Fil. p. 53. *Lastrea aristata*, T. Moore, Ind. Fil. p. 86.—Viti (Seemann! n. 742, Sir E. Home! M'Gillivray!). Also from Tahiti (Forster! Banks and Solander! Nelson!), Sunday Island (Milne!), Aneitum (M'Gillivray!), and St. Christina (Collie!).

XXV. **Lastrea**, Bory, Dict. Class. d'Hist. Nat. vol. vi. p. 588. Sporangia receptaculo ex medio rare apice v. sub apice venularum imposita, in soros globosos collecta. Indusia reniformia, plana v. fornicata, fugacia v. persistentia. Venæ e costa simplices furcatæ v. pinnatæ, venulis liberis.—Filices caudice erecto decumbente v. repente, frondibus pedatis, pinnatis v. bi-tripinnatis.—*Dryopteris*, Adanson, Fam. d. Pl. 20. *Gleichenia*, Necker, Elem. Bot. vol. iii. p. 314. *Dichasium*, A. Braun, Flora, vol. xxiv. p. 710. *Thelypteris*, Schott, Gen. Fil.

In addition to the species recorded, the following have been noticed in tropical Polynesia:—1. *L.*

tenericaulis, Moore, Ind. Fil. p. 107, from Tahiti (Banks and Solander ! Nelson ! Barclay!), and New Hebrides, Tana and Aneitum (M'Gillivray !). 2. *L. truncata*, Brack. U. S. Expl. Exped. *Filices*, p. 195. t. 27, from Sandwich Islands (Nelson ! Strickland ! Hillebrand !). 3. *L. globulifera*, Brack. l. c. p. 194, from Sandwich Islands (Macrae ! Hillebrand ! U. S. Expl. Exped.). 4. *L. glabra*, Brack. l. c. p. 200, from Sandwich Islands (Barclay ! n. 1220, Strickland ! Hillebrand !). 5. *L. Barclayi*, Carr. ms.; stipitibus nigricantibus, basi paleis lanceolatis acuminatis onustis, cum ramificationibus fusco-pubescentibus; frondibus ovatis, pinnatis, supra glabris, subtus pubescentibus; pinnis oppositis, subpetiolatis, lineari-lanceolatis, acuminatis, pinna terminali magna, margine irregulariter sinuata v. lobata; lateralibus margine sinuatis, basi superiore lobatis; inferioribus inæqualiter inciso-pinnatifidis, v. pinnatis; costis prominulis, venulis liberis numerosis; soris biserialibus ad apicem venularum in areolis positus.—New Ireland (Labillardière ! Barclay !).

1. **L. Harveyi**, Carr. ms. in Herb. Mus. Brit.; stipitibus semiteretibus, supra sulcatis, nitidis; frondibus membranaceis, ovato-lanceolatis, acuminatis, pinnatis; pinnis superioribus alternis approximatis, inferioribus oppositis, remotis, lineari-acuminatis similibus, pinnatifidis, apice attenuatis, basi truncatis v. obtuse cuneatis; laciniis oblongis, obtusis, subpatentibus; rachi cum ramificationibus hirsuto, venis supra setosis; soris marginalibus, indusio glabro integro.—*Nephrodium patens*, Auct. (partim).—Viti (Harvey ! Sir E. Home !). Also from Upolu, Navigators' Islands (Sir E. Home !).

2. **L. Brackenridgii**, Carr. ms.; stipitibus lævis, sulcatis; frondibus pinnatis, pinnis alternis oblongo-lanceolatis, caudato-acuminatis, pinnatipartitis, apice serrulatis, supra glabris, subtus glanduloso-pubescentibus; laciniis oblongo-lanceolatis, acutis, falcatis, latere inferiore brevioribus, basi diminuendis; costa utrinque pubescente; soris parvis, biserialibus, costæ approximatis, indusio leviformi piloso, sporangiis sessilibus glanduliferis.—*Aspidium Brackenridgii*, Mett. Ann. Sc. Nat. ser. 4. vol. xv. p. 75. *L. attenuata*, Brack. U. S. Expl. Exped. *Filices*, p. 193. t. 26. fig. 2. *Nephrodium inæquilaterale*, Baker, Syn. Fil. p. 454.—Viti (Milne !). Also from Tahiti (Banks and Solander ! Nelson ! Collie !) and Aneitum (M'Gillivray !)

3. **L. Prenticei**, Carr. ms. in Herb. Mus. Brit.; frondibus glabris, subtus pallidioribus, acuminatis, pinnatis; pinnis sessilibus, lineari-lanceolatis, acuminatis, basi elongato-cuneatis, erecto-patentibus, pinnatifidis, lobis triangulato-oblongis, patentifalcatis, margine integris, sparse setosis; rachi stramineo glabro; costis primariis infra glabris, supra hispidis, venis simplicibus anterioribus elongatis; soris distinctis, subcostalibus; indusio integro, glabro.—Viti (M'Gillivray !).

The materials on which this species is established are somewhat imperfect, consisting of only the upper portion of two fronds, but they are sufficient to show that it is very distinct from any hitherto described. I have associated with it the name of C. Prentice, Esq., who noted it as new in the Herbarium of the British Museum.

4. **L. articulata**, Brack. U. S. Expl. Exped. *Filices*, p. 191. t. 26. fig. 1; rhizomate repente nigro, sparse squamoso; stipitibus remotis, teretibus, articulatis, rufo-pubescentibus; frondibus subcoriaceis, lineari-lanceolatis, pinnatis; pinnis sessilibus, alternis, oblongo-lanceolatis, pinnatifidis, supra pubescentibus, apice subacuto serratis, basi truncato-cuneatis, superioribus coadunatis crenato-dentatis, laciniis semioblongis obtusis; costa venisque utrinque rufo-pubescentibus; soris sparsis; indusio reniformi-orbiculato, lacero.—Viti (Seemann ! n. 721, Milne ! U. S. Expl. Exped.). Allied to *L. albo-punctata*, Presl, but distinguished by its long filiform rhizome, the position of the articulation of the stipes, the subcostal sori, and other characters.

5. **L. squamigera**, Brack. U. S. Expl. Exped. *Filices*, p. 198; rhizomate brevi, erecto; stipitibus rachibus costisque subtus squamis reticulatis fimbriatis adpressis dense obsitis; frondibus ovato-deltaideis, pinnatis, basi bipinnatis; pinnis lanceolatis, acuminatis, pinnatifidis; venis fureatis; soris magnis, inter costam et marginem æquidistantibus.—*Nephrodium squamigerum*, Hook. et Arn. Beechey's Voy. p. 106.—Viti (U. S. Expl. Exped.). Also from Sandwich Islands (Collie ! Seemann ! Strickland !).

6. **L. tenuifolia**, Brack. U. S. Expl. Exped. *Filices*, p. 199; stipite angulato, squamoso-hirsuto; frondibus membranaceis, basi fere tripinnatis, sursum bipinnatis apice pinnatifido; pinnulis oblongo-lanceolatis, acutis, pinnatipartitis, basi obliquis, adnato-decurrentibus, laciniis lineari-oblongis, inferioribus inciso-serratis; rachi costa venisque utrinque paleaceis, glanduloso-hirsutis; soris parvis; indusio reniformi, lacero.—*N. tenuifolium*, Hook. Sp. Fil. vol. iv. p. 144.—Viti (U. S. Expl. Exped. Milne).

7. **L. Fijiensis**, Carr. ms.; stipitibus rachibusque ferrugineo-paleaceo-hirsutis; frondibus amplis, submembranaceis, firmis, siccitate fusco-viridibus, late ovato-acuminatis, bipinnatis; pinnis primariis remotis, ovatis, acuminatis, petiolatis (supremis exceptis), secundariis v. pinnulis oblongo-linearibus, acutis, sessilibus, profunde fere ad costam pinnatifidis, segmentis oblongo-ovatis ciliatis, obtusis inferioribus pinnatifido-lobatis, reliquis subintegris; soris biserialibus dorso venularum impositis, indusiis orbiculari-cordatis pilis clavatis ciliatis.—*Nephrodium Fijiense*, Hook. Sec. Cent. Ferns, t. 67.—Viti, on mountains, not common (Milne, n. 159).

8. **L. dissecta**, Carr. ms.; rhizomate brevi, erecto; stipitibus fasciculatis, semiteretibus, nigris v. fulvo-brunneis, cum rachidibus costisque pubescentibus, basi paleaceis; frondibus ovatis, acuminatis, membranaceis, bipinnatis; pinnis primariis ovatis petiolatis, secundariis sessilibus lanceolatis acuminatis profunde pinnatifidis, segmentis oblongis obtusiusculis sinuato-dentatis v. subpinnatifidis; venis simplicibus v. furcatis; soris sparsis, indusio cordato-reniformi.—*Polypodium dissectum*, Forst. Prodr. n. 441. *Nephrodium dissectum*, Desv. Ann. Linn. vol. vi. p. 259 (non Baker). *Aspidium attenuatum*, Sw. Syn. Fil. p. 48. *Nephrodium Milnei*, Hook. Sec. Cent. Ferns, t. 62.—Viti (Milne!). Also from Friendly Islands (Nelson!), Tongatabu (Sir E. Home!), Upolu, Samoa Islands (Sir E. Home!), and Aneitum, New Hebrides (M'Gillivray!).

9. **L. davallioides**, Brack. U. S. Expl. Exped. *Filices*, p. 202; stipitibus teretibus, supra sulcatis, scabris, basi squamosis; frondibus subcoriaceis, decompositis, divisionibus tripinnatis; pinnis primariis et secundariis oblongis, acuminatis; pinnulis rhomboideo-lanceolatis, pinnatifidis, laciniis lanceolatis acutis inciso-serratis; rachi cum costa furfuraceo-hirsuta; soris solitariis; indusio rotundato-reniformi, integerrimo.—Viti Levu (Græffe!). Also from Tahiti (U. S. Expl. Exped.).

XXVI. **Oleandra**, Cavan. Prælect. p. 252. Sporangia receptaculo prope basin venularum imposita, in soros globosos collecta. Indusia reniformia. Venæ e costa simplices v. furcatae, venulis parallelibus unisoriferis.—*Filices* rhizomate repente v. erecto; stipitibus nodoso-articulatis; frondibus simplicibus, membranaceis v. subcoriaceis.—*Neuronia*, Don, Prodr. Fl. Nep. p. 6. *Ophiopteris*, Reinw. Syllog. Ratis. vol. ii. p. 3.

O. Sibbaldii, Grev. Ann. Nat. Hist. Ser. 2. vol. i. p. 327, occurs in Tahiti (D. Nelson!).

1. **O. mollis**, Presl, Epim. Bot. p. 41; rhizomate erecto, tereti, ramoso, paleis squamæformibus ovatis obtusis imbricatis obtecto, ramis radices aereas filiformes elongatas deorsum flexas gerentibus, et apicem versus paleis lanceolato-subulatis densissimis obtectis; stipitibus brevibus, glabris, pulvino brevissimo paleaceo; frondibus supra glabris, subtus pubescentibus, subverticillatis, deciduis, delapsis, pulvinum stipitis dereliquentibus, lineari-lanceolatis, apice submucronato-acuminatis; venis 2-3-furcatis pubescentibus; soris subcostalibus, uniseriatis; indusio membranaceo, integro, oblongo-reniformi.—Viti (Seemann! n. 750), Ovalau, climbing trees in mountain woods (M'Gillivray! n. 1). Also from Aneitum (C. Moore!).

XXVII. **Nephrolepis**, Schott, Gen. Fil. t. 3. Sporangia receptaculo ad apicem venularum imposita, in soros rotundatos collecta. Indusia rotundato-reniformia v. subreniformia. Venæ pinnato-furcatae, venulis liberis ad apices incrassatis.—*Filices* caudice brevi erecto stolonifero v. repente,

interdum tuberifero; frondibus pinnatis; pinnis articulatis.—*Nephrodium*, Link, Fil. Sp. (non Rich.) *Lepidoneuron*, Fée, Gen. Polyp. p. 301.

The following species have been noticed in tropical Polynesia:—1. *N. exaltata*, Schott, Gen. Fasc. 1, from the Sandwich Islands (Hillebrand!), Oahu (Macrae! Barclay! n. 1227), and Maui (Collie!), Tahiti (Nelson! Barclay!), Tongan Islands (Nelson!), and New Hebrides, Aneitum (M'Gillivray!). 2. *N. ramosa*, T. Moore, Ind. Fil. p. 102, from Samoa (Powell!).

1. **N. tuberosa**, Presl, Tent. Pter. p. 79; rhizomate oblique fibroso; stipitibus fasciculatis, brevibus, supra dense infra laxe paleaceis; frondibus subcoriaceis, linearibus, pinnatis; pinnis approximatim v. imbricatis, basi inæqualiter cordatis, lobo inferiore plus minus rotundato, superiore auriculatim producto, oblongis, obtusis; sterilibus serratis, fertilibus undulato-serratis, auricula integerrima, majuscula acuta, dorso rachis pinnæque proximæ superioris incumbente; venis furcatis, ramis anterioribus soriferis; soris obliquis; indusio semiorbiculari v. subreniformi, versus apicem pinnæ libero.—*Aspidium tuberosum*, Bory in Willd. Sp. Pl. vol. v. p. 234. *N. cordifolia*, Baker (ex parte), Syn. Fil. p. 300 (non *Polypodium cordifolium*, Linn.)—Viti (Seemann! n. 745). Also from Aneitum (M'Gillivray!).

2. **N. acuta**, Presl, Tent. Pter. p. 79; stipitibus subteretibus, antice sulcatis, flavicantibus, paleaceis; frondibus membranaceis, viridibus, glabris, oblongo-lanceolatis, pinnatis; pinnis alternis, subsessilibus, patentibus, lanceolatis, acutis, crenatis, basi truncato-rotundatis, sursum latioribus, non autem in lobulum dilatatis; venis 3-4-furcatis; soris inter costam et marginem positus, v. submarginalibus, indusio reniformi-orbiculare.—*Aspidium acutum*, Schkuhr, Fil. p. 32. t. 31. *A. biserratum*, Schkuhr, Fil. p. 34. t. 33.—Viti, Ovalau (M'Gillivray!), Sandalwood Bay (U. S. Expl. Exped.). Also from Tahiti (Banks and Solander!), and Aneitum, New Hebrides (M'Gillivray!).

3. **N. hirsutula**, Presl, Tent. Pter. p. 79; stipitibus teretibus, antice sulcatis, paleaceo-hirsutis; frondibus oblongo-lanceolatis, pinnatis; pinnis pilis paleaceis pubescentibus, alternis, subsessilibus, patentibus, falcato-lanceolatis, acuminatis, crenatis, apice serratis, basi truncatis, utrinque auritis, auricula sursum spectante longiore angusta acutiuscula, deorsum spectante, oblique rotundata; nervis furcatis; soris submarginalibus, indusio orbiculari-reniformi.—*Polypodium hirsutulum*, Forst. Prodr. n. 439. *Aspidium hirsutulum*, Schkuhr, Fil. p. 33. t. 33. *Nephrodium hirsutulum*, Gaud. Bot. Freyc. Voy. p. 339. *Aspidium pilosum*, Langsd. et Fisch.—Viti (Seemann! n. 744; Harvey! U. S. Expl. Exped.; Græffe!) Also from Pacific Islands (Forster!), Tahiti (Banks and Solander!), Isle of Pines (M'Gillivray!), Upolu (Sir E. Home!), and Wallis' Island (Sir E. Home!).

Var. β . *nudiuscula*, Solander, ms. in Prim. Flor. Ins. Oc. Pac. (ined.); stipitibus pilis paleaceis e flavo-ferrugineis adpressis; pinnis latioribus pallidioribus, minusque pubescentibus; soris marginalibus.—Oahu (Nelson!), Tonga Islands (Nelson!), and New Hebrides, Aneitum (M'Gillivray!), Tana (Barclay!).

4. **N. saligna**, Carr. in Herb. Mus. Brit.; stipitibus lævissimis, strictis, tenuibus, antice late canaliculatis, basi paleaceis; frondibus glaberrimis, longissimis, lineari-lanceolatis, pinnatis; pinnis alternis, sessilibus, remotis, lanceolatis, acuminatis, basi cuneatis, articulatis, margine serratis; venis 3-4-furcatis, ramis anterioribus apice soriferis; soris submarginalibus magnis; indusio orbiculari-reniformi integro.—*Polypodium salignum*, Solander in Herb. Mus. Brit. *Nephrolepis splendens*, Presl?, Brack. U. S. Expl. Exped. p. 212.—Viti (Seemann! n. 743; Sir E. Home! U. S. Expl. Exped.).—Also from Tahiti (Banks and Solander!), and Mangsi Islands (U. S. Expl. Exped.).

5. **N. trichomanoides**, J. Sm. in Hook. Journ. 1841, p. 413; rhizomate repente, filiformi, hirsuto; stipitibus brevissimis, teretibus, articulatis; frondibus membranaceis, ovato- v. lineari-lanceo-

latis, pinnatis; pinnis glabris, dimidiato-oblongis, obtusis, integris v. undulatis, basi supra truncato-auriculata, rachi pubescenti parallela; venis furcatis; ramis anterioribus, soriferis; soris rotundatis, indusio reniformi-orbiculari integerrimo.—*N. repens*, Brack. U. S. Expl. Exped. *Filices*, p. 209.—Viti, Ovalau; on trees in mountain woods (M'Gillivray! n. 1; U. S. Expl. Exped.).

This species is nearly allied to *N. ramosa*, T. Moore, Ind. Fil. p. 102 (*Aspidium ramosum*, Beauv. Flore d'Oware, p. 54. pl. xci.), but it can at once be distinguished by the truncated frond terminating in a single large pinna, so admirably shown in Beauvois' figure. It is difficult to understand how it came to be confounded with *Nephrodium oblitteratum*, R. Br. Prodr., which is a completely different plant, though a true *Nephrolepis* (*N. oblitterata*, Carr. ms.). The description of *N. oblitterata*, Hook. Sp. Fil. vol. iv. p. 154, is taken from *N. ramosa*, T. Moore.

XXVIII. **Nephrodium**, Richard in Mich. Flor. Bor.-Amer. vol. ii. p. 266. Sporangia receptaculo ex medio venularum imposita, in soros globosos compacta. Indusia reniformia. Venæ pinnatæ, prominentes, venulis simplicibus inferioribus conniventi-anastomosantibus.—*Filices* caudice brevi, suberecto v. repente; frondibus simplicibus, pinnatifidis v. pinnatis.—*Cyclosorus*, Link, Fil. Sp. *Pronephrium*, Presl, Epim. Bot. p. 258.

In addition to the species described below, the following are recorded from tropical Polynesia:—
1. *N. abruptum*, Hook. Sp. Fil. vol. iv. p. 77, from Aneitum, New Hebrides (M'Gillivray!). 2. *N. molle*, Desv. Mem. Soc. Linn. vol. vi. p. 258, from Tahiti (Nelson!) and Aneitum, New Hebrides (M'Gillivray!). 3. *N. cyatheoides*, Presl, Tent. Pter. p. 81, from Sandwich Islands (Nelson! Macrae! Barclay! n. 1226; Seemann! Hillebrand!). 4. *N. obliquatum*, Baker, Syn. Fil. p. 264, from New Caledonia (Vieillard). 5. *N. subsericeum*, Baker, Syn. Fil. p. 281, from New Caledonia (Vieillard). 6. *N. Vieillardii*, Baker, Syn. Fil. p. 282, from New Caledonia (Vieillard). 7. *N. membranifolium*, Presl, Rel. Hænk. p. 36. t. 5. f. 3 (*Polypodium Milnei*, Hook. Sp. Fil. vol. iv. p. 254, fide Baker), from Tutuna, New Hebrides (Milne). 8. *N. latifrons*, Hook. Sp. Fil. vol. iv. p. 138, from Sandwich Islands (U. S. Expl. Exped.; Douglas; Seemann; Hillebrand). 9. *N. arborescens*, Baker, Syn. Fil. p. 286, from Samoa (Powell).

1. **N. propinquum**, R. Br. Prodr. p. 148; rhizomate repente; stipitibus elongatis, lævibus, angulatis; frondibus pinnatis; pinnis subpetiolatis, ensiformibus, apice attenuatis, integris, basi truncato-cuneatis, inciso-pinnatifidis, subtus pubescentibus; lobis triangulari-oblongis; costa parce paleacea venisque pubescentibus atomis resinosis conspersis; soris submarginalibus confluentibus, indusio piloso.—Viti (U. S. Expl. Exped.). Also from the Sandwich Islands (Menziès! Nelson! Macrae! Seemann! Hillebrand!) and Aneitum, New Hebrides (M'Gillivray!).

2. **N. Hænkeanum**, Presl, Epim. Bot. p. 46; stipitibus erectis, pubescentibus; frondibus oblongo-lanceolatis, pinnatis; pinnis suboppositis, sessilibus, linearibus, acutissimis, basi obtusis, pinnatifidis; lobis acutis, subfalcatis, integerrimis, rachis cum ramificationibus molliter denseque pubescentibus; venis simplicibus, numerosis, infimis quatuor in arcus anastomosantibus; soris versus apicem venarum positis, distinctis, tamen approximatis, indusio ciliato.—*N. serratum*, Presl, Rel. Hænk. vol. i. p. 34. *Aspidium multilineatum*, Mett. Aspid. p. 108.—Viti (Harvey!). Also from Tongan Islands (Nelson!) and Upolu, Navigators' Islands (Sir E. Home!).

3. **N. invisum**, Carr. in Herb. Mus. Brit.; stipitibus erectis, subglabris, supra sulcatis, hirsutis, rachibus cum ramificationibus hirsutis; frondibus elongato-ovatis, acuminatis, basi diminuendis, pinnatis; pinnis alternatis, infimis, suboppositis et distantibus, sessilibus, linearibus, acutissimis, basi incrassatis, pinnatifido-serratis, lobo superiore ad basin pinnarum distantium et minorum subpinnatifido, subtus hirsutis, supra glabris; venis simplicibus, infimis, anastomosantibus; soris ad apicem venarum positis, approximatis; indusio hirsuto.—*Polypodium invisum*, Forst. Prodr. n. 443. *Aspidium invisum*, Sw. Syn. Fil. p. 48 (ex parte).—Viti (Seemann! n. 739, 740; Sir E. Home! Barclay! n. 3469; M'Gillivray!). Also from Pacific Islands (Forster!), Tahiti (Banks and Solander! Smith!), Erromanga, and Aneitum, New Hebrides (M'Gillivray!), New Caledonia (Strange!), Tonagatoboo (Sir E. Home!), and Vavao (Barclay!).

This species is very nearly related to *N. propinquum*, R. Br., but the enlarged base of the more sessile pinnæ and the greater pubescence, besides other characters, sufficiently distinguish them.

4. **N. nymphale**, Carr. ms.; stipitibus pubescentibus, semiteretibus, supra sulcatis; frondibus membranaceis, utrinque pubescentibus, oblongis, acuminatis, pinnatis; pinnis alternis, remotis, horizontalibus, lineari-acuminatis, pinnatifidis, apice attenuatis, serratis v. integris, basi cuneatis, infimis distantibus reflexis; lobis oblongis, obtusis, subfalcatis; costa venisque hirsutis; venis simplicibus, infimis anastomosantibus; soris inter costam et marginem loborum positis, indusio hirsuto.—*Polypodium nymphale*, Forst. Prodr. n. 442. *Nephrodium molle*, Auct. ex parte.—Viti (U. S. Expl. Exped.). Also from Pacific Islands (not New Zealand, as stated in Prodr. Flor. Ins. Aust.) (Forster!), Tahiti (Banks and Solander! Nelson! Barclay! n. 3337), Tongan Islands (Nelson! Barclay! n. 3418), and New Hebrides, Aneitum (M'Gillivray!).

5. **N. truncatum**, Presl, Tent. Pter. p. 81; stipitibus lævis, trisulcatis; frondibus membranaceis, pinnatis, supra nitidis, ad costam pubescentibus, oblongo-lanceolatis; pinnis subalternis, sessilibus, lineari-lanceolatis, in apicem serratum denique integerrimum attenuatis, basi subtruncatis, infimis distantibus cordato-ovatis, pinnatifidis, laciniis oblongis, truncatis v. obtusis; venis simplicibus, 2 rarius 3 inferioribus anastomosantibus; soris parvis, indusio reniformi integerrimo glabro.—*Aspidium truncatum*, Gaud. Freyc. Voy. p. 332. t. 10. *N. Hudsonianum*, Brack. U. S. Expl. Exped. *Filices*, p. 188. t. 25.—Viti, Ngau (M'Gillivray! Milne!). Also from Aneitum (M'Gillivray!), Manicola (C. Moore!), and Sandwich Islands (Nelson! Seemann! Hillebrand!).

XXIX. **Pleocnemia**, Presl, Tent. Pter. p. 183. Sporangia receptaculo ex medio venularum imposita, in soros globosos compacta. Indusia reniformia. Venæ reticulatæ et arcuato-anastomosantes, areolis costalibus elongatis, venulis marginalibus liberis.—*Filices* rhizomate subarborescente; frondibus amplis, bipinnato-pinnatifidis; pinnis inferioribus bipartitis v. parvis pinnatifidis.—*Haplodictyum*, Presl, Epim. Bot. p. 50.

1. **P. Leuzeana**, Presl, Tent. Pter. p. 184; caudice brevi, crasso, erecto; stipitibus striatis, cum ramificationibus supra glanduloso-hirtis; frondibus amplis, subcoriaceis, infra pallidis, subdeltoideis; pinnis lineari-lanceolatis, pinnatifidis v. inferioribus subpinnatis; laciniis oblongis, subfalcatis, integris, serrato-dentatis, crenatis v. pinnatifidis; soris ad costulam laciniarum uniseriatis v. irregulariter bi-triseriatis; indusio reniformi, minuto, fugace.—*Polypodium Leuzeanum*, Gaud. Bot. Freyc. p. 361. t. 6. *Nephrodium Leuzeanum*, Hook. Sp. Fil. vol. iv. p. 61.—Viti (Seemann! n. 741; Harvey! Milne! U. S. Expl. Exped.). Also from the Samoan Islands (Powell!).

XXX. **Sagenia**, Presl, Tent. Pter. p. 86. Sporangia receptaculo ex apice venularum liberarum v. ex medio v. anastomosanti venularum coalitarum imposita, in soros rotundatos compacta. Indusia cordato-reniformia. Venæ e costa pinnatæ prominentes, venulis arcuato- et repetito-anastomosantibus cum ramis liberis.—*Filices* rhizomate brevi erecto v. decumbente v. subrepente; frondibus amplis pinnatis, bi-tripinnatis, sæpe pedato-pinnatis.

The following species have also been found in tropical Polynesia:—1. *S. apiifolia*, T. Moore, Ind. Fil. p. 85, from the Sandwich Islands (Macrae! Strickland! Greaves! Seemann!). 2. *S. caryotideum*, Wall. Cat. n. 376, from Sandwich Islands (Nelson! Hillebrand! U. S. Expl. Exped.).

1. **S. pteropus**, Kunze, Bot. Zeit. iv. p. 462; trunco erecto, paleis fuscis ovato-lanceolatis acuminatis onusto; frondibus subcoriaceis, glabris, breviter stipitatis, oblongis, basi longe attenuatis, pinnatipartitis; laciniis ala lata confluentibus, lanceolato-oblongis, acuminatis, subsinuatis, infimis nonnunquam bipartitis, superioribus approximatis; soris inter costas secundarias biseriatis, iisque

approximatis, indusio reniformi plano coriaceo.—*Aspidium decurrens*, J. Sm. Hook. Journ. vol. iii. p. 410 (non Presl). *A. alatum*, Brack. (non Wall.) U. S. Expl. Exped. *Filices*, p. 179.—Viti (Seemann! n. 748; M'Gillivray!). Also from Tahiti (Nelson! Collie!) and Samoa (U. S. Expl. Exped.).

2. **S. pachyphylla**, T. Moore, Ind. Fil. p. 99; caudice erecto; stipitibus basi paleaceis; frondibus coriaceis, glabris, oblongis, acuminatis, pinnatis; pinnis infimis, subpetiolatis, superioribus adnatis, lanceolato-oblongis v. e basi subrotundata sensim attenuatis, acuminatis, infimis v. inferioribus deorsum bipartitis v. pinnatipartitis, laciniis obtusis fertilibus contractis; soris inter costas secundarias biserialis majoribus; indusio membranaceo, rigido, glabro, rotundato-oblongo.—*Aspidium pachyphyllum*, Kunze, Bot. Zeit. vol. vi. p. 259. *A. repandum*, Brack. U. S. Expl. Exped. *Filices*, p. 179.—Viti (Milne). Also from Aneitum, New Hebrides (M'Gillivray!), and Tahiti (U. S. Expl. Exped.).

3. **S. latifolia**, Carr. ms. (non Presl); rhizomate repente; stipitibus cum ramificationibus ebeneis nitidis, infra paleis nigricantibus lanceolatis onustis; frondibus membranaceis, bipinnatis, apice pinnatifidis; pinnis pinnulisque petiolatis, pinnulis elongato-deltaideis acuminatis, basi cordatis, apice pinnatifidis; segmentis triangulatis acutis v. obtusis crenatis; venis prominulis; soris parvis, subbiserialibus; indusiis reniformibus, minutis, fugacibus.—*Polypodium latifolium*, Forst. Prodr. n. 457; Swartz, Syn. Fil. p. 234; Schkuhr, *Filices*, t. 24 (nec *Aspidium latifolium*, J. Sm., non *A. Forsteri*, Kze.). *Drynaria latifolia*, Brack. U. S. Expl. Exped. *Filices*, p. 50. *Aspidium irregulare*, Brack. U. S. Expl. Exped. *Filices*, p. 180. *Nephrodium irregulare*, Baker, Syn. Fil. p. 298. *Sagenia Hippocrepis*, Brack. U. S. Expl. Exped. *Filices*, p. 181.—Viti (Seemann! n. 747; Sir E. Home!), Lakemba (Harvey!), Matuku (M'Gillivray!), Ngau (M'Gillivray!), and Ovalau (M'Gillivray!). Also from Pacific Islands (Forster!), Tahiti (Banks and Solander! Barclay! n. 3328! Collie! Salomon Islands (Milne!), and New Hebrides, Tana (W. Anderson! M'Gillivray!), and Manicola (C. Moore!).

The very caducous indusium of this species has led to its being placed in *Polypodium* by some authors. The indusium is small, membranaceous, and reniform. Independent of the form of the true plants, the indusium supplies an easy means of distinguishing *S. latifolia* from *S. apiifolia*, being in the latter species large, firm, and more persistent.

TRIBUS VI. POLYPODIEÆ.

XXXI. **Polypodium**, Linn. Syst. Nat. ed. 1. Sporangia venarum apice v. latere imposita, in soros rotundos v. ovoideos, superficiales v. immersos aggregata. Venæ simplices v. furcatae, venulis liberis.—*Filices* rhizomate repente, decumbente v. erecto; frondibus simplicibus pinnatifidis pinnatis v. 2-3-pinnatis.—*Adenophorus*, Gaud. Dict. Class. vol. vi. p. 587. *Marginaria*, Bory, Dict. Class. vol. vi. p. 587. *Cryptosorus*, Fée, Gen. Fil. p. 231. *Lastrea*, R. Br. Plant. Jav. Rar. p. 4. *Phegopteris*, Fée, Gen. Fil. p. 242.

In addition to the species described below, the following have also been found in tropical Polynesia:—
1. *P. Samoense*, Baker, Syn. Fil. p. 321, from Samoa (Powell, n. 111). 2. *P. pleiosorum*, Mett. Linnæa, 1869, p. 128, from Tahiti (Banks and Solander! D. Nelson! A. Collie! Vesco, Lepine). 3. *P. pseudo-grammitis*, Gaud. in Freyc. Voy. Bot. p. 345, from Sandwich Islands (Nelson! Macrae! Brackenridge), and Hawaii (Mann). 4. *P. sessilifolium*, Hook. Sp. Fil. vol. iv. p. 168. t. 272 A, from Tahiti (D. Nelson!) and Raiatea (A. Collie!) 5. *P. Hookeri*, Brack. U. S. Expl. Exped. *Filices*, p. 4, from Oahu (D. Nelson! Brackenridge), and Hawaii (Mann). 6. *P. minimum*, Brack. U. S. Expl. Exped. *Filices*, p. 5. t. 1. f. 3 (*P. serrulatum*, Hook. ex parte, non Swartz), from Sandwich Islands (Menziès! U. S. Expl. Exped., Hillebrand), Hawaii (Mann). 7. *P. subpinnatifidum*, Bl. Enum. p. 129 (*P. Haaliloanum*, Brack.), from Sandwich Islands (U. S. Expl. Exped.), Hawaii (Mann). 8. *P. trachycarpum*, Mett. Linnæa (1869), p. 127,

from Tahiti (Vesco). 9. *P. crassifrons*, Baker, Syn. Fil., from New Caledonia (Deplanche). 10. *P. subnudum*, Mett. Linnæa, 1869, p. 130, from Society Islands, Huahine (Capt. Cook!), Tahiti (Collie! Barclay! n. 3327, Vesco, Riebourt). This is a true *Polypodium*, which has been confounded in herbaria, as Mettenius states, with *Davallia contigua*. Indeed, at page 338, I erroneously referred Capt. Cook's specimen to that species. It may, however, be only a Polypodioid state of the *Davallia*, in which the indusium is almost entirely aborted, and forms only a slightly-raised ridge on the inner margin of the sorus. The sporangia are very short-stalked, grouped in roundish oval sori on the under surface of the pinnules, and extend often along the margins of the pinnule to its very base; while in *Davallia contigua* they are confined to the upper half of the pinnule. The rachis is green, not dark, and less setose also than in the *Davallia*. 11. *P. lasiostipes*, Mett. Ann. Sc. Nat. ser. 4. vol. xv. p. 76, from New Caledonia (Vieillard, n. 1601, 1602). 12. *P. sarmentosum*, Brack. U. S. Expl. Exped. *Filices*, p. 8. t. 2. f. 3, from Sandwich Islands (D. Nelson! Macrae! U. S. Expl. Exped.), Hawaii (Mann). 13. *P. adenophorus*, Hook. et Arn. Beechey's Voy. p. 104. pl. xxii., from Sandwich Islands (Beechey, Macrae!), Hawaii (Mann). 14. *P. decorum*, Brack. U. S. Expl. Exped. *Filices*, p. 7. t. 2. f. 2, from Society Islands, Tahiti (Banks and Solander! U. S. Expl. Exped.), Raiatea (Collie!), and Sandwich Islands, Aneitum (M'Gillivray!). 15. *P. pellucidum*, Kaulf. Enum. Fil. p. 101, from Sandwich Islands, Oahu (Chamisso, Nelson! Menzies! Macrae! Hillebrand! Douglas, n. 75), Hawaii (Mann). 16. *P. tamariscinum*, Kaulf. Enum. Fil. p. 117, from Sandwich Islands (Chamisso, Nelson! Menzies! Barclay! Mann, Remy). 17. *P. tripinnatifidum*, Presl, Tent. p. 178 (*P. Hillebrandii*, Hook.), from Sandwich Islands (Macrae! Strickland! Hillebrand! Mann). 18. *P. hymenophylloides*, Kaulf. Enum. Fil. p. 118, from Sandwich Islands (Chamisso, Strickland! Mann). 19. *P. abietinum*, Eaton, Proc. Am. Acad. of Arts and Sc. vol. vii. (1867), p. 219, from Sandwich Islands (U. S. Expl. Exped., Baldwin, Mann). 20. *P. unisorum*, Baker, Syn. Fil. p. 307, from Sandwich Islands (Hillebrand). 21. *P. rufescens*, Blume, Fil. Jav. p. 194. t. 91, from New Caledonia (*vide* Baker, Syn. Fil. p. 309). 22. *P. unidentatum*, Hook. and Arn., Beechey Voy. p. 105, from Sandwich Islands (Nelson! Hillebrand! Mann). 23. *P. crinale*, Hook. and Arn., Beechey Voy. p. 105, from Sandwich Islands (Hillebrand! U. S. Expl. Exped., Mann). 24. *P. Honoluluense*, Hook. Sp. Fil. vol. iv. p. 280 (*P. Hillebrandii*, *id.* p. 254), from Sandwich Islands (Hillebrand). 25. *P. Sandwichicense*, Hook. and Arn., Beechey Voy. p. 104, from Sandwich Islands (Beechey, U. S. Expl. Exped., Mann). 26. *P. Keraudrenianum*, Gaud. Freyc. Voy. p. 362. t. 7, from Sandwich Islands (D. Nelson! Strickland! Freycinet, U. S. Expl. Exped., Diell, Hillebrand, Mann).

1. **P. conforme**, Brack. U. S. Expl. Exped. *Filices*, p. 5. t. 1. f. 2; rhizomate cæspitoso; stipitibus brevibus; frondibus lineari-lanceolatis, obtusis, basi attenuatis, membranaceis, glabris, ad marginem paullulum repandum costamque setosis; venis furcatis; soris biserialibus approximatis, planis, rotundis; costæ proximis; sporangiis echinatis.—Viti, Ovalau, on rocks and trunks of trees at an altitude of 2000 feet (U. S. Expl. Exped.).

2. **P. ligulatum**, Baker, Syn. Fil. p. 320; stipitibus brevibus, gracilibus, nudis, cæspitosis; frondibus subcoriaceis, ligulatis; utrinque attenuatis, subrepandis, glabris; venis furcatis; soris rotundis, remotis, costæ proximis.—Viti (U. S. Expl. Exped.).

3. **P. blechnoides**, Hook. Sp. Fil. vol. iv. p. 180; rhizomate brevi, repente; frondibus stipitatis, coriaceis, glabris, utrinque attenuatis, profunde pinnatifidis; laciniis oblongo-linearibus v. fertilibus attenuato-linearibus, basi subtriangulatis, alternis, integris, obtusis; venis obscuris, simplicibus; soris approximatis, oblongo-ovalibus v. lineari-oblongis, obliquis, planis, setosis.—*Grammitis blechnoides*, Grev. Ann. Mag. Nat. Hist. 2nd ser. vol. i. (1848), p. 328. pl. xvii. *P. contiguum*, Brack. U. S. Expl. Exped. *Filices*, p. 6. t. 2. f. 1. *Cryptosorus Seemanni*, J. Smith, 'Bonplandia,' vol. ix. p. 262.—From Viti (Seemann! n. 823), Muthuata Mountains, at an altitude of 2000 feet (U. S. Expl. Exped.). Also from Raiatea, Friendly Islands (Sibbald).

XXXII. **Goniopteris**, Presl, Tent. Pter. p. 181. Sporangia venarum latere v. apice imposita, in soros globosos collecta. Venæ prominentes, pinnatæ, venulis conniventim anastomosantibus, ultima venula e confluentia venularum excurrente, libera v. ad confluentia venularum mox superiorum elongata.—*Filices* rhizomate brevi decumbente, frondibus pinnatifidis v. pinnatis.—*Glyphotænium*, J. Sm. Bot. Herald, p. 227.

The following species is also found in tropical Polynesia:—*Goniopteris Sandwicensis*, Carr. mss. (*Stenogramma Sandwicense*, Brack. U. S. Expl. Exped. p. 26. pl. iv. f. 2), from the Sandwich Islands (Nelson! Macrae! U. S. Expl. Exped.), and Hawaii (Mann).

1. **G. simplicifolia**, Carr. ms.; caudice subrepente; stipitibus paleaceo-setosis, rachibus venis venulisque hirsutis; frondibus pinnatis, hirsutulis; pinnis paucis, elliptico-oblongis, integris v. sinuatis, obtusis v. acuminatis, sessilibus, terminali maxima oblongo-lanceolata acuminata basi inæquali obtusa; soris elongatis, anastomosantibus, venularum approximatis.—*Polypodium simplicifolium*, Hook. Sp. Fil. vol. v. p. 2. *Nephrodium simplicifolium*, J. Sm. Hook. Journ. 1841, p. 411. *Abacopteris simplicifolia*, Fée, Gen. Fil. p. 310. *Aspidium simplicifolium*, Hook. Ic. Fil. pl. 919.

Var. β . *Vitiensis*; frondibus glabris; pinnis adnatis; soris medio venularum insertis.—Viti (Seemann! n. 736).

2. **G. rubrinervis**, Carr. ms.; frondibus chartaceis glaberrimis, pinnatisectis; laciniis oblique patentibus, sessilibus, elongato- v. lineari-oblongis, e basi oblique truncatis, crenatis v. serratis, apice subintegerrimo productis; soris inter costulas biseriatis, radio intercostali approximatis.—*Phegopteris rubrinervis*, Mett. Linnæa, 1869, p. 116.—Viti (Thorey, n. 158). Also from New Ireland (Turner), Aneitum, New Hebrides (Strange).

3. **G. costata**, Brack. U. S. Expl. Exped. *Filices*, p. 28; frondibus pinnatis; pinnis sessilibus distantibus subalternis, glabris lanceolato-linearibus attenuatis, pinnatifidis; laciniis oblongis, obtusis, integris; rachi sulcata costaque supra pubescentibus; soris numerosis, approximatis, biserialibus.—Viti (U. S. Expl. Exped.). Also from Tahiti, Society Islands (U. S. Expl. Exped.).

XXXIII. **Dictyopteris**, Presl, Tent. Pter. p. 194. Sporangia anastomosi venularum insidentia, in soros globosos v. oblongos collecta. Venæ tenues, reticulatæ, absque venulis liberis.—*Filices* rhizomate repente, frondibus simplicibus v. bipinnatis.—*Dictymia*, J. Sm. Bot. Mag. (1846), App. 16.

1. **D. attenuata**, Presl, Tent. Pter. p. 194; rhizomate repente, apice subulato-squamoso; stipitibus brevibus glabris, basi articulatis; frondibus coriaceis, glabris, lineari-lanceolatis, acutis, basi attenuatis, integris; costa infra prominenti; venis immersis, obscuris, reticulatis; areolis costalibus elongatis; soris magnis, ellipticis, remotis.—*P. attenuatum*, R. Br. Prodr. p. 146. *Dictymia attenuata*, J. Sm. Bot. Mag. 1846, App. p. 16. *Drynaria Browniana*, Fée, Gen. Fil. p. 270.—Viti (Milne!).

2. **D. irregularis**, Presl, Tent. Pter. p. 194; stipitibus tetragonis, glabris, sulcatis; frondibus amplissimis, pinnatis, glabris; pinnis sessilibus, oblongo-lanceolatis, acuminatis, superioribus basi decurrentibus, aliis basi obtuse cuneatis; laciniis falcato-ovatis, obtusis, subserrulatis, infimis elongatis, acutis, inciso-pinnatifidis; soris sparsis, numerosissimis, rotundatis v. ovatis.—*Polypodium irregulare*, Presl, Rel. Hænk. p. 25. t. 4. f. 3; Blume, Fil. Jav. p. 164. t. 71. *D. macrodonta*, Presl, Tent. Pter. p. 194.—From Viti (Seemann! n. 746).

XXXIV. **Goniophlebium**, Presl, Tent. Pter. p. 185. Sporangia apice venulæ infimæ axillaris et venularum secundariarum imposita, in soros globosos collecta. Venæ furcatæ v. pinnatæ, venulis oppositis, angulatim v. arcuatim anastomosantibus, infima ex axilla superiori venæ libera, venulis marginalibus liberis.—*Filices* rhizomate repente, frondibus simplicibus pinnatifidis v. pinnatis.—*Marginaria*, Presl, Tent. Pter. p. 186, non Bory.

In addition to the species described, the following has been found in tropical Polynesia:—*G. grandidens*, Fée, Gen. Polyp. p. 255, from New Hebrides, Aneitum (M'Gillivray!).