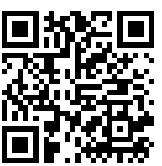

CATALOGUE

OF THE

Natural and Industrial Products

OF

NEW SOUTH WALES,

FORWARDED TO THE

PARIS UNIVERSAL EXHIBITION OF 1867,

BY THE

NEW SOUTH WALES EXHIBITION COMMISSIONERS.

By Authority:

THOMAS RICHARDS, GOVERNMENT PRINTER, SYDNEY, NEW SOUTH WALES.

1867.

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INTRODUCTION.

THE Colony of New South Wales was founded by the Government of Great Britain, as a penal settlement, in the year 1788. Australia was then so far removed from all communication with the civilized world that it appeared to possess peculiar advantages in this respect. It seemed improbable that convicts could ever return from a country so distant. The voyage alone was so formidable that the boldest spirit might well quail in contemplating its length and its dangers. Colonel Collins, who came out in the "first fleet," felicitated himself and his companions on their landing in safety, in the following terms:—"Thus, under the blessing of God," he wrote in his history, "was happily completed, in eight months and one week (the whole fleet being safe at anchor on the 20th of January, 1788), a voyage which, before it was undertaken, the mind hardly dared venture to contemplate, and on which it was impossible to reflect without some apprehension as to its termination."

One thousand and forty-four persons embarked on this formidable enterprise. They consisted of 10 civil officers—a military guard, including officers, of 212 persons—their wives and families, 45 in number—81 other free persons—and 696 male and female convicts. These were mostly young persons from agricultural districts, few of whom had committed serious crimes. Of the number thus embarked, 1,030 were safely landed on the shores of Port Jackson. The proportion of women among them is unknown, but it is supposed to have been under 300. The first fleet also brought several head of cattle, sheep, horses, pigs, goats, poultry, and a great variety of seeds and plants.

Such was the humble origin of settlements which now extend far into the interior of Australia, and some thousands of miles along its sea-board. Only seventy-eight years have elapsed since the Colony was founded, yet the city of Sydney now numbers over 100,000 inhabitants. From New South Wales have sprung the Colonies of Tasmania, New Zealand, Victoria, and Queensland. The city of Melbourne—the capital of Victoria—contains 130,000 souls. The

population of the British Colonies in Australasia, taken collectively, is now not far short of 2,000,000. Their trade extends to every part of the world. Their exports and imports amount respectively to from £25,000,000 to £30,000,000 annually, and they have raised gold alone to fully the value of £200,000,000 sterling.

The history of the world presents no greater instance of successful colonization, nor a stronger illustration of national aptitude or genius in that direction. Colonies have been established and new cities have risen to magnitude in other parts of the world in a very few years, but perhaps in no other case have similar results been achieved at such a distance from any great centre of population.

The Australian colonists have brought with them, not only the industry, enterprise, and energy, but also the institutions of their Fatherland. They prize its principles of self-government and jurisprudence; they cherish its traditional love of order and justice; and they hope, in themselves and their descendants, to maintain the genius of its people. And it is with no slight gratification that they now respond to the invitation of Great Britain, to unite with her in representing the industrial resources of the British Empire in the Paris Exhibition of 1867.

To effect all the necessary arrangements for this purpose, the Governor, Sir John Young, appointed a Commission, consisting of the following gentlemen, namely:—

The Hon. W. M. Arnold, Speaker of the Legislative Assembly,
James Barnet, Esq., Colonial Architect,
George Bennett, Esq., M.D.,
Hon. Alexander Campbell, M.L.C.,
Rev. W. B. Clarke, M.A., F.G.S.,
Fredk. Ebsworth, Esq.,
Edward Flood, Esq.,
John Hay, Esq., M.L.A.,
E. S. Hill, Esq.,
A. T. Holroyd, Esq.,
J. F. Josephson, Esq., M.L.A.,
Wm. Keene, Esq., F.G.S.,
G. Krefft, Esq.,
Walter Lamb, Esq.,
James Macarthur, Esq.,
Hon. Sir Wm. Macarthur,

J. L. Montefiore, Esq.,
Charles Moore, Esq.,
T. S. Mort, Esq.,
Hon. T. A. Murray, President of the Legislative Council.
J. N. Oxley, Esq.,
Hon. H. Parkes, Colonial Secretary,
George Russell, Esq.,
S. Samuel, Esq.,
Professor Smith, M.D.,
Hon. E. Deas Thomson, C.B., M.L.C.,
R. Wisdom, M.L.A.,
R. J. Want, Esq., and
John Windham, Esq.

Several of the Commissioners thus appointed applied themselves assiduously to the work entrusted to them. The Government aided them liberally with funds, and His Excellency Sir John Young did them the honor to attend their meetings on several occasions as a visitor, and aided them materially by his countenance and advice.

New South Wales abundantly possesses the raw materials of wealth, which it needs but capital and population to develop. She is rich in minerals of all kinds. Gold, silver, copper, iron, lead, and tin, are scattered over the face of the country. Very little capital, however, has yet been applied to the production of these metals. There is reason to believe that the auriferous deposits of this Colony are as rich as those of Victoria, but the same skill and enterprise have not been applied in working them. A few copper mines are in successful operation; but the mass of the metallic wealth of New South Wales remains almost untouched. Coal is also plentiful, and already forms an important article of trade. 20,000 tons a week are raised at Newcastle alone—about sixty miles north of Sydney—and a considerable quantity is produced in the Illawarra District, about forty miles to the south. Kerosene shale has also been discovered in several places, and factories for extracting oil from it have been successfully established. Specimens of all these minerals have been forwarded for exhibition.

But the richness and extent of her pastures have as yet been the main source of the prosperity of New South Wales. There are now in all Australia about 30,000,000 sheep, 3,000,000 horned cattle, and 600,000 horses. Tallow, hides, leather, and preserved meats, form

important articles of export; but the production of fine wool seems still the great staple industry of the country. For this source of wealth the colonists are mainly indebted to the enterprise and energy of the late John Macarthur, Esquire, of Camden Park, one of the earliest settlers. This gentleman was a Captain in the 102nd Regiment, with which he came to Sydney, in 1790. Observing that the climate and pastures of New South Wales were eminently fitted for sheep-farming, he procured three merino rams and five merino ewes from the Cape of Good Hope, in 1797; and in 1803 he brought other sheep of the same breed from England, in a ship of his own, to which he gave the appropriate name of the "Argo." Thus originated those flocks of fine-woolled sheep which now in millions range the great pastures of Australia. The services of Mr. Macarthur in this respect have not yet had the public recognition to which they are evidently entitled, and must sooner or later receive. The Australian Colonies now export 100,000,000 lbs. of wool, of which about 30,000,000 are raised in New South Wales.

The land held in freehold in the Colony amounts to 4,600,000 acres; of which, 230,000 acres are under cultivation. Leasehold, however, is the general or principal tenure, about 120,000,000 of acres being held thus by Crown tenants, of which about 160,000 are under cultivation. Wheat, maize, barley, oats, rye, and tobacco, are grown, but principally for home consumption. Extensive vineyards have been planted in various localities, and cotton and the sugar-cane are cultivated in the northern and warmer districts.

Arts and manufactures are comparatively in their infancy in New South Wales, but a profitable and promising commencement has been made in a great variety of articles.

Great attention was directed to Australia, in consequence of the discovery of rich deposits of gold in New South Wales and Victoria, in 1851. The quantity since produced in both Colonies, especially in Victoria, has been enormous, but it is difficult to discover what equivalent New South Wales has now to shew for all she has raised and exported. It seems as if it had been mainly exchanged for perishable or consumable articles, which perhaps served the waste and luxury fully as much as the necessities of the moment. Her population—the great test of a nation's progress—has not advanced in a greater ratio than before.

The progress of the Colony during the present century may be well illustrated by the following statistics:—

In 1803	the population consisted of	7,097
1821	„ „	29,783
1833	„ „	60,794
1840	„ „	129,463
1850	„ „	265,503
1851	(In this year Victoria separated)	197,168
1858	„ „	342,062
1859	(Queensland separated)	336,572
1866	„ „	420,000

The people of New South Wales possess all but plenary powers of legislation with respect to their local affairs. The Governor, is appointed by the Crown, and has a right of veto upon all Bills, but this is never exercised when local interests alone are involved. There are two Legislative Chambers—a Legislative Council and a Legislative Assembly. The Members of the former are nominated by the Crown for life, those of the latter are elected by the people. The qualifications for an elector are simply residence and registration—but the possession of land or houses also entitles the holder to a vote in any district in which they are situated. According to the statistical returns, few persons exercise the franchise. At the last general election, out of 120,000 electors, only 44,000 voted; and at the preceding one, only 28,000 out of 107,000. The towns of the Colony are in general quiet and orderly, but the country districts are occasionally much disturbed by bushrangers. On special occasions the citizens of Sydney may be seen assembled in crowds of 20,000 or 30,000, and nothing can be more orderly than their general bearing, nothing more pleasing than the contented well-to-do appearance they invariably present. And perhaps there is no seaport town in the world, in which order and decorum are more observable than in the city of Sydney.

There is no dominant Church in New South Wales. State support has hitherto been granted to the principal Denominations of Christians; and the Jews also have had an allowance, in recognition of their right as citizens in this respect. But an Act was passed by the Legislature, in 1862, whereby Government aid is, for the future, withheld from all sects, but the interests of all existing incumbents are protected. There are in the Colony 396 registered clergymen of all denominations, 576 churches and chapels, 922 dwellings or public buildings

which are used for public worship, and 588 Sunday Schools, which are attended by 35,500 children. There are 1,069 ordinary schools throughout the country, at which 53,500 scholars receive instruction daily.

The Colony numbers several gentlemen who are prominent in letters and science. The Rev. W. B. Clarke has a European reputation as a geologist. Dr. Bennett is well known as a naturalist, and Mr. J. Tebbutt, junr., has attained distinction in astronomy. Some of Mr. Henry Kendall's poems have been favourably noticed in England, Miss Ironside's paintings have been admired in Rome, and Miss Chambers has been regarded as a "*prima donna*" in Florence. Thus the Country promises well in letters, science, and the fine arts.

A paper by Mr. Clarke, on the Geology of Australia—one by Mr. W. Keene, on the Coal Fields of New South Wales—one by Mr. Tebbutt, on the state of Astronomical Science in the Colony—and one from Dr. Bennett, on the cultivation of the Orange—are appended to this Catalogue.

As the intellectual condition and tendencies of new countries form interesting objects of contemplation, the Executive Commissioner requested Mr. G. B. Barton—a gentleman known to devote much attention to literary pursuits—to favour him with a paper on the state of the Belles Lettres in New South Wales. Mr. Barton is a native of the Colony, a Barrister of the Middle Temple, London, and Reader in the English Language in the University of Sydney. Although pressed for time, from the shortness of the notice he had received, Mr. Barton has produced a volume which must in time prove a valuable record. The work, it is alleged, is by no means as comprehensive as it might have been. Omissions were perhaps unavoidable under the circumstances. The writer of these pages, however, considers it due to Mr. Barton to say that, in his opinion, the work gives a fair general estimate of the Literature of the Colony.

But marked as the progress of New South Wales has been during the past portion of the present century, there is good reason to believe that it will henceforth be much greater. Steam communication and the electric telegraph are working their wonders in Australia, as well as elsewhere. Were Colonel Collins to revisit this sphere, he would be surprised to find that the voyage to Sydney, which in his day "was happily concluded in eight months and one week," is now accomplished

by steamers in from fifty to sixty days, and by sailing vessels in from eighty to one hundred. Telegraphic communications have been had from London in twenty-five days.

Sydney has now postal communication with Europe by three distinct routes, viz.:—1st, by the Peninsular and Oriental Company's steamers, direct by Galle and the Red Sea; 2nd, by Queensland, Torres Straits, and Singapore; and 3rd, by the Panama route—by New Zealand, across the Pacific. The first of these is, as a postal line, decidedly the most successful. The second—through Torres Straits—was uniformly upheld by the late Admiral Philip Parker King as the best route; and his opinion upon this, as well as upon all questions connected with his profession, is held in the highest respect by his fellow-colonists; but he contemplated arrangements by light-houses on the various islands, which would admit of vessels running through the Straits by night as well as by day. At present, from the number of coral reefs, vessels going through are obliged to anchor at night. The third—by Panama—is of very little, if of any use to New South Wales as a postal line, but it brings the Colony into direct communication with North and South America. The mails arrive by each of these routes once a month. Those by Queensland, Torres Straits, and Singapore, and by New Zealand and Panama—have been but recently established, and the Colonists have as yet had little or no experience of their effects. It is impossible, however, but that they must derive many advantages from the intimate communication they thus have with all parts of the world; not only commercially, but in the social and intellectual intercourse which breaks down national prejudice, leads to a juster appreciation of national character, and to a higher sense of truth and right among mankind.

Although the Australian are perhaps the most purely British settlements that ever were founded, it is gratifying to the Colonists to have men of other nations enrolled among their most useful citizens. Among these, New South Wales has many from France, with whom her people are in most friendly intercourse.

In addition to the industrial products of the Colony, the Local Commissioners endeavour to represent on this occasion some of the characteristic forms of Australian animal life. A request to this effect was made to His Excellency the Governor, by the Imperial authorities. But the Flora and Fauna of Australia differ so much from those of other countries, that the Commissioners have thought it advisable that their exhibits of this nature should not be limited to existing species. They

desire to represent Australian life not only as it is, but as it was in former geological periods; and with this view, submit fossil specimens, also, in illustration of any peculiarities which may have attached to it in past ages.

And the Local Commissioners have also thought that it would be interesting to exhibit man in his "stone age," as exemplified by the Aborigines of Australia, in juxta-position with man in the golden age of his present civilization, as existing in the great capitals of the old world. In the rude products of aboriginal ingenuity which they have sent to the Exhibition, may be contemplated the rudiments of those qualities and powers which in their higher development give man the position he now holds in the world. From the canoe of the savage may be traced the lines of the iron-clad; in the flint spear-head—in the stone knife or tomahawk—in the line, the net—the rudiments of those arts which have made man, even in his short individual existence, the lord of created life. And as in every age and stage of savagism, barbarism, or civilization, "suffering is the badge of all our tribe," so the poor savage too has to grieve, and the evidences of his mourning are not wanting in this collection of aboriginal memorials.

With these few introductory remarks, the following Catalogue of New South Wales Exhibits in the Great International Exhibition of 1867 is respectfully submitted to the public.

T. A. MURRAY,

Sydney, January 1st, 1867. Executive Commissioner.

ADDENDA.

COMMISSIONERS IN PARIS

W. C. MAYNE, Esq., 118, Cannon Street (London).
E. L. MONTEFIORE, Esq., Resident Commissioner, 47, rue Laffitte.

Animal Products.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY.
561. Stuffed platypus.	Sir Danl. Cooper, Bart.
462. Black opossum skin.	Ditto.
563. Grey ditto.	Ditto.
564. Whale's teeth, carved and coloured at sea.	Ditto.
565. Three samples of fine wool in grease.	Ditto.

Mineral Products.

566. Twelve specimens of gold in quartz.	Ditto.
567. Thirteen ditto.	Ditto.
568. One quartz crystal with gold.	Ditto.
569. Two cases illustrating the various deposits encountered in sinking for gold n this colony, and the character of the gold thus obtained.	Prepared by Lieut.-Col. Ward, at the Royal Mint, Sydney. Exhibited by Sir Danl. Cooper, Bart.

The value of the gold specimens in this series is calculated, after melting, at 3*l.* 17*s.* 10 1-2*d.* the ounce standard; the silver being treated as alloy, and its value neglected.

The following is a detailed catalogue of the series:

NORTHERN DISTRICT.

NUNDLE.

No. of stratum	Thickness of stratum	
1	4 feet	Black mould.
2	4 feet	Ironston (trappean).
3	6 feet	Loam.
4	6 feet	Red gravel.
5	5 feet	Wash dirt, yielding 3 1-2 dwts. of gold per load, of 50 buckets.

No. of stratum	Thickness of stratum	
6		Gold from the above, containing after melting, in 1,000 parts—gold, 937·6; silver, 62·0. Value per oz., 3*l* 19*s*. 7*d*.
7		Bed rock, baked schistose rock.

This locality contains about 150 working miners, and yields a monthly average of about 350 ozs. of gold; the washing being usually effected by means of sluice boxes.

PEEL RIVER.

1	1 ft. 6 in.	Red Loam.
2	2 feet	Stiff ferruginous clay.
3	1 foot	Wash dirt.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 929·5; silver, 67·0. Value per oz., 3*l*. 18*s*. 11*d*.
5		Bed rock, decomposed serpentine.

The gold here is obtained by ground sluicing, and a party of three can get about 19 dwts. of gold daily. Working population about 150, average monthly yield about 350 ozs.

HANGING ROCK.

1	3 feet	Red loam and clay.
2	5 feet	Loam, approaching to clay.
3	5 feet	Drift.
4	2 feet	Quartz crystals imbedded ferruginous cement.
5	5 feet	Wash dirt, yielding 20 ozs. of gold to 40 cubic feet.
6		Gold from the above, containing, after melting, in 1,000 parts—gold, 934·9; silver, 63·1. Value per oz., 3*l*. 19*s*. 5*d*.
7		Bed rock, decomposed trap, hard-end.

Here, also, the gold is obtained by ground sluicing. Working population about 150, monthly yield about 350 ozs.

ROCKY RIVER.

1	2ft. 6in.	Black soil.
2	2ft. 0in.	Stiff clay.
3	27ft. 0in.	Nodular (amygdaloidal) basalt.
4	33ft. 0in.	Basalt in jointed masses
5	3ft 6in.	Blue clay and scoria, baked.
6	5ft. 0in.	Yellow magnesian clay.
7	6in.	Black clay.
8	3ft. 0in.	Fine yellow sand and clay.
9	3ft. 6in.	Black clay, becoming shaly when dry.
10	3ft. 6in.	Buff sand, or soft sandstone.
11 12	6ft. 6in.	Auriferous drift, fine at trop, coarse in the middle, and still coarser at the bottom.
13		Gold from the above, containing after melting, in 1,000 parts—gold, 969·3; silver, 26·9. Value per oz., 4*l*. 2*s*. 4*d*.
14		Bed rock soft granite, red and grey.

The auriferous drift is raised by windlass and bucket. It is washed in sluice boxes when water is abundant, and by cradle when it is scarce. The yield from the claim whence samples have been taken averaged on its first working 4 ozs. per load of 50 buckets, the bed rock being carefully scraped, and the drift washed to a thickness of 2 feet above the granite. The party now working the claim romove the drift to a thickness of 4 or 5 feet above the granite, obtaining about 15 dwts. per load, and occasionally meeting with a block, of which the produce is equal to that of the original ground. A section of this shaft accompanies the series marked "Sydney Flat, Clain No. 1, Rocky River."

TIMBARRA—PRETTY GULLY.

1	3ft	Drift one foot below the surface.
2	3ft.	Whitish clayey wash-dirt, yields one grain per dish.
3	1ft. 6in.	Whitish shaly wash-dirt, yelds 2 dwts. per tub.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 899·5; silver, 96·5. Value per oz., 3*l*. 16*s*. 5*d*.
5		Red rock, schistose rock.

POVERTY POINT.

1	3 feet	Drift one foot below the surface.
2	2 to 8ft.	Drift. yielding 1-4 gr. of gold per dish.

No. of stratum	Thickness of stratum	
3	2 feet	Drift yielding 2 gr. of gold per dish.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 928·5; silver, 66·0. Value per oz., 3*l.* 18*s.* 10*d.*
5		Bed rock decomposing granite.

WESTERN DISTRICT.

IRONBARK CREEK.

1	1 to 2ft.	Dark vegetable soil, mixed with rounded fragments of trap.
2	20ft.	Greyish blue trap tuff.
3	2 to 4ft.	Quartz fragments in ferruginous and argillaceous cement.
4	6 to 10 ft.	Hardened deposit of clay.
5	1 to 4 ft.	Washing stuff quartzose drift with whitish schist, yielding 3 dwts. of gold per load.
6		Gold from the above, containing, after melting, in 1,000 parts—gold, 971·8; silver, 24·2. Value per oz., 4*l.* 2*s.* 6*d.*
7		Bed rock, white slate.

The working population of this locality number about 50 miners who collectively obtain a monthly average of 200 ozs. usually by means of puddling machines.

CARCOAR.

1	Not given.	Ferruginous trap.
2	,,	Grey sandy clay.
3	,,	Quartz gravel.
4	6in. to 1 ft.	Washing stuff quartzose drift, with light yellow shale, yielding 2 dwts. per tub.
5		Gold from the above, containing, after melting, in 1,000 parts—gold, 837·0; silver, 159·0. Value per oz., 3*l.* 11*s.* 1*d.*
6		Bed rock, white decomposed slate.

The gold is obtained by tub, cradle, and sluice box. Population about 20 Europeans, and 60 to 70 Chinese; average monthly yield about 100 ozs.

MERRUNDEE.

1	Not given.	Surface soil, ferruginous.
2	Not given.	
3	1ft.	Washing stuff yields about 2 dwts. of gold per tub of 30 gallons.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 873·6; silver, 621·7. Value per oz., 3*l.* 14*s.* 2*d.*
5		Bed rock schist.

Contains a working population of about 70 Europeans, and 200 Chinese, who obtain about 200 ozs. monthly, by means of tub, cradle, and sluices.

STONEY CREEK.

1	3 to 10ft.	Black soil.
2	12 to 30ft.	Pebbly drift.
3	3 to 6in.	Washing stuff, consisting principally of roundel fragments of schist, yielding 2 dwts. of gold per tub.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 936·8; silver 59·7. Value per oz., 3*l.* 19*s.* 7*d.*
5		Bed rock, drab-coloured slate.

Contains working population of about 200, chiefly Chinese, who obtain a monthly average of from 300 to 400 ozs., by cradles, tubs, and sluice boxes.

OPHIR.

1	Not given.	Red soil.
2	,,	Sandy grit.
3	8in. to 1ft.	Washing stuff, quartzose drift, mixed with pale yellow shale, yielding 3 dwts. of gold per tub.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 915·4; silver, 82 2. Value per oz., 3*l.* 17*s.* 9*d.*
5		Bed rock, white slate.

No. of stratum	Thickness of stratum	

This locality contains a working population of about 50 Europeans, and 60 to 70 Chinese, obtaining collectively a monthly average of about 150 ozs; by means of tub, cradle, and sometimes by sluicing.

MUDGEE—PIPE-CLAY CREEK.

1	10 feet	Stiff brown clay.
2	12 feet	Clay containing much oxide of iron.
3	5 feet	Drift containing quartz (white, and ferruginous), clay and shale, yielding 1 gr. of gold per tub.
4	1 foot	Clay coloured by oxide of iron, auriferous.
	54in. to 1 ft.	Quartzose drift, etc., yielding 2 dwts. per tub.
6		Gold from the above, containing, after melting, in 1,000 parts—gold, 898·5, silver, 100·5. Value per oz., 3*l.* 16*s.* 4*d.*
7		Bed rock, slate.

These samples are from a flat adjoining the creek which is a tributary of the Cudgegong, running westerly. The method of working is by tub washing. At the opening of these diggings, there were about 150 miners on the creek, obtaining on an average 3 1-2 ozs. monthly per man.

WINDEYER—RICHARDSON'S POINT, MEROO RIVER

1	14 feet	Surface soil, sandy clay,
2	3 feet	Drift containing quartz, flat shaly pebbles, etc., yielding 3 grs. of gold per tub.
3	1 foot	Drift containing quartz, flat shaly pebbles, iron stone, etc., yielding 9 grs. of gold per tub.
4	4 feet	Washing stuff; bright yellow clay, with quartz, ironstone, etc., yield-30 grs. per tub.
5		Gold form the above, containing, after melting, in 1,000 parts—gold, 959·0; silver, 37·5. Value per oz., 4*l.* 1*s.* 5*d.*
6		Bed rock, slate.

Richardson's Point is apparently the old bed of the Meroo. It is about 4 acres in extent, and at one period had 100 miners on it. Average produce, 5 ozs. monthly per man.

WINDEYER—DEVIL'S-HOLE GREEK

1	7 feet	Drab-coloured soil.
2	2 feet	Drab-coloured clay.
3	2 feet	Decomposing ferruginous conglomerate.
4	1 foot	Washing stuff; quartz, ironstone, clay, etc., yielding 3 dwts. per tub.
5		Gold from the above, containing, after melting in 4,000 parts—gold 946·0; silver, 53·5. Value per oz., 4*l.* 0*s.* 4*d.*
6		Bed rock, slate.

Devil's Hole Creek is a tributary of the Meroo, and a mile in length, running into it in a northerly direction. At the opening of the diggings on this creek there were about 1,200 miners, producing, by tub washing, cradle, and sluicing, 7,200 ozs. per month

HARGRAVES LOUISA CREEK.

1	1 foot	Drab clay.
2	8 feet	Whitish clay with ironstone nodules interspersed.
3	1 foot	Washing stuff, whitish clay with ironstone, yielding 4 grs. of gold per tub.
4		Gold containing, after melting, in 1.000 parts—gold 914·7; silver, 84·3, Value per oz., 3*l.* 17*s.* 8*d.*
5		Bed rock or bar of slate, breaking up from 3 inches to 3 feet in depth, in the pockets and crevices of which gold is found, averaging 6 dwts. to the tub.

The Louisa Creek rises on the Table Land, 500 feel above the Meroo, and runs into it northward about 10 miles. The diggings are on the table land, about 4 miles from it rise. At the opening of these diggings, 600 miners averaged, monthly, 4 ozs. per man, obtained by pugmill and tub.

TAMBAROORA—GOLDEN GULLY.

1	1 ft. 6in.	Drab coloured stiff soil. containing about 1-2 dwt. of gold per load of 50 buckets.

No. of stratum	Thickness of stratum	
2	2ft.	Yellow clay, with quartz, ironstone, etc., containing 1 dwt. per load.
3	1ft.	Reddish yellow clay, with quartz, ironstone, etc., containing 1 dwt. per load.
4	2ft.	Reddish yiellow clay, with quarts ironstone, etc., containing 2 dwts. per load.
5	3ft.	Sandy clay, with quartz, ironstone etc., containing 4 dwts. per load.
6	6in.	Soft shale, containing from 4 1-2 to 7 1-2 dwts. per load.
7	6in.	Soft shale, containing from 6 to 10 ozs. per load.
8	Gold from the above, containing, after melting, in 1,000 parts—gold, 954·0; silver, 42·0. Value per oz., *4l.* 1*s.*	
9	Bed rock, gneiss.	

The whole depth from surface to bed rock is washed, and the yield averages from 3 to 3 1-2 dwts. per load. A horse puddling machine is usually employed for this purpose. About 9 inches in depth of the bed rock itself is also washed, yielding about 1 dwt. per load.

TAMBAROORA—DIRT-HOLE CREEK.

1	3 feet	Black soil.
2	6 feet	Shaly and schistose drift, with quartz, ironstone, etc., containing 1 dwt. of gold per load of 50 buckets.
3	5 feet	Sandy clay, containing 2 1-2 dwts. per load.
4	1 foot	Sandy drift, containing 6 to 7 dwts. per load.
5	Gold from the above, containing, after melting, in 1,000 parts—gold, 943·5; silver, 53·0. Value per oz., *4l.* 0*s.* 1*d.*	
6	Bed rock, slate.	

The whole depth, with exception of surface, is washed. by means of horse puddling machines.

TAMBAROO—RATBALD HILLS.

1	5 feet	Reddish clay.
2	2 feet	Ditto ditto,
3	2 feet	Drift, quartz, ironstone, and sandy clay.
4	2 feet	Clay (white).
5	Gold from the above, containing, after melting, in 1,000 parts—gold, 943·0. silver, 54·0. Value per oz., *4l.* 0*s.* 1*d.*	
6	Bed rock, slate.	

The whole depth, from surface to bed rock, is washed by means of horse puddling machines, and yields from 3 to 3 1-2 dwts. per load.

TAMBAROORA—LOWER TURON.

1	2 feet	Ferruginous clay, with pebbles.
2	8 feet	Ditto ditto.
3	4 feet	Sandy clay, with pebbles, quartz, etc.
4	Gold from the above, containing, after melting, in 1,000 parts—gold, 948.0; silver, 50.0. Value per oz., *4l.* 0*s.* 6*d.*	
5	Bed rock, drab slaty rock.	

The whole depth, form surface of bed rock, is often washed; the ordinary hand-washing in tubs being the method employed The average yield is from 4 to 5 dwts. per load of 50 buckets. The diggings are situated in the river bed.

TAMBAROORA—MAQUARIE RIVER.

1	8 feet	Dark coloured fine drift, with quartzite nodules.
2	5 feet	Clay with pebbles.
3	7 Ditto	ditto.
4	Gold from the above, containing, after melting, in 1,000 parts—gold, 946·6; silver, 48·5. Value per oz., *4l.* 0*s.* 5*d.*	
5	Bed rock, drab slaty rock.	

The surface layer is thrown aside, and the other two are washed in "Long-toms," yielding 4 to 4 1-2 dwts. perload.

PYRAMUL CREEK.

1	3 feet	Quartz, in algillaceous cement.
2	3 1-2ft.	Stiff clay, with quartz.

No. of stratum	Thickness of stratum	
3		Gold from the above, containing, after melting, in 1,000 parts—gold, 948·0; silver, 48·0. Value per oz., 4*l*. 0*s*. 6*d*.
4		Bed rock, sandstone of the slate formation.

These diggings are in the creek bed. The whole depth is washed by "ground sluicing," and yields on the average 3 3-4 dwts. per load.

CENTRAL TURON.

1	4 feet	Loam.
2	3 feet	Pebbly drift.
3	Not given.	Washing stuff, pebbly drift.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 928·6; silver, 68·5. Value per oz., 3*l*. 18*s*. 10*d*.
5		Bed rock, trappean.

The claim whence the samples are taken is situated in the river bed. The preliminary works are of a costly and interesting character. A tunnel was driven through 354 feet of solid rock, forming a neck of land, to drain a bend of the river three quarters of a mile long. It occupied 10 men two years, and cost 3,425*l*. The average yield is about 3 dwts. per tub. The labour employed by this company involves a yearly expenditure of 10,500*l*.

WATTLE FLAT.

1	6 feet	Surface earth.
2	2 feet	Washing stuff, yielding 1 dwt. per tub.
3		Gold from the above, containing, after melting, in 1,000 parts—gold, 925·7; silver, 72·1. Value per oz., 3*l*. 18*s*. 7*d*.
4		Bed rock, eiesnkiesel, with cubes of pyrites, intersected with small quartz veins.

The work in this locality is almost entirely carried on by puddling machines, which are annuler wooden troughs, sunk in the ground, and through which harrows are drawn by a horse working within the ring. This operation disintegrates the mass, which is afterwards washed by a cradle.

CENTRAL TURON—ERSKINE FLAT.

1	5 feet	Clay, with pebbles of quartz, etc.
2	12 feet	Sand, with pebbles of trap, slate quartz, etc.
3	Not given	Washing stuff, average yield, 1-2 dwt. of gold per tub.
4		Gold from the above, containing, after melting, in 1,000 parts—gold, 918·8; silver, 78·5. Value per oz., 3*l*. 18*s*.
5		Bed rock, schistose vein.

Dry bank diggings. The whole of this bank is washed to a depth of 40 feet. The average yield per tub is 1-2 dwt. The gold is obtained by sluicing, the water being brought a distance of 5 miles to obtain the requisite elevation. Though the yield is small, the immense quantity which is passed through the sluices when water is plentiful, makes a good return. The cost of such works is sometimes 3,000*l*. The working population of the Central Turon is about 1,800; and the monthly yield about 2,400 ozs.

SOUTHERN DISTRICT.

BURRANGONG—LVMBING FLAT.

1	1 1-2 feet	Dark sandy soil.
2	1 1-2 feet	Sandy granatic drift.
3	1 foot	Drift with much quartz and mica.
4	10 1-2 feet	Sandy micaceous drift.
5	1-2 3 feet	Argillaceous ditto. with much small angular qdartz.
6	1 1-2 feet	Ditto, with decomposing granite.
7		Gold from the above, containing, after melting, in 1,000 parts—gold 949·0; silver, 45·5. Value per oz., 4*l*. 0*s*. 7*d*.
8		Bed rock, soft granite.

The shaft whence specimens were taken is 3 feet by 22 inches, with a depth of 19 1-2 feet. The average yield of the washing stuff is 1 dwt. to the bucket.

BURRANGONG—TIPPERARY GULLY.

No. of stratum	Thickness of stratum	
1	4 feet	Fine quartzose sand, with reddish argillaceous cement.
2	8 feet	Stiff clay containing nodules of oxide of iron.
3	7 1-2 ft.	" Cement " quatzose gravel.
4	10 feet	Micaceous clay.
5	12 feet	Argillaceous " cement," with mica.
6	9 1-2ft.	Whitish clay.
7	5 1-2ft.	Argillaceous gravel, with oxide of iron.
8	2 feet	Granatic drift, with fragments of quartz.
9		Gold from the above, containing, after melting, in 1,000 parts—gold, 947·5; silver, 47·6. Value per oz., *4l.* 0*s.* 6*d.*
10		Bed rock, decomposing red granite.

The shaft whence samples were taken is 38 inches by 22 inches, and 58 1-2 feet deep; average yield of gold 1 1-2 dwts. to 6 buckets.

BURRANGONG—BACK CREEK.

1	10in.	Dark alluvial sandy soil.
2	10ft.	Bluish sandy clay, with vegetable matter.
3	15ft.	Bluish alluvial clay.
4	14ft.	Argillaceous cement mica, felspar, and oxide of iron.
5	10in.	Browish drift sand, granite, mica, and quartz.
6	8ft..	Argillaceous cemented sand, granite, quartz, and mica.
7	14in.	Drift sand, composed of crushed granite and quartz.
8		Gold from the above, containing, after melting, in 1,000 parts—gold, 887·0; silver, 107. 2 Value per oz., 3*l.* 15*s* 4*d.*
9		Bed rock, granit, decomposing.

BURRANGONG.

1	1f.	Dark vegetable soil.
2	2ft.	Yellowish clay, vith vegetable matter.
3	16ft.	Yellow and blue clay.
4	10ft.	Very hard " cement," containing silica oxide iron, and mica schist.
5	14ft.	Hard grey clay, with vegetable matter.
6	2ft. 3in.	Greyish drift sand, quartz, pebbles, and mica.
7		Gold containing, after melting, in 1,000 parts—gold, 84·82; silver, 48·4. Value per oz., *4l.* 0*s.* 6*d.*
8	6in.	Wash drift, from which the above is obtained, consisting of argillaceous sand, quartz, pebbles, oxide of iron, and a few quartz boulders.

The Burrangong gold-fields are on a granite formation; the sinking moderate, except in some places where the granitic drift, about 10 feet from the bottom, is cemented, and very hard. On the creeks much water has to be contended against, and almost all the shafts require to be slabbed.

BRAIDWOOD—MAJOR'S CREEK.

1	1ft. 6in.	Black soil
2	2ft. 0in.	Ditto, but lighter colour.
3	3ft. 6in.	Stiff black soil.
4	2ft. 6in.	Drift from decomposed granite.
5	4ft. 0in.	Stiff black soil.
6	6ft. 0in.	Fine grey drift.
7	2ft, 0in.	Wash dirt.
8		Gold from the above, containing, after melting, in 1,000 parts—gold, 934·5; silver, 62·0. Value per oz., 3*l.* 19*s.* 4*d.*
9		Bed rock, decomposing granite.

This gold field is on granite. The average thickness of the washing stuff is from 2 to 6 feet, varying much in yield, from simply "the colour" to 2 ozs. per bucket. The claim whence these samples were taken yields about 50 ozs. per week to a party of four men. The working population of the locality numbers about 250 men. The monthly yield averages about 500 ozs., but varying with the weather and supply of water. The method of working is to remove the superincumbent deposit till the wash dirt is reached; this operation is called "stripping." The washing stuff is then removed and washed through sluice boxes. the gold collecting in the false bottom of the sluice box.

UPPER ADELONG.

No. of stratum	Thickness of stratum	
1	Not given	Vegetable mould.
2	Not given	Drift with much hornblendic rock in nodules.
3	Gold from the above, containing, after melting, in 1,000 parts—gold, 946·0; silver, 52·7. Value per oz., 4*l.* 6*s.* 4*d.*	
4	Bed rock, slate.	

LOWER ADELONG.

No. of stratum	Thickness of stratum	
1	8ft.	Drift, with rounded pebbles of quartz, and hornblendic rock
2	1ft.	Ditto ditto.
3	1ft.	Wash drift.
4	Gold from the above, containing, after melting, in 1,000 parts—gold, 951·5; silver, 45·8, Value per oz., 4*l.* 0*s.* 10*d.*	
5	Bed rock, chlorite slate.	

The washing stuff yields about 40*l.* weekly to six men.

Vegetable Products.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY.
570.	Piece of wood taken lately from a ship built of Colonial timber in the year 1831, showing the perfect soundness of the timber.	Sir Danl. Cooper, Bart.
571.	Colonial ironbark wood, being the strongest of any kind of timber exhibited at the Exhibition of 1862.	Ditto.
572.	9 pieces of timber; kinds used for ship-building.	Ditto.
573.	Samples of cotton.	Ditto.
574.	Peg tops of Colonial hard wood.	Ditto.

Wines.

	NAME.	GROWER	EXHIBITED BY.
575.	Kurrawai.	Lawson.	Sir Danl. Cooper, Bart.
576.	Red Kalhdah.	Blake.	Ditto.
	White ditto.	Ditto.	Ditto.
	Red Irawany.	Ditto.	Ditto.
	White ditto.	Ditto.	Ditto.
577.	Cawarra.	Lindeman.	Ditto.
	Lewmbrock.	Ditto.	Ditto.
	Irawany.	Ditto.	Ditto.
578.	Dalwood.	Wyndham.	Ditto.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY.
579.	Casoary skin.	E. L. Montefiore, Esq.
580.	Nugget of gold with quartz.	Ditto.
581.	Gold brooch, kangaroo and emu.	Ditto.
582.	Pearl shell, with native spearing a fish.	Ditto.

Paris. — Printed by G. Kugelmann, rue de la Grange-Batelière.

ERRATA.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
Exhibit No. 99. Kurrajong bark, for cordage. Collected by John Wyndham.	N. S. Wales Exhibition Commission.
Exhibit No. 404. Note inserted here belongs to Exhibit No. 402.	
Exhibits Nos. 463 and 464	Ditto.

Exhibit 482.
Bottom line to be (482*e*).

Appendix, page 59.
47th line, "8th of June" *for* "9th of June."

Appendix, page 64.
32nd line, "to our" *for* "of our."

Appendix, page 65.
26th line, *omit* "in part."

Appendix, page 67.
1st line, *for* "this order" *read* "one order."

Appendix, page 68.
46th line, *omit* "any."

Appendix, page 72.
48th line, *omit* "also."

Appendix, page 79.
23rd line, *for* "(483*e*)" *read* "(482*e*)."

NATURAL AND INDUSTRIAL PRODUCTS

OF

NEW SOUTH WALES.

ANIMAL PRODUCTS.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
1.	Bale of wool	W. P. Faithfull, near Goulburn.
2.	Bale of wool	R. Kummerer, Sydney.
3.	Bale of wool	E. K. Cox, Mudgee.
4.	Bale of scoured wool	J. J. Riley, Mulgoa.
5.	Bale of wool—2nd combing	C. C. Cox, Broomby, near Mudgee.
6.	Bale of wool (superfine 1st combing), 150 part fleeces.	Ditto.
7.	Bale of wool	N. P. Bayley, Mudgee.
8.	Bale of wool	G. H. Cox, Mudgee.
9.	Bale of wool	F. Lord, Sydney.
10.	Fleeces of wool	G. H. Cox.
11.	Wool from yearling ewes, and from 11 months combing ewes.	Dangar Bros., Yallaroy, Gwydir.
12.	Scoured skin wool (firsts)	H. Bell, Sydney.
13.	Do. (seconds)	Ditto.
14.	Wether fleece	J. Christian & Co., Walhallow, Liverpool Plains.
15.	Hoggett fleece	Ditto.
16.	Scoured wool	Fred. Ebsworth.
17.	Wool	Dangar, Bros., Yallaroy, Gwydir.
18.	Wool	Glass & Corrigan, Singleton.
19.	Wool (washed)	John Wyndham, Dalwood.
20.	One bale scoured skin-wool	Mr. Evenis, Bathurst, N. S. Wales.
21.	Packages of wool. Hunter River District, N. S. Wales.	G. S. Yeo, Hunter River.
22.	Case of fleeces	N. P. Bayly.
23.	Fleeces of wool	Dr. Traill, Collaroy, N. S. Wales.
24.	Fleeces of Rambouillet wool	Frank Cooper, near Goulburn, per E. S. Hill.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
25. Case containing six glass boxes of combing wool.	R. Kummerer, Sydney.
26. Case containing six glass boxes of clothing wool.	Ditto.
27. Fleeces of wool, &c., &c.	E. K. Cox, Mudgee.
28. Black alpaca wool	Acclimatization Society of N. S Wales.
29. Brown do. ewe lambswool	Ditto.
30. Do. lambswool	Ditto.
31. Grey ram alpaca wool	Ditto.
32. Alpaca skins, unprepared...	Ditto.
33. Sample of opossum fur, as removed by plucking from the animal while still warm after death. Barwon River.	Rev. W. Stack, B.A., Balmain, Sydney.
34. Skin of the kangaroo rat, tanned with mimosa bark and acetic acid. Native name, goon-nure. Barwon River.	Ditto.
35. Skin of a small species of hydromys sp. or water-rat, tanned. Native name, colley-bog. Barwon River.	Ditto.
36. Skin of a paddy-melon, a small kind of kangaroo, from the great centre plains of Australia, tanned with the same process. Native name, My-a-ra. Barwon River.	Ditto.
37. Skin of opossum, tanned. Native name, moota. Barwon River.	Ditto.
38. Skin of opossum, prepared and painted by an aboriginal for a cloak, with a station brand on it. Barwon River.	Ditto.
39. One dingo skin	Ditto.
40. Colonial patent enamelled kangaroo skins	Alderson & Sons, Sydney.
41. Colonial patent japanned kangaroo skins	Ditto.
42. Sole leather—three pieces	Saddington & Sons, Sydney.
43, Do. two pieces	J. T. Begg, Glenmore Tannery, Sydney.
44. Case of maufactured and unmanufactured skins of the platypus. By E. S. Hill.	N. S. Wales Exhibition Commission.
45. Black swans' down	W. J. Baker, Sydney, N. S. Wales.
46. Flitch of colonial bacon	G. T. Loder, Wylie Flat, Singleton.
47. Colonial ham	Ditto.
48. Tin of preserved beef-steaks	E. W. Lang, East Maitland.
49. Cask of mess beef	Henry Bell, Sydney.
50. Three samples of preserved meat, in tins	Australian Meat Company, Ramornie, Clarence River District.
51. Essence of beef	Whitehead & Co., Mossman's Bay, Sydney.
52. Bottle of neatsfoot oil	Henry Bell, Sydney.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
53. One glass jar of mutton tallow	York Brothers, Sydney.
54. Do. beef tallow	Ditto.
55. Two bottles of beef tallow	Henry Bell, Sydney.
56. Two do. mutton tallow	Ditto.
57. Jar of beef tallow. Manufactured by exhibitor.	T. Hewitt, Grafton.
58. Purified neatsfoot oil. By E. W. Rudder, Macleay River.	N. S. Wales Exhibition Commission.
59. Bottle of bone-dust	Henry Bell, Sydney.
60. Beeswax	Mrs. Bunker, Liverpool.
61. Sponges	H. Moss, Shoalhaven.
62. Whale's tusk. By E. W. Rudder ...	N. S. Wales Exhibition Commission.
63. Kangaroo leg bone Do....	Ditto.
64. Six whales teeth, from the Pacific Ocean	E. S. Hill.
65. Collection of colonial-grown silk, by Master Glennie, Singleton, N. S. Wales. Collected by John Wyndham.	N. S. Wales Exhibition Commission.
66. Collection of colonial-grown silk	Mr. Jordan Wainwright, Sydney.
67. Box of silk, grown and skeined, by Master W. T. Gibb, High-street, West Maitland.	N. S. Wales Exhibition Commission.
68. Sample of raw silk, arranged and wound by children in the Asylum, under the superintendence of the exhibitor.	J. W. May, Superintendent, Randwick Destitute Children's Asylum.

VEGETABLE PRODUCTS.

69. Bundle of reed canes—Richmond River District. E. W. Rudder.	N. S. Wales Exhibition Commission.
70. Bundle of rattan cane—M'Leay River District. By do.	Ditto.
71. Specimens of the stem of aralia papyrifera; collected by C. Moore, Director, Botanic Gardens, Sydney.	Ditto.
72. Gums—Iron-bark, gum-tree, black-butt, box-gum, blood-wood, grass-tree, stringy-bark, wattle-gum, blue gum, red gum.	I. J. Josephson, Sydney.
73. Gums—Xanthorea, apple-tree, silver gum, iron-bark, blood-wood, grass-tree. Collected by E. W. Rudder, Kempsey House, Macleay River.	N. S. Wales Exhibition Commission.
73*a*. Gums—Macrozamia Denisonii, do., collected humid, grevillia robusta, eucalyptus sp., iron-bark, black-butt. Collected by C. Moore, Sydney.	Ditto.
74. Two (bamboo) walking-sticks, prepared. Sir Wm. Macarthur, Camden Park, N. S. Wales.	Ditto.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
75. Bundle of (kangaroo grass-tree) walking-sticks, unprepared. Senr. Const. Henderson.	New South Wales Exhibition Commission.
76. Sample of native moss (Eugeniè moss).	H. Moss, Shoalhaven, N. S. Wales.
77. Woolly part of the stems of the macrozamia spiralis.	Saul Samuel, Sydney.
Bark used near Sydney for tanning, viz.:—	
78. Two bundles of bark of acacia decurrens	Jas. and Wm. Macarthur, Camden Park, N. S. Wales.
79. or green wattle. See No. 95, Catalogue of Southern Woods.	
80. Two do. do. acacia decurrens var.	Ditto.
81. See No. 96, Catalogue of Southern Woods.	

These two varieties of acacia are of very rapid growth; will flourish in almost any kind of soil, but best in that which is rich and light. In the soil and climate of Algeria they ought to thrive to unlimited extent. They will attain maturity in from three to five years, producing large quantities of seed for future sowing. In New South Wales they vegetate spontaneously in thickets, more or less dense, wherever portions of trees have been consumed by fire. In cultivating them, the seeds vegetate much more certainly and rapidly if first plunged in nearly boiling water, or if moderate fires of rubbish be made over the sites where they are sown. They do not well bear to be transplanted.

82. Bundles of tea-tree bark, supposed to contain properties of a substitute for rag in manufacturing paper, &c.	H. Moss, Shoalhaven.
83. Bundle of kurrajong bark, Richmond River, N. S. Wales. By Senior Constable Henderson.	N. S. Wales Exhibition Commission.
84. Root of a Moreton Bay fig-tree. M'Leay River District. E. W. Rudder.	Ditto.
85. Bundle of prickly cane. Richmond River District.	Ditto.
86. Thornstick, called wogra wogra. Richmond River District.	Ditto.
87. Doryphora sassafras, sassafras bark ...	Ditto.
88. Bundle of bolar bark	Ditto.
89. Collection of sea-weeds—Harbour of Port Jackson, Pittwater, Lane Cove, Long Bay, and in the vicinity of Sydney, N. S. Wales.	Mrs. Raphael and Miss Raphael Sydney.
90. Tea-tree bark, for paper-making. Collected by John Wyndham, Dalwood, near Branxton.	N. S. Wales Exhibition Commission.
91. Wattle bark—a material used in N. S. Wales for tanning leather. Collected by do.	Ditto.
92. Apple-tree juice, used as a varnish. Collected by do.	Ditto.
(The above are indigenous to N. S. Wales.)	
93. Bundle of maize husks, Clarence River. Exhibited as a material suitable for paper-making, and as food for cattle.	Mr. J. Gregor, Woodford Island, N. S. Wales.
94. Currajong bark (North Richmond) ...	M. Lamrock.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
95.	Native cotton	Ditto.
96.	Fibres of urtica gigas	Mrs. James F. Wilcox, Grafton, N. S. Wales.
97.	Do. brachychiton luridum	Ditto.
98.	Do. hibiscus heterophyllus ...	Ditto.
99.	Kurrajong bark for cordage	Ditto.
00.	Fibre from the kurrajong bark; used by the natives for fishing lines.	H. Moss, Shoalhaven.
01.	Fibres of cassia sp. Warrego River—obtained by steeping the bark in water only.	C. Weldon Birch.
02.	Fibre of the traveller's grass (gymnostachis anceps). C. Moore, Sydney.	N. S. Wales Exhibition Commission.
03.	Fibre of pimelia; yielding a silky fibre, and growing abundantly on the seacoast towards Jarvis' and Bateman's Bay, N. S. Wales. By E. S. Hill, Sydney.	Ditto.
04.	Fibres from the native marsh-mallow; used by the natives for emu-nets, &c., &c., in the Darling River District.	Ditto.
05.	Fibres from the musa ensete. By C. Moore, Sydney.	Ditto.
06.	Fibres from the kurrajong bark	M. Lamrock, North Richmond.
07.	Prickly fibre. By E. W. Rudder, Macleay River District.	N. S. Wales Exhibition Commission.
08.	Two samples of flax made of Phormium tenax.	M. Whytlaw, Balmain, N. S. Wales.

Phormium tenax—New South Wales.

Sample No. 1.

Prepared directly from the plant, by only one mechanical operation, and subsequently dried.

The object of the exhibitor of this sample is to shew that in a country or colony such as New South Wales, where labour is comparatively high, an article of great commercial value may be cheaply and efficiently prepared for export, leaving it to the skilled labour of Europe to reduce the material to those finer conditions into which this article has so often been brought and applied with success in various branches of manufacture at Home.

The Phormium tenax has been so long and so well known that it is unnecessary to describe it, but it may be of importance to state that it grows as luxuriantly in this Colony as it does in New Zealand; and there are greater facilities for the cultivation of it here than in the latter country, where it is indigenous.

The exhibitor having resided upwards of twenty years in New Zealand, and whilst there devoted much time and capital towards developing this source of wealth to the Colony—but which labours were rendered useless by the distracted state of that Colony—can state, with the confidence of actual experience, that the following statement of results may be thoroughly depended upon, and shall be glad to give fuller details to any parties who may feel interested in the subject.

That from 1 acre of land which may have been properly planted, there will be obtained, at the end of eighteen months, 3 tons of leaves; and each successive year about threefold the produce of the previous one, until the plants entirely cover the ground, and become so dense that they impede each others further growth, and require then to be thinned out, when fresh ground can be occupied.

That the proportion of available fibre (like the sample) obtained from the raw material is from 20 to 22½ per cent.

That the cost of production, including interest of capital, rent of land, tear and wear of machinery, &c., would not exceed £12 sterling per ton.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY

Sample No. 2.

Has undergone a chemical process, and shews the beauty of the fibre; but although such a process, owing to the skill and labour required, could not be profitably conducted in this Colony, it might be done with great advantage in Europe, were a sufficient and regular supply of No. 1 sample supplied.

Sydney, New South Wales,
19th November, 1866.

M. WHYTLAW,
Balmain.

109.	Bundle of cabbage-tree fibre. Would make good rope.	H. Moss, Shoalhaven, N. S. Wales.
110.	Stringy bark	N. S. Wales Exhibition Commission.
111.	Bark and fibre } By E. W. Rudder ...	
112.	Bundle of flax. Cavan, near Yass ...	J. S. Calvert.
113.	Fibre from the Burrawang root, Shoalhaven.	H. Moss.
114.	Specimen of fibre from the tree locally known as sycamore (brachychiton luridum), to which attention is particularly requested, from the delicacy and beauty of the tissue. On the Clarence the tree is rapidly disappearing before the agriculturist.	T. Bawden, Grafton, Clarence River, N. S. Wales.
115.	Fibre from the same tree, so prepared as to shew its application to the making of cordage.	Ditto.
116.	Specimen of fibre of the fig-tree.... ...	Ditto.
117.	Fibre of the root of the fig-tree (ficus macrophylla), Clarence River, of considerable strength and durability, and used by the Aborigines in the fabrication of their scoop fishing-nets.	Walter Black, Wooli, N.S.W.
118.	Gum of spotted-gum-tree (Newcastle). By Wm. Keene, Esq., Government Examiner of Coal Fields.	N. S. Wales Exhibition Commission.
119.	Spotted gum. Collected by Mr. Wyndham	Ditto.
120.	Grass-tree do.	Ditto.
121.	Stringy-bark do.	Ditto.
122.	Bastard box do.	Ditto.
123.	Apple-tree do.	Ditto.
124.	Iron-bark do.	Ditto.
125.	White box do.	Ditto.
126.	Red box do.	Ditto.
127.	Gum from the bean-tree (castanospermum Australe).	Ditto.
128.	Can of spotted gum	Mr. Moss, Shoalhaven.
129.	Blood-wood gum. Will make splendid dye and useful varnish.	Ditto.
130.	Cakes of grass-tree gum	Ditto.
131.	Grass-tree varnish. E. W. Rudder ...	N. S. Wales Exhibition Commission.
132.	Six brooms, made of N. S. Wales palm-leaves, and used by the settlers.	Ditto.

They are more durable than the millet brooms of America, and their cheapness entitles them to consideration.

AGRICULTURAL PRODUCTS.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
133.	Two bottles of olives preserved in sea-water.	Mrs. Chas. Moore, Sydney.
134.	One do. preserved in salt and water.	Ditto.
	The olives were grown and preserved in the Botanic Gardens, Sydney.	
135.	Box of muscatel raisins. Simply sun-dried, without any other process.	Mrs. Selwyn, Grafton, N. S. Wales.
136.	Bottle of dried quinces	G. T. Loder, Wyley Flat, near Singleton.
137.	Do. peaches	Ditto.
138.	Bottle of jelly from mulberries	Ditto.
139.	Do. oranges	Ditto.
140.	Bottle of jam of Seville oranges ...	Ditto.
141.	Do. apricots	Ditto.
142.	Do. pears	Ditto.
143.	Bottle of jelly of quinces	Ditto.
144.	Glass jars of black guava jelly, or psidium cattleianum.	Mrs. C. Moore, Botanic Gardens, Sydney.
	This valuable fruit-tree thrives remarkably well in the Colony, its fruit is very prolific, and is now coming into general use for preserving.	
145.	Bottle of colonial grown cayenne ...	Mrs. Bunker, Liverpool.
146.	Do. Sweet sliced chutnee	J. H. Hasmott, Sydney.
147.	Do. Bengal curry powder	Ditto.
148.	Jar of arrowroot (maranta nobilis) ...	D. L. Waugh, Kiama.
149.	Do. potato arrowroot. E. S. Hill...	N. S. Wales Exhibition Commission.
150.	Do. arrowroot (macrozamia spir.) do....	Ditto.
151.	Do. do. (maranta nobilis) do....	Ditto.
152.	Do. do.	John Higgins, Berrico, Glo'ster.
153.	Do. do. (maranta nobilis). E. W. Rudder, Macleay River District.	N. S. Wales Exhibition Commission.
154.	Do. do. (Greenfield) ... do...	Ditto.
155.	Do. do. (maranta nobilis) do...	Ditto.
156.	Do. do.	W. C. Hetherington, Melville, near West Maitland.
157.	Do. do.	G. T. Loder, Wiley Flat, near Singleton.
158.	Prepared arrowroot, from the Burrawang nut.	H. Moss, Shoalhaven.
159.	Unprepared do.	Ditto.
160.	Samples of arrowroot	Wm. Cole & Son, Tomago, Hunter River District, N. S. Wales.
161.	Jar of white maize flour. A. Cobcroft, Singleton.	N. S. Wales Exhibition Commission.
162.	White maize meal...	Prepared by exhibitor, P. L. Fraser, Grafton.
163.	Yellow do.	Ditto.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
164.	Case of maizena flour, from maizena corn, introduced from America, by J. P. Collett. Grown and ground by Wm. Collett, of the Gundary Mills, Moruya.	T. S. Mort, Greenoaks, Sydney, N. S. Wales.
	The yield is 22 lbs. of fine flour to the bushel, @ 60 lbs., and grinding very free. Wheat is only yielding about the same.	
165.	White wheaten flour	Ditto.
166.	Jars of the fecula of the castanospermum Australe. C. Moore.	N. S. Wales Exhibition Commission.
167.	Collection of cobs of maize	G. T. Loder, Wyley Flat, near Singleton.
168.	Do. A. Cobcroft, Charlton, near Singleton, N. S. Wales.	N. S. Wales Exhibition Commission.
169.	Do. By E. W. Rudder	Ditto.
170.	Do. maize (New England) ...	Dangar Brothers.
171.	Do. striped maize; very prolific, and fine horse feed.	E. S. Hill.
172.	Do. coloured and 90 days maize...	Ditto.
173.	Do. do. (Armidale)	J. Brown.
174.	Sample of cob of maize grown on land in cultivation since 1824, and has never been manured.	G. J. Frankland, Mowbray, Paterson River.
175.	Glass jar of bread corn maize	J. and Wm. Macarthur, Camden Park.
176.	Do. best small yellow early maize, 67 lbs. to the bushel.	Ditto.
177.	Do. best large yellow early maize, 66 lbs. to the bushel.	Ditto.
178.	Jars of wheat, deposited in siloes in 1861, and opened in 1865.	John Eales, Duckenfield, Hunter River District, N. S. Wales.
179.	Glass jar of wheat	Dalton Brothers, Orange, N. S. Wales.
180.	Do. do., 64¼ lbs. to the bushel; grown by John Lyster, Orange, N. S. Wales.	W. T. Trappitt.
181.	Do. do., 63¼ lbs. to the bushel..	Ditto.
182.	Do. wheat...	Mr. Richards, Orange.
183.	White Tuscan wheat	G. T. Loder, Singleton.
184.	Wheat grown by A. Cobcroft, Charlton, near Singleton.	N. S. Wales Exhibition Commission.
185.	Glass jar of velvet wheat (sample No. 1) New England, N. S. Wales.	Dangar Brothers.
186.	Do. white wheat (sample No. 2)...	Ditto.
187.	Do. wheat (Armidale)	J. Brown.
188.	Do. do. (Kelly's Plains, Armidale).	J. M'Lennan.
189.	Do. white oats (New England, N. S. Wales).	Dangar Brothers.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
190. Malting barley, grown in 1866, from English seed imported in 1862 from Mr. Stevenson, Rainton, Yorkshire.	G. J. Frankland, Mowbray, Paterson River.

Yield about 45 bushels per acre, worth about 5s. per bushel in New South Wales. The ground in which this barley was grown was first cultivated in 1829—has been under crop ever since—has never been manured—and had a crop of barley the previous year. A sample of the soil (see No. 504) accompanies it, and a sample of the malt (see No. 405) made from the previous crop is exhibited by Messrs. Tooth.

191. Cape barley	Abraham Golby, junr., Largs, West Maitland.
192. English barley	Ditto.
193. Barley (Armidale)	J. Brown.
194. Packets of starch done up for sale, manufactured from the seeds of the bean-tree (castanospermum Australe). This starch has been highly commended; the seeds are abundant, and the manufacture inexpensive.	T. Bawden, Grafton, Clarence River District, N. S. Wales.
195. Lucerne seed, No. 1 } Grown on the Hunter.	John Wyndham, Dalwood, Branxton, N. S. Wales.
196. Do. No. 2 } Grown on the Hunter.	Ditto.

This lucerne produces over six tons to the acre each cutting, and can be cut from six to eight times in the year.

197. Lucerne seed	G. J. Frankland, Mowbray, Paterson River.

Grown on land which has been under cultivation since 1823, and has never been manured.

198. New Orleans cotton, Clarence River, grown by Mr. Walter Murphy.	Mrs. Wilcox, Grafton, N. S. Wales.
199. New Orleans cotton, Clarence River, grown in stony soil; planted in October, 1865, and picked in March, 1866; estimated produce, one ton (in seed) per acre. Grown by exhibitor.	Angelo Zanelli, Ulmarra, N. S. Wales.
200. Sea Island cotton, Clarence River District; planted in the end of September, 1864; picking commenced in March, and lasted until August, 1865. Estimated produce, three-quarters of a ton (in seed) per acre. Grown by exhibitor.	Ditto.
201. Australian cotton, Clarence River District. A new variety, the result of crossing the Sea Island with the New Orleans varieties. Two acres planted in the end of September, 1864; picking commenced in March, 1865, and continued until August, 1865. Estimated produce, three-quarters of a ton per acre. Grown by exhibitor.	Ditto.
202. Sample of Egyptian cotton, Clarence River District.	J. L. Michael, Grafton, N. S. Wales.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
203.	New Orleans cotton, Clarence River District. Grown on scrub or brush land, 25 miles from the sea. Estimated produce, 1,200 lbs. (clean) per acre. Grown by exhibitor.	J. Gregor, Woodford Island, N. S. Wales.
204.	Samples of Sea Island cotton, grown at Port Macquarie, in a wet season.	O. B. Ebsworth, Sydney.
205.	New Orleans cotton, grown on the Clarence River; bright and sound.	Ditto.
206.	Sea Island cotton	Mrs. A. Glennie, Lochinvar, N. S. Wales.
207.	Cotton	John Smith, Singleton, N. S. Wales.
208.	Seeds of Sea Island cotton	O. B. Ebsworth, Sydney.
209.	Do. do.	Ditto.
210.	Do. do.	Ditto.
211.	Five sugar-canes—E. W. Rudder, Macleay River District.	N. S. Wales Exhibition Commission.
212.	Sample of sugar from imphee	T. H. Miller, Maitland.
213.	Ditto ditto	J. R. Nowlan, Eelah, West Maitland.

MINERAL PRODUCTS.

214.	Coal in frame—Edward Campbell's, Rix's Creek Colliery, near Singleton. Collected by W. Keene.	N. S. Wales Exhibition Commission.
215.	Do. —A. A. Company's Newcastle Colliery. Collected by ditto.	Ditto.
216.	Do. —Lambton Colliery—Scottish Australian Coal Company. Collected by ditto.	Ditto.
217.	Do. —A. A. Company's Newcastle Colliery. Collected by ditto.	Ditto.
218.	Do. —John Mitchell's Colliery, Four-mile Creek, East Maitland. Collected by ditto.	Ditto.
219.	Do. —John Wyndham's Colliery, Dalwood, near Branxton. Collected by ditto.	Ditto.
220.	Do. —W. F. De Salis—Colliery, Four-mile Creek, East Maitland. Collected by ditto.	Ditto.
221.	Do. —Bulli Coal Company, Wollongong. Collected by ditto.	Ditto.
222.	Do. —Bellambi Coal Company ...	Ditto.
223.	Do. Do. do. Collected by ditto.	Ditto.
224.	Do. —Waratah Coal Company. Collected by ditto.	Ditto

224*a*	Coal in frame—Newcastle Wallsend Coal Company. Collected by W. Keene.	N. S. Wales Exhibition Commission.
224*b*	Do. —Newcastle Co-operative Coal Company. Collected by ditto.	Ditto.
224*c*	Do. —Bulli Coal Company, Wollongong. Collected by ditto.	Ditto.

[illegible]

		Paraffin Company (Limited.)
233.	Block of kerosene shale—Pioneer Works, Wollongong, N. S. Wales.	J. Graham.
234.	Case kerosene pioneer oil — Pioneer Works, Wollongong, N. S. Wales.	Ditto.
235.	Case kerosene oil	Hartley Kerosene Oil and Paraffin Co.
236.	Case unrefined paraffin oil	Ditto.
237.	Block of yellow sulphuret of copper ...	Cadiangulong Mine Company, near Orange, N. S. Wales.
238.	Do. do. do. ...	Ditto.
239.	Ingot of copper, from the mines ...	Cadiangulong Consolidated Copper Mining Company (Limited), N. S. Wales.
240.	Block of copper ore	Ditto.
241.	Large block of yellow sulphuret of copper, Cadiangulong Mines, near Orange. J. H. Miller, Secretary.	Cadiangulong Consolidated Copper Mining Company (Limited).
242.	Large block of ditto	Charles Croker.
243.	Case of yellow sulphuret of copper—Western District. Collected by E. S. Hill.	N. S. Wales Exhibition Commission.
244.	Copper ore, Icely. Collected by E. S. Hill.	Western Copper Mining Company.
245.	Specimen of copper ore	The Western Copper Mining Company.
246.	Black oxide of copper — Currawang Mines, near Goulburn. Collected by E. S. Hill.	N. S. Wales Exhibition Commission.
247.	Mundic quartz—Adelong	A. Graham, Adelong, N. S. W.
248.	Native copper—Western District. E. S. Hill.	N. S. Wales Exhibition Commission.
249.	Specimens of iron ore—Narara Creek, Brisbane Water, Broken Bay, N. S. W.	G. K. Mann, Sydney.

This ore is found cropping out on the surface, and apparently in unlimited quantity, within 1 mile of water carriage, near to Narara Creek, navigable by coasting vessels of light draught. The general character of the surrounding country is Hawkesbury sandstone, densely wooded. Fire-clay is also plentiful, and, like the ore, easily procurable.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
250. Samples of raw and calcined ore... ...	Fitzroy Iron Works and Mining Company, New Sheffield, at Nattai, N. S. Wales.
1 pig No. 1 grey iron	Ditto.
1 pig No. 2 do. (in two pieces) ...	Ditto.
1 pig white iron (in two pieces) ...	Ditto.
1 bar round wrought iron	Ditto.
1 bar square do.	Ditto.

The iron ore of New Sheffield is a red *hematite*, containing about 70 per cent. of metal, and is found both on the surface and underground, extending to a depth of about 30 feet. The iron-works are in the township of Nattai or New Sheffield. The constitution of the Company promises to give a turn to the fortunes of the enterprise. The business of the Company has been amalgamated with that of the Messrs. Russell & Co., of the Sydney Foundry. The partners of the latter establishment undertook the practical management for five years; and it is reasonable to expect, that the same skill and practical knowledge that has made the Sydney Foundry the largest and most prosperous establishment of the kind in the southern hemisphere, will turn the Fitzroy Iron Mine into a great success. The Great Southern Railway Line touching at the works, and the intrinsic capabilities of the property, contain in themselves the elements of prosperity. The estate consists of 1,600 acres of land, intersected by the Main Southern Road. The iron is all on one side of the road—the coal is all on the other. There are four seams of coal on the property, the chief of which is *anthracite*, and the others more of a bituminous character. The latter kind is used for puddling, in Great Britain; but in Pennsylvania, only the former is used for that purpose.

251. Specimen of fire-clay	Fitzroy Iron Works and Mining Company, at New Sheffield,
252. Stream tin, No. 1—30·99 per cent.	John de V. Lamb and Augustus Morris.
253. Do. No. 2—49·74 ditto	
254. Do. No. 3—69·92 ditto	E. S. Hill and J. Milsom.
255. Do. No. 4—47·85 ditto	
The products of New South Wales.	
256. Four bars of tin, numbered 1, 2, 3, 4, correspond with above figures.	Ditto.

Royal Mint,
28 August, 1866.

Sir,

I have the honor to transmit the enclosed report on the four bags of black sand left at the Mint by Mr. E. S. Hill, which have been assayed for tin, and a portion of the tin extracted, for the purposes of the Commissioners of the Paris Exhibition, in accordance with the wishes you were pleased to express on the subject.

I also beg to forward the four samples of tin and the remaining portions of the black sand.

I have, &c.,
C. ELOUIS.

The Honorable
The Colonial Secretary.

(*Enclosure.*)

Assay Office, Royal Mint,
Sydney, 28 August, 1866.

REPORT on four small bags of black sand received from the Acting Deputy Master, with instructions to assay each for tin, and also to produce a small bar of tin from each sample.

The proportion of tin contained in each sample was found to be:—

In No. 1, marked Sieve B	.....	30·99	per cent.
In No. 2 „ Result C, Sieve D	.....	49·74	„
In No. 3 „ Sample of Mitchell Sieve D	.....	69·92	„
In No. 4, „ Through Sieve D. Sand washed out, Oban	.....	47·85	„

The accompanying four bars of tin, as obtained from above samples, are numbered to correspond with above figures.

F. B. MILLER.
A. LEIBIUS.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
257. Stanniferous sand—Rocky River, N.S.W.	E. S. Hill.
258. Samples of silver and lead ores, Isis River, county of Brisbane.	A. Martin.
259. Small specimens of silver and lead ore, Isis River, county of Brisbane.	W. P. Wilshire.
260. Sample of silver ore, Moruya, N. S. Wales	T. Walker, Yaralla, Concord, N. S. Wales.
261. Sample of silver ore, from the mines ...	Moruya Silver Mining Company.
262. Specimens of silver and lead ore, from Woolgarlo, near Yass.	Walter Renny, Pitt-street, Sydney.
263. Specimens of quartz, viz. :—	
No. 1 from Mount Parnassus, near the township of North Gundagai. The quartz is embedded in a slate formation; the veins run in a direction N.N.W. by S.S.E.; no stones from these workings have yet been crushed.	A. C. S. Rose, Gundagai, N. S. Wales.
No. 2 from the Excelsior Reef, Muttama, 20 miles to the north-west of Gundagai. The quartz is embedded in granite. The specimen was found at a depth of 40 feet, and is a fair sample of the quartz to be found in these workings. The whole country for miles abounds in quartz, which has in very many instances been proved to be auriferous. None of the stone from which the accompanying specimen was taken has yet been crushed, but the machine is in course of erection near the reef	
No. 3 from Eurongilly, 27 miles south-west from Gundagai. The stone from this place generally yields from 1 to 2 oz. to the ton.	
264. Samples of quartz from the Alexandrina Reef, Skid Hollow Quartz Mining Co., viz. :—	T. H. Green, Manager, Wattle Flat, Turon, N. S. Wales.
First shaft—	
1st sample casing head wall.	
2nd do. do. foot wall.	
3rd do. 1st quartz (surface).	
4th do. 2nd quartz south drive (air shaft) 3 fathom level.	
5th do. 3rd quartz 3½ fathom level.	
6th do. 4th do. 7 do. do.	
7th do. 5th do. 10 do. do.	
8th do. 6th do. 12 do. north drive.	
9th do. 7th do. 14 do.	
10th do. 8th do. do. do.	

DESCRIPTION OF EXHIBIT.	EXHIBITED BY

Second shaft—
1st sample casing.
2nd do. 1st quartz (surface).
3rd do. 2nd quartz 3 fathom level.
4th do. 3rd do. 6 do. do.
5th do. 4th do. 8 do. do.
6th do. 5th do. 9 do. do.
7th do. 6th do. 10 do. do.

The above samples are from the two working shafts, and shew the character of the quartz at different levels.

265. Specimens of quartz crystals taken out of an auriferous quartz reef. — Mrs. Elizabeth King, Goonoo Goonoo, N. S. Wales.

266. Specimens of auriferous black sand ... — John F. Clements, Summerhill, near Bathurst.

267. Native gold of New South Wales, from the various auriferous districts in which alluvial diggings are systematically carried on, viz. :— — N. S. Wales Exhibition Commission.

No.	District.			Weight.
1.	Armidale	North...	...	ozs. 30
2.	Grafton	do. ...	...	30
3.	Rocky River	do. ...	...	30
4.	Nundle	do. ...	...	30
5.	Tamworth	do. ...	...	30
6.	Bathurst	West...	...	30
7.	Do.	do. ...	...	30
8.	Do.	do. ...	...	30
9.	Forbes	do. ...	...	30
10.	Hargraves	do. ...	...	30
11.	Orange	do. ...	...	30
12.	Mudgee	do. ...	...	30
13.	Do.	do. ...	...	30
14.	Do.	do. ...	...	30
15.	Sofala	do. ...	...	30
16.	Do.	do. ...	...	30
17.	Stony Creek	do. ...	...	30
18.	Jamberoo	do. ...	...	30
19.	Adelong S.	South...	...	30
20.	Braidwood	do. ...	...	30
21.	Do.	do. ...	...	30
22.	Burrangong	do. ...	...	30
23.	Cooma	do. ...	...	30
24.	Goulburn	do. ...	...	30
25.	Nerigundah	do. ...	...	30
26.	Kiandra	do. ...	...	30
27.	Tumberumba	do. ...	...	30
28.	Weddin	do. ...	...	30
29.	Gundagai	do. ...	...	4·30

Standard Gold :—
2 bars, 2 fillets, 2 scissel-plates, 4 blanks, and 4 coins ... 356·02

ozs. 1200·32

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
268. Native alum—Shoalhaven, N. S. Wales...	H. Moss.
269. Three bottles Kaolin clay—No. 1, 2, 3. These three bottles separated in their constituent parts from each other, make the whole of the clay as it was before separating.	James Manning, Panbula, Twofold Bay, N. S. Wales.
270. Block of granite from Moruya	Thomas Walker, Yaralla, Concord, N. S. Wales.
271. Do. limestone	Fitzroy Iron Works and Mining Company, and New Sheffield, Nattai, N. S. Wales.
272. Specimen of ore supposed to contain antimony, from the Clarence River District.	Thos. Bawden, Grafton, N. S. Wales.
273. Specimen of auriferous quartz from Napoleon Reef, Turon.	A. H. Eldred.
274. Specimens of auriferous quartz from Solitary Reef, Turon.	Ditto.
275. Specimen of auriferous quartz from Woods Point, Bingera.	J. de V. Lamb.

ARTS AND MANUFACTURES.

276. Two pieces of colonial tweed	French & Sons, Bowenfels.
277. 16 ends, containing 107½ yards of do. ...	O. B. Ebsworth, Sydney.
These 16 patterns of Australian tweed, made solely from New South Wales wool were manufactured and designed by the exhibitor. They are cut off pieces in stock, and not manufactured expressly for exhibition, but a fair sample of tweed in daily consumption and demand.	
278. N. S. W. cabbage-tree hats and plaits ...	N. S. Wales Exhibition Commission.
279. Pair of socks, Pair of gloves, Pair of wrist cuffs, Pair of mitts — spun and woven from opossum wool	Janet Morrisson, of Canburry, Queanbeyan, N. S. Wales.
280. Machine-stamped petticoat and two antimacassars.	S. Nathan, Sydney.
281. Colonial boots, made without the use of any machine, and manufactured by young men born in N. S. Wales, and taught by exhibitor, viz.:— Pair of Australian squatters' enamelled riding boots. Pair of kangaroo Wellington boots, colonial style. Pair of jockey boots, with tops ... ... Pair of enamelled kangaroo, elastic-side, mock-lace, toe-cap boots. Pair of plain do., do., do.... ... ... Pair of ladies' kid elastic-side boots ... Pair of ladies' plain do., do.	John Lobb, Sydney.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
282.	Pair gentlemen's enamelled hide Napoleons, brass rivetted. Pair gentlemen's colonial enamelled kangaroo hessian boots, brass rivetted. Pair gentlemen's waxed calf, straight cut top, riding boots. Pair gentlemen's colonial patent enamelled kangaroo emperors. Pair of ladies' best colonial patent enamelled kangaroo mock-balmorals, perforated toe-caps. Pair of ladies' best colonial patent japanned elastic-side boots (sewn) perforated toe-caps (Isabella boot).	Alderson & Sons, Sydney, N. S. Wales.
283.	Pair of gloves, spun and woven from opossum wool, by Mrs. M'Donald.	Revd. A. D. Soares, Queanbeyan, Yass District, N. S. Wales.
284.	Two hats, made by Mrs. Bawden, from the fibre of the sycamore tree (brachychiton luridum), thus shewing the adaptability of that fibre to useful and ornamental purposes.	T. Bawden, Grafton, Clarence River District, N. S. Wales.
285.	A case of jewellery, made to order by C. L. Quist, Hunter-street, Sydney, and containing— 1 brooch of gold. 1 smaller do. do. 1 pair of ear-rings do. 2 bracelets do. 1 buckle do. 1 pair sleeve-links do.	N. S. Wales Exhibition Commission.
	All of 18-carat gold, and the representations emblematical of N. S. Wales.	
286.	A flute, with 8 keys, made of N. S. Wales myall-wood, mounted in N. S. Wales Moruya silver, and enclosed in a N. S. Wales native rosewood case.	Jordan Wainwright, George-street, Sydney.
287.	Sample of colonial-grown tobacco, from Virginia seed.	D. H. Campbell, Goimbla, N. S. Wales.
288.	Sample of colonial-grown tobacco, Orinoco.	Ditto.
	Exhibitor was the first grower of tobacco in the Western District.	
289.	Keg tobacco, from leaf grown in the Hunter River District.	John Church, High-street, West Maitland, N. S. Wales.
290.	Case of colonial sugar, by Australian Sugar Refining Company in Sydney, N. S. Wales.	The Company.
291.	Public Statutes of N. S. Wales, 1824–1862.	Government of N. S. Wales.
292.	Private Acts of N. S. Wales, 1832–1862.	Ditto.
293.	N. S. Wales Letters of Registration of Inventions.	Ditto.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
294. Kamilaroi, Dippil, and Turrubul languages, spoken by Australian Aborigines. Rev. Wm. Ridley, M.A., Presbyterian Minister. Sydney.	Government of N. S. Wales.
296. Railway Time-tables. Stereotype.	Ditto.
297. Astronomical and Meteorological Observations of N. S. Wales. G. R. Smalley, Astronomer of N. S. Wales, B.A. & F.R.A.S.	N. S. Wales Exhibition Commission.
298. Flowers of Jewish Writers.	Samuel Elyard, Sydney.
299. Poets and Prose Writers of N. S. Wales. Edited by G. B. Barton, of the Middle Temple, Barrister-at-Law, Reader in the English Language and Literature to the University of Sydney.	N. S. Wales Exhibition Commission.
300. "Literature of New South Wales," by ditto.	Ditto.
301. Transactions of the Entomological Society of N. S. Wales.	Ditto.
302. Morocco-bound large Folio, containing N. S. Wales Land Titles Office Specimen Copies, Certificates of Title, &c., under Real Property Act (Torrens' System).	Alex. Dick, Examiner of Titles, Sydney, N. S. Wales.
303. Statistical View of N. S. Wales for Twenty Years. By Theod. J. Jaques, Registrar General, Sydney, N. S. Wales.	Government of N. S. Wales.
304. Sydney Directories. By J. Sands, Sydney.	N. S. Wales Exhibition Commission.
305. Gatherings of a Naturalist. By Geo. Bennett, M.D.	Ditto.
306. Baillière's Gazetteer of N. S. Wales.	Ditto.
307. History of N. S. Wales. By Rev. J. Dunmore Lang, M.A., D.D., M.P.	Ditto.
308. Australian Almanacs, 1866. By Sheriff & Downing.	Ditto.
309. Wayfaring Notes. By John Smith, M.D., Professor, Sydney University.	Ditto.
310. Southern Gold Fields. By Rev. W. B. Clarke, M.A.	Ditto.
311. On Flax and Hemp. By Francis Campbell, M.D., M.A.	Ditto.
312. Scott's Lepidoptera.	Ditto.
313. Snakes of N. S. Wales.	Ditto.
314. Catalogues of Mammalia.	Ditto.
315. Do. Land Shells.	Ditto.
316. Transactions, Philosophical Society of N. S. Wales, 1865.	Ditto.
317. Australian Nautical Almanac. (Bound by Sheriff & Downing, Sydney, N. S. Wales.)	Ditto.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
318. Geography of N. S. Wales, Physical, Industrial, and Political.	W. Wilkins, Chief Inspector of National Schools, Sydney, N. S. Wales.
319. Bottle of refuse of Castanospermum australe, after extracting the starch. By Chs. Moore, Botanic Gardens, Sydney.	N. S. Wales Exhibition Commission.
320. Nuts of the cone of do. Do.....	Ditto.
321. Case of brooms, made from millet grown in the Hunter River District, by the exhibitor.	Joseph Creer, High-street, West Maitland, N. S. Wales.
322. Two flower vases for the use of the toilet table, &c., made of emu eggs, mounted in silver; manufactured by C. L. Quist, Hunter-street, Sydney, N. S. Wales.	N. S. Wales Exhibition Commission.

The garlands, representing leaves and flowers, and the Aboriginals at the foot of the vases, are characteristic of N. S. Wales.

323. Specimens of silversmiths' work, designed and manufactured by the exhibitors, viz.:— Miniature clock tower, being a silver-mounted emu's egg, ornamented with frosted silver-grapes and leaves, kangaroos and emus, opossums, flying squirrels, a laughing jackass, and an Aboriginal surmounting a bouquet of wild bush flowers. Silver-mounted emu's egg inkstand	Veyret and Delarue, jewellers, George-street, Sydney.
324. Bas-relief casting, gilt and coloured, representing "The Royal Coat of Arms," manufactured from N. S. Wales iron and steel.	P. N. Russell & Co., George-street, Sydney.
325. Perfumes manufactured from flowers indigenous to New South Wales.	E. H. O'Neil, chemist, Sydney.
326. Turnery, in bean-tree—Castanospermum australe, Red cedar—Cedrela australis, Tulip-wood—Owenia venosa.	George Jordan, Grafton, N. S. Wales.
327. Pipe bowl of colonial meerschaum—silicate of magnesia.	John M'Fadden, junior, Richmond River District, N. S. Wales.
328. Wax models of Australian flowers ...	Elizabeth Podmore, Sydney.
329. Bush flowers of Australia, modelled in wax.	Mrs. Johnson.
330. Wax models of fruits	N. S. Wales Exhibition Commission.
331. Stereographs of prismatic sandstone, from near La Pérouse's Monument, N. S. Wales.	Dr. John Smith, Professor, University, Sydney.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
332. Photographs, viz.:—	
(By Milligan Brothers)—	
Bridge-street, Sydney, looking west.	N. S. Wales Exhibition Commission.
Pitt-street, Sydney, looking north	Ditto.
Bourke's Statue, Sydney, Domain.	Ditto.
Prince Albert's Statue, Sydney, Hyde Park.	Ditto.
Margaret-street, Sydney, looking east.	Ditto.
Royal Exchange, Sydney ...	Ditto.
University, Sydney	Ditto.
College-street, Sydney, looking south.	Ditto.
Wynyard-street, Sydney, looking west.	Ditto.
George-street, Sydney, north ...	Ditto.
Pitt-street, Sydney, looking north.	Ditto.
George-street, Sydney, looking south.	Ditto.
Wentworth Statue, Sydney University.	Ditto.
Macquarie-street, Sydney, looking south.	Ditto.
Christ Church, George-street, Sydney, looking north.	Ditto.
(By Freeman, Brothers, and Prout)—	
Randwick Church	Ditto.
St. Leonard's Church, North Shore.	Ditto.
Council Chambers, Randwick ...	Ditto.
Liverpool, London, and Globe Insurance Company, Sydney.	Ditto.
University, Sydney	Ditto.
Statuary in Museum, Sydney ...	Ditto.
Sydney Infirmary	Ditto.
Moore's Wharf, Sydney ...	Ditto.
Sydney Exchange	Ditto.
Rosemont, Residence of Alex. Campbell.	Ditto.
Kirketon. Residence of Wm. Billyard.	Ditto.
Aston Lodge. Residence of John Watkin.	Ditto.
Tusculum. Residence of Wm. Long.	Ditto.
Craigend. Residence of Hy. Prince.	Ditto.
Carara. Residence of John Hosking.	Ditto.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
Photographs—*continued*:—	
(By Freeman, Brothers, and Prout)—*continued*—	
Claremont. Residence of George Thorne.	N. S. Wales Exhibition Commission.
Ginahgulle. Residence of John Fairfax.	Ditto.
Clifford. Residence of F. H. Dangar.	Ditto.
Greenknowe. Residence of Walter Lamb.	Ditto.
Terraces. Residence of Burton Bradley.	Ditto.
The Warren. Residence of Thos. Holt.	Ditto.
Sydney University	Ditto.
Barncleuth. Residence of Hy. Moore.	Ditto.
Claremont. Residence of Geo. Thorn.	Ditto.
Cranbrook. Residence of Robt. Towns.	Ditto.
Australian Club, Sydney ...	Ditto.
Asylum (Destitute Children's), Randwick.	Ditto.
The Treasury, Sydney	Ditto.
Percy Lodge. Residence of Major Wingate.	Ditto.
Rockwall. Miss Little's residence.	Ditto.
Goderich Lodge. Fred. Tooth's residence.	Ditto.
Sydney Exchange	Ditto.
Quiraing. J. D. M'Lean's residence.	Ditto.
Waratah. Geo. King's residence.	Ditto.
Larbert. Mrs. Emma Lamb's residence.	Ditto.
Winslow. E. Wylde's residence.	Ditto.
Greenoaks. T. S. Mort's residence.	Ditto.
Clifford. F. H. Dangar's residence.	Ditto.
Glenrock. John de V. Lamb's residence.	Ditto.
Granthamville. Mrs. Dangar's residence.	Ditto.
St. Leonards Parsonage, North Shore. Rev. W. B. Clarke's residence.	Ditto.
Wallaroy. Sir Wm. Manning's residence.	Ditto.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
	Photographs—*continued*:—	
	(By Freeman Brothers and Prout)—*continued.*	
	Toxteth Park. Geo. Allen's residence.	N. S. Wales Exhibition Commission.
	Mount Adelaide. Henry Mort's residence.	Ditto.
	Hillside. Wm. Laidley's residence.	Ditto.
	Linthorpe. Christopher Rolleston's residence.	Ditto.
	Enmore House and Grounds. J. F. Josephson's residence.	Ditto.
	(By Wm. Hetzer)—	
333.	New General Post Office, Sydney.	Government of N. S. Wales.
	Sydney Museum	Ditto.
	Menangle Bridge, Great Southern Railway, N. S. Wales.	Ditto.
	Upper Gallery, New Wing, Museum, Sydney.	Ditto.
	Queen's Wharf and Steam Cranes, Newcastle, S. N. Wales.	Ditto.
	2 Views of Bridge at Singleton, Great Northern Railway N. S. Wales.	Ditto.
	Bridge to Abattoirs, near Sydney.	Ditto.
	Picton Tunnel, Great Southern Railway, N. S. Wales.	Ditto.
	Victoria Lodge and Gate, Botanic Gardens, Sydney	Ditto.
	Picton Viaduct, Great Southern Railway, N. S. Wales.	Ditto.
	Albert Drinking Fountain, Sydney.	Ditto.
	Royal Mint, Sydney	Ditto.
334.	Residence of A. Berry, North Shore, Sydney.	N. S. Wales Exhibition Commission.
	Cohen's Family Hotel, Sydney...	Ditto.
	Albion House. Residence of Mrs. J. Terry Hughes, Sydney (two sites).	Ditto.
	Two Sites of University; opposite views.	Ditto.
335.	Pitt and Spring Streets, Sydney..	J. Degotardi.
336.	Steamship "Rakaia," Sydney ...	Ditto.
337.	Prince Albert's Statue, Sydney...	Ditto.
338.	W. B. Campbell's Residence, Hunter's Hill, Parramatta River	Ditto.
339.	Petty's Hotel, Sydney	Ditto.
340.	Holroyd's Orangery, near Parramatta, N. S. Wales. By John Degotardi.	A. T. Holroyd.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
	Photographs—*continued*:—	
341.	James Pye's Orangery, near Parramatta. By J. Degotardi.	J. Pye.
342.	Machine Shop, Fitzroy Dry Dock ... Workshops at do. ... Caissons, do. ... By J. Degotardi	Government of New South Wales.
343.	Joint Stock Bank, Sydney	Bank.
344.	English, Scottish, and Australian Chartered Bank, Sydney.	Bank.
345.	Mutual Provident Society, Sydney ...	Directors.
346.	Bank of New South Wales, Sydney ...	Bank.
347.	City Bank, Sydney	Bank.
348.	*Herald* Office, Sydney	John Fairfax & Sons.
349.	Large photographic picture, View of Sydney Harbour, N. S. Wales.	John Degotardi, photographer, printer, &c., Sydney.
350.	Photographic view of Cowper's Wharf, Sydney. By Wm. Hetzer.	Government of New South Wales.
	Two views of Semi-circular Quay, Sydney. By Wm. Hetzer.	Ditto.
	View of the Botanic Gardens, Sydney, N. S. Wales, from eastern entrance. By Wm. Hetzer.	Ditto.
	View of ditto, entrance between the upper and lower Gardens. By Wm. Hetzer.	Ditto.
	View of ditto, from upper part, looking towards the western entrance, shewing the newly reclaimed ground. By Wm. Hetzer.	Ditto.
	View of ditto, from western entrance. By Wm. Hetzer.	Ditto.
	View of ditto, shewing the ground appropriated for the zoological collection. By Wm. Hetzer.	Ditto.
	View of the unfinished Bridge at Penrith, Great Western Railway, N. S. Wales. By Wm. Hetzer.	Ditto.
	View of Knapsack Gully Viaduct, Great Western Railway, N. S. Wales. By Wm. Hetzer.	Ditto.
	View of Australian Mutual Provident Society's Offices, Sydney, N. S. Wales. By Wm. Hetzer.	The Company.
351.	Three photographs of fossil fish, from the Wianamatta beds, of the Carboniferous Formation of New South Wales. By Freeman Brothers & Co.	Rev. W. B. Clarke, M.A., St. Leonards.
352.	View of Pyrmont Bridge, Sydney, N. S. Wales. By Wm. Hetzer.	Thos. Smith, Secretary to the Bridge Company.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
	Photographs—*continued.*	
353.	View of Hy. Bell's Buildings, Sydney.	N. S. Wales Exhibition Commission.
354.	View of London Chartered Bank, Sydney.	Ditto.
355.	View of St. Kilda House, Woolloomooloo, Sydney.	Mrs. Brady.
356.	Jolly's Orimbah Steam Saw-mills, Brisbane Water.	William Jolly & Co., Sydney.
	Do. Timber Wharf, Darling Harbour, Sydney.	Ditto.
357.	View of Cuthbert's Patent Slip, Sydney.	John Cuthbert, Sydney.
358.	One pen etching, representing Queen Adelaide's Oak, executed by Mr. P. J. Hogan, draftsman, Survey Department of N. S. Wales.	M. Fitzpatrick, Under Secretary, Department of Lands, Sydney.
359.	Four water-colour paintings of N. S. Wales Scenery.	Mrs. Eliz. Thurston (Amateur Artist), Hartley, N. S. Wales.
360.	Water-colour painting—View from Mount Bowen, South Kurrajong, N. S. Wales.	Mrs. C. T. Gedye (Amateur Artist), Woollahra, Sydney, N. S. Wales.
361.	Water-colour painting—View from the North Shore of Port Jackson. By Conrad Martens.	N. S. Wales Exhibition Commission.
362.	Water-colour painting — View on the Clarence River, N. S. Wales.	John Rider Roberts Sydney, N. S. Wales.
363.	Water-colour painting—The Bush Track. By F. C. Terry.	N. S. Wales Exhibition Commission.
364.	Five water-colour paintings—Australian Scenery.	Samuel Elyard (Amateur Artist), Colonial Secretary's Office, Sydney, N. S. Wales.
365.	Oil-painting — Representing Fruit and Game-stall, the work of a self-taught Artist.	A. J. Liddington, Witton Park, Bringelly, N. S. Wales.
366.	Model of La Pérouse's Monument at Botany Bay, N. S. Wales; executed in Pyrmont sandstone. By Js. Donaldson Sydney.	N. S. Wales Exhibition Commission.
367.	Specimen of sculpture in stone, representing copy of a Capital as used in the New General Post Office Building, Sydney. By Walter M'Gill, Sydney.	Ditto.
368.	Case of cutlery containing— Bowie knife, with pen-blade, lancers, cork-screw, pricker, and tweezers. Hunting knife, with phleme, borer, horse-hook, screw-driver, two screws, pricker, and tweezers. Dagger.	Mrs. Wm. Jennings, Sydney.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
369. Specimen of dental mechanism, being a closely-fitting plate for the human mouth.	David Fletcher, Wynyard-square, Sydney.
370. Three samples of silicate of magnesia ...	Senr. Const. Henderson, Ballina, Richmond River. N. S. W.
371. Kaolin urn; manufactured by Mr. Field, Sydney.	James Manning, Panbula, Two-fold Bay, N. S. Wales.
372. A variety of 12 descriptions of horse-shoes, forged from N. S. Wales iron, and most of them invented by the exhibitor.	John Gribben, Elizabeth-street, Sydney.
373. Lady's side-saddle, in a glass case ...	John Brush, Sydney, N. S. Wales
374. Engraved myall handle and stock-whip ...	A. A. Dangar.
375. Sword and electro-plated scabbard. The hilt made of New South Wales gold and silver, the blade of New South Wales steel.	N. S. Wales Exhibition Commission.
376. Carved tablet of colonial beech (Vitex Leichhardtii), Brisbane Water — designed by Mr. Manderson, carved by Armstrong.	Ditto.
377. Case of stereotype plates, moulds, &c. ...	Thos. Richards, Government Printer, Sydney, N. S. Wales.
378. Type and chase	Archibald Wright, type-founder, Yurong-st., Sydney.
379. Case of rough pottery, containing— 1 square fire-brick, one end out, one side out; 1 half fire-brick, 1 inch do., 1 2-inch do., 1 6 x 12 fire-tile, 1 12 x 12 do., 1 15 x 12 do., 1 18 x 12 do., 1 24 x 12, 2 chimney-pots, 1 cupular brick, 1 skew-back brick, and two garden tiles.	Bradford & Co., Balmain, N. S. Wales.
380. Colonial glue	Walker & Berry, Botany Bay, N. S. Wales.
381. Skeleton leaves of Australian trees, executed by Mr. W. B. Tribe, Sydney.	N. S. Wales Exhibition Commission.
382. Sign-board	O. B. Ebsworth, Sydney.
383. Twenty-five specimens of confectionery, manufactured by the exhibitor.	Thomas O'Neil, George-street, Sydney.
384. Six brooms, made of N. S. Wales palm-leaves, and used by the settlers.	N. S. Wales Exhibition Commission.
They are more durable than the millet brooms of America, and their cheapness entitles them to consideration.	
385. Top of loo table made of the Wellington pine of N. S. Wales.	N. S. Wales Exhibition Commission.
386. Samples of cabbage-tree plaits, by the children under the care of the exhibitor.	J. H. May, Superintendent, Randwick Destitute Children's Asylum.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
387. Case containing— 8 tins biscuits. 1 do. cabin biscuits. 1 do. navy do. 1 do. yorks do. 1 do. cracker do. 1 do. abernethy do. 1 do. pic-nic do. 2 do. dollar do.	Hardie & Mitchell, Sydney.
388. One bottle of biscuits made from seeds of the castanospermum Australe.	Chas. Moore, Botanic Gardens, Sydney, N. S. Wales.

The seeds of the Castanospermum Australe or the Bean-tree, are used as an article of food by the aboriginal natives, who prepare them by first steeping them in water from eight to ten days; then they are taken out, dried in the sun, roasted upon hot stones, pounded up into a coarse meal, in which state it may be kept for an indefinite period. When required for use, the meal is simply mixed with water, made into a thin cake, and baked in the usual manner. In taste, cakes prepared in this way resemble a coarse ship-biscuit.

389. Soap manufactured by the exhibitor ...	Fredk. Layton, Grafton, Clarence River.

WINES AND FERMENTED LIQUORS.

390. Colonial wine, grown at Porphyry, Williams River, N. S. Wales.	G. T. and J. B. Carmichael, Porphyry, Seaham, N. S. Wales.
No. 33 box, white wine, 1862 vintage, made from Riesling grape; No. 34 box, white wine, 1865 vintage, made from Riesling grape; No. 35 box, white wine, 1866 vintage, made from Verdeilho.	Ditto.

The soil is alluvial to the depth of from 12 inches to 2 feet, with a stiff clay subsoil. It has not been trenched, but simply prepared with an ordinary plough. The yield per acre, in 1862, was about 200 gallons; in 1865, was about 250 gallons; and in 1866 was about 200 gallons.

391. Colonial wine	W. S. Caswell, Moruya.
392. Colonial distilled whiskey from barley and sorghum, August, 1866. Henry Lumsdaine, Chief Inspector of Distilleries.	Government of N. S. Wales.
Do. rum, from treacle and sorghum, August, 1866.	Ditto.
Do. white spirit, from treacle and sorghum.	Ditto.
393. Colonial wine, produced and grown at the Cawarra Vineyard—white, 1858 vintage; red, 1862 vintage.	Dr. John Lindeman.
394. Red wine, grown and manufactured at Wallalong, Williams River, N. S. Wales.	Walter Scott, Wallalong, N. S. Wales.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
395.	Kaloudah wine, grown and manufactured at Lochinvar, N. S. Wales, Hunter River.	J. F. Doyle, Lochinvar, N. S. Wales.
396.	Colonial wine, Shepherd's Riesling, 1866 vintage, grown and manufactured at Seaham, Williams River, N. S. Wales.	J. N. Ireland, Seaham, N. S. Wales.
397.	White Madeira, 1862 vintage; Hermitage, 1861 vintage. Both the above samples grown and manufactured in the Hunter River District.	Messrs. Kelman, Kirkton near Branxton, N. S. Wales.
	Kirkton red wine, 1866 vintage	Ditto.
398.	Colonial wine, produced and grown at Merton Vineyard—Red wine, white wine, and muscatel; 1851 vintage.	Mrs. M. Ogilvie, Fairlight, Edgecliff-Road, Woollahra, Sydney.
399.	Colonial white wine, grown at Orindinna Vineyard, 1862 vintage.	John Glennie, Gresford, Paterson, N. S. Wales.
400.	Colonial wine grown at Hardwicke Vineyard—Red wine, 1864 vintage; red wine, 1865 vintage; white wine, 1865 vintage.	Arthur Remmington, Hardwicke, N. S. Wales.
401.	Colonial wine, grown on the Hunter River, N. S. Wales, by J. Stewart and Andrew Hollander—Tokay, Burgundy, and Muscatel.	Stewart & Co., 90 and 92, Clarence-street, Sydney.
402.	White Dalwood wine, 1862 & 1866 vintages	Messrs. Wyndham, Dalwood, near Branxton, N. S. Wales.
	Red do. do., 1862 & 1866 vintages	Ditto.
	Do. do. do., 1865 vintages ...	Ditto.

Dalwood is situate 15 miles from Maitland. The vineyards from which these wines were made are about 55 acres in extent, planted chiefly during the years 1858 and 1860; further addition being made in 1864 and 1865. And the wines sent are fair average samples from good to indifferent vintages.

403.	White Bukulla wine, 1863 & 1865 vintages	Messrs. Wyndham, Dalwood, near Branxton, N. S. Wales.
	Red do. do., 1865 & 1866 ...	Ditto.

The vineyard from which these wines were made is about 300 miles inland, and is about 20 acres in extent, planted chiefly in 1858 and 1860.

Total yield from Dalwood and Bukulla Vineyards in the year 1866, 23,000 gallons; estimated crop, 1867, 30,000 gallons.

404.	Dozen bottles of colonial wine	R. L. Jenkins, Nepean Towers, N. S. Wales.
	Samples of colonial Burgundy wine ...	Ditto.
	Do. Verdeilho wine ...	Ditto.

NOTE.—The vineyard from which these wines were made are about 55 acres in extent, planted chiefly during the years 1858 and 1860; further additions in 1864 and 1865. And the wines here are fair average samples from good to indifferent vintages.

405.	Pale malt, from barley (see exhibit No. 190) grown in the Colony, and manufactured by and on the premises of exhibitor.	R. and F. Tooth, Sydney.
406.	Colonial vinegar, white	D. J. Monk, Sydney.
	Do. brown	Ditto.

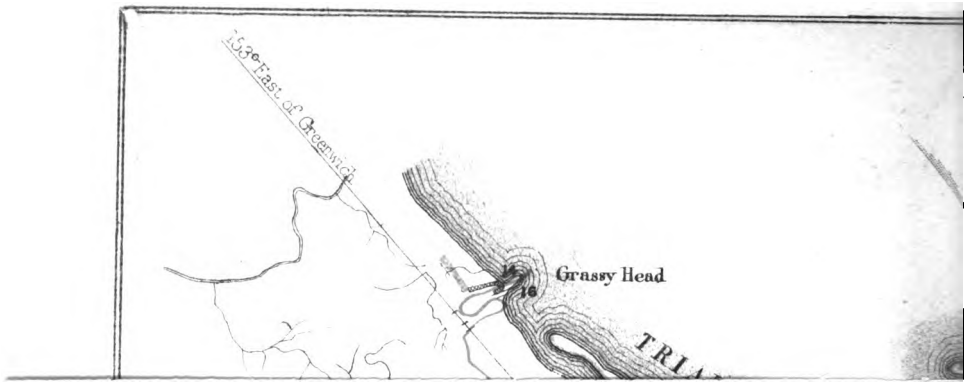
ABORIGINAL WEAPONS AND IMPLEMENTS.

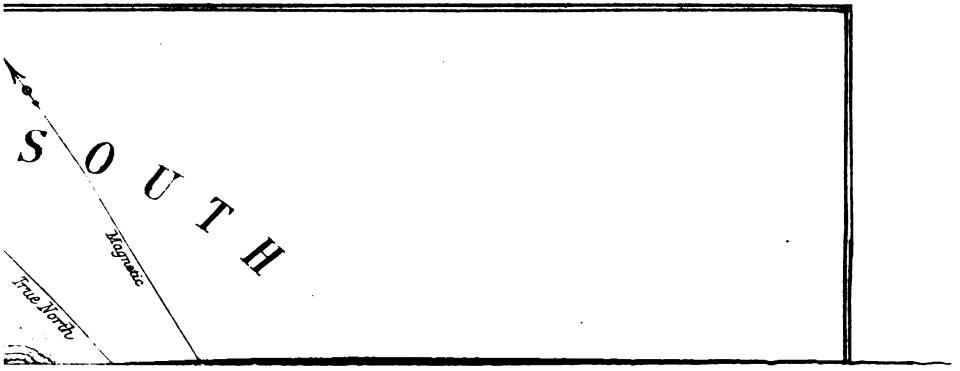
	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
407.	Dilly-bags, used by natives in the Richmond River District.	N. S. Wales Exhibition Commission.
408.	Native basket and two bags. Darling River District.	Ditto.
409.	Fishing-net. Do ...	Ditto.
410.	Emu-net. Do ...	Ditto.
411.	Dilly-bags and necklace. Richmond River District.	Ditto.
	NOTE.—The above bags are made of the kurrajong fibre; and the nets, of the native marsh-mallow.	
412.	Fishing-net, made by the natives of Wooli, at the mouth of the Clarence River, of the fibre of the root of the fig-tree (ficus macrophylla).	T. Bawden, Grafton, Clarence River District, N. S. Wales.
413.	Dilly-bag, made from the fibrous bark of the coryjong (hibiscus heterophyllus).	Ditto.
414.	Fishing-line, made of coryjong, the same material as that of which the dilly-bag is manufactured.	Ditto.
415.	Fishing line, made of fibre of the bark of the nettle-tree or stinging-tree (urtica gigas).	Ditto.
416.	Aboriginal dilly-bag, made of rushes ...	Walter Black, Wooli, Clarence River District, N. S. Wales.
417.	Aboriginal dilly-bag, made of coryjong fibre, obtained from the bark of hibiscus heterophyllus, which is prepared by the aboriginal gins by chewing.	Ditto.
418.	Aboriginal fishing-line, made of the fibrous bark of the nettle-tree (urtica gigas).	Ditto.
419.	Six pegees, for holding water and mixing honey and water, used by the aboriginal natives. Richmond River.	N. S. Wales Exhibition Commission.
420.	One pegee do. Bellinger River.	Mr. Marks.
421.	Tally-tally of opossum skin. Richmond River District.	N. S. Wales Exhibition Commission.
422.	Two caps of clay, worn by the aboriginal widows for twelve months during mourning. Darling River District.	Ditto.
423.	Native necklace. Do. ...	Ditto.
424.	Aboriginal head-dress. West of N. S. Wales.	Ditto.
425.	Aboriginal necklace—Fringes of opossum wool. Richmond River District.	Ditto.
426.	Two aboriginal necklaces. Do. ...	Ditto.
427.	Opossum rug. Richmond River. ...	Ditto.
428.	Aboriginal tomb tablet in memory of killing and burying one of the tribe,	Ditto,

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
429.	Seeds or pappa of the comboli, used by Aboriginals as food. Darling River District.	N. S. Wales Exhibition Commission.
430.	Three plaster of Paris casts of aboriginal feet and fingers and	Ditto.
431.	Skull of an aboriginal female. M'Leay River District. E. W. Rudder.	
432.	Stones for grinding combolee seeds, as used by Aboriginals in the Darling River District.	Ditto.
433.	Native yam spade, Darling River District.	Ditto.
434.	Native yam spades, West of N. S. Wales.	Ditto.
425.	Native yam spades, called "Kanie" by the Aborigines. Richmond River.	Ditto.
436.	Cake grass-tree gum, as prepared by Aboriginals of N. S. Wales, for fastening on the heads of spears, &c., and is much esteemed by Europeans as a varnish.	Ditto.
437.	Shields of Aboriginals, Richmond River...	Ditto.
438.	Collection of native weapons and implements by John Wyndham, Hunter River District.	Ditto.

The boomerangs are thrown with great precision by the aboriginal natives. Some are fashioned in a way to return to the thrower. From the movement of this simple instrument Sir Thomas Mitchell introduced the boomerang propeller in maritime steam-engines. The spears are used as weapons of war.

439.	Waddies, Murray River District ...	N. S. Wales Exhibition Commission.
440.	Oomeras, or wameras, Murray River District.	Ditto.
441.	Nulla-nullas, Murray River District ...	Ditto.
442.	Axe-headed weapons, do. ...	Ditto.
443.	Reed spears, Fort Bourke District. Collected by E. S. Hill.	Ditto.
444.	Wamera for throwing reed spears, Fort Bourke District.	Ditto.
445.	Helemans do.	Ditto.
446.	Boomerangs do.	Ditto.
447.	Pean (nulla-nullas) Macleay River District Collected by E. W. Rudder.	Ditto.
448.	Boomerangs and shields, Macleay River District. Collected by E. W. Rudder.	Ditto.
449.	Barbed and plain spears, Macleay River District. Collected by E. W. Rudder.	Ditto.
450.	Collection of native spears, Macleay River District. Collected by E. W. Rudder.	Ditto.
451.	Stone tomahawks, Darling River District	Ditto.
452.	Helemans do.	Ditto.
453.	Boomerangs do.	Ditto.





DESCRIPTION OF EXHIBIT.	EXHIBITED BY
454. Collection of native spears, Darling River District.	N. S. Wales Exhibition Commission.
455. Pean (nulla nullas) do.	Ditto.
456. Rude stone, do. Use unknown to the present Aborigines, and considered a great rarity.	Ditto.
457. Stone hammers, West of N. S. Wales ...	Ditto.
458. Boomerangs do.	Ditto.
459. Waddies do.	Ditto.
460. Stone knives do.	Ditto.
461. Stone tomahawks do.	Ditto.
462. Stone tomahawks. Barwon River ...	Rev. Wm. Stack, B.A., Balmain,
463. Helemans, Richmond River	Ditto.
464. Boomerangs, Richmond River District ...	Ditto.
465. Dilly-bags. Ballina, Richmond River, ... N. S. Wales.	N. S. Wales Exhibition Commission.
466. Fishing-nets. do.	Ditto.
467. Collection of clubs, spears, and boomerangs. Bellinger River, N. S. Wales.	Mr. Marks.
468. Case of spears, &c.	S. H. Officer, Murray River District.

GEOLOGICAL.

469. Geological specimens, collected by E. W. Rudder, illustrated by map accompanying:—	N. S. Wales Exhibition Commission.

Macleay River District.

(1) Arakoon granite; (2) do.; (3) Smoky Cape granite; (4) Smoky Cape slate; (5) Arakoon conglomerate; (6) Arakoon shale; (7) do.; (8) do.; (9) Arakoon fossil; (10) do.; (11) do.; (12) do.; (13) do.; (14) Double Cooner; (15) do.; (16) do. silver ore; (17) do. do.; (18) do.; (19) Smoky Cape; (20) Boat Harbour Road; (21) East Kempsey; (22) Commandant Hill; (23) Yessebah; (24) Moonaba; (25) Old Sheep Station; (26) do.; (27) do.; (28) Pinnacle, New England Road; (29) East Kempsey; (30) New England; (31) do.; (32) do., near Mount Sea View.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
469.—*continued.*	
Port Macquarie District.	
(33) Port Macquarie; (34) do., cobalt ore; (35) Port Macquarie serpentine; (36) Port Macquarie iron ore; (37) Port Macquarie lead ore; (38) Port Macquarie copper ore; (39) Port Macquarie iron ore; (40) Port Macquarie cobalt; (41) Port Macquarie cobalt; (42) Port Macquarie bog iron ore; (43) Port Macquarie pyrites; (44) Port Macquarie Asbestos; (45)—(46) Port Macquarie Molybdenite.	N. S. Wales Exhibition Commission.
Peel River Gold Field.	
(47) Peel River, A. A. Co's.; (48) do. do.; (49) Hanging Rock; (50) Peel River, A. A. Co.; (51) Carnn's Plains, A. A. Co.; (52) do. do.; (53) Foley's Creek, A. A. Co.; (54) Peel River, A. A. Co.; (55) Foley's Creek, A. A. Co.; (56) do. do.; (57) Goonoo Goonoo, A. A. Co.; (58) Foley's Creek, A. A. Co.; (59) Peel River; (60) do.; (61) do.; (62) do.; (63) do.; (64) do.; (65) do.; (66) Foley's Creek; (67) copper ore from bed of conglomerate, Carnn's Plains; (68) Peel River; (69) Foley's Creek; (70)—(71) Peel River, 1,800 feet above the level of the sea; hill near Nundle; (72) Hanging Rock; (73) Foley's Creek; (74) Peel River; (75) do. granite; (76) do. do.; (77) Peel River; (78) Goonoo Goonoo; (79) Peel River; (80) do.; (81) do.; (82) Foley's Creek; (83) Hanging Rock wash-dirt; (84) do. do.; (85) near Nundle; (86) Peel River; (87) Nundle; (88) Cope's Gully.	
Stroud Coal Field.	
(89) iron ore, Tilligerry; (90) do.; (91) do.; (92) do.; (93) do.; (94) do.; (95) do.; (96) do.; (97) do.	

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
469.—*continued.*	
Bathurst Gold Field.	
(98) near Sofala; (99) do.; (100) do.	N. S. Wales Exhibition Commission.

(23*a*) Yessebah specimen contains fossil bone, as does also its duplicate. These are the first, and at present the only ones procured. Time would not permit of further exploration. They are from the limestone formation, and were found in an exposed fissure connected with extensive caves. Future examination may prove these caves to be of the same character as those of England, Germany, &c., described in Buckland's "Reliquiæ Diluvianæ."

(24*b*) Yessebah; (25*c*) do.; (26*d*) do.; (27*e*). Oaklands; (28*f*) do.; (29*g*) Euroka Creek.	
470. Samples of transmuted carboniferous shales, with ferns.	Leop. Yates and Geo. Butler, Warialda, N. S. W.
471. Two petrifactions, Colley Creek, Singleton, N.S.W.	A. Loder.
472. Asbestos—Western District By E. S. Hill.	N. S. Wales Exhibition Commission.
473. Prismatic sandstone — from near La Pérouse's Monument, Botany Bay.	Dr. John Smith, Professor of Chemistry and Experimental Physics, Sydney University.
474. Silurian fossils and ores of copper and lead, from the Deleget and Bombala Rivers, Maneroo District, N. S. Wales; collected by A. Le Fleming:—	N. S. Wales Exhibition Commission.
1. From Quedong.	
2. Do.	
3. Do.	
4. Do.	
5. Do.	
6. From Dangenong.	
7. From Deleget.	
8. From Quedong.	
9. Do.	
10. From Currawang.	
11. From Quedong.	
12. Do.	
13. From near Bombala Copper Mine.	
14. From Quedong.	
475. Exhibits from Cavan and its neighbourhood, Murrumbidgee River, N.S. Wales, viz.:—	J. S. Calvert, Cavan, Yass.
Specimens of silurian limestone, from Cavan, Yass, the property of Castle and Calvert.	
Specimen of tertiary quartzite, with impression of leaves, from Jerawa, Mr. Brown's station, near Yass.	

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
475.—*continued.*	
Specimen of galena, from Good Hope, Yass; supposed to contain 10 per cent. of silver.	J. S. Calvert, Cavan, Yass.
Specimen of copper, from Queanbeyan, the property of J. J. Wright & Co.	
Specimen of copper from Good Hope, Yass.	
Specimen of iron ore from Everton, the property of A. H. Hume.	
476. Limestone from the Wellington Caves, N. S. Wales.	Joseph Aaron, Narramine, Wellington, N. S. Wales.
477. Geological sections	Rev. W. B. Clarke.
477*a*. Fossil fishes, represented by photographs (three in number), from Wianamatta Beds, N. S. Wales. (See No. 351).	Ditto.

NATURAL HISTORY.

478. Entomological collection, in 20 drawers, containing—	J. Williams, New Pitt-street, Sydney.
In 7 drawers, Lepidoptera.	
In 5 do., Coleoptera.	
In 2 do., Orthoptera.	
In 1 do., Neuroptera.	
In 1 do., Orthoptereous specimen.	
In 1 do., Hymenoptera and diptera.	
In 2 do., Oneoptera and Hemiptera.	
In 1 do., Hemiptera and others.	
479. Collection of fresh-water shells, &c. By E. W. Rudder, Kempsey House, Macleay River.	N. S. Wales Exhibition Commission.
These have a particular interest, as connected with the geological history of the District of Macleay.	
480. White ants' nest (Termites)	J. S. Norrie, Sydney.
481. Collection of sea-shore shells	Mrs. Bode, Newcastle.
482. Collection of Natural History. By Gerard Krefft, Curator, Australian Museum :—	N. S. Wales Exhibition Commission.
(482*a*) Mammals of Australia. (See Appendix, page 92.)	
(482*b*) Birds do. (See Appendix, page 102.)	
(482*c*) Reptiles do. (See Appendix, page 105.)	
(482*d*) Fishes do. (See Appendix, page 109.)	
(483*e*) Fossils do. (See Appendix, page 111.)	

MISCELLANEOUS.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
483. Seeds of Australia. By Chas. Moore, Director, Botanic Gardens, Sydney.	N. S. Wales Exhibition Commission.
484. Seeds from the cone of the macrozamia nut. Collected by E. S. Hill.	Ditto.
485. Seeds, &c.	G. J. Frankland, Paterson, N. S. Wales.
These are exhibited both in raw and manufactured state, viz. :— 2 bracelets, seeds of native apple; 7 carved seeds of the quandong; 10 plain seeds of the quandong; variety of seed-vessels of swamp and forest oak.	
486. Tin of berries (*Phyto lacca*).—When dissolved in hot water, will produce a deep carnation dye.	— Moss.
487. Pods of the Castanospermum australe (bean-tree), shewing the seeds of that tree, which grows in great abundance in the Clarence River District. (For the arrowroot made therefrom, see No. 194.)	T. Bawden, J.P., Mayor of Grafton. N. S. Wales.
488. Packet of various oleaginous seeds, Macleay River District. By E. W. Rudder.	N. S. Wales Exhibition Commission.
489. Specimen of medicinal bark, locally known as bitter bark, obtained from the alstonia constricta, which grows on the Clarence in abundance. The bark is believed to furnish a fine bitter tonic, equal to gentian and quassia, and possibly to Peruvian bark.	T. Bawden, Grafton, Clarence River, N. S. Wales.
490. Specimens of medicinal products, grown and prepared by the exhibitor.	Thos. Patterson, Elizabeth-st., Sydney.
491. Specimens of Australian marble from near Bathurst, and one from Argyle, New South Wales.	F. Murphy, Liverpool-street, Sydney.
492. A tin box, containing antidote to the bites of snakes; adapted for bush use.	Dr. Berncastle, Sydney.
493. Sample of the bark of Alstonia constricta, and outer wood, of an intensely bitter taste, used as a tonic and as bitters. May be procured in large quantities.	J. F. Wilcox, Grafton, Clarence River District, N. S. Wales.
494. Bottle of decoction of the Bitter-bark (Alstonia constricta), Clarence River District, as prepared for bitters.	Ditto.
495. Granulated sulphate of iron, for the cure of fluke in sheep.	Elliott Brothers, Sydney, N. S. Wales.
496. Australian ointment, made from Australian plants, for the cure of wounds and sores.	I. J. Josephson, Sydney.
497. Bitter-bark. Ballendole River	Dr. Foulis, Sydney.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
498. Dyes, in fifteen bottles. Collected by E. W. Rudder. These dyes were used by Mr. Rudder for dyeing the specimens contained in Nos. 506, 507, 508.	N. S. Wales Exhibition Commission.
499. Bottle of super-phosphate of lime, prepared from bones only, with sulphuric acid, containing 40 per cent. of soluble matter.	Elliott Brothers, Sydney, N. S. Wales.
500. Pieces of granite, by A. Cobcroft, Charlton, near Singleton, N. S. Wales.	N. S. Wales Exhibition Commission.
501. Bottle bisulphite of soda	Elliott Brothers, Sydney, N. S. Wales.
502. Fire-bricks, as used in house-building, &c.	J. Barnet, Colonial Architect.
503. Block of stone, Saunders' quarry, Pyrmont.	Ditto.
Do., do. ...	Ditto.
Do., from Maitland ...	Ditto.
Do., from Morpeth ...	Ditto.
Do., from Newcastle ...	Ditto.
Do., as used in Darlinghurst Gaol.	Ditto.
Do., from Dunn's quarry ...	Ditto.
Do., from Singleton ...	Ditto.
504. Sample of an alluvial loam from Mowbray, Paterson River, N. S. Wales. Has been under crop since 1829; has never been manured, and has yielded a crop of barley, about 45 bushels per acre, of which a sample is exhibited in No. 190.	Geo. J. Frankland Mowbray, Paterson, N. S. Wales.
505. Specimen of dye-wood, locally known as the cockspur vine, plentiful on the Clarence. (Dyed specimen, No. 509.)	T. Bawden, Esq., Grafton.
506. Specimens of dyed woollen and wool ...	N. S. Wales Exhibition Commission.
507. Specimens of dyed linen	
508. Specimens of dyed silk	
By E. W. Rudder, Macleay River, N. S. Wales.	

All these specimens have been produced upon fabrics as white as could be procured, and all have been subjected to the test of sun and dew—many for weeks. Some of the silks have been exposed to the sun's rays at a temperature of 110° Fahrenheit for many hours, and there was not found more than *one* material which is likely to fail, and of which there are but three examples, and this will stand when not subjected to powerful exposure. There is an important fact to be stated in connection with these dyes, requesting attention on the part of dyers, viz.:—that the colours are produced direct from the material used, and the variations in shade by the mordants, and do not require to be subjected to the action of other dyes, and are therefore of a simple and powerful character. They have all been produced under circumstances full of disadvantages, the work having been performed far away from any town, in the distant bush, with the aid of such appliances as distant settlers possess and the mind suggested, all being of the rudest and most simple character.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
509. Specimen of ribbon dyed with the yellow-wood, or cockspur vine, No. 505; thus shewing that it affords a good and permanent dye.	T. Bawden, Grafton, Clarence River, N. S. Wales.
510. Case containing silk cocoon comb ...	Asselin & Brady, Sydney, N. S. Wales.

Cocoon comb.—Rayon à soie.

Asselin & Brady, Brisbane, Queensland, and Sydney, New South Wales.

This contrivance, the invention of and method adopted by the exhibitors for cocooning mulberry silkworms, has great advantages over the ordinary modes, especially in regard to cleanliness, order, expedition, convenience, and economy in all attendant operations.

It secures at first a considerable economy of the floss or material expended by the caterpillar in perching the cocoon, therefore affording a larger proportion of the animal's treasure to be availed in the construction of the perfect cocoon. The cocoon itself is of better quality, make, and shape, as well as richer in reeling silk, than when the first efforts of the animal are partially spent in yielding its peculiar secretion in a form of comparatively little value. The silk reels better; and we have found by experience the difference in quality and quantity secured by our plan equal at all times to a superiority of not less than 15 to 20 per cent. over the bush or arbour mode of cocooning, and frequently more.

Our plan is particularly available in operations on a large scale, by reason of the facility it affords for management; and besides this, the saving in building accommodation is very considerable. We use frames or "combs" of hexagonal as well as of trigonal recesses, comprising generally about 100, 200, 500, 600, or 1,000 cells in each comb. When the caterpillars are nearly mature for "laying up," a comb is placed on a movable stand, handy to the feeding benches, and as the worms ripen they are put one by one into the cells until the comb is complete. The comb is then covered with a sheet of muslin, mosquito net, or other light flexible substance, and then another comb upon it, so that the same sheet serves for top of one comb and bottom of the one next above it (but separate sheets top and bottom are preferable), and so on *ad libitum* as fast and as long as the combs can be filled. Each day's nest of combs is moved aside, and left undisturbed for at least five days. By these means the utmost order and regularity are maintained, and progress known and noted with exactitude. Dafions and irregularities can only occur by sheer carelessness, which cannot fail to be revealed and fixed on the negligent servant.

After six or more days, the combs are separated from each other, and from the sheets, and placed, one comb at a time, on a table provided with a counterpart of the cells, and pressed down. Thus, the whole contents—100, 200, 500, 600, or 1,000 cocoons—are forced out in a moment, and the attendant assorts the colours and quantities at a glance with rapidity and precision, and proceeds on in like manner with the next. This, again, establishes a great economy of time and labour, and is very efficient.

We find the trigonal cells and combs best adapted for the smaller races of silkworms, and hexagonal for those forming large cocoons. Made of suitable material, the combs are simply washed with pure water after each service, which secures the small floss adhering to the sides of the reels. The same combs (cleansed) are used repeatedly during the season, and year after year, without being in the least injured by fair wear; and the entire cost of the combs is saved, or rather gained, in about four or five times use, by the increased quantity of silk obtained, leaving intact the yet further advantages of enhanced quality, &c., besides the efficiency of administration, saving of labour (which in these Colonies is expensive), and also the greatly less building-space required.

We employ about thirty-five different sizes and forms of cells—trigonal, hexagonal, square, diamond, circular, and oval—for general and also for particular purposes. When the number of silkworms daily laying up is moderate, we approve as most convenient combs of trigons of 100 and of 600 cells each; comb and the sizes of the sides of the triangles, 1¼ inch, 1⅜ inch, and 1½ inch; and combs, each of about 200 and about 1,000 hexagons, whose smallest diameter is equal to ⅞ inch, 1 inch, and 1⅛ inch respectively (arranged in parallelograms), according to the size and habit of the particular race, variety, or breed of worm; the depth of the cells, 1⅜ inch to 1¾ inch, is found sufficient.

The cocoons in the model exhibited are of the small and inferior worm of the country, and are only shewn to manifest the principle, as the time is not opportune to afford proper examples of our own stock; but it may be stated, as a rule, that the finer the cocoon, and the more valuable the race of worm yielding it, yet superior is the produce, and greater the advantage derived from our mode of securing the crop.

DESCRIPTION OF EXHIBIT. EXHIBITED BY

If the cocoons are left in the combs unwound, or reserved for breeding, the moths come forth from them with less difficulty than in any other mode with which we are acquainted. The combs are separated from each other after the seventh or eighth day, divested of the cloths, and set up on edge. The moths extricate themselves with perfect ease at the usual period, or rather earlier, uniformly on the same side (that which was at first the lower side), and all in each comb precisely at the same time.

The model exhibited is from the nursery of Messrs. Asselin & Brady in Sydney, and is of the same form as the combs manufactured of various materials for their plantation in Queensland,—5,000 acres specially authorized by the Queensland Parliament to be granted on conditions to the exhibitors, for the purpose of affording full scope to private enterprise to initiate the commercial growth of silk in the Australian Colonies. Their stock of worms comprises a considerable variety of both tame and wild silkworms, and the food appropriate to their sustenance; but the plan shewn by the model is as yet only adapted to the mulberry worm, and is intended to exemplify one of several arrangements designed by them to economize labour, and dispense with the cumbersome appliances and wasteful modes which have hitherto rendered silk culture on a *large* scale impracticable or unprofitable, even in countries where labour is cheap. Here, the low cost of land, its prolific nature, the magnificent climate, and particularly the clear elastic atmosphere of Australia, afford all other conditions besides labour and intelligent management necessary to success.

ASSELIN & BRADY.

Sydney, New South Wales,
28 November, 1866.

WOODS—MISCELLANEOUS CONTRIBUTIONS.

511. Sixty-nine specimens of Colonial woods; collected by E. W. Rudder, Kempsey House, Macleay River, N. S. Wales:—1 cherry, 2 box, 3 rosewood, 3 fustic, 3 lignum vitæ, 4 forest oak, 1 iron-bark, 2 cedar, 2 jibbong, 3 yellow cedar, 1 mulberry, 3 beech, 2 bastard myall, 2 flooded gum, 2 black-butt, 2 yellow turning tree, 3 blood-wood, 1 she-ash, 2 mahogany, 1 turpentine, 1 pepper-tree, 1 tree No. 1, 3 ash or Flindersia, 1 lance-wood, 1 grey gum, 1 tree No. 3, 3 swamp oak, 3 tea-tree, 2 water gum, 5 golden vine, 2 brush iron-bark, 1 monthly rose, 1 blood-wood, 1 turpentine, 1 mahogany. — N. S. Wales Exhibition Commission.

512. Eight specimens of wood... ... ... — Jas. Barnet, Esq., Colonial Architect, Sydney.

513. Block of iron-bark as used in girders ... — Ditto.

514. Collection of woods, by Charles Moore, Director, Botanic Gardens, Sydney. — N. S. Wales Exhibition Commission.

515. Specimen of wood (called coobar) from Narrandera. — Mrs. Bunker, Liverpool, N. S. Wales.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
516.	Specimen of salt-water swamp oak; collected by E. S. Hill.	N. S. Wales Exhibition Commission.
517.	Bundle of forest oak shingles—Brisbane Water District; collected by do.	Ditto.
518.	Specimen of podocarpus or white pine of Illawarra; by do.	Ditto.
519.	Do. Bradlea or native Walnut; by do.	Ditto.
520.	Do. Acacia or fish Wattle; by do.	Ditto.
521.	Do. Christmas-tree—C. apetalum; by do.	Ditto.
522.	195 S Do. Eucryphia Mooreii, 3,000 feet elevation; by do.	Ditto.
523.	182 S Do. Elæocarpus, from same elevation; by do.	Ditto.
524.	Do. Messmate; by do.	Ditto.
525.	186 S Do. Acronychia Hillii; by do. ...	Ditto.
526.	162 S Do. Callicoma or black Wattle; by do.	Ditto.

The specimens of woods (S. 162, S. 182, S. 186, and S. 195) have been only sent to fill up the gap in the consecutive numbers of the Southern Woods of N. S. Wales. Being green and full of sap, they should be kept packed up, and ultimately, after the close of the Exhibition, presented to the Kew Museum.

527.	Two brush fig-trees	H. Moss, Shoalhaven.
528.	Block of iron-bark	G. J. Frankland, Paterson.
529.	A case, manufactured of colonial timber, containing 30 specimens of colonial woods:—	John Cuthbert, Sydney.

1. Eucalyptus rostrata or blue gum, N. S. Wales.
2. Angophora lanceolata or red gum —North N. S. Wales.
3. Eucalyptus species or red gum —South N. S. Wales.
4. Tristania nereifolia or water gum —South N. S. Wales.
5. Eucalyptus maculata or spotted gum—North N. S. Wales.
6. Eucalyptus species or spotted gum —South N. S. Wales.
7. Eucalyptus resinifera or ironbark— N. S. Wales.
8. Eucalyptus persicifolia or black-butt—N. S. Wales
9. Eucalyptus corymbosa or blood-wood—N. S. Wales.
10. Eucalyptus species or bangally— N. S. Wales.
11. Eucalyptus resinifera or ironbark, 40 years in use—N. S. Wales.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
	12. Eucalyptus robusta or stringy-bark —N. S. Wales.	John Cuthbert, Sydney.
	13. Avicennia tomentosa or mangrove— N. S. Wales.	
	14. Vitex Leichhardtii or colonial beech —N. S. Wales.	
	15. Podocarpus spinulosus or colonial pine—N. S. Wales.	
	16. Eucalyptus species or colonial mahogany of N. S. Wales.	
	17. Eucalyptus botryoides or swamp or bastard mahogany—N. S. Wales.	
	18. Casuarina stricta or swamp oak— N. S. Wales.	
	19. Dammara Australis or Kauri pine— New Zealand.	
	20. Cedrela or cedar—N. S. Wales.	
	21. Eucalyptus longifolia or forest mahogany—N. S. Wales.	
	22. Acacia pendula or myall—N. S. Wales.	
	23. Banksia integrifolia or white honeysuckle—N. S. Wales.	
	24. Banksia serrata or red honeysuckle N. S. Wales.	
	25. Casuarina torulosa or mountain oak—N. S. Wales.	
	26. Casuarina tenuissima or forest oak —N. S. Wales.	
	27. Castanospermum Australe or bean-tree—N. S. Wales.	
	28. Melaleuca styphelioides or white tea-tree—N. S. Wales.	
	29. Owenia venosa or tulip-wood—N. S. Wales.	
	30. Xylomelum pyriforme or native pear-tree—N. S. Wales.	
530.	Piece of colonial wood, No. XLII, by C. Moore, Director, Botanic Gardens.	N. S. Wales Exhibition Commission.
531.	Collection of 195 pieces of southern woods of N. S. Wales. (See pages 7–26.)	Ditto.
532.	Collection of CXVI pieces of northern woods of N. S. Wales. (See pages 29–48.)	Ditto.
533.	Log of myall-wood	Fred. Ebsworth.
534.	Slab of acacia sp. (See Southern Woods, No. 88.) Collected by Sir Wm. Macarthur.	N. S. Wales Exhibition Commission.
535.	Do. eucalyptus sp. (See Southern Woods, No. 32.) Do.	Ditto.
536.	Do. brachychiton populneoides. (See Southern Woods, No. 122.) Do.	Ditto.

	DESCRIPTION OF EXHIBIT.	EXHIBITED BY
537.	Persoonia linearis. (See Southern Woods, No. 80.) Do.	N. S. Wales Exhibition Commission.
538.	Tristania laurina. (See Southern Woods, No. 56.) By Sir W. Macarthur. Do.	Ditto.
	Do. Do. Do.	Ditto.
	Do. Do. Do.	Ditto.
539.	Do.—Two mill cogs of. Do. Do.	Ditto.
540.	Block of tulip-wood (Owenia venosa). Clarence River. A very handsome wood, suitable for cabinet-work.	E. Laman, Grafton.
541.	Case of Colonial Woods, from the property of William Jolly and Lyall Scott, Orimbah, Brisbane Water.	Wm. Jolly & Co., Sydney.

1. Blue gum. Eucalyptus gobulus.
2. Black butt. Eucalyptus percisifolia.
3. Ironbark. Eucalyptus resinefera.
4. Beech. Vitex Leichhardtii.
5. Flendosa or brown beech. Cryptocaria glaucescens.
6. Turpentine. Syncarpia sp.
7. Swamp mahogany. Eucalyptus sp.
8. Forest mahogany do.
9. Forest oak. Casuarina torulosa.
10. Rosewood. Synoum glandulosum.
11. Pencil-wood. Synoum sp.
12. Brush maple.
13. Plum-tree. Achras sp.
14. Brush cherry-tree. Exocarpus.
15. Hickory. Acmena sp.
16. Maiden's blush. Sapindaceæ.
17. Brown wood.
18. White cedar. Melia.
19. Silky oak. Grevillia robusta.
20. Tick wood. Tetranthera sp.
21. Tea-tree. Mellaleuca.
22. Coach-wood. Ceratopetalum.
23. Sassafras. Doriphora.
24. Willow. Acmena sp.
25. Lignum vitæ. Ditto.
26. Fern-tree. Alsophila.
27. Ash. Cupania sp.
28. Yellow pine. Podocarpus.
29. Cork wood. Duboisia.
30. Grey gum. Eucalyptus.
31. Honeysuckle. Banksia.
32. Water gum. Tristania nerifolia.

ADDENDA.

Animal Products.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
542 Fleeces of wool	C. C. Cox, Mudgee.

Vegetable Products.

543 Colonial-grown sugar	Thos. Scott, Point Clare, Brisbane Water, N. S. Wales.

TABLE, shewing the results of two Samples of Sugar made by me, from Canes grown upon this property, on the 12th, 13th, 14th, 21st, and 22nd instant.

Number of Sample.	Age of Canes.	Whether first, second, or third crops from one planting.	Species of Canes.	Area of Ground cropped.	Weight of Canes.	Yield of Sugar and Molasses.	Yield of Sugar, at the rate per acre.	Number of Crops one Planting will give.	Net Proceeds of Sugar.	Molasses from Samples.	Waste and Losses, per cwt. (See Remarks.)	Cost per Acre for each Crop, upon a large and well-organized Estate.	Yields from Juice, &c.			
													lbs.	Gallons.	Of Sugar and Molasses.	Marking per Beaumes' Saccharometer.
	Months.			sq. ft.	lbs.	lbs.	lbs.		lbs	per cwt.		£			per cwt.	
1	24	First ..	Yellow Tahite.	164	220	32⅞	7,437	From 8 to 12 or more	28	12	17	35	132	14⅝	..	....
2	14	Second		280	290	36⅛	5,600		27	20	25		174	20	21	12

REMARKS.—I cannot vouch for the strict accuracy of all the above figures; indeed, with the rude and very imperfect appliances I had to produce these samples, together with the diminutive quantities upon which I had to operate, it is nearly impossible to define to a unit the various weights, &c. They are however sufficiently accurate, to determine the prominent object in view namely: the yield per acre and consequently the mercantile value of the industry in New South Wales.

The waste and losses accruing from the production of these samples I estimate as follow, viz.:—

	No. 1 Sample, per cent.	No. 2 Sample, per cent.
Loss of juice, from inefficient mill	10	10
„ sugar, by unusual excess of molasses, caused by my unavoidable treatment of the juice in the defecation of it	2	10
Waste and losses arising from these diminutive tests	5	5
	17	25

In this table, "No. 1," I have at present left blank a very important column, "Density of Juice, per Beaume's Saccharometer." The figure given by that instrument will doubtlessly be deemed by all intelligent men as fabulous. As a very essential and public question, so *immediately connected* with these records, I therefore *wish* practically to prove this *astounding* fact in Sydney, which I can do in five minutes. It will afford a key to all the most important figures opposite to "No. 1," and amply elucidate the yet unknown and wholly unrecorded facts, as relates to the richness of canes of twenty-four months' growth, and herein delineated.

I have now performed my last and final efforts, during a period of *forty-five* (45) years, to benefit my adopted country. These labours, with *considerable* outlay, are not yet appreciated; but the time will now shortly arrive when all will know and acknowledge the national value of them.

I once tried canes of thirty months' growth, which proved still richer than those of twenty-four months. See my letter in the *Herald* (I think in July last). But this *very* prolonged period I *do not* recommend, as the canes are liable, in that case, to "spring." Plant canes of twelve months' growth will *barely* make one ton to the acre. Rattan canes attain to maturity at a much earlier period.

In Antigua and other similar climates, our canes attain to maturity in about twelve months, or a little more. They then cast an "arrow," that is, shew a tassel similar to that of corn; after which they deteriorate, and must therefore be annually cropped. Here they do not cast that arrow, and consequently continue to grow for twenty-four to thirty months. This greater period of growth, as a natural result, improves the richness of their saccharine juices, which, and from their large size, a far greater yield of sugar is obtained from them. From this cause, the planters here will enjoy three great advantages over those within the tropics. First, a far greater yield; secondly, the *perfect* facility of cropping at *any* time during the *entire* year; and, thirdly, one planting will give from eight to twelve or more crops from one planting; whereas in Antigua, at the *utmost*, we have only two crops from one planting, and rarely more than one, and are limited in *time* to take off the crops.

When in Queensland, I saw the canes there in arrow, and "springing," that is, shooting at the eyes or joints. If this be generally the case, I am *certain* that the profits derivable from this invaluable industry will be *very* considerably *less* than I *know* will be enjoyed by the planters in *New South Wales*.

THOMAS SCOTT.
Sept. 28th, 1866.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
544. Colonial-grown sugar	Revd. Ed. Holland, Port Macquarie, N. S. Wales.

This sugar was manufactured from the cane. Its astonishing productiveness in New South Wales is surprising; and a correct estimate of its profitableness, in a commercial point of view, may be formed, when considered that considerably more than 60 lbs. were obtained from about 36 *square yards* of land, not of a superior quality, together with 40 *lbs. of excellent* molasses. Nor is this a chance or casual return. Over and over again, similar quantities have been obtained. This would be at the rate of 3¼ tons of *dry sugar*, and 12 to 14 cwt. of molasses, to the acre. This statement of facts, to those not acquainted with cane culture in New South Wales, may appear incredible, but is nevertheless correct. It can be vouched as certain as anything could be, that, with suitable seasons, over £100 of profit per acre may be calculated on. There is nothing to prevent New South Wales becoming a great sugar-producing country, supplying the wants of her own population, and exporting her surplus stock to neighbouring Colonies. With cane, imphee, and sorghum, and a judicious outlay of capital, an important future lies before her. She possesses many advantages not enjoyed by other countries, not the least remarkable of which is the extraordinary productiveness of the sugar cane.

Mineral Products.

545. Oxide of iron—raw material, and colour extracted from it.	John T. Hobbs, Sydney.

Arts and Manufactures.

546. 24 photographs in illustration of collection of Natural History. By Wm. Hetzer. Appendix, pages 91–124.	N. S. Wales Exhibition Commission.

DESCRIPTION OF EXHIBIT.	EXHIBITED BY
547. Stand for wine	N. S. Wales Exhibition Commission.
548. Case for perfumery	E. H. O'Neil.
549. Case for confectionery	Thos. O'Neil.

The above Nos. 547, 548, and 549, have been executed by Wm. Penman, Sydney.

550. Sydney University Calendar. Binding by Messrs. Sheriff & Downing, Sydney.	Sydney University.
551. } Two views of Sydney Gas Works. 552. } Photographed by John Degotardi.	The Directors.
553. View of Sydney Bible Hall. Photographed by John Degotardi.	N. S. Wales Bible Society.

Wines and Fermented Liquors.

554. Quinine wine	R. C. Knaggs, Newcastle.

Geological.

555. Pyrites and fossil, from Charcoal Reef, Adelong.	Edwards Bros.

Natural History.

556. Collection of land and fresh-water shells of Australia.	Geo. Masters, Sydney.
557. Three skeletons of Australian Marsupials and Monotremes.	Henry Barnes, Sydney.
558. Collection of Australian Mammals, by C. Tost, Sydney.	N. S. Wales Exhibition Commission.
559. Collection of Australian game birds, (mounted), by Mrs. C. Tost, Sydney.	Ditto.

Miscellaneous.

560. Sarsaparilla plant and leaves ...	Squire W. Pye, Parramatta.

APPENDIX.

SPECIMENS OF WOODS

INDIGENOUS TO THE SOUTHERN DISTRICTS;

WITH

REMARKS DESCRIPTIVE OF THE NATURE OF THE TREES, AND THE QUALITIES OF THEIR WOODS, SO FAR AS THESE COULD BE ASCERTAINED.

" A SHORT description of the general features of the kinds of Woodland, from which have been collected the majority of the specimens of Woods hereinafter described in detail, with a few observations upon the general character of the latter, would seem to be a desirable introduction to the Catalogue. They will be useful in rendering the subject more intelligible to all who have not had the opportunity of informing themselves by personal observation. For greater convenience, the different descriptions of natural Woodlands will be included under three classes; and the letter denoting its Class will be inserted opposite to each specimen of Wood.

Class A.

" Forest more or less open; generally composed of trees with little or no underwood; their trunks more or less naked and lofty, height being a more conspicuous feature than diameter; their heads small in proportion to the trunks, divided into few secondary or tertiary ramifications, and thinly clothed with persistent, dry, dull-coloured, thick, leathery leaves, abounding in essential oils, and in their decomposition adding little to the vegetable matter in the soil. The different species, Eucalyptus and Angophora, with Melaleuca, Callistemon, Syncarpia, and Lophostemon, compose the larger trees which furnish all the common durable hard-wood timber used in Sydney and the adjoining districts. Occasionally these dry forests pass into tracts crowded with trees, generally of a single species (still with little or no underwood), their trunks being drawn up to a great height, and of small diameter. The trees of this class are usually produced to a greater size, and with better quality of timber, on lands rather poor than good; the more fertile lands commonly producing trees of comparatively small dimensions, thinly scattered over their surface. The rich alluvial lands on the margins of rivers are exceptions to this rule—they are almost always heavily timbered, and towards the coast their character passes from A to C.

"There are some characteristics applicable to the whole of the large trees of this class. When at full maturity they are rarely sound at heart, and even when they are so, the immediate heart-wood is of no value, on account of its extreme brittleness. In sawing up logs into scantlings or boards, the heart is always rejected. The direction in which the larger species split most freely is never from the bark to the heart (technically speaking, the 'bursting way'), but in concentric circles round the latter. Some few of the smaller species of forest trees are exceptions to this rule; such as the different species of Casuarina, Banksia, and other species belonging to the natural order Proteaceæ. The latter, however, with little exception, belong to Class B. They split most freely the 'bursting way'; as do the Oaks, &c., of Europe and America. A very serious defect prevails amongst a portion of the trees of this class, to such extent as to demand especial notice here. It is termed 'gum vein,' and consists simply in the extravasation, in greater or less quantity, of the gum resin of the tree, in particular spots, amongst the fibres of woody tissue, and probably where some injury has been sustained; or, which is a much greater evil, in concentric circles between successive layers of the wood. The former is often merely a blemish, affecting the appearance rather than the utility of the timber; but the latter, when occurring frequently in the same section of the trunk, renders it comparatively worthless, excepting for fuel. In the latter case, as the wood dries, the layers with gum veins interposing separate from each other; and it is consequently impracticable to take from trees so affected a sound piece of timber, excepting of very small dimensions. The whole of the species of Angophora or Apple-tree, and many of the Eucalypti, or Gums, are subject to be thus affected; and it is the more to be regretted, because it appears to be the only reason why many of the trees so blemished should not be classed amongst the most useful of the hard-woods of the Colony. Another characteristic among these hard-woods is deserving of notice:—Although the majority of them make excellent fuel, and are valuable on account of the comparative quantity of steam they are capable of generating, the greater part are slow to kindle, and a few of them will hardly burn at all. To this circumstance, probably, is to be attributed the small number of houses burnt—in a climate, and amongst a population, likely to afford an unusual proportion of such accidents. Few of the species of Eucalypti are rich in potash, but several of the genus Angophora contain it abundantly.

"It would be difficult to form even an approximate estimate of the number of species of Class A, producing good timber, throughout the settled districts of New South Wales. It is believed that very few of them have a wide range; the same local names being applied many times over to different species, in different districts.

Class B.

"Barren scrub, covered either wholly with low shrubby vegetation without trees, or with short-stemmed, stunted trees, rarely or never producing serviceable timber. The same dry character of vegetation prevails over this description of country as over the last. The 'bush fires' which sweep over these barren scrubs, once (at least) in every four or five years, effectually prevent the species which do not grow with naked trunks, from obtaining the dimensions they might otherwise be susceptible of acquiring. At each burning, the majority are killed to the ground, to be reproduced from the collar. Good specimens of their wood for illustration are, therefore, scarcely attainable. It may be observed, that the majority of the beautiful flowering shrubs of the Colony have their habitats in this sort of country; which is almost always more or less rocky, stony, or sandy.

Class C.

"Rich Brush or 'Cedar Brush.' Tracts of country rarely of great continuous breadth, but often alternating at short intervals with Class A, and prevalent only at moderate distances from the sea, or, at all events, to the eastward of the great dividing range.

"This description of woodland often occupies country covered with rocks and stones, but of such geological character that a rich soil results from their decomposition. It usually follows the course of streams; and, in country favourable, geologically speaking, to the formation of good land, the Cedar Brushes fill up the valleys and the gorges of ravines with their dense vegetation. They are to be found in the greatest perfection at Illawarra, a few miles from the open sea-coast, upon natural terraces skirting the mountain side, at various elevations up to 1,500 feet; and upon rich alluvial plains, particularly in the districts to the northward of Sydney, where they are described to be of great continuous extent. They produce few shrubs, but a variety of trees of considerable altitude; frequently of comparatively slender growth, almost universally clothed with beautiful, dense, bright green foliage; their umbrageous character being much increased by the numerous lofty

ligneous climbers ('bush ropes') which attain their topmost branches, and frequently throw themselves from tree to tree. At Illawarra, and in some other districts, four species of arborescent ferns, and two noble species of palms, add materially to the tropical aspect of this description of country. A few of the trees of Class A are to be observed thinly scattered through the Cedar Brushes. In such case they often attain the most magnificent dimensions, but their general character remains unaltered.

"During the heats of summer, the atmosphere of the Cedar Brushes is always much less dry, and the temperature more equable, than it is upon adjoining lands not clothed with rich vegetation. Bush fires rarely or never extend into their recesses, which are difficult to penetrate, even on foot, owing to the numerous irregularities of surface which prevail, and to the tangled nature of the vegetation. These difficulties apart, nothing can be imagined more charming to the beholder; especially where glades or natural openings occur, to enable him to comprehend the full grandeur of the still life around him. The extreme loftiness of the noble trees, which are thrown together in surprising variety, with stems rarely cylindrical, but of the most picturesquely irregular forms,* covered with mosses and orchids, and loaded aloft with huge masses of epiphytical ferns of exquisite beauty. All these vegetable wonders, viewed in the transparent, green, and almost sunless light, which, even on the brightest days, pervades their recesses, combined with the delicious fragrance, and the agreeable temperature which, in fine weather, invariably characterizes the Cedar Brushes, astonish and gratify the lovers of sylvan scenery. But although the senses are charmed, the difficulties in exploring them, to ascertain of what species of trees they

* "Amongst the forms which attract the attention of a stranger, may be instanced the Giant Nettle (*Urtica gigas*), a common brush tree, which occasionally attains very noble proportions. Two specimens, growing near each other, upon measurement, proved respectively to be 40 and 42 feet in circumference, at 4 feet from the ground. The smaller one, still in full vigour, rises from its base by a series of buttresses of singularly regular outline, gradually tapering upwards without a branch to the height of 100 to 120 feet; the trunk then dividing into a regularly formed, wide-spreading head.

"But in picturesque beauty, as well as in stature, the nettle must give place to the Giant Figs. Of five species of this genus common to the brushes, three (*Ficus macrophylla*), and two with very small leaves (the names of which we have not ascertained), become huge trees. The largest actually measured girthed about 86 or 87 feet—its very irregular form preventing any approach to accuracy. It would be difficult by description to convey an adequate idea of the grand, yet wild character

consist, are very great; and still more serious are the obstacles to be surmounted in getting out new trees when found. The common use of the wood of the Cedar (*Cedrela Australis*) in joiners' and cabinet-work, and its extensive exportation to the neighbouring Colonies, and to Europe, have induced the sawyers to penetrate into every nook from whence sawn timber could be dragged out. But in seeking out this particular tree, they would appear to have neglected all the rest. The most experienced amongst them have no names for a great number, and can give little information to be relied upon with regard to the qualities of their timber. They have been in the habit of confounding together numerous species, under the general designation of 'brush trees.' It requires careful and laborious investigation, on the part of a stranger in these brushes, to distinguish trees even of very different families. Their foliage is often so far overhead, and so intermingled with that of neighbouring trees and climbers, their trunks are so covered with epiphytes, and the light is so imperfect, that the tree often requires to be cut down to determine its identity. Even then, it frequently becomes further requisite to cut down several of the neighbouring trees, which have their branches attached to it by 'bush ropes,' before the tree will fall and bring the foliage within the explorer's reach. The uncertainty of their periods of flowering and fruiting gives rise to further difficulty. On the present occasion, although they have been repeatedly examined at short intervals, over a period of six months, comprising the seasons at which they might be expected to shew flowers or fruit, it is remarkable how few have been detected in a fertile state. These few forming the exception rather than the rule, with the particular species to which they belong, it would appear to be certain that the great majority of the trees of this class do not flower every year, and many of them only at

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of these singular trees. Originating from seed deposited by birds, high up among the branches of the tallest trees, the plant commences its growth by extending its rope-like roots directly downwards. Getting firm possession of the soil, it then gradually embraces the parent stem, until the latter wholly disappears under the successive ligneous layers deposited by the Fig, and becomes the centre of an enormous fluted column, generally of very irregular form, but always supported by huge buttresses, which extend to a great circumference at the base. The Fig has now become the monarch of the surrounding brush; extending its immense cupola-shaped head high above the surrounding trees, and its roots far around, in ridges like low walls, several feet above the soil. An instance was observed, in which, supposing the tree to be standing alone upon a plain, a hundred men might be placed, sitting or lying down between the roots, perfectly concealed from view at a short distance."

long intervals. In proof of the intimate intermixture of many kinds of trees, it may be stated that, skirting a narrow track through a Cedar Brush for about half a mile, more than sixty species were observed, all growing within twenty or twenty-five yards of the track. Of these, above three-fourths were of the stature of trees. It may be remarked, also, that no two brushes resemble each other precisely. Fresh species of trees make their appearance in each succeeding brush, whilst others disappear. This characteristic seems to prevail wherever an opportunity of examining them closely has been afforded.

"The timber of the trees of this class differs remarkably from Class A. The grain is much finer, it is also more generally sound at heart; and the heart-wood, if not shaken in the fall of the tree, may be used, as is the case with the timber trees of Europe. Even when of very large size, and not sound at the butt, they are often perfectly so a little higher up. They differ generally, also, from the trees of Class A, in splitting most freely the 'bursting way.'

"Although their qualities be so little known, it is not to be doubted that some of them would prove of great value. The very imperfect collection of them which has been made on this occasion, affords evidence that some possess considerable beauty. At the same time, it should be observed, that the timber of a considerable portion is not durable when exposed to the weather or to damp; and that as a class, they are neither for strength nor lasting qualities, to be compared with the numerous more coarsely grained but almost imperishable woods of Class A."

The foregoing extracts from the Catalogue of 1854 formed the introduction to the Catalogue of the Southern Woods collected for the Great Exhibition at Paris. They are reprinted because the description of the different classes of Woodland seems to be substantially correct, and to have answered its purpose. The total number of Woods to be now exhibited falls short of the collection made in 1854; but in that collection several were repeated by error under different numbers, and there were about fifty other species, which have now been purposely omitted, on account of their inferior size or want of interest. In arranging this collection, some attempt at classification has been made, by bringing together into groups, in so far as our knowledge of them would permit, the woods of the same genera and natural orders; but this classification is necessarily imperfect, because there are a considerable number of whose affinities we are ignorant.

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
1	A	Eucalyptus sp.	*Myrtaceæ.*	* Barremma.	* White or Pale Iron-bark.	36—48	80—120	Sir Wm. Macarthur.
		From Illawarra; the most valuable perhaps of all the Iron-barks; remarkable for its smooth, uniform outer bark, and its very hard, tough, inlocked, strong wood.						
2	A	Eucalyptus sp.	*Myrtaceæ.*		† White Iron-bark.			Edward S. Hill, Esq.
		Variety from Brisbane Water; reported to be more tough and durable, and more pleasant to work, than the common Iron-bark.						
3	A	Eucalyptus sp.	*Myrtaceæ.*		* Iron-bark.	36—60	80—130	Sir Wm. Macarthur.
		From Illawarra; differs apparently from the Iron-bark of Cumberland and Camden; a strong and most durable timber.						
4	A	Eucalyptus sp.	*Myrtaceæ.*	¶ Terri-barri.	¶ Broad-leaved Rough Iron-bark.	24—48	80—120	Sir Wm. Macarthur.
		From Appin; common in Cumberland; one of the strongest and most durable of timbers.						
5	A	Eucalyptus sp.	*Myrtaceæ.*		Iron-bark.	24—48	80—120	Sir Wm. Macarthur.
		From Appin; distinguishable by its very rough bark, in broad, deep, longitudinal furrows, its very broad leaves, its smooth bark on the young branches, and the different grain of its wood.						
6	A	Eucalyptus sp.	*Myrtaceæ.*		Iron-bark.	24—36	60— 80	Sir Wm. Macarthur.
		From upper part of the Bargo Brush.						
7	A	Eucalyptus sp.	*Myrtaceæ.*	¶ Mokaarago.	¶ Narrow-leaved Smooth or Red Iron-bark.	24—48	50— 90	Sir Wm. Macarthur.
		From Camden; of smaller and more tortuous growth than either of the first four varieties; its timber redder, closer, softer, more easily worked, and probably not so durable; a most highly valued timber-tree.						
8	A	Eucalyptus sp.	*Myrtaceæ.*		Narrow-leaved Iron-bark.	24—48	60—100	Sir Wm. Macarthur.
		From Appin; harder and much coarser in the grain than the last.						

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
9	A	Eucalyptus sp.	*Myrtaceæ.*		¶ Pink or Crimson Flowering Iron-bark.	18—30	40— 60	Maj.-Gen. Macarthur.
		From the vicinity of Parramatta; a beautiful flowering tree, but scarcely to be considered valuable for timber.						
10	A	Eucalyptus sp.	*Myrtaceæ.*	* Gnooroo-warra.	* Box of Illawarra.	48—72	120—180	Sir Wm. Macarthur.
		A tree with magnificent timber, of first-rate quality for size, hardness, toughness, and durability.						
11	A	Eucalyptus sp.	*Myrtaceæ.*	* Dtaah.	* Bastard Box of Illawarra.	36—60	100—150	Sir Wm. Macarthur.
		A fine timber tree, but not equal to the preceding in size or in the quality of its wood.						
12	A	Eucalyptus corymbosa.	*Myrtaceæ.*	¶ Bourrayero Gourroo.	¶ True or Yellow Box of Camden.	18—36	30— 50	Sir Wm Macarthur.
		Generally of crooked growth, and not abundant.						
13	A	Eucalyptus sp.	*Myrtaceæ.*	¶ Barroul Gourrah.	¶ Bastard Box.	24—48	60—100	Sir Wm. Macarthur.
		An excellent timber; the tree of most unsightly appearance, and almost invariably hollow or decayed at heart before attaining full stature; the wood greatly prized for plough-beams, poles and shafts of drays and carts, spokes of wheels, &c.						
14	A	Eucalyptus sp.	*Myrtaceæ.*		¶ Bastard Box.	24—48	80—100	Sir Wm. Macarthur.
		Not so close in the grain, but probably of excellent quality. From Appin.						
15	A	Eucalyptus sp.	*Myrtaceæ.*		Box.	24—48	50—90	Sir Wm. Macarthur.
		Said to be good, but certainly not equal to the other varieties of Box. From Upper Bargo.						
16	A	Eucalyptus sp.	*Myrtaceæ.*	† Thurambai.	† Flooded Gum.			Edward S. Hill, Esq.
		A famous timber for ship-building and for house carpentry.						
17	A	Eucalyptus sp.	*Myrtaceæ.*	¶ Dthackai Courroo.		36—48	80—120	Sir Wm. Macarthur.
		A good Gum timber—a link apparently between that great division and the one called Box.						
18	A	Eucalyptus sp.	*Myrtaceæ.*	* Couranga.	† Blue Gum of Coast Districts.	40—72	100—160	Edward S. Hill, Esq.
		A magnificent timber for ship-building, and a favourite wood for house carpentry; not nearly so hard or heavy, and not so durable as the Iron-barks.						

19	A EUCALYPTUS SP.	*Myrtaceæ.*	* Tjellat, ¶ Zarrah.	¶ Blue Gum of Camden.	36—48	70—100	Sir Wm. Macarthur.

Very valuable, harder, closer, and more inlocked in grain than the last; excellent for naves and felloes of wheels, and for work under ground. The minute grub holes often found in this and other varieties of Eucalyptus are not symptoms of general decay.

20	A EUCALYPTUS SP.	*Myrtaceæ.*		Blue Gum.	36—48	80—100	Sir Wm. Macarthur.

From Appin; timber of excellent quality.

21	A EUCALYPTUS SP.	*Myrtaceæ.*		Blue Gum.	36—48	80—100	Sir Wm. Macarthur.

From Appin.

22	A EUCALYPTUS SP.	*Myrtaceæ.*		** Blue Gum of Berrima.	24—36	40— 80	Sir Wm. Macarthur, with the aid of the Rev. James Hassall.

Said to be good timber, but not to be compared to the other varieties of Blue Gum.

23	A EUCALYPTUS SP.	*Myrtaceæ.*	¶ Maandowie.	¶ Grey Gum.	24—48	60—100	Sir Wm. Macarthur.

An excellent Gum timber.

24	A EUCALYPTUS SP.	*Myrtaceæ.*	* Gnaoulie.	* Woolly Butt of Illawarra.	36—72	100—150	Sir Wm. Macarthur.

A magnificent timber tree, in very high repute for wheelwrights' work.

25	A EUCALYPTUS SP.	*Myrtaceæ.*	* Burram-burrang.	Rough-barked Gum.	36—48	80— 90	Sir Wm. Macarthur.

A good hard-wood timber.

26	A EUCALYPTUS SP.	*Myrtaceæ.*	* Yah-ruigne, ¶ Booangie.	Spotted or Mottled Gum.	36—48	80—100	Sir Wm. Macarthur.

A good timber tree, with lofty straight bole, in increasing reputation for ship-building, but not to be compared for strength and durability with the best description of Gums.

27	A EUCALYPTUS MEDIA?	*Myrtaceæ.*	Yarr-Warrah.	Black Butt Gum.	36—72	100—130	Sir Wm. Macarthur, & Edward S. Hill, Esq.

One of the very largest of the Eucalypti; the timber of excellent quality for house carpentry, or other purposes where strength and durability are objects. The compiler lately measured a specimen at Bullai, Illawarra, still in full vigour, and with no external symptoms of decay, 41 feet in circumference, with the bole of immense height.

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
28	A	Eucalyptus sp.	*Myrtaceæ.*		Flooded Gum of Camden.	36—48	80—100	Sir Wm. Macarthur.
		A fine-looking but comparatively worthless sort; the timber weak and not durable.						
29	A	Eucalyptus radiata.	*Myrtaceæ.*	¶ Kayer-ro.	¶ River Gum, Camden.	12—24	30— 50	Sir Wm. Macarthur.
		Of no value for timber.						
30	A	Eucalyptus sp.	*Myrtaceæ.*	¶ Caarambuy.	White Gum.	24—40	60— 80	Sir Wm. Macarthur.
		Not much valued, being generally of crooked growth.						
31	A	Eucalyp. pillularis.	*Myrtaceæ.*		* Mountain Ash. ** Willow or Whitetop	24—48	50—120	Sir Wm. Macarthur.
		Much valued for rough purposes in districts where the better sorts of timber are not produced. This sp. usually occupies rough, rocky sites, and seems to form a link between the division of Iron-barks and that of the Gums.						
32	A	Eucalyptus sp.	*Myrtaceæ.*		** Woolly Gum of Berrima.	24—48	40— 80	Sir Wm. Macarthur, with the aid of the Rev. James Hassall.
		A tree often of beautiful form, but the timber weak and worthless.						
33	A	Eucalyptus sp.	*Myrtaceæ.*		** White Gum of Berrima.	24—40	40— 80	Sir Wm. Macarthur, with the aid of the Rev. James Hassall.
		Not of much value for timber.						
34	A	Eucalyptus sp.	*Myrtaceæ.*		** Yellow Gum of Berrima.	24—40	40— 80	Sir Wm. Macarthur, with the aid of the Rev. James Hassall.
		Said to be a good timber.						
35	A	Eucalyptus sp.	*Myrtaceæ.*		** Lead-colored Gum.	18—30	30— 40	Sir Wm. Macarthur, with the aid of the Rev. James Hassall.
		Of no value for timber, but excellent for fuel.						
36	A	Eucalyptus sp.	*Myrtaceæ.*		** Red Gum.	24—40	40— 80	Sir Wm. Macarthur.
		Said to produce good timber.						

37	A EUCALYPTUS SP.	*Myrtaceæ.*			24—38	60— 80	Sir Wm. Macarthur.
	A rare variety, found at Appin; the timber apparently a good, hard wood.						
38	A EUCALYPTUS SP.	*Myrtaceæ.*		† Grey Gum from Brisbane Water.			Edward S. Hill, Esq.
	A fine timber, from Brisbane Water, which possibly may be same as No. 23 from Appin.						
39	A EUCALYPTUS SP.	*Myrtaceæ.*	¶ Mannen.	¶ Blood-wood.	24—60	50—120	Sir Wm. Macarthur.
	A worthless sort of timber.						
40	A EUCALYPTUS SP.	*Myrtaceæ.*	* Warreeah.	* Messmate.	36—60	80—130	Sir Wm. Macarthur.
	A fine timber tree, very like stringy-bark, excepting towards the butt.						
41	A EUCALYPTUS SP.	*Myrtaceæ.*		** Messmate (Berrima)	24—60	60—100	Sir Wm. Macarthur, and Rev. J. Hassall.
	A fine tree, but the timber not so strong as that of the preceding.						
42	A EUCALYPTUS SP.	*Myrtaceæ.*	† Bang-alay.	† Swamp Mahogany.	30—36	40— 80	Edward S. Hill, Esq.
	A crooked-growing tree; the timber much valued for knees and crooked timbers of coasting vessels.						
43	A EUCALYPTUS SP.	*Myrtaceæ.*	* Burram Murra.	Swamp Mahogany.	36—60	60—100	Sir Wm. Macarthur.
	A useful timber for inside work, but not equal to the better sorts of Eucalypti in strength or durability.						
44	A EUCALYPTUS SP.	*Myrtaceæ.*	¶ Booah.	Mahogany.	36—60	60—130	E. S. Hill, Esq., and Sir Wm. Macarthur.
	A noble timber tree, the wood much prized for its strength and durability.						
45	A EUCALYPTUS SP.	*Myrtaceæ.*		White Mahogany.			Edward S. Hill, Esq.
	From Brisbane Water; a good building timber.						
46	A EUCALYPTUS SP.	*Myrtaceæ.*	* DthahDthaang † Ngneureung.	Stringy-bark of Coast.	36—60	80—120	Edward S. Hill, Esq.
	The coast variety, excellent for house carpentry; from Brisbane Water.						
47	A EUCALYPTUS SP.	*Mrytaceæ.*		Stringy-bark, Appin.	36—48	70—100	Sir Wm. Macarthur.
	A distinct variety.						
48	A EUCALYPTUS SP.	*Myrtaceæ.*	¶ Bour rougne.	Stringy-bark, Camden.	24—54	50—100	Sir Wm. Macarthur.
	Not equal in stature or in hardness to the coast variety.						

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
49	A	Eucalyptus sp.	*Myrtaceæ.*		Stringy-bark, Berrima.	24—36	50—100	Sir Wm. Macarthur, and Rev. J. Hassall.
		Inferior to any of the foregoing varieties of the Stringy-bark, in stature, and in the quality of its wood.						
50	A	Angophora sp.	*Myrtaceæ.*	¶ Kajimbourra	¶ Red Gum.	36—70	60—100	Maj.-Gen. Macarthur.
		A fine tree, the largest of the genus, the connecting link between Angophora and the smooth-barked Eucalypti; timber applied to no useful purpose.						
51	A	Angophora sp.	*Myrtaceæ.*			24—36	40— 60	Maj.-Gen. Macarthur.
		Of no value.						
52	A	Angophora sp.	*Myrtaceæ.*	* Yeh-dthédeh	Apple-tree of Coast.	24—48	40— 60	Sir Wm. Macarthur.
		Useful for naves of wheels and boards, but generally much deteriorated by gum veins						
53	A	Angophora sp.	*Myrtaceæ.*	¶ Boondah	Apple-tree.	18—48	40— 60	Sir Wm. Macarthur.
		A handsome tree, occupying rich flats, deep loams, and sandy soils, inland; the timber much used by wheelwrights.						
54	A & C	Syncarpia sp.	*Myrtaceæ.*	* Booreah †Killa Warrah	Turpentine.	59—100	120—180	Sir Wm. Macarthur, & Edward S. Hill, Esq.
		A magnificent tree, often measuring 20 to 30 feet in circumference, and with great length of bole; the timber valued for posts in timber fences, and said to be most durable under ground; very liable to rend in drying.						
55	C	Tristania neriifolia.	*Myrtaceæ.*	* Ooramilly.	Water Gum.	24—48	80—120	Sir Wm. Macarthur.
		A fine tree, with lofty bole, timber very close-grained and elastic, much valued for boat-building; common at Illawarra, high up the mountain; very difficult to season without rending.						
56	C	Tristania laurina.	*Myrtaceæ.*		Water Gum of the Streams in Cumberland and Camden.	12—24	20— 30	Sir Wm. Macarthur, and E. S. Hill, Esq.
		Never growing remote from the beds or courses of streams or rivers; of crooked growth; wood very difficult to season, but when dry of singular closeness and toughness, and in such state believed to be unmatched for cogs of wheels in machinery, &c.						
57	C	Tristania sp.	*Myrtaceæ.*	† Wallaya.	Hickory.	24—36	80—120	Edward S. Hill, Esq.
		From Brisbane Water; a fine tree, resembling No. 55.						

58	A	TRISTANIA SP.	*Myrtaceæ.*		Water Gum.	12—24	30— 50	Edward S. Hill, Esq.
		Much valued at Brisbane Water for ribs and knees of boats; quite distinct from the preceding three species.						
59	A	MELALEUCA STYPHELIOIDES.	*Myrtaceæ.*	* Naambarr.	Prickly Tea-tree.	18—36	40— 80	Sir Wm. Macarthur.
		The timber of this and the two following species of Melaleuca appear to possess the same qualities. It is hard, close, rends very much in seasoning, but is said to be almost imperishable under ground. The outer bark can be easily detached in innumerable thin layers, very soft to the touch.						
60	A	MELA, UNCINATA.	*Myrtaceæ.*	* Yaang-arra.	Common Tea-tree.	24—48	40— 80	Sir Wm. Macarthur.
61	A	MELA. ROSMARINIFOLIA	*Myrtaceæ.*	* Gurreet-dtheerah	Soft-leaved Tea-tree.	24—36	40— 80	Sir Wm. Macarthur.
		The leaves contain, in common with several other species of humbler growth, an essential oil, which, when extracted by distillation, is only distinguishable by the colour from the "Cajeput."						
62	C	CALLISTEMON SALIGNUM?	*Myrtaceæ.*	¶ Bood joong.	Broad leaved Tea-tree.	12—36	40— 80	Sir Wm. Macarthur.
		Timber and bark very like those of the preceding three species.						
63	A	CALLISTEMON SP.	*Myrtaceæ.*			4— 8	20— 80	Sir Wm. Macarthur.
64	A	CALLIS. PALLIDUM.	*Myrtaceæ.*	Numbah.	Broad-leaved Tea-tree.	24—60	30— 50	Edward S. Hill, Esq.
		Trunk short and stout; wood much resembling that of the Melaleucas generally.						
65	B	LEPTOSPERMUM SP.	*Myrtaceæ.*	¶ Tibbekin.		6—12	12— 30	Sir Wm. Macarthur.
		Very hard, dense wood, used formerly by the Aborigines for their weapons.						
66	B	LEPTOSPERMUM SP.	*Myrtaceæ.*			6— 8	12— 15	Sir Wm. Macarthur.
67		FABRICIA SP.	*Myrtaceæ.*	* Baon-Bun	Black Tea-tree.	10—20	30— 40	Edward S. Hill, Esq.
68	C	ACMENA ELIPTICA	*Myrtaceæ.*	* Tdjerail.	Lily Pily.	24—36	60— 80	Sir Wm. Macarthur.
		Beautiful tree, with dense foliage, producing a profusion of fruit in clusters, very acid, but eatable and wholesome; wood close, apt to rend in drying.						
69	C	ACMENA SP.	*Myrtaceæ.*	* Galang arra.	Brush Cherry.	11—36	60—100	Sir Wm. Macarthur.
		Beautiful tree, the wood close, and apt to rend in drying; the fruit very beautiful, and of an agreeable acid flavour.						

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
70	C	Acmena.	*Myrtaceæ.*	Kangaloon.	Myrtle.	12—40	33— 80	Sir Wm. Macarthur.
		At Illawarra occasionally a fine tree, but generally branching low and attaining no size; wood exceedingly hard, close, and heavy, formerly much used by the Aborigines for their offensive weapons. Common in almost every rocky ravine east of the Blue Mountains.						
71	C	Acmena sp.	*Myrtaceæ.*	* Ngniringni-ngniringni.	Pariby.	6— 8	15— 25	Sir Wm. Macarthur.
		A remarkable small tree, with very smooth bark and light green foliage; the wood exceedingly dense and heavy, and said not to be subject to rend in drying. Much prized for swingles of flails. From Illawarra.						
72	C	Myrtus trinervis.	*Myrtaceæ.*	* Dthalandoon.	Three-viewed Myrtle.	10—24	40— 70	Sir Wm. Macarthur.
		Handsome small tree, very showy when in blossom, the timber close and hard, but the tree always hollow when large.						
73	C	Stenocarpus salignus.	*Proteaceæ.*	* Meleyn.	* Beef-wood. † Silky Oak.	18—36	50— 80	Sir Wm. Macarthur, & Edward S. Hill, Esq.
		A tree with very sparse foliage, the only Proteaceous tree common in Cedar brushes; produces wood of great beauty, which promises to be useful for veneers in cabinet-work.						
74	B	Xylomelum pyriforme.	*Proteaceæ.*	¶ Meridja-courroo.	Native Pear.	6—18	20— 40	Edward S. Hill, Esq.
		Curious small tree, producing dark-coloured, prettily-marked wood, something resembling the last, but of darker colour and coarser grain.						
75	B	Banksia serrata.	*Proteaceæ.*	¶ Wattung-urree.	Honeysuckle.	12—24	20— 30	Sir Wm. Macarthur, & Edward S. Hill, Esq.
		Low branching tree, producing handsome wood, but always bored by the larva of the coleopterous insects.						
76	B	Banksia integrifolia.	*Proteaceæ.*	¶ Courridjah.	Honeysuckle.	12—36	20— 40	Sir Wm. Macarthur, & Edward S. Hill, Esq.
		Low branching tree, usually found only on the immediate sea-board; wood like the last.						
77	B	Banksia coccinea.	*Proteaceæ.*			6—12	15— 20	Sir Wm. Macarthur.
		Beautiful large flowering shrub.						
78	A	Banksia sp.	*Proteaceæ.*			6—12	20— 25	Sir Wm. Macarthur, & Rev. Jas. Hassall.
		Low growing tree, found only upon the great dividing range and table-land.						

79	C	GREVILEA ROBUSTA.	*Proteaceæ.*		Silky Oak.	12—24	60— 80	Sir Wm. Macarthur.
		Much used for staves in the Northern Districts. The specimen from a tree cultivated for ornament at Camden Park, and planted about 24 years ago.						
80	A	PERSOONIA LINEARIS.	*Proteaceæ.*	¶ Naam-burra.		6—10	10— 20	Sir Wm. Macarthur.
81	B	PERSOONIA LATIFOLIA.		¶ Nunimo.		6—12	10— 20	Edward S. Hill, Esq.
82	C	ACACIA SP.	*Fabaceæ.*	* Baaliang.		12—20	20— 40	
		A beautiful specimen of Acacia with broad phyllodia, and handsome dark wood, from Illawarra.						
83	A	ACACIA SP.	*Fabaceæ.*			6—10	20— 30	Sir Wm. Macarthur, and Rev. J. Hassall.
		Beautiful when in blossom. From Upper Bargo and Berrima.						
84	A	ACACIA BINERVATA.	*Fabaceæ.*	* Myimbarr.	Black Wattle of Illawarra.	12—18	20— 40	Sir Wm. Macarthur.
		Beautiful small tree, wood close-grained, tough, and light, prized for axe helves and bullock yokes.						
85	C	ACACIA SP.	*Fabaceæ.*	* Marrai-uo.	Sallow.	12—36	40— 80	Sir Wm. Macarthur.
		One of the largest of the genus; in some of the brushes attaining the stature of a fine timber tree, remarkable for its narrow sparse phyllodia and rugged bark; wood very handsome, tough, and light, excellent for axe helves and bullock yokes.						
85(*b*)	C	ACACIA SP.	*Fabaceæ.*		Silver.	24—36	40— 80	Sir Wm. Macarthur, and Rev. J. Hassall.
		Is apparently the same as No. 85, but the wood very different.						
86	A	ACACIA FALCATA.	*Fabaceæ.*	¶ Wee-tjellan.	Hickory Lignum Vitæ.	8—14	15— 25	Sir Wm. Macarthur.
		Pretty, small tree, wood hard, close, tough, bark containing much tannin, used by the Aborigines to poison fish, and to make embrocations for the cure of cutaneous diseases.						
87	B	ACACIA HOMOMALA.	*Fabaceæ.*	¶ Kaarreewan.		12—24	20— 30	Sir Wm. Macarthur.
		A beautiful species, the phyllodia of remarkable glareous hue; wood hard, close, tough, and handsome.						
88	A	ACACIA SP.	*Fabaceæ.*	¶ Willow.		10—12	20— 25	Sir Wm. Macarthur.
		Handsome species, affecting the banks of streams; wood close, tough, and light.						
89	A	ACACIA SP.	*Fabaceæ.*	¶ Willow.		8—10	20— 25	Sir Wm. Macarthur.
		A sub-species of the last No., with broader phyllodia, and coming later into flower.						

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
90	A	Acacia sp.	*Fabaceæ.*		* Hickory ** Light-wood.	9—12	20— 40	Sir Wm. Macarthur, and Rev. J. Hassall.
		Tall, slender-growing specimen, with dark-coloured bark and very broad phyllodia, growing between Bargo Brush and Goulburn; wood close, light, and tough.						
91	B	Acacia elata?	*Fabaceæ.*			12—15	40— 60	Sir Wm. Macarthur.
		A very fine species, with very large leaves; wood hard, close, and tough. Found in rocky glens, in coarse sandstone formation.						
92	C	Acacia umbrosa.	*Fabaceæ.*	* Meroan gauge.		15—20	40— 60	Sir Wm. Macarthur.
		A handsome specimen, with very broad leaves; wood yellowish brown, close, and light.						
93	A	Acacia pendula?	*Fabaceæ.*		Myall.	9—18	30— 30	James Riley, Esq.
		A species well known for its violet-scented wood, common on the open sheep pastures in the interior.						
93 (*b*)		Acacia sp.	*Fabaceæ.*		Boree.			The Hon. T. A. Murray, then Speaker.
		A sub-species of the Myall.						
94	B	Acacia adenophora.				6— 8	15— 25	Sir Wm. Macarthur.
		Very slender, elegant specimen, with a glaucous hue.						
95	A	Acacia decurrens.	*Fabaceæ.*	¶ Wat-tah.	¶ Green Wattle.	10—15	20— 30	Sir Wm. Macarthur.
		The common "green wattle" of the older colonists; a light, tough, strong wood, but generally much bored by the larva of coleopterous insects.						
96	A	Acacia decurrens var.	*Fabaceæ.*	¶ Book kerriking.	¶ Black Wattle.	10—15	40— 50	Sir Wm. Macarthur.
		The common "black wattle" of the older colonists; wood strong, light, and tough; bark much prized for tanning.						
97	A	Acacia sp.	*Fabaceæ.*	* Nummerak.	* Green Wattle.	12—18	30— 30	Sir Wm. Macarthur.
		"Green wattle" of the Illawarra District; bark much prized for tanning.						
98	A	Jacksonia scoparia.	*Fabaceæ.*	Moutangarra	Dog-wood.	6— 8	12— 15	Sir Wm. Macarthur.
		Small tree, with slender stem, very showy when in bloom; the colonists' name said to be given in consequence of the offensive odour emitted by its wood when burning.						

99	B	Callitris or Frenella sp.	*Pinaceæ.*	Murragun	Cypress.	8—12	20— 40	Sir W. Macarthur, & Edward S. Hill, Esq.

Elegant, bushy, small tree, affecting sandy soils; wood soft; not supposed to be durable.

100	B	Callitris or Frenella sp.	*Pinaceæ.*		Cypress or Pine.	12—24	50— 80	J. Trickett, Esq., & Mr. J. B. Holdsworth

A very fine species, growing only to the westward of the Great Dividing Range.

101	A	Casuarina suberosa	*Casuarinaceæ.*	Dahl Wah.	Forest Oak. Beef-wood. Shingle Oak.	16—24	30— 50	Sir W. Macarthur & Edward S. Hill, Esq.

A low branching tree; the wood much used for shingles, of great beauty for cabinet-work, but very apt to rend in drying: should be used only in veneers.

102	A	Casuarina sp.	*Casuarinaceæ.*	Nar-rua.	Spreading Oak.	10—15	15— 30	Sir Wm. Macarthur.

Small tree, without much interest; its wood inferior in beauty to the foregoing, but good for fuel.

103	A	Casuarina sp.	*Casuarinaceæ.*	Nar-rua.	Spreading Oak.	10—15	15— 30	Sir Wm. Macarthur.

A sub-species of the foregoing, found at Appin.

104	A	Casuarina sp.	*Casuarinaceæ.*	Coom-ban.	Forest Swamp Oak	12—30	40— 70	Sir Wm. Macarthur.

Usually found in groups or small detached dense thickets in moist places, or "open forest ground"; wood much used for purposes in which lightness and toughness are required.

105	A	Casuarina sp.	*Casuarinaceæ.*	Billagin.	River or white Oak.	24—60	40—120	Sir Wm. Macarthur.

A beautiful, picturesque tree, growing only in or near the borders of rivers; its wood strong, light, tough, but not durable if exposed to the weather.

106	A	Casuarina stricta.	*Casuarinaceæ.*	Comburra.	Saltwater Swamp Oak.	12—24	40— 70	Edward S. Hill, Esq.

Tall-growing species, found only near the margin of salt water; its wood not much valued.

107	B	Monotoca albeus.	*Stypheliaceæ.*	Wallang-unda.	Beech.	6—12	10— 15	Edward S. Hill, Esq.

Branching, large shrub; wood much sought after for handles to chisels and other tools, and for carpenters' mallets.

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
108	C	Trochocarpa laurina.	*Stypheliaceæ.*	Barranduna.	Beech, Brush Cherry.	10—16	20— 30	Sir Wm. Macarthur.
		Small tree, generally of crooked growth; wood very close-grained, useful for turning, and other purposes demanding a tough, fine-grained wood; requires to be seasoned carefully.						
109	C	Zieria octandra?	*Rutaceæ.*	Beud ding.	Turmeric.	12—24	40— 70	Sir Wm. Macarthur.
		Small tree, with yellow duramen, and bark yielding a bright yellow dye, wood very hard, close-grained, and strong.						
110	C	Zieria lanceolata.	*Rutaceæ.*			12—24	30— 70	Sir Wm. Macarthur.
		Handsome, small tree; wood soft, but close; found at Illawarra.						
111	C	Eriostemon sp.?	*Rutaceæ.*	Yander manna.		18—24	40— 70	Sir Wm. Macarthur.
		Handsome, small tree, with white, close-grained wood; found at Illawarra.						
112	C	Eriostemon sp.?	*Rutaceæ.*			12—15	40— 50	Sir Wm. Macarthur.
		Pretty, small tree, with white, close-grained wood, like that of the orange.						
113	C	Polyosma Cunninghamii.	*Grossulariaceæ.*	Yeralla.		8—12	30— 40	Sir Wm. Macarthur.
		A very beautiful, small tree, with bright glossy foliage, and very fragrant flowers; wood close-grained, soft, very apt to rend in drying; from Illawarra, high up the mountain.						
114	C	Eupomatia laurina.	*Annonaceæ.*	Balwarra.		8—16	20— 30	Sir Wm. Macarthur.
		Low, branching tree, bearing a profusion of fragrant flowers; wood soft, close, yellowish brown.						
115	C	Cryptocarya glaucescens.	*Lauraceæ.*	* Oorawang. † Baanung.	Laurel.	24—28	70—120	Sir Wm. Macarthur, & E. S. Hill, Esq.
		A noble tree, with lofty bole and dense foliage; wood soft, not durable, but useful.						
116	C	Cryptocarya obovata.	*Lauraceæ.*	Myndee.	White Sycamore.	24—60	80—130	Sir Wm. Macarthur.
		A magnificent tree, producing a soft, white and useful wood.						
117	C	Cryptocarya sp.	*Lauraceæ.*			12—30	50— 80	Sir Wm. Macarthur.
		A handsome brush tree; the wood more beautiful than most of the Lauraceæ.						

118	C CRYPTOCARYA SP.?	*Lauraceæ.*		Yellow-wood.	12—18	40— 60	Sir Wm. Macarthur.

Very tall, slender tree.

119	C CRYPTOCARYA SP.?	*Lauraceæ.*		Flindosa.			Edward S. Hill, Esq.

A tree of noble dimensions, in general habit resembling Cryptocarya Obovata, but with smaller leaves; wood soft, light, in request for decking small craft. The local name would seem to be a corruption of Flindersia, with which, however, it has no affinity.

Genus unknown	*Lauraceæ.*			12—	50— 60	Sir Wm. Macarthur.

Small tree found on the summit of Bullai Mountain, Illawarra.

120	C ENDIANDRA GLAUCA.	*Lauraceæ.*	† Murrogun.	Teak-wood.			Edward S. Hill, Esq.

A noble tree, with lofty, cylindrical stem, and ample head; wood hard, close, and fine in grain, duramen dark-coloured, and frequently very handsome, with a powerful aromatic fragrance throughout; common at Brisbane Water, and said to be a very valuable timber.

121	C BRACHYCHITON ACERIFOLIUM.	*Sterculiaceæ.*	Weery Wegne.	Flame Tree.	15—36	40—100	Sir Wm. Macarthur.

A lofty tree, beautiful at all times, magnificent when in blossom; its local name having reference to the striking appearance of its brilliant coral-coloured flowers. Wood soft and spongy, the bark prized by the Aborigines for nets and fishing lines.

122	A BRACHYCHITON POPULNEOIDES.	*Sterculiaceæ.*	Couramyn.	Couramyn.	24—36	30— 50	Sir Wm. Macarthur.

Pretty, small tree, with short stout stem, and graceful aspen-like foliage; the wood soft and spongy, full of mucilage; the tap roots of young trees, and the young roots of old trees, used for food by the aborigines; the bark used for nets and fishing lines.

123	C HIBISCUS HETEROPHYLLUS.	*Malvaceæ.*	Dtharang-gange.	Coryjong.	6— 9	20— 30	Sir Wm. Macarthur.

A beautiful flowering tree, with slender tall stem; the bark much prized by the Aborigines for nets and fishing lines.

124	C SAPINDUS SP.	*Sapindaceæ.*	* Balim bowlimba.		18—36	40— 80	Sir Wm. Macarthur.

One of the most beautiful of the Cedar brush trees, of moderate size, the trunk never cylindrical, but of most irregular outline; wood soft, but close, very apt to rend in drying. Found only at Illawarra.

125	C Genus unknown.	*Sapindaceæ.*	* Dawawah. † Kareeing.	* Maidens' Blush. † Ladies' Blush,	18—40	40— 80	Sir Wm. Macarthur, and E. S. Hill, Esq.

Of moderate size, but perhaps the most beautiful of the Cedar brush trees, its magnificent large leaves being densely clustered together at the ends of its long slender pendulous branches; trunk of very irregular form; wood close, soft, and of pinkish hue, hence its local names.

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
126	C	Cupanea sp.	*Sapindaceæ.*	Yowarrow.		6—12	20— 40	Sir Wm. Macarthur.
		Small, crooked-growing tree, with dense, hard wood.						
127	C	Cupanea Australis, Stadmannia Australis.	*Sapindaceæ.*	* Burrunedura.	* Tamarind Tree.	12—30	53— 90	Sir Wm. Macarthur.
		An elegant tree, with magnificent, large, pinnate leaves, producing, every third or fourth year, large clusters of acid fruit, used for preserving by the colonists. Wood whitish, and coarse-grained.						
128	C	Genus unknown.	*Sapindaceæ.*			8—16	40— 60	Sir Wm. Macarthur.
		Coarse-grained, but tough wood, of no beauty.						
129	C	Panax sp.	*Araliaceæ.*			9—18	30— 50	Sir Wm. Macarthur.
		Remarkable, small, slender-growing tree, with few or no ramifications. Its fine, pinnated leaves often exceed three or four feet in length; wood soft and perishable.						
130	C	Aralia elegans.	*Araliaceæ.*	* Merring arra.		10—15	30— 35	Sir Wm. Macarthur.
		Elegant-growing, small tree, with magnificent pinnated leaves; wood soft, white, and spongy.						
131	C	Botryodendron sp.	*Araliaceæ.*		* Laurel, Birdlime.	10—15	20— 30	Sir Wm. Macarthur.
		A singular, small tree, with magnificent, large, simple leaves, and soft, spongy, white wood.						
132	C	Doryphora sasafras.	*Atherospermaceæ.*	† Tdjeundegong. * Caalang	Sasafras or Sasafrax.	24—36	80—120	Sir Wm. Macarthur.
		A charming tree, with dense, bright, glossy foliage and aromatic odour, filling the brushes with the most delicious fragrance. Infusions of its aromatic bark in repute as a simple tonic. Wood soft, weak, and in little repute.						
133	C	Doryphora sp.	*Atherospermaceæ.*		Black Sasafras.	30—60	80—120	Alderman Hanraghan.
		Another charming tree, quite distinct from the last, and if possible, still more beautiful; seen only in the southern parts of Illawarra.						
134	C	Cargillia Australis.	*Ebenaceæ.*	* Booreerra.	* Black Plum.	8—14	20— 40	Sir Wm. Macarthur.
		Upright, slender, tall, little tree, with close-grained hard wood, very apt to get discoloured and to rend in seasoning.						

135	C	CARGILLIA SP.	*Ebenaceæ.*	* Caarambool.	* Grey Plum.	12—24	40— 30	Sir Wm. Macarthur.

A much finer tree, and with tougher wood, produces large quantities of small fruit, eaten by the Aborigines; wood in repute for strength and toughness.

136	C	Genus unknown.	*Icacineæ.*	Ngneureen. * Naanan.	* White Maple.	40—80	83—150	Sir Wm. Macarthur.

A most magnificent tree, its lofty, erect bole always of triangular form; wood close-grained, firm, moderately hard and tough, very apt to rend in drying, containing a peculiar bitter principle; it qualities little known. The largest tree measured girthed 27 feet.

137	C	PITTOSPORUM UNDULATUM.	*Pittosporeæ.*	Wallandun deyren.		18—30	50— 80	Sir Wm. Macarthur.

A small tree, with very close-grained, hard, white wood, which, when seasoned carefully, is excellent for turning, and promises to be good for wood engraving; sound transverse sections of more than 10 to 16 inches would be rare.

138	C	ELÆODENDRON AUSTRAL.	*Celastraceæ.*	Couraiuo.		8—10	25— 35	Sir Wm. Macarthur.

Slender-growing, little tree, with pretty, close-grained wood, which however splits in seasoning.

139	C	APHANOPETALUM SP.	*Cunoniaceæ.*	Tdjeunen.	White Myrtle. Blue Ash. Ash.	30—48	80—120	Sir Wm. Macarthur.

A noble tree, of great beauty, producing in terminal racemes large quantities of acid fruit; wood close-grained, and easily worked; likely to be useful.

140	C	CERATOPETALUM APETALUM.	*Cunoniaceæ.*	* Boola. † Ngnaa-rewing.	* Light-wood. Leather-jacket † Coach-wood.	24—40	80—128	Sir Wm. Macarthur, and Edward S. Hill, Esq.

A beautiful tree, with elongated, cylindrical stem, wood soft, light, close-grained, of agreeable fragrance, good for joiners' and cabinet-work, much in request for coach-building.

141	C	CERATOPETALUM GUMMIFERUM.	*Cunoniaceæ.*		Officer Plant. Light-wood. Christmas.	6—15	20— 40	Sir Wm. Macarthur.

A beautiful, flowering plant, rendered conspicuous from afar by the brilliant scarlet colour of the persistent calices of its numerous flowers; used for the decoration of Churches at Christmas, whence one of its local names.

142	C	Genus unknown.	*Cunoniaceæ.*	Bool boorah.	Cork-wood.	18—36	80—120	Edward S. Hill, Esq.

Small tree, with close-grained, reddish-brown wood, said to be good for staves.

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
143	C	Podocarpus spinulosus.	*Taxaceæ.*	Dyrren dyrren.	Pine, White Pine.	25—60	70—130	Sir Wm. Macarthur, & E. S. Hill, Esq.

A fine tree, with elongated trunk, rarely cylindrical; wood free from knots, soft, close, easily worked, good for joiners' and cabinet-work, some trees affording planks of great beauty; common from latitude 35° to 24°.

144	C	Epicarpurus sp.	*Moraceæ.*	Marrulang.	Rough Fig.	8—16	30— 50	Sir Wm. Macarthur.

Small tree, of elegant, upright growth, with bright, glossy, very rigid, nettle-shaped leaves; wood hard, close-grained, tough, and firm; common at Illawarra.

145	C	Ficus muntia.	*Moraceæ.*	Ulowang.	Rough-leaved Fig.	12—24	30— 50	Sir Wm. Macarthur.

Wood of no apparent value.

146	C	Ficus sp.	*Moraceæ.*	Warrauka.	Smallest-leaved Fig.	50—150	100—200	Sir Wm. Macarthur.

The largest tree of the Cedar brushes, almost invariably originating as a parasite upon the stem of some large tree; the wood not much valued.

147	C	Ficus sp.	*Moraceæ.*	Baira.	Small-leaved Fig.	50—150	100—200	Sir Wm. Macarthur.

Another giant of the Cedar brushes, with the same habit of growth.

148	C	Ficus macrophylla.	*Moraceæ.*	Karreuaira.	Large-leaved, or Moreton Bay Fig.	60—120	100—160	Sir Wm. Macarthur.

With the same habit as the preceding; not attaining to the same stature, although a more noble-looking tree; wood useful, though difficult to season; common in Cedar brushes, over a great extent of the east coast.

149	C	Ficus rubiginosa.	*Moraceæ.*	Dthaaman.	Port Jackson Fig.	24—48	30— 60	Sir Wm. Macarthur.

Very common on the shores of Port Jackson, but attaining much greater stature in the Cedar brushes.

150	C	Urtica gigas.	*Urticaceæ.*	Goo mao mah.	Nettle-tree.	40—100	100—160	Sir Wm. Macarthur.

A remarkable tree for its great stature and beauty. The leaves of young vigorous plants often exceed 12 to 15 inches in diameter, and are always conspicuous for size; their sting is most formidable. The largest tree measured exceeded 40 feet in circumference. The wood is too soft to be of use as timber, but a strong fibre is obtained from it by the Aborigines.

151 C ACHRAS AUSTRALIS. *Sapotaceæ.* Jerra wa wah. {Brush Apple. / Wild Plum.} 12— 36 30—100 Sir Wm. Macarthur.

A beautiful, small tree; the rich, milky sap of which resembles cream in taste; the fruit like a very large plum, but of coarse, insipid flavour; the wood close-grained, firm, and prettily veined, good for cabinet-work. Common at Illawarra and at Brisbane Water. The largest tree seen at the latter place measured 16 feet 6 inches in circumference.

152 C NOTELÆA OVATA. *Oleaceæ.* Dunga runga. 6—13 15— 25 Sir Wm. Macarthur.

Small tree, of crooked growth, and no beauty; wood close, hard, and firm; found at Illawarra.

153 C NOTELÆA SP.? *Oleaceæ.* 1—15 20— 30 Sir Wm. Macarthur.

At Merrigang; an ugly, small tree, with hard-hearted wood, but greatly decayed inside.

154 C ALPHITONIA SP.? *Rhamneæ.* Murrung. {Red Ash. / Leather-jacket. / Cooper's Wood.} 20—40 50—100 Sir Wm. Macarthur.

A small tree, with branching, wide-spreading head and sparse foliage; trunk erect and cylindrical; wood close-grained and firm; excellent for many purposes.

155 C Genus unknown. *Rhamneæ.* 24—43 60—120 Sir Wm. Macarthur.

A noble tree, with a magnificent canopy of foliage, and lofty erect, cylindrical bole; wood very close, firm, and hard, evidently a serviceable wood; found at Illawarra and at Brisbane Water.

156 C Genus unknown. *Meliaceæ.* {White Cedar. / Jemmy Donnelly.} 24—60 60—100 Sir Wm. Macarthur.

Handsome tree, producing pale-coloured wood, apparently not of much value.

157 C MELIA AUSTRALIS. *Meliaceæ.* Dtheerah. White Cedar. 12—24 30— 60 Sir Wm. Macarthur.

Beautiful, flowering tree, closely resembling Melia azedarach; wood soft and coarse; not valued.

158 C TRICHILIA GLANDULOSA. *Meliaceæ.* * Wallaon. {Dog-wood. / Blood-wood.} 12—18 30— 50 Sir Wm. Macarthur.

A beautiful, small tree.

159 C SYMPLOCOS SP. *Styraceæ.* Dtharandah. 20—30 50—100 Sir Wm. Macarthur.

Small tree, with spreading branches and lofty, erect trunk, wood close-grained; its qualities little known.

160 C EXOCARPUS SP. *Santalaceæ.* Ko-ie-yatt. Cherry. 12—20 39— 50 Sir Wm. Macarthur.

Beautiful, small tree; distinguishable from the common Exocarpus by its greater stature, more spreading habit of growth, more sparse foliage, and yellow instead of red fruit; wood close, good for turning, but difficult to season without rending open.

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
161	A & B	Exocarpus cupressiformis.	*Santalaceæ.*	Coo yie.	Cherry.	8—12	12— 15	Edward S. Hill, Esq.
		Species or sub-species of close upright growth, very different from the last number.						
162	B	Callicoma sp.	*Santalaceæ.*	Tdjerruing.		12—20	40— 70	Edward S. Hill, Esq.
		Small, slender-growing tree; wood close-grained, but its value not known.						
163	C	Duboisia myoporoides.	*Santalaceæ.*	Ngmoo.	Cork-wood.	10—16	15— 30	Sir Wm. Macarthur.
		Low branching small tree, with rough cork-like bark; wood white, very soft, close, and firm, excellent for carving.						
164	C	Myrsine sp.	*Myrsineæ.*			8—14	25— 40	Sir Wm. Macarthur.
		Handsome, small, slender tree, with prettily-grained white wood.						
165	C	Myrsine variabilis?	*Myrsineæ.*			6—15	20— 50	Sir Wm. Macarthur.
		Charming little tree, with prettily-grained white or pinkish-coloured wood.						
166	B & C	Rulingia pannosa.	*Byttneriaceæ.*	Kerrawah.	Black Coryjong.	6— 9	15— 25	Sir Wm. Macarthur.
		Light, worthless wood, but yielding a valuable fibre. A very common plant.						
167	C	Genus unknown.	*Xanthoxyleæ.*	Kaligneen.		12—24	40— 90	Sir Wm. Macarthur.
		Beautiful, small tree; the wood very hard and close. Common at Illawarra.						
168	C	Myoporum acuminatum.	*Myoporaceæ.*	Ngmoo.		8—12	20— 40	Sir Wm. Macarthur.
		Pretty, small tree; wood close and fine.						
169	A	Avicennia tomentosa.	*Myoporaceæ.*	Baa-lun.	Mangrove.	15—24	12— 36	Edward S. Hill, Esq.
		Low branching tree, growing in the mud of salt water estuaries; wood, when sound, valued on account of its inlocked tenacious fibre, for stone-masons' mallets.						
170	C	Clerodendron tomentosum.	*Verbenaceæ.*			4— 6	12— 15	Sir Wm. Macarthur.
171	C	Vitex Leichhardtii.	*Verbenaceæ.*	Coo-in-new.	* White Beech. † Beech.	36—70	80—120	Sir Wm. Macarthur, & Edward S. Hill, Esq.
		A noble tree; the wood of which is said never to shrink in drying; much prized for decks of vessels.						

172	C	EHRETIA ACUMINATA. *Ehretiac æ.*			10—12	20— 30	Sir Wm. Macarthur.
		One of the few deciduous trees of Australia; wood soft, and apparently of no value.					
173	C	EHRETIA SP.	*Ehretiaceæ.*	Jinda Yinda.	12—24	40— 60	Sir Wm. Macarthur.
		A species or sub-species of larger dimensions, and yellowish wood.					
174	C	BRADLEIA SP.	*Euphorbiaceæ.*		12—24	50— 70	Sir Wm. Macarthur.
		A small tree, with sparse foliage, and soft, red, close-grained wood.					
175	C	BALOGHIA SP.	*Euphorbiaceæ.* Nulliera.	Roger Gough.	9—18	40— 80	Sir Wm. Macarthur.
		A handsome Cedar brush tree, with soft, close-grained wood, which burns freely when green, and seems to contain an oily secretion.					
176	C	CEDRELA AUSTRALIS.	*Cedreleæ.*	Polai. Cedar.	40—100	80—120	Edward S. Hill, Esq.
		A magnificent timber tree, almost universally used in New South Wales for the interiors of houses. Some of the choice specimens valuable for cabinet-work.					
177	C	ELÆOCARPUS SP.	*Tiliaceæ.*	Yander-airy. Mountain Ash.	24—60	80—130	Sir Wm. Macarthur.
		A noble timber tree; the wood light and tough, used for oars, and other purposes requiring lightness and toughness.					
178	B & C	ELÆOCARPUS CYANEUS. *Tiliaceæ.*			6—10	15— 25	Edward S. Hill, Esq.
		Pretty, small tree, conspicuous from its bright blue fruit.					
179	C	Genus unknown.			16—20	60— 80	Sir Wm. Macarthur.
		A pretty, small tree, with close-grained, useful wood, found on Mount Keira, Illawarra.					
180	C	Genus unknown.			8—10	30— 40	Sir Wm. Macarthur.
		An elegant, little tree, with long pendulous spray.					
181	C	Genus unknown.		* Peet-tah.	16—24	50— 50	Sir Wm. Macarthur.
		A handsome, small tree, with close-grained, soft wood, found at Illawarra.					
182	C	ELÆOCARPUS HOLOPETALUS.			24—36	60— 80	Sir W. Macarthur, & Rev. James Hassall.
		A beautiful tree, with foliage resembling that of the Quercus Ilex; wood close-grained, and good for joiners' work. From an elevation of about 3,000 feet on Merrigang Range, near Berrima.					
183	C	Genus unknown.			10—15	40— 60	Sir W. Macarthur, & Rev. James Hassall.
		Tree with large, ovate leaves.					

No.	Class.	Botanical Name.	Natural Order.	Aboriginal Name.	Local Name.	Diameter. Inches.	Height. Feet.	By whom Collected or Presented.
184	C	Genus unknown.			** Silky Oak.	12— 18	40— 60	Sir W. Macarthur, & Rev. James Hassall.
185	C	Genus unknown.			† Flint Wood.			Edward S. Hill, Esq.
186	C	Acronochyia sp.						Edward S. Hill, Esq.
187	C	Seaforthia elegans.	*Palmaceæ.*	Bangaly.	Bangalow.	8— 14	40— 60	Sir Wm. Macarthur.
		A most beautiful palm, but hitherto not applied to any useful purpose.						
188	C	Corypha Australis.	*Palmaceæ.*	Dtharowal.	Cabbage Palm.	12— 18	20—120	Sir Wm. Macarthur.
		A noble palm. The unexpanded fronds prepared by repeated immersion in boiling water, and by drying in the shade, are much prized for the manufacture of plait for hats.						
189	C	Areca sp.?	*Palmaceæ.*		Walking-stick Palm.			
		Used for walking-sticks.						
190	C	Balantium Antarcticum.	*Polypodiaceæ.*	Gourroo-mool.	Tree Fern.	9— 18	10— 25	Sir Wm. Macarthur.
		Perhaps the most beautiful, as it is the largest, of the four species of Tree Ferns. Found at Illawarra.						
191	C	Alsophila Australis?	*Polypodiaceæ.*	Beeow-wang.	Tree Fern.	6— 9	10— 15	Sir Wm. Macarthur.
		An arborescent Fern of great beauty, but not applied to any useful purpose.						
192	C	Alsophila sp.?	*Polypodiaceæ.*	Yàrrah-wah.	* Tree Fern.	8— 4	10— 15	Sir Wm. Macarthur.
		Very slender-growing species; the midribs of the fronds dark purple, and very spiny.						
193	C	Alsophila sp.?	*Polypodiaceæ.*	Denn-nangue.	* Tree Fern.	9— 12	12— 18	Sir Wm. Macarthur.
		Beautiful species, with stout, cylindrical stem; the midribs of the fronds yellow, and quite smooth.						
194	C	Cedrela Australis.	*Cedreleæ.*	Polai.	Cedar.	60—120	80—150	Mr. R. Laing, Mr. J. Houison.
195	C	Eucryphia Moreii.						E. S. Hill, Esq.
		Moderate-sized tree, growing at an elevation of 3,000 feet; opposite pinnate leaves; foliage sparse.						

* Name at Illawarra.
** Name at Berrima.
† Name at Brisbane Water.
¶ Name in Cumberland and Camden.

WOODS FROM THE NORTHERN DISTRICTS
OF THE COLONY,

COLLECTED BY MR. CHARLES MOORE.

NOTE.—These are marked by numerals, to distinguish them from the Southern Collection.

The Woods referred to in the following Catalogue were collected in the Clarence and Richmond Districts, and are principally from localities similar in every respect to that described as "Rich Brush," "Cedar Brush," in the Introduction to the Woods of the Southern Districts. It may be well to observe, by way of further information, that this description of country occupies both sides of the Clarence River for upwards of sixty miles, in belts of no great breadth. On the banks of the Richmond it is not so extensive or so continuous; but from the north branch of that river a rich brush woodland extends in an inland direction to the north-west and south-west for nearly one hundred miles each way; skirting, more or less, the vast basin formed by the New England dividing range. The number of species of trees, and the size to which many of these attain in this magnificent country, especially on the table-land, is truly astonishing, some Red Cedars being ten feet in diameter, and yielding 30,000 feet of saleable timber. Yet so little is known of these woods, that beyond the Cedar (*Cedrela*), Pine (*Araucaria*), Rosewood (*Synoum*), Ash (*Flindersia*), Beech (*Vitex*) Tulip-wood (*Owenia*), and Silky Oak (*Grevillea*), nearly all the others are regarded as worthless, excepting for firewood. Owing to the state of the country from floods, the want of time, and the impossibility of procuring adequate assistance in these somewhat remote districts, the kinds of woods selected for exhibition are for the most part small in size, and limited in number. These, therefore, very imperfectly represent the timber resources of the North.

It is desirable to add that the collection was made at a season when the sap was rapidly rising. From this cause, as well as from the subsequent exposure to the sun and air, to which they were all unavoidably subjected, many of the sections have split, or have been otherwise injured. By comparing this with the preceding catalogue, it will be observed that while some trees are common to both districts, such as the large-leaved Fig (*Ficus macrophylla*), large Nettle (*Urtica*

gigas), Native Tamarind (*Cupania Australis*), and the Red Cedar (*Cedrela Australis*), and some others, that in general there is a great distinction in genera and species between the trees of the South and those of the North. The most remarkable difference in this respect is the entire absence in the former of Araucaria, Flindersia, Castanospermum, Rottlera, Argyrodendron, and Owenia—genera which abound everywhere in the latter, and mark by their peculiar appearance the localities in which they grow.

Botanical Gardens,
Sydney, 10 October, 1866.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
I.	Flindersia Bennettii. F. Muelr.	*Cedrelaceæ.*		Bogum-bogum.	Richmond River.

This tree is very abundant in the coast brush forests; there attaining a height of 80 feet, and 2 feet diameter, comparatively rare and of small size on the Clarence; its large, bright, glossy foliage, and masses of terminal white flowers, render it a conspicuous object wherever it grows. The wood is seldom used by settlers, but as it splits well, might probably be valuable for staves.

II.	Myrtus, Becklerii. F. Muelr.	*Myrtaceæ.*		Ginugal.	Ballina, Richmond River.

From 60 to 80 feet in height, about 2 feet in diameter, umbrageous, and graceful in appearance; timber of a reddish colour when fresh, becoming pale when dry; said to be durable. Tree very plentiful.

III.	Cryptocarya sp.	*Laurinaceæ ?*		Gooroie.	Richmond River.

A tree of general occurrence in the cedar brushes, timber hard and durable, and may be obtained of considerable size, but not used by settlers.

IV.	Cryptocarya sp.	*Laurinaceæ.*		Gulgi.	Richmond River.

A magnificent tree in size and appearance, attaining a height of 100 feet, and from 3 to 4 in diameter. Timber of great durability.

V.	Lophostemon Australis.	*Myrtaceæ.*	Brush, Bastard, or White Box.	Geria.	Port Stephens to the Tweed. Plentiful within the coast range, in open forests, as well as in brushes.

Attaining a height of 100 feet, and 4 to 5 feet in diameter; one of the most valuable timbers in the Colony, on account of its durability. It is averred, on credible authority, that instances are known of this timber remaining perfectly sound after being nearly thirty years worked up as ribs of vessels.

VI.	Lophostemon Australis var.	*Myrtaceæ.*	Red Box.		Richmond River.

This tree is abundant, perhaps the same as the last, although the wood is somewhat redder in colour, and hence the name. Used, like the last, for ship-building, scantling, flooring-boards, &c.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
VII.	Nelitris, sp.	*Myrtaceæ.*	Buranna.		Richmond River, near Ballina.

This fine tree occurs only on the coast, in situations facing the sea, where it attains a height of from 70 to 80 feet, and from 3 to 4 feet in diameter. Its timber has been used for ship-building purposes, but on account of its hardness is now seldom employed. It is very close-grained, and when fresh, is quite red in colour. Very plentiful.

VIII.	Frenella verrucosa, var. lævis.	*Coniferæ.*	Cypress Pine.	Coorong.	Near the coast, at the mouth of the Richmond and Clarence; plentiful.

The root of this tree is valued by cabinet-makers for veneering purposes, and largely employed in this way some years ago; but from some cause, not explained, it seems to have fallen in disuse. It attains a height of about 60 feet, and from 18 inches to about 2 feet in diameter.

IX.	Genus?	*Meliaceæ?*		Worrel.	Richmond brushes.

A handsome, small-sized tree, of frequent occurrence, but of no acknowledged value.

X.	Cryptocarya? sp.	*Laurinaceæ.*		Menem.	Ballina, Richmond River.

A magnificent tree, from 80 to 100 feet in height, and 3 to 4 feet in diameter. Abundant in the brushes. Timber of apparent value, but not used for any purposes by settlers.

XI.	Phebalium elatum, A. Cunn.	*Rutaceæ.*		Bobo Bobie.	Ballina, R. River. In open brushes.

A small-sized tree, principally remarkable for the strong scent of its leaves.

XII. XIII.	Schmidelia anodonta. F. Muel.	*Sapindaceæ.*		Gomphan.	Richmond and Clarence brushes.

A tree of moderate size and general occurrence; not used by the settlers.

XIV.	Flindersia, sp.	*Cedrelaceæ.*		Wobul.	Richmond River.

A handsome, moderate-sized tree, unknown to the settlers, although occurring in most of the brushes.

XV.	Panax, sp.				Near Lismore, on Richmond River.

A small-sized tree, growing in great abundance in the brushes; timber tough, but not used for any purpose by the settlers.

XVI. ARAUCARIA Cunninghamii. *Coniferæ.* Moreton Bay Pine. Coorong. Richmond River, in brush forests.

This noble tree bears the same Aboriginal name as the Cypress Pine; it grows in the greatest profusion in all the brush forests on the Richmond. The timber from the inland or mountain brushes is preferred to that from the coast. It is exported to Sydney and elsewhere in large quantities, the sawyers receiving at the present time £2 10s. per 1,000 feet. Some trees will yield as much as 10,000 feet of saleable timber. Spars for ships may be obtained in any quantity, from 80 to 100 feet in length. In some instances the tree attains a height of at least 150, and from 4 to 5 feet in diameter; much smaller on the Clarence, where it is also in less abundance.

XVII. CUPANIA serrata. *Sapindaceæ.* Gulwin Gulwin. Richmond and Clarence.

A very ornamental tree, of small size, plentiful in the brushes. Timber not used.

XVIII. ACMENA, sp. *Myrtaceæ.* Pobo. Richmond, near Lismore.

This occurs generally in the brushes. The timber appears to be of some value, but it is not used by the settlers. Size—varying from 50 to 70 feet in height, and from 2 to 4 in diameter.

XIX. HARTIGHSIA, sp. *Meliaceæ.* Munduo. Richmond and Clarence brush forests.

Small-sized tree. Timber not used.

XX. NELITRIS ingens. F. Muelr. } *Myrtaceæ.* Cherry. Cobun Bun. Richmond River.

This singularly handsome tree occurs on nearly all the branches of the Richmond, and always on its immediate banks; it is chiefly remarkable for its bright red guava-like fruit, which is borne in terminal bunches, in great quantities. Fruit edible, but astringent. Timber not used.

FICUS aspera. *Moraceæ.* Small-leafed Fig. Ladalbie. Clarence and Richmond brush forests.

Plentiful, but timber not used. A moderate-sized tree.

XXI. CUPANIA xylocarpa. *Sapindaceæ.* Wootarie. Clarence and Richmond brushes.

A large tree in good situations; timber close-grained and hard, particularly so when dry. Not used.

XXII. Genus? *Sapindaceæ.* Woorrodii. Clarence and Richmond brushes.

Abundant; timber close-grained, and, when fresh, somewhat flesh-coloured. From 50 to 80 feet in length, and from 2 to 3 feet in diameter.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
XXIII.	Mooria campylosperma. F. Mueller.	*Anonaceæ.*		Urra Wymbie.	Clarence brushes, near Grafton.

A very beautiful tree in appearance; timber not used; tree 60 to 80 feet in height, and 3 to 4 feet in diameter.

XXIV.	Flindersia Australis.	*Cedrelaceæ.*	Ash, Beech, and Flindosa.	Wyagerie or Cugerie.	Clarence and Richmond.

A large-sized tree, of very general occurrence in the Northern Districts; from 80 to 100 feet in height, and from 2 to 4 feet in diameter. Timber valuable for staves, for which purpose it is extensively used in the Clarence District.

XXV.	Cryptocarya glaucescens	*Laurinaceæ.*		Urri Burrigundie.	Brushes on the coast of the Colony generally.

A fine tree, attaining a height of 100 feet in good situations, and from 2 to 3 feet in diameter. Timber not used.

XXVI.	Jambosa Australis.	*Myrtaceæ.*	Cherry of the Clarence.	Urri-ilbie.	Abundant on the Clarence.

This tree has an abundantly extensive geographical range, occurring more or less in brushes all along the coast of the Colony. Timber not used; from 60 to 80 feet in height, and from 1 to 2 feet in diameter.

XXVII.	Cupania Australis.	*Sapindaceæ.*	Native Tamarind.	Acouloby.	All along the coast, in brushes; a common inhabitant.

This tree, remarkable for its large and singular foliage, attains a considerable size on the Clarence, from 60 to 80 feet in height, and as much as 3 feet in diameter; is valued by the settlers on account of its sub-acid fruit, which it yields in great abundance, and of which a very good preserve is made. Timber, although compact and durable, seldom used.

XXVIII.	Achras Australis.	*Sapotaceæ.*	Native Plum.	Wycaulie.	Clarence and Richmond brushes.

Plentiful—one of the most common brush trees, frequently of large size. Timber hard and compact, but seldom used for any purpose in the Northern Districts.

XXIX.	Pseudalangium sp.	*Alangiaceæ.*		Walm Babie.	Brushes on the Clarence, near Grafton

A moderate-sized tree, and attaining about 11 inches in diameter. Timber not used.

XXX.	Castanospermum Australe.	*Fabaceæ.*	Moreton Bay Chestnut, or Bean Tree.	Irtalie.	Richmond and Clarence brushes; abundant.

A very beautiful and magnificent tree, the principal occupant of many extensive forests in the localities referred to. On the table-land of the Richmond it attains the height of at least 130 feet, and from 5 to 6 feet in diameter. Although the timber is dark, and prettily grained not unlike Walnut, yet it is seldom used for any purpose; if durable, it is worthy of attention; it is sometimes split for staves.

XXXI.	CUPANIA pseud-orchus.	*Sapindaceæ.*		Iccaaya.	Clarence and Richmond brush forests.

A very general tree, of moderate size, attaining a height in good situations of 70 feet, and 2 feet in diameter. Timber not used.

XXXII.	HARTIGHSIA rufa.	*Meliaceæ.*		Woggi-Amabbie.	Clarence and Richmond brush forests.

Not uncommon; a small-sized brush tree, with handsome foliage. Timber not used.

XXXIII.	EPICARPURUS orientalis.	*Moraceæ.*	Elm.	Monduar Gourabie.	Clarence and Richmond brush forests.

Abundant—a very general tree, varying in size from 50 to 70 feet, and from 2 to 3 feet in diameter. Timber said to be durable, very hard; not used.

XXXIV.	COMMERSONIA sp.	*Byttneriaceæ.*	Brown Kurrajong.	Num-Mirraribie.	Clarence brush forests.

Plentiful; a small-sized tree, valuable for its bark, which yields a very strong fibre, of which fishing-nets and bags for various purposes are made by the Aborigines. If properly prepared, this fibre might become of commercial value, as it could readily be obtained in large quantities.

XXXV.	PANAX elegans.	*Araliaceæ.*		Undambie.	Clarence and Richmond open forest brushes.

A moderate-sized tree, of elegant appearance; timber soft when fresh; not used.

XXXVI.	Genus. ?	*Celastrinaceæ.*		Larrabie.	Clarence and Richmond brush forests.

This tree occurs in considerable abundance near to Grafton, where it attains a height of about 60 feet, and from 18 inches to 2 feet diameter. Timber said to be durable, but seldom used.

XXXVII.	PITHECOLOBIUM umbrosum, Acacia umbrosa. A. Cunn.	*Fabaceæ.*		Malla Waundie.	Clarence and Richmond brush forests.

In more or less abundance all along the coast; a handsome, small-sized tree. Timber hard, and occasionally used for carpenters' tools.

XXXVIII.	MORUS Brunoniana.	*Moraceæ.*		Lagaulbie.	Clarence and Richmond brushes.

Timber not used.

XXXIX.	Genus ?			Inderriga.	Clarence and Richmond brush forests.

Timber not used.

No.	Botanical Name.	Natural Orders.	Local Name.	Aboriginal Name.	Habitat.
XL.	Nephelium lanuginosum.	*Sapindaceæ.*		Uroobie.	Clarence and Richmond brush forests; plentiful.

A fine tree, attaining a height of 80 feet, and 3 feet in diameter; timber occasionally used for building purposes.

XLI.	Genus?			Biggera.	Clarence brush forests.

Tree of moderate size; timber not used.

XLII.	Ailanthus? sp.	*Xanthoxylaceæ.*		Agundi gundie.	Clarence. Plentiful near Grafton.

A good-sized tree; timber not used.

XLIII.	Endiandra virens? F. Mueller.	*Laurinaceæ.*	Bat & Ball. Native Orange? Native Pomegranate.	Ullagal Mabbie.	Clarence and Richmond open brush forests.

This singular tree—with its large Pomegranate-like fruit, which is borne in great abundance, with sparse, shining, light green foliage—is general in the districts referred to; timber not used.

XLIV.	Genus?	*Ebenaceæ.*	Black Myrtle.	Ulla Wabbie.	Clarence River brushes.

Very abundant; a fine tree of large growth, attaining a height of 100 feet, and 2 to 3 feet in diameter; somewhat rigid in habit; timber soft when fresh, but so tough as to admit of its fibres being worked into a rope without breaking; said to be durable; worthy of particular notice.

XLV.	Atherosperma micranthum.	*Atherospermaceæ.*		Tdun-dambie.	Brush forests on the Clarence, near Grafton.

A remarkable and very handsome tree, attaining a height of 80 feet, and from 2 to 3 feet in diameter; timber quite yellow when fresh; not used.

XLVI.	Baloghia lucida.	*Euphorbiaceæ.*		Nun Naia.	Clarence River.

Frequent on the coast; abundant on the Clarence; a good-sized tree; timber not used.

XLVII.*	Synoum glandulosum.	*Meliaceæ.*	Rosewood.	Mocondie.	Open forest brushes on the Clarence and Richmond.

One of the largest trees in the district in which it is found, varying in height from 70 to 100 feet, and from 4 to 5 feet in diameter; timber when fresh of a deep red colour, emitting a scent similar to the common rose; used for cabinet purposes, for which it has long been highly valued, as well as for the inside lining of houses and ship-building.

* A beautiful specimen of this wood has been supplied by A. Lenehan, Esq.

XLVIII.	Genus ?		Inderriga.	Clarence brush forests.
	Plentiful; a middle-sized tree; timber not used.			
XLIX.	TETRANTHERA ferruginea.	*Laurinaceæ.*	Ugaulbie.	Clarence and Richmond brush forests.
	In favourable situations this tree attains a large size; timber hard, close-grained, but not used.			
L.	HODKINSONIA ovatiflora. F. Muellr.		Larribie.	Clarence and Richmond brush forests.
	A small tree; timber not used.			
LI.	SYNOUM Lardneri. Moore.	*Meliaceæ.* Pencil Cedar, Turnip-wood.	Mocoundie.	Clarence and Richmond brushes.
	Plentiful; a fine tree, called by the Aborigines by the same name as the rosewood No. XLVII, but from which it is very different; timber red when fresh, without scent, similar in appearance and in the grain to the cedar used for pencils, hence the name; the bark smells somewhat like a Swedish turnip; employed in housework and general purposes.			
LII.	ROTTLERA tinctoria.	*Euphorbiaceæ.*		Clarence and Richmond River brush forests.
	A moderate-sized tree; timber not used.			
LIII.	CARRISSA ovata.	*Apocynaceæ.*		Mountain brushes, Clarence River.
	A small-sized tree; timber prettily grained; not used.			
LIV.	SCHMIDELIA pyriformis.	*Sapindaceæ.*		Clarence and Richmd. mount. brushes.
	A small-sized tree, large, handsome foliage; timber very hard; not used.			
LV.	CUPANIA anacardoides.	*Sapindaceæ.*		Clarence and Richmond brushes.
	Abundant. This tree attains a height of 70 or 80 feet in good situations, and 18 inches to 2 feet diameter; timber occasionally used for house-building purposes, but not highly valued.			
LVI.	GEIJERA salicifolia.	*Rutaceæ.*		Clarence and Richmond mount. brush.
	A fair-sized tree; timber soft when fresh; not used.			
LVII.	CROTON phebaloides.	*Euphorbiaceæ.*		Clarence and Richmond mount. brush.
	Tree of small size; timber not used.			

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
LVIII.	Eucalyptus sp.	*Myrtaceæ.*	Rough-barked Blood-wood.	Weni Aabie	Clarence and Richmond open forests.

Prevailing to a great extent; a tree of considerable size. Timber of great strength, and very durable, both in and out of the ground. Used principally for posts and beams.

LIX.	Eucalyptus sp.	*Myrtaceæ.*	Smooth-barked Blood-wood.	Weni Aabie	Clarence and Richmond open forests.

This and the preceding are mere varieties of the species, and only to be distinguished from each other by the bark. Both are equally common, and used for the same purposes.

LX.	Acmena sp.	*Myrtaceæ.*	Hickory, Lignum Vitæ.		Clarence brush forests.

Very abundant. A small-sized tree, distinguished from all others by its somewhat flattened, angular stem, and smooth, red-stained bark. Timber very hard and tough; said to be valuable for gig-shafts.

LXI.	Flindersia Australis var.	*Cedrelaceæ.*	Flindosa.	Wyagerie.	Mountain and River brushes, near Grafton, on the Clarence.

A tree similar to XXIV, from which it differs in being smaller in every respect, in the wood being more compact, of a yellowish tinge, and difficult to split; and particularly in the stems being smooth, without internode-like swellings, as in that species. Timber used for house building, and occasionally for staves.

LXII.	Denhamia pittosporoides. F. Muellr.	*Flacourtiaceæ.*			Clarence brush forests.

A tree of moderate size; timber not used.

LXIII.	Flindersia Greavesii. Moore.	*Cedrelaceæ.*	Flintamendosa.	Wyagerie.	Mountain brushes on the Clarence.

A magnificent tree, the monarch of the northern forests, attaining a height of 150 feet, 3 to 6 feet in diameter, distinguishable from every other species of the genus by its dark brown and rough, scaly bark, as well as by other characters; timber used for house-building purposes.

LXIV.	Callistemon salignum.	*Myrtaceæ.*	Tea-tree.	Unoyie.	In moist situations; Clarence and Richmond.

A tree of moderate size; timber used for posts in damp situations, as it stands well in water.

LXV.	Melaleuca styphelioides.	*Myrtaceæ.*	Tea-tree.		Damp situations inland, and banks of river Clarence.

Of frequent occurrence; similar in size to the last, and the timber used for the same purpose.

LXVI.	Acacia Cunninghamii.	*Fabaceæ.*	Bastard Myall.		Brushes and open forests, Clarence.

This tree, which is very abundant in the locality referred to, occasionally attains a considerable size, from 60 to 80 feet in height, and from 18 inches to 2 feet in diameter; timber dark, prettily grained; seldom used.

LXVII. ALPHITONIA excelsa. *Rhamnaceæ.* Nono Gwyinandie. Clarence river brushes.

Of general occurrence along the coast; a fine tree, often attaining a height of 100 feet; timber dark when old; used for various purposes in the Southern Districts, but not valued on the Clarence.

LXVIII. VITEX sp. *Verbenaceæ.* Pine brush, near Grafton, Clarence.

A very remarkable tree, and only found in the locality referred to, where, however, it is plentiful; timber quite soft when fresh, becoming harder on exposure; not used.

LXIX. MYRTUS Melastomi. *Myrtaceæ.* Clarence & Richmond brush forests.

A moderate-sized tree; timber not used.

LXX. GEIJERA salicifolia ? *Rutaceæ.* Balsam Capivi Tree. Brush forests, generally in the Northern Districts.

A tree of moderate size; the bark tasting strong of the drug from which it receives its local name; timber not used. Ink of a good quality has been made from the bark of this tree.

LXXI. CASUARINA quadrivalvis *Casuarinaceæ.* Swamp Oak. Worgnal. Damp situations, in open forest country.

A very common tree, attaining a large size on the Richmond; timber used occasionally for staves and shingles.

LXXII. CASUARINA tenuissima. *Casuarinaceæ.* Forest Oak, or Beef-wood. Noo Loi. Generally abundant in open forest country—principally on sandy ridges.

A moderate-sized tree; timber extensively used for shingles, and sometimes for cabinet-work.

LXXIII. ANGOPHERA subvelutina. F. Muell. *Myrtaceæ.* Apple-tree. Illarega. Clarence and Richmond open forest country. Abundant.

A fair-sized tree; timber very strong and durable; used for posts and rails.

LXXIV. MYRTUS acmenoides. F. Muell. *Myrtaceæ.* White Myrtle. Brush forests on the Clarence and Richmond.

A fine tree, from 60 to 70 feet in length, and from 2 to 3 feet in diameter; timber very hard and durable, but seldom used.

LXXV. ACACIA sp., near Cumninghamii. *Fabaceæ.* Bastard Myall ? Clarence & Richmond open forests.

A moderate-sized tree; timber dark, suitable for cabinet-work; seldom used.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
LXXVI.	Acronychia Hillii. F. Muelr.	*Aurantiaceæ.*			Clarence brush forests.
	A small-sized tree; timber not used.				
LXXVII.	Eucalyptus sp.	*Myrtaceæ.*	Iron-bark of the Clarence.	Algerega.	Open forest country; abundant on the Clarence River.
	This well-known tree attains a very large size in the Northern Districts—upwards of 100 feet in height, and as much as 5 feet in diameter. Timber very highly valued for its unequalled strength and durability. It is used for all kinds of fencing, shingles, beams, dray-poles, plough-beams, and various other purposes; when properly seasoned it will not shrink. Apparently distinct from the Iron-bark of the south.				
LXXVIII.	Melia Australis.	*Meliaceæ.*	White Cedar.		Open forests generally, in the Northern Districts.
	This tree grows to a large size on the Clarence. Timber soft, easily worked; principally used for shingles, which are of an inferior kind.				
LXXIX.	Pseudalangium sp. F. Mueller.	*Alangiaceæ.*			Clarence and Richmond brush forests.
	A moderate-sized tree; timber not used.				
LXXX.	Owenia venosa. F. Mueller	*Sapindaceæ.*	Tulip-wood.	Mouliibie.	Clarence River brush forests.
	This very handsome-foliaged tree, which occurs in most of the northern brush forests, is well worthy of attention on account of its timber, which is exceedingly strong, and very highly coloured with different shades from black to yellow. It takes a good polish, and is used for cabinet-work.				
LXXXI.	Brachychiton luridum Moore.	*Sterculiaceæ.*	Sycamore.		Clarence. Plentiful.
	This tree often grows to a large size—frequently 3 feet in diameter. Timber very soft, white in colour, and perishable; it splits freely, and is therefore often used for shingles. The bark is exceedingly strong, and yields a fibre similar to the Bass or Russian Matting.				
LXXXII.	Rottlera discolor.	*Euphorbiaceæ.*			Mountain brush forests, Clarence.
	A fine tree, but comparatively scarce. Timber not used.				
LXXXIII.	Duboisia myoporoides.	*Scrophulariaceæ.*	Cork-wood.	Onungunabie.	Clarence brush forests.
	A moderate-sized tree, remarkable for its cork-like bark.				

LXXXIV. OLEA paniculata? *Oleaceæ.* Marble-wood. Lariundie. Plentiful near Grafton, on the Clarence.

A fine tree, and one of very frequent occurrence. Timber said to be hard and durable, but not used.

LXXXV. FICUS macrophylla. *Moraceæ.* Large-leafed Fig, M. Bay Fig. Waabie. Brush forests; everywhere on the coast of the Colony.

A truly noble tree, the magnificence of which it would be difficult, if not impossible, to describe. The stem is of great thickness—from 10 to 15 feet—from which, extending outwards, wall-like buttresses grow in all directions; these appear as if intended by nature to be a support to its enormous spreading branches. Timber soft, and not durable. Made into packing-cases on the Clarence.

LXXXVI. *Rutaceæ.* Brush forests on the Clarence.

A moderate-sized tree; timber not used.

LXXXVII. URTICA gigas. *Urticaceæ.* Gigantic Nettle-tree. Irtaie. Brush forests on the coast; very general on the Clarence and Richmond.

This tree attains a most gigantic size, and in both districts it is most abundant; the timber is soft, spongy, and of no value, but the bark furnishes a fibre which is used by the Aborigines for making nets and dilly-bags. Should this prove to be of any commercial value, very large quantities can be obtained.

LXXXVIII. EVODIA erythrococca. F. Muell. *Rutaceæ.* Brush forests on the Clarence.

A tree of moderate size, of stiff, formal habit. Timber not used; bark very acrid.

LXXXIX. DIOSPYROS? sp. *Ebenaceæ.* Brush forest on the banks of the Clarence.

A fair-sized deciduous tree, with dark-coloured wood when fresh, changing to a comparative light colour on exposure. Timber soft; not used.

XC. PETALOSTIGMA quariloculare. F. Muell. Open forest country, invariably adjoining brush lands.

A low-sized tree, with somewhat pendulous branches. Timber not used for any purpose.

XCI. EVODIA sp. *Rutaceæ.* Clarence brush lands.

A tree of moderate size; timber not used.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
XCII.	Baloghia lucida var. (*b*) Australiana. F. Mueller.	*Euphorbiaceæ.*			Brushes on the Clarence; abundant.

A tree of general occurrence, and occasionally of considerable size. Timber not used.

XCIII.	Celtis opaca. F. Muellr.	*Ulmaceæ.*			Clarence and Richmond brush land.

A good-sized tree. Timber not used. Sometimes 2 feet in diameter.

XCIV.	Rottlera discolor? F. Muellr.	*Euphorbiaceæ.*			Banks of the Clarence, both in brush and forest land.

A moderate-sized tree. Timber not used. Near No. LXXXII.

XCV.	Evodia erythrococca? F. Muellr.	*Rutaceæ.*			Brushes on the Clarence.

Perhaps the same as No. LXXXVIII, but the wood appears to be of a different texture and colour. Timber not used.

XCVI.	Busbeckia arborea.	*Capparidaceæ.*	Tree Caper.		Brush forests on the Richmond and Clarence.

A small-sized, spiny, branched tree. Timber yellowish in colour, and occasionally used for whip handles.

XCVII.	Genus?	*Ebenaceæ.*			Pine brush, Clarence River.

This tree, which is of a moderate size, abounds in the locality referred to. Timber not used.

XCVIII. PERSOONIA cornifolia. *Proteaceæ.* — Richmond and Clarence, open forest country.

This is a small tree, chiefly remarkable as being the only species of the genus in the Northern Districts of the Colony. Timber of no value.

XCIX. JACKSONIA scoparia. *Fabaceæ.* Dogwood. — In open forest country throughout the Colony.

A very common, small tree; a sure indication of poor soil. Timber of no value.

C. ERYTHRINA vespertilionis. *Fabaceæ.* — Clarence and Richmond.

On open forest land bordering on the thick brush forests.

CI. Wistaria megasperma. F. Muellr. *Fabaceæ.* — Clarence brush forests.

A climbing plant, the stem of which is sometimes a foot in diameter, and which, when freshly cut, exudes a rich, red, resinous juice, which is very astringent. Not used for any purpose.

CII. EUCALYPTUS sp. *Myrtaceæ.* Flooded Gum. Umbagga. — Near watercourses, or on rich deep alluvial soil, in many parts of the Colony.

Plentiful on the Clarence. This timber is extensively used for building purposes, such as scantling, battens, flooring-boards, and for posts and rails, ships' planks, &c.; it is often 7 feet in diameter, with a stem without knot or flaw, of from 70 to 80 feet in length. Many trees yield from 6,000 to 8,000 feet of timber, which is worth, at the present time, 18s. per 100 feet; its specific gravity is said to be less than any of the other Gums.

CIII. EUCALYPTUS sp. *Myrtaceæ.* Grey Gum. — On strong, stiff, alluvial soils throughout the Colony.

Plentiful in the Clarence District. This is little if at all inferior in size to the preceding; its timber is, however, harder and more durable, but is used for the same purposes, and is of the same market value.

CIV. TABERNÆMONTANA? sp. *Apocynaceæ.* Bitter Bark. Lacambie. — Brushes on the banks of the Clarence; abundant.

A moderate-sized tree, with an intense bitter bark, similar in taste to the Quinine, for which it is sometimes substituted. A decoction of the bark is sold by some publicans for bitters.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
CV.	Rhus rhodanthemum. F. Mueller.	*Anacardiaceæ.*	Light Yellow Wood.		Richmond brush forests; plentiful near Lismore.

A good-sized tree; timber sound and durable, of a light yellow colour, close-grained and beautifully marked; will take a fine polish, and is one of the most suitable timbers in the Colony for cabinet-work.

CVI.	Argyrodendron trifoliatum. F. Muell.		Iron-wood; Richmond.	Booiong.	Richmond brushes; abundant.

A very fine tree, remarkable for its rich foliage. Timber hard, as the local name implies, but principally used for firewood.

CVII.	Urtica photiniophylla.	*Urticaceæ.*	Small-leafed Nettle.		Clarence and Richmond brushes; abundant.

This attains to a large size in some situations. Timber soft, and of no value; the bark yields a good description of fibre, which is used by the Aborigines for various purposes.

CVIII.	Grevilllea robusta.	*Proteaceæ.*	Silky Oak.	Warra-garria.	General in the Clarence and Richmond brush forests.

This tree grows to a moderate size, and is very general in the Northern Districts. Timber extensively used for staves and tallow casks, and is, in consequence, becoming very scarce.

CIX.	Lophostemon sp.	*Myrtaceæ.*	Swamp Mahogany.	Urcanga.	Open forest country in the Clarence District.

This fine tree, and a variety called forest mahogany, grows to a large size, and is very plentiful near Grafton; its timber is found to be very durable in wet situations, and is therefore useful for posts or sleepers. It is easily worked, but possesses the property in an unusual degree of blunting the edges of tools, and is, therefore, no great favourite with sawyers.

CX.*	CALLISTEMON sp.	*Myrtaceæ.*	Water Gum.		Banks of fresh-water creeks, Clarence District.

A small-sized tree; timber very strong and tough, used for boats' knees and braces, axe and chisel handles. Shavings of this wood will bind like a ribbon.

CXI.*	CALLISTEMON sp.	*Myrtaceæ.*	Water Gum.		Banks of watercourses, Clarence District.

Similar in every respect to the former.

CXII.*	ACMENA pendula. Moore.	*Myrtaceæ.*	Large-leaved Water Gum.		Banks of the Clarence and Richmond Rivers.

A small, spreading shrub or tree; timber very hard and tough; used for the same purposes as the two preceding kinds.

CXIII.	LOPHOSTEMON Australis	*Myrtaceæ.*	Brush Box, Clarence.		Clarence and Richmond, in brush and open forest country.

Same as No. VI.

CXIV.	Genus ?		Brush Iron-bark.		Brushes, Clarence and Richmond.

A good-sized tree. Timber of a dark colour, and splits very readily. Used occasionally for various purposes.

CXV.	CEDRELA Australis.	*Cedrelaceæ.*	Red Cedar.	Woolia.	In thick brush forests within the coast range.

The timber of this best known, and perhaps the most valuable tree the Colony possesses, is used very largely for all kinds of purposes; it is easily worked, and in dry situations very durable. A good specimen of this wood is equal in quality to the best mahogany, to which it is very similar in appearance. The tree grows to an enormous size on the table-land of the Richmond, from which and the adjoining district of the Tweed, the principal supply is now obtained. A tree of this, lately cut down near Lismore, measured 10 feet in diameter at the base, and was calculated to yield 30,000 feet of saleable timber.

* Specimen supplied by W. A. B. Greaves, Esq., C.C.L.

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
CXVI.	Trochocarpa laurina. R. Brown.	*Epacridaceæ.*			Plentiful at the edges of all thick brush forests within the coast range.
	A small-sized, ornamental tree.				
CXVII.	Ackama Muellerii. Bentham.	*Saxifragaceæ.*			Found generally in thick brush forests near the coast.
	A tree of moderate size.				
CXVIII.	Echinocarpus Australis. Bentham.	*Tiliaceæ.*			Plentiful in brush forests north of Sydney.
	A tree of the largest size, frequently attaining a height of 200 feet, with a clear trunk of 50 feet. Specimen of timber—part of a branch.				
CXIX.	Genus ?	*Proteaceæ.*			Manning and Hastings Rivers.
	A small-sized tree, found sparingly in thick brush forests.				
CXX.	Eugenia sp. ?	*Myrtaceæ.*			Plentiful in the northern brush forests.
	A tree of moderate size.				
CXXI.	Genus ?	*Laurinaceæ.*			In thick brush forests on the Manning and Hastings Rivers.
	A small-sized tree ; the whole plant, when fresh, smells like sassafras.				
CXXII.	Genus ?	*Monimiaceæ.*			Very plentiful in brush forests on the Manning and Hastings Rivers.
	A tree of small size, called Brush Box by the colonists.				
CXXIII.	Sterculia fœtida ? Bentham.	*Sterculiaceæ.*			General in brush forests on the northern rivers.
	A tree attaining a large size, frequently with a clear straight trunk of 70 feet, called Stave-wood by the colonists.				
CXXIV.	Tetranthera sp. ?	*Laurinaceæ.*			Plentiful at Camden Haven and Hastings River.
	A large-sized tree.				

CXXV. GEISSOIS Benthamii. F. Müller.	*Saxifragaceæ.*	
A tree attaining a large size. Specimen of wood cut 30 feet from the base.		
CXXVI. ACKAMA sp. ?	*Saxifragaceæ.*	Found very generally on the Manning and Hastings Rivers brush forests.
A moderate-sized tree.		
CXXVII. SCHIZOMERIA ovata.	*Saxifragaceæ.*	Found in all thick brush forests within the coast range.
A tree of large size.		
CXXVIII. ORITES excelsa.	*Proteaceæ.*	Found in the thick brush forests on all the northern rivers.
A tree of small size.		
CXXIX. PENNANTIA Cunninghamii. Miers.	*Olacineæ.*	General in brush forests near the coast.
A moderate-sized tree.		
CXXX. Genus ?	*Laurinaceæ.*	Brush forest on Hastings and Manning Rivers.
A small-sized tree.		
CXXXI. TETRANTHERA sp. ?	*Laurinaceæ.*	Plentiful in the thick brush forests on the Hastings River.
A moderate-sized tree.		
CXXXII. Genus ?		Plentiful on the Hastings River and at Camden Haven.
A small tree.		
CXXXIII. TETRANTHERA sp. ?	*Laurinaceæ.*	General in thick brush forests on the Manning and Hastings Rivers.
A moderate-sized tree.		
CXXXIV. HELICIA glabriflora.	*Proteaceæ.*	Found in the Mountain brushes on the Hastings River.
A small tree.		

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
CXXXV.	Anopteris Macleayanus.	*Saxifragaceæ.*			Plentiful at Port Macquarie and other places near the coast.
	A small-sized tree.				
CXXXVI.	Cargillia pentamera?	*Ebenaceæ.*			Plentiful in the mountain brushes on the Hastings River.
	A moderate-sized tree, called Black Myrtle, on the Hastings River. This name is also applied to another species of Cargillia by the settlers on the Clarence River.				
CXXXVII.	Stenocarpus saligna. R. Brown.	*Proteaceæ.*	Port Macquarie Silky Oak.		Found in all thick brush forests on the coast range.
CXXXVIII.	Genus?	*Laurinaceæ.*			Found in abundance near Port Macquarie and in many of the thick brush forests on the Hastings and Macleay Rivers.
	A tree of moderate size.				
CXXXIX.	Syncarpia leptopitita.	*Myrtaceæ.*			Very plentiful in the thick brush forests on the Hastings River.
	A tree of moderate size.				
CXL.	Octoclinus Macleayanus.	*Coniferæ.*	Port Macquarie Pine.		At present only found near Port Macquarie.
	A small-sized tree.				
CXLI.	Tarriettia argyrodendron. Bentham.	*Sterculiaceæ.*	Iron-wood.		Very plentiful in thick brushes on the Clarence and Richmond Rivers.
	A large-sized tree.				

CXLII.	Genus ?	*Myrtaceæ.*		Plentiful in thick brush forests, from the Richmond to the Tweed River.
	A tree of large size.			
CXLIII.	CASTANOSPERMUM Australe. A. Cun.	*Leguminosæ.*	Moreton Bay Chestnut, or Bean-tree.	Found in abundance in the brushes, from the Macleay River south to Cape York to the north.
	A tree of very large size.			
CXLIV.	HELICIA ternifolia. F. M.	*Proteaceæ.*	Nut-tree.	Richmond and Tweed River brushes.
	A small-sized tree.			
CXLV.	DYSOXYLON rufum Bentham.	*Meliaceæ.*		Found in the thick brushes on all the rivers on the east coast of Australia.
	A large-sized tree.			
CXLVI.	STENOCARPUS Cunninghamii. R. Brown.	*Proteaceæ.*		Very plentiful in the brushes on the Richmond and Tweed Rivers.
	A very handsome tree, of moderate size.			
CXLVII.	ELŒOCARPUS grandis. F. M.	*Tiliaceæ.*		Found in the thick brushes on all the rivers on the east coast of New South Wales.
	A tree attaining a very large size.			
CXLVIII.	AKANIA Hillii. Hook.	*Sapindaceæ.*		Found in the thick brushes on all the rivers of the east coast of New South Wales, from the Manning to the Tweed River.
	A handsome tree, of small size.			
CXLIX.	HELICIA prœalta. F. M.	*Proteaceæ.*		Found in the thick brushes on the Clarence and Richmond Rivers.
	A tree of moderate size.			

No.	Botanical Name.	Natural Order.	Local Name.	Aboriginal Name.	Habitat.
CL.	Cedrela Australis. F. M.	*Meliaceæ.*	Red Cedar.		Open forest brushes on the coast of New South Wales, on the Richmond, Bellinger, and Tweed Rivers.

This wood is yet obtained in considerable quantities, but this will soon become a scarce article, as it is not to be procured of any size from any other localities than those indicated.

CLI.	Grevillea robusta.	*Proteaceæ.*	Silky Oak.		Found in the thick brushes on the east coast of Australia, from the Clarence River to Cape York.

This tree attains to a considerable size.

CLII.	Laurus camphora. W.	*Laurinaceæ.*			

Grown in the Botanic Gardens, Sydney.

CLIII.	Frenela verrucosa.	*Coniferæ.*	Cypress Pine.		Plentiful on the Richmond and Clarence Rivers.

This tree attains a considerable size. The wood is valued by the cabinet-makers for veneering purposes.

CLIV.	Rhus rhodanthema. F. M.	*Anacardiaceæ.*	Light-yellow Wood.		Richmond River brush forests.

A tree attaining a considerable size. The timber is sometimes used for cabinet-work.

CLV.	See 182, Southern Woods.				
CLVI.	Fagus carronii. Moore.	*Corylaceæ.*			Found on the Northern Coast Range, at an elevation of 3,000 to 4,000 feet.

A magnificent tree.

ON THE INTRODUCTION AND CULTIVATION OF THE ORANGE

IN

NEW SOUTH WALES.

By GEORGE BENNETT, M.D., F.L.S., &c.

Those persons, whether visitors or residents, who may feel any interest in the naturalization of choice fruit-trees in New South Wales, should visit the extensive gardens of orange and other fruit trees near Parramatta, and in other districts of the Colony. Oranges, lemons, apple, pear, loquat, apricot, peach, and other excellent fruits, together with extensive vineyards stocked with superior kinds of grapes, may be seen growing in the greatest luxuriance.

When the question is asked, what is the use of acclimatization? the appearance of the gardens just mentioned, filled with healthy trees in full bearing, will be the best reply. At the same time, we must recollect that this result was not obtained without labour and difficulty, and the study of the most suitable soils and situations, when all impediments having been overcome by judgment and perseverance, the experiment terminated in success, the trees became naturalized, were readily propagated, and after many years, the result has been a source of great wealth to the Colony; the produce finding a ready market, both for exportation as well as home consumption.

My attention was directed to this subject by a visit made on Saturday, Dec. 8, 1866, to the extensive and fertile orangery of Mr. James Pye, near Parramatta, in company with Mr. Charles Moore and Dr. Fyffe. It is situated on a point of land known as the "Governor Arms," on the south side of a creek running from Castle Hill into the head of the Parramatta River. The orangery is planted on land more or less elevated, near a creek, the fruit-trees growing on the slopes as well as on level ground. I observed that the orange, lemon, and apple trees, of various kinds (of which the greatest number of trees consisted), were in a very healthy state, and growing with the greatest luxuriance, *in a very poor sandy loam, from which large sandstone rocks cropped out over the whole of the land*, the trees being planted around and between them. The situation was sheltered, and the whole extent of the fruit-gardens was 12 acres, divided into three paddocks or enclosures; and the neatness and order of the ground, and the perfection of the trees in growth and bearing, excited our admiration. I remarked in the Azores or Western Islands, that the soil is volcanic, and generally a friable loam, and many of the orange gardens are formed in places where there is often not a greater depth of soil than 18 to 20 inches above the shattered mass of rubble and rock which has been thrown

together by volcanic action. The orange-trees at Mr. Pye's were still bearing ripe fruit; and a quantity of a second crop, as yet but small and unripe, were on many of the trees; for there are often three crops of oranges during the year, the fruit of each crop differing in form and size, but all of excellent flavour. I remarked that the oranges are of a dark-reddish orange colour, of a deeper hue than I had usually seen them. Whether this was occasioned by the advanced state of the season, or other causes, I could not determine.

A quantity of oranges from the garden were lying in heaps in the out-house, ready for packing, as well as a number of well-filled boxes, prepared for transmission to Sydney. A large quantity of oranges are exported to Tasmania, Melbourne, and other of the southern ports of Australia, and also to New Zealand. There is a dark-skinned orange often seen on the trees, which colour is occasioned by a kind of fungus being deposited on the rind. It is called the "Black" or "Maori" orange, by the growers. At first sight, the dark colour occasions it to be rejected as unsound; but when tasted, it is found to be of as luscious flavour as any of the oranges of the normal colour on the tree, and are excellent for keeping. In this garden there were a few very young orange trees, easily distinguished at a short distance by their stiff, clumpy form. Most of the trees had attained a height when the full beauty of their rich green foliage had been developed, and were laden with drooping clusters of golden fruit, some of the clusters consisting of from sixteen to twenty oranges. The *Herald* of June 10, 1865, mentions that a bunch of oranges grown by Mr. Holroyd was exhibited, containing forty-two oranges on a single stem the thickness of a finger, and was grown on a yearly worked tree, planted out in September, 1860. The fruit was very fine, and formed only a small portion of the produce of the tree from which it was taken. Some of the oranges, Mr. Pye informed us, had remained fifteen months on the tree, and when gathered were found to be sound, juicy, and sweet. On tasting some of them, the result confirmed this opinion. The apple-trees, growing intermingled with the orange and lemon trees in this inferior soil, consisted of russet, winter pearmain, quarrenden, red-streak, and other excellent varieties. They were all healthy, and in full bearing, but the fruit was not yet ripe. It was certainly more than might have been expected, to see the apple and orange flourishing side by side. The Lisbon lemon-trees were bending under the weight of fruit of large size. Among some we gathered, we weighed three. The first weighed 19 ounces; the second, 17½ ounces; and the third, 14 ounces. When cut, they were firm, very juicy, and in excellent condition. The varieties of the orange in the garden were the navel, mandarin, common, and a few Seville oranges, citrons and limes. Although the whole of the excellent fruit-trees before mentioned grew with the greatest luxuriance in this poor soil, yet I was informed that peach, nectarine, and other stone-fruit, would seldom last longer than three years after having commenced bearing. Many of the orange-trees were from 20 to 25 feet in height, and the wide-spreading branches and dense foliage afforded a cool and agreeable shelter from the heat of the sun. These trees were 20 years old. The trunk of one of them we measured was 4 feet 1 inch in circumference, 1 foot from the ground, and 3 feet 10 inches at 4 feet from the ground. Near them were some seedlings

of large growth, 9 years old, the fruit of which had not yet been gathered. Seedling trees are considered by orange-growers in Europe to be far less liable to be attacked by insects than those raised by layers. The trees, Mr. Pye informed us, were occasionally refreshed by fresh soil, to replace that which had been washed away by heavy rains; and at certain intervals of time, bone-dust was applied as a manure. From the situation of the gardens, the roots of the orange and other fruit trees appeared to be well drained; for, from the locality, and the nature of the soil, it was not likely that water would accumulate at the roots, which often causes the destruction of the orange-trees, more especially when the soil is clay, and the drainage is not attended to.

On arriving at another part of the orangery, the magnificent orange-trees, celebrated for their size, and one of the objects of our visit, were now before us in all their beauty of fresh luxuriant foliage, and profuse bearers of luscious fruit. The previous accounts I had received of them were not over-rated, but it is only by actual inspection and attentive examination that a correct idea of them can be formed. It is seldom that in orange-growing countries trees are seen of this magnitude. One has been mentioned growing at St. Michael's (Azores) which, when measured, was found to be 30 feet in height, and the stem 7 feet in circumference at the base. The photograph of these beautiful trees, taken by Degotardi, for the Paris Exhibition, although executed with great accuracy, does not represent the graceful drooping of the dense foliage, the delicate tints of colour,—from a dark to the lightest hue of green,—the light and shade of the leaves being contrasted by the rich colour of the ripe and ripening fruit, this is all lost in a photograph. The elegant appearance of these beautiful vegetable productions can only be truly and accurately obtained by a drawing in water-colours, and if executed by an artist accustomed to sketch from nature, would, no doubt, succeed in delineating their natural beauties. The lofty sandstone rocks on the opposite side of the creek, forming a background, would afford a good relief to the picture. This rocky portion of the landscape comes out very well in the photograph. These noble trees are now 40 years old, and, although of full growth and mature age, were covered with a bright and luxuriant foliage, the bark smooth and healthy, young and slender stems branching in all directions, indicative of a vigorous and robust state of health, and bearing large crops of fruit every year. An agreeable shade was obtained under the extensive branches, where several persons could find a cool and agreeable resort from the heat of the sun. The loftier of the two trees was 35 feet in height; and the other was 30 feet high, but surpassed the former in the circumference of its branches, which, by actual measurement, was 33 feet in diameter from the extremities of the branches, making a circumference of 99 feet. The first tree bifurcates a few feet from the ground; and, below the bifurcation, at a foot from the ground, the trunk measured 5 feet in circumference. The circumference of the lower portion of the bifurcated stems was,—the first, 3 feet 3 inches; and the other, 2 feet 10 inches. The fresh, vivid green of the foliage, and general healthy appearance of these, as well as all the orange and other fruit trees in these extensive grounds, could not but excite our admiration. It has

been stated that, in 1859, Mr. J. Pye gathered from two large trees in his orangery 2,000 dozen (24,000) oranges. The gardens are situated on the banks of the creek, at an elevation varying from 25 to 30 feet. Pomegranate, loquat, quince, and other fruit trees were planted in the gardens; but orange, lemon, and apple trees of luxurious growth formed the largest proportion of fruit-trees, and was a sight rarely if ever seen in any other climate in the world.

In August last I visited the orangery of Mr. A. T. Holroyd, at Sherwood Scrubs, near Parramatta. It was a very young orchard, compared with that of Mr. Pye, but it was in an excellent and flourishing state. The orangery consists of 13 acres, on which there are 850 trees planted, having seventy trees to the acre. Ten of the trees, he informed me, yielded, this year, upwards of 550 dozen of oranges. He obtains for his oranges this season 7d. to 8d. a dozen wholesale; and I understood that 2d. a dozen would pay the expenses of cultivation—all above that amount is profit to the grower.

There appears to me to be a great desire, on the part of the orange-growers in this Colony, to import the St. Michael's orange, regarding it as a variety of very superior quality. On ordering plants of it from Europe, many have supposed they had obtained it, but were not satisfied with the result; for on coming into bearing, the trees did not produce the expected thin-skinned variety, free from seed. The disappointment arises, in my opinion, from this cause:—From observations made at the Azores or Western Islands, I do not consider, except as a variety, it differs from the common orange generally cultivated in the Colony; the improvement in the quality of the fruit, constituting a variety, resulting from the genial climate, soil, or careful cultivation. There are some trees at the Azores which are very old, and these bore the thin-skinned orange, very juicy, and free from pips. The thinness of the rind, and freedom from seeds, will be found to depend on the age and careful cultivation of the tree. The younger trees, in all the gardens I examined, and the fruit which was at the same time in process of packing for England, were for the most part similar in quality to the common orange produced in New South Wales (which was originally introduced from the Brazils in 1788, and is no doubt the Lisbon orange, brought from Portugal to that part of South America), and generally with abundance of seeds. At the Azores the orange trees are planted at a distance of from 25 to 30 feet apart, and the ground sown with lupins, which are considered by the Portuguese to be a favourite food of the orange-trees. Seven years elapse from the time of planting before the orange-trees come into full bearing, during which space of time, more especially among the poorer class of proprietors, the garden is sown with melons, water-melons, and other vegetables. The orange-trees are pruned every year, so that by thinning out their superfluous branches a free circulation of air is allowed, which is required for the proper ripening of the fruit. The orange grounds at the Azores vary in size from 1 to 60 acres, and they are rarely occupied only by orange-trees; for besides the vegetables before mentioned, among the more opulent owners, limes, citrons, sweet lemons, guavas, loquats, and other trees, are scattered about. A recent writer (Mr. P. Wallace) observes that "there are two kinds of oranges cultivated in the island of St. Michael's (Azores), namely, the Portugal and the Mandarin. Many

varieties of the former exist, and they are greatly improved by the genial climate of St. Michael's. The mandarin orange has not been many years in the island, nevertheless there are some trees of it 14 feet high. This capital little orange has lately been exported to England, where it realizes a higher price than the common St. Michael's."

Mr. George Oakes has also been very successful in the cultivation of the orange, near Parramatta, and well bears out what the soil and climate are capable of producing. Some navel oranges, taken from trees that will be five years old next spring, and were grafted on seedlings, were exhibited very recently in the Sydney Market, and were found to weigh, respectively, 22, $22\frac{3}{4}$, and $25\frac{1}{2}$ ounces. Two common oranges on a single stalk weighed together 32 ounces. Some large specimens of the Emperor mandarin orange, exhibited at the same time, also confirmed the excellence of the cultivation. Wax models of oranges, lemons, and other fruits, have been sent from the Colony, to be displayed in the Paris Exhibition of 1867.

ON THE

PROGRESS AND PRESENT STATE

OF

ASTRONOMICAL SCIENCE

IN

NEW SOUTH WALES.

By JOHN TEBBUTT, Junr., Windsor, N. S. Wales.

New South Wales can hardly be expected to have contributed much hitherto to the advancement of Astronomy. Seventy-eight years only have elapsed since Sydney, its metropolis, formed part of its primeval forest, in which the aboriginal roamed in all his native freedom. In that brief period its progress in commercial prosperity has been rapid and astonishing, and the time is now probably at hand when it will take its place creditably among the old countries of Europe as a contributor to the arts and sciences. Now that we are possessed of an excellent University, opportunities are afforded to young men for the necessary training in order to distinction in scientific pursuits. And in so far as the science of Astronomy is concerned, the Colony can now boast of a national Observatory, comparing favourably with many of those on the continent of Europe. The object of the present paper is to show, in as brief a compass as possible, that New South Wales is not without her associations in connection with astronomical science, and has in some measure contributed to its advancement. Her astronomical history commences with the establishment, in 1822, of the Parramatta Observatory—an institution founded and liberally supported by the private munificence of Sir Thomas M. Brisbane, who was Governor of the Colony at the time. He was one of the Vice-presidents of the Astronomical Society of London, and was distinguished for his ardent love of Astronomy, with the theory and practice of which he was familiar. Its cultivation was always a matter of interest to him, even in the midst of the turmoil and adventure of a military life. But it was not till his appointment as Governor of this Colony that he had an opportunity for contributing in any marked degree to the advancement of his favorite science. He at once perceived the ample opportunities which an Observatory in the clear southern skies of Australia would have for extending our knowledge of the heavens. The labours of Lacaille at the Cape of Good Hope are well known to astronomers, and formed hitherto the chief contribution to our knowledge of the southern heavens. Under these circumstances, the Observatory of Parramatta in conjunction with that at the Cape of Good Hope, whose establishment was nearly contemporaneous with it, would have a wide and

brilliant field for the development of its efforts. We shall presently see that the former is not without interest in the records of astronomical science. Sir Thomas Brisbane arrived in the Colony in the year 1821. He brought with him two assistants for the work of the proposed Observatory, namely, Mr. Carl L. Rümker, a German, afterwards the distinguished Director of the Hamburgh Observatory, and Mr. James Dunlop, a gentleman of considerable natural talent as a mechanic and astronomer. The Observatory being completed, the work of observation was carried on with great assiduity. The principal instruments employed were a transit instrument of 64 inches focal length and $3\frac{3}{4}$ inches aperture, a two-feet mural circle, both by Troughton, a 16-inch repeating-circle by Reichenbach, and a small equatorial of 42 inches focal length. The two first-named instruments were fully employed in forming a catalogue of southern stars; and in this work Sir Thomas himself, in his relaxation from his governmental duties, took a large share. The first-fruits of the labours of the Observatory consisted in observations of the summer solstice of 1821, the results of which were made known to the astronomical world through the *Astronomische Nachrichten* of Schumacher. Determinations of both the solstices of 1822 also appeared in that journal; and those of the solstices of 1823 were communicated to the Astronomical Society, together with an extensive series of observations of the principal stars in both hemispheres. The observations underwent a careful reduction in the hands of Dr. Brinkley, "the details of which," says Sir John F. W. Herschel, in an address delivered by him before the Astronomical Society, in February, 1828, on the occasion of the presentation of the Society's honorary medals to Sir T. Brisbane and Mr. Dunlop, "as well as the original observations, are printed in the "first part of the second volume of the Transactions of this Society; and "which justify, in the eyes of that experienced observer, as they must in "those of every practical astronomer, a decided opinion of the great care "and skill with which they have been made." Of occasional observations, a great number were furnished by the Observatory; among these may be mentioned observations of the planets Venus and Uranus near their conjunctions and oppositions, of comets, and of eclipses and occultations. One of the most interesting circumstances in the history of the Parramatta Observatory is the fact that we owe to it the verification of one of the most remarkable investigations in physical Astronomy. I refer to the elaborate investigation, by the late Professor Encké, into the movements of the comet discovered by Pons in 1818, but which now universally bears the name of the distinguished professor. The comet had been seen on several occasions previously. Although the parabolic elements calculated for it at the different apparitions were identical, and shewed, beyond doubt, that they belonged to one and the same body, yet no attempt had been made, previously to 1819, to determine the period in which its revolution was performed round the sun. The investigation of this element, which was a work of profound difficulty in the then comparatively unadvanced state of physical Astronomy, was ably conducted by Encké. From the series of observations made during its visibility from the earth in 1818–19, he arrived at the conclusion that the comet was moving in an ellipse, with a period of about $3\frac{1}{3}$ years. This announcement marked the first discovery of a comet of short

period (there being only one comet of known periodic character hitherto discovered, namely, Halley's), and formed a very important epoch in the history of physical Astronomy. Encké proceeded to investigate the perturbations which the comet would undergo during its next revolution round the sun, from the combined influence of the planets, and fixed May 24th, 1822, as the time of its next perihelion passage. An ephemeris was computed from the resulting elements, shewing the apparent track which the comet would pursue among the stars. Encké had the greatest confidence in the result of his investigations; but unfortunately for the gratification of the ardent expectation which every astronomer shared with him, it was found that the comet would traverse the southern hemisphere below the horizon of the European Observatories. It is necessary thus to enter briefly into the early history of this comet, in order to shew the interest which the Parramatta Observatory had in the matter. It was now that the means for the verification of this important investigation was quite out of reach of European Astronomers, that the establishment at Parramatta stepped in and supplied the want. On the evening of the 2nd June, 1822, the wanderer was detected by Mr. Rümker. A series of observations, extending to 29th June, was made, which enabled Encké to correct his elements, and predict the next apparition with increased accuracy. The only observations obtained were those made at Parramatta. The investigation was indeed a triumph, and no small merit is due to our Observatory for the part it performed in its verification. Observations of the length of the pendulum were also made at Parramatta, and published in the Transactions of the Royal Society for 1823. "The remainder, and, indeed, the great mass of the observations made with the mural circle and the transit instrument," says Sir J. Herschel, in the address before referred to, "have at different periods been communicated to the Royal Society, and are for the present deposited in its archives. Forming our judgment only upon those of which an account has been publicly read at the meetings of that illustrious body, but which are understood to constitute only a comparatively small part of the whole, they form one of the most interesting and important series which has ever been made, and must ever be regarded as marking a decided era in the history of southern Astronomy."

Besides the useful catalogue of 7,385 stars which has already been published, as the result of the labours of the Parramatta Observatory, we have also Mr. Dunlop's catalogue of upwards of 600 southern nebulæ and clusters of stars, together with a large and valuable collection of double stars. Independently of the detection and observation of Encké's comet, the Observatory has not been behindhand in cometary discovery. On the 15th July, 1824, the first comet of the year was discovered by Mr. Rümker. It was seen only in the southern hemisphere, and I believe the only elements which have been computed for it are those by its discoverer. The comet of 1833 was detected by Mr. Dunlop on the 1st October, and observed to the 16th. No other observations are recorded. The comet which appeared in the following year, and was first discovered by Gambart, at Marseilles, on the 8th March, was also found independently by Mr. Dunlop at Parramatta. The Observatory continued in operation till 1847, when it was dismantled; and it was not till ten years afterwards that anything worth

recording was done in the Colony in connection with Astronomy. For this period the Colony remained without an Observatory, till Sir William Denison (another Colonial Governor, of considerable scientific attainments) drew attention to the importance of establishing in the Colony an Observatory, supported wholly by the Government. A memorandum was addressed by His Excellency to the Executive Council, in March, 1855, on the subject. The Council concurred in the views of His Excellency, and the matter was immediately brought before the Legislature. A liberal sum was voted for the erection of a National Observatory, and the Rev. W. Scott, M.A., of Sidney Sussex College, Cambridge, on the recommendation of the Astronomer Royal of England, was appointed to the important office of first Astronomer to the establishment. He graduated as Third Wrangler in 1848, had continued to reside in Cambridge as Fellow, and afterwards Mathematical Lecturer of his College. Mr. Scott arrived in Sydney on the 1st November, 1856, and proceeded with as little delay as possible to select a site for the proposed Observatory. For purely scientific purposes, some site in the country would have been preferable for the building; but it was requisite that it should be within easy access of the public institutions of the metropolis. The hill occupied by Fort Phillip was selected for the purpose, as it commanded the best view of the horizon and of the shipping in the harbour, for whose interests it was proposed to erect a time-ball. In June, 1858, the building was so far advanced as to admit of meridian observations. The instruments at the disposal of the institution were those formerly employed at the Parramatta Observatory. The principal ones were the transit instrument and mural circle, a meridian circle, and a portable equatorial. In the absence of the meridian circle, which had been sent to England for repairs, observations were carried on with the transit instrument, simply for the determination of local time, and of the longitude by the moon and moon-culminating stars. Contemporaneously with the establishment of the Observatory, meteorological stations were formed throughout the Colony. About this period occurred several astronomical phenomena of great public interest, which drew the attention of the colonists generally to the claims of astronomical science, and, as a consequence, to the high value of the newly formed Observatory. Among these were the total solar eclipse of March 26th, 1857, and the appearance of the comet of Donati, in October, 1858. Calculations of the former phenomenon were published in the *Sydney Morning Herald*, several days previously to its occurrence, by the Government Astronomer, Mr. F. Napier, and the writer of this paper. Unfortunately, however, no part of the total phase was seen at any station where instruments were available for its observation. Nothing could be recorded beyond a few meteorological and terrestrial observations. The Sydney Observatory not being yet completed, the Astronomer had prepared a temporary Observatory at the South Head of Sydney Harbour, in which a portable equatorial lent to him by the Governor formed the principal instrument. In the meteorological department he was assisted by Capt. Ward, R.E. The sun was seen for about fourteen minutes after its appearance above the horizon during the progress of the partial eclipse. In addition to the meteorological observations at South Head, there was a series made at St. Leonard's, in its vicinity, by the Rev. W. B. Clarke, which

were published in the *Herald* of April 9th, 1857. The grand comet of Donati was an object of intense interest to the colonists. It was for some time supposed to be the illustrious body which appeared in 1264 and 1556, and whose re-appearance was expected about this time. Our national Observatory, then in its infancy, and in an incomplete state, could not furnish any accurate information respecting the interesting stranger. Approximations to the orbit were severally computed from sextant observations, by the Government Astronomer, Mr. Hawkins, of the King's School, Parramatta, and the writer, which shewed the comet to be quite a different body from the expected great comet. Its appearance shewed the absolute necessity of furnishing the Observatory with an instrument of a high class for extra-meridian observation. The Astronomer accordingly submitted a report on this subject to the Government; and the Legislature, with their accustomed praiseworthy liberality, granted the sum of £800 for the purchase of a large equatorial instrument. At the close of 1858 the transit circle was received from England, and was mounted with all possible dispatch. Regular observations were commenced with it in June, 1859. These consist of determinations of the right ascension of the moon for longitude, and of the positions of stars culminating near the zenith of Sydney. The latter results will hereafter be found useful for the determination of the latitude of other points in the Colony. Four volumes of transit and zenith distance observations of stars have been published, embracing the period from the middle of 1859 to the middle of 1862. The transit circle is described as only a second-class instrument; but, considering the care and skill employed in the use of it, the volumes referred to will be found to be a very valuable contribution to the science. In the cometary department of Astronomy, the Colony was wholly indebted for its information to the labours of the Government Astronomer, Mr. Hawkins, and the writer. The attention of the colonists was again strongly drawn to the claims of astronomical science, by the appearance, in 1861, of one of the most splendid comets of modern times. The newspapers of the day teemed with correspondence respecting the stranger, and the predictions of its movements created much excitement. It was detected by the writer on the evening of the 13th May, and its position determined, with great difficulty, by means of a small telescope and a sextant. The discovery was communicated to the Sydney Observatory as soon as he was convinced of its cometary character, and a letter announcing it appeared in the *Herald* of 25th May. Mr. Scott's first observation of the interesting stranger was obtained on the evening of the 22nd, with the old Parramatta equatorial—the only instrument immediately at his disposal. A new equatorial, by Merz & Son, of Munich, had just arrived, of 10 feet 4 inches focal length, and $7\frac{1}{4}$ inches clear aperture, but was not yet mounted. Observations were continued with the old equatorial, and it was not till 9th June that the first observation was obtained with the new instrument. On the 15th June, the writer published his first determination of the orbit, in the following communication to the *Sydney Morning Herald*:—

"THE COMET'S ORBIT:—Sir,—The following is a rough approximation to the orbit of the comet now visible. It is based on the observation made at the Sydney

Observatory on the 24th May, and sextant observations made here on the mornings of the 3rd and 11th June.

Perihelion passage, June 13, d. 7253, 1861.	Greenwich mean time.
Perihelion distance	0·82033
Longitude of ascending node	280° 0′ 44″
Longitude of perihelion on the orbit	252° 13′ 39″
Inclination of orbit	86° 18′ 42″
Heliocentric motion	Direct.

"The above results will doubtless hereafter require considerable correction, as it is difficult to obtain an approximate orbit from a few observations made at the commencement of a comet's visibility. This fact was exemplified in the case of Donati's comet, the earlier orbits computed for it being afterwards found to be very incorrect. I have some doubts as to the direction of the present comet's heliocentric motion, as in the case of an almost perpendicular orbit small errors in the adopted positions of the comet might produce an error of several degrees in the inclination, and thus convert a retrograde into a direct motion. The true numbers will be approximated to as observations accumulate. My calculations show that the comet will soon move rapidly towards the north, and that on the 29th instant the earth will be at no great distance from the extremity of its tail. There is some probability of the comet becoming visible in full daylight about that date."
Windsor, June 13th.

This was supplemented by the following more particular statement, in the *Empire* of June 22nd:—

"The following particulars, deduced from the rough orbit I have already computed, will perhaps not be uninteresting to your readers. On the night of discovery, the comet was distant about 124 millions of miles from the earth, and 96 millions from the sun. It arrived at the perihelion point of its orbit on the 13th instant, its distance from the sun at that time being 78 millions of miles. Although the comet is now increasing its distance from the sun, its distance from the earth is diminishing at the rate of about 2½ millions of miles daily. This diminution will go on till about the time of the comet's passing its ascending node, namely, on the 29th instant, when the distance of the nucleus from the earth will be about 14 millions of miles. Its distance from us at this date is 35 millions of miles. On the last two or three mornings I have observed the tail to be divided into two branches, which emanate from the main part of the tail, at a distance of about six degrees from the head. The upper or western branch was the more distinct, and I could trace it to a distance of 42 degrees from the head. The tail, supposing it to point directly from the sun, will cross the earth's path about the 29th instant, at a point which will be occupied by the earth on the 2nd July, so that it appears the earth will have a narrow escape from being enveloped in the more diffused part of that appendage. The comet will be in conjunction with the sun about the beginning of next month, and will shortly afterwards become visible in the evenings in the north-west."

The remarkable announcement of the near approach of the comet's tail to the earth was received with confidence by some, but with extreme distrust and even ridicule by others; and it was not till determinations of the orbit were published respectively by the Government Astronomer and Mr. Hawkins, that the public mind was assured of the correctness of the prediction. On the evening of the 30th June this wonderful body made its appearance above the European horizon, and employed the efforts of the most distinguished Observatories. A few days after its sudden appearance in England, Mr. Hind made the following announcement in the newspapers, which was received with the highest interest:—

"It appears not only possible, but even probable, that in the course of June 30th, the earth passed through the tail, at a distance of perhaps two-thirds of its length from the nucleus. I think the earth would very probably encounter the tail in the early part of that day; or at any rate, it was certainly in a region which had been swept over by the cometary matter shortly before."

It does not appear to be known in Europe that this remarkable circumstance of the comet's movements was *predicted* in New South Wales. In the Rev. W. Webb's account of the physical appearance of this comet, he noticed the gradual closing up of the branches of the tail on the evening immediately succeeding the earth's passage through that appendage. The opposite of this perspective effect was remarked by the writer on the mornings immediately preceding the event. The observations of the comet are numerous, and extend over a considerable period. Those made at the Sydney Observatory were published by the Royal Astronomical Society, together with an accurate set of parabolic elements, by Mr. Hawkins, of Goulburn. The observations were also published by Professor Peters, the distinguished Director of the Altona Observatory, in the *Astronomische Nachrichten*. Sextant observations made at the Williamstown Observatory, Victoria, extending from the 6th to 19th June, also appeared in the same journal. A careful series of sextant observations was also made by the writer, but has not yet been published. In the year 1861 the Government Observatory may be said to have been complete in every respect. The total number of meridian observations made and reduced during the year 1860 was 2,820, of which 2,507 were published. The number made in 1861 was 2,100, being fewer than in 1860, owing to the efforts of the Astronomer and his assistant being partly devoted to the employment of the new equatorial. Occultations of fixed stars, approximately computed by the writer for the purpose, were observed with this instrument, and also a few of Sir J. Herschel's double stars. The comet observations made at the Observatory during Mr. Scott's superintendence consist of those of Comet III, 1860, Comet II, 1861, and Encké's Comet, in the beginning of 1862, all of which have been communicated to the astronomical institutions of Europe. Mr. Scott contributed several useful papers to the Colonial Philosophical Society, and in his official capacity he endeavoured to form a class of amateur astronomers. It is, however, much to be regretted that this attempt did not meet with the support it deserved. After ably fulfilling the duties of his post, from the establishment of the Observatory till the close of 1862, he resigned his appointment. The Observatory remained in charge of the assistant, Mr. Russell, till the beginning of 1864, when Mr. George R. Smalley, B.A., formerly Assistant at the Observatory of the Cape of Good Hope, was appointed to the office. During the interval, the chief work performed was the transit observations for local time, and the reduction of the meteorological observations made at the Observatory, and the country stations connected with it. I am not aware that any observations have been published since 1862, of a purely astronomical character. A careful series of observations of Mars at its opposition in 1862, was, I believe, made by Mr. Russell during the time he was in charge of the establishment. The time has scarcely yet arrived for the establishment in the Colony of private Observatories on a large scale. The history of Astronomy in New South Wales rests almost entirely on the labours of the Parramatta and Sydney establishments. Occasional observations have proceeded from the private Observatory of the writer, at Windsor. The first-fruits of this small establishment, which have been published in Europe, were the observations of Comet II, 1862, communicated in a paper read before the Royal Astronomical Society,

at their monthly meeting held January 9th, 1863, together with the elements deduced therefrom. Since the resignation of the Government Astronomer, all the local information respecting the different comets which have appeared in the Colony has been derived solely from the Observatory at Windsor. The principal instruments are,—a transit instrument mounted on a substantial pier, and an excellent refracting telescope by Jones, of $3\frac{1}{4}$ inches aperture, and 48 inches focal length, equatorially mounted under a revolving roof. The writer hopes shortly to be in possession of a good transit circle, which will aid materially in the character of the work. Meteorological observations of the same class as those at the Sydney Observatory are conducted with accuracy and regularity, and will be published in due course. These observations, after complete reduction, were forwarded monthly to the Sydney Observatory, during the years 1863, 1864, and 1865, to be incorporated with the returns from the Government stations. Transit observations of the moon, and moon-culminating stars, are taken for the determination of the longitude from Greenwich. The longitude with reference to the Sydney Observatory has been accurately determined by telegraphic time signals. The accurate determination of the latitude has not yet been made. Occultations of stars by the moon, eclipses, &c., of Jupiter's satellites, and other occasional phenomena, form part of the work of the Observatory. The comet observations already made have appeared in the *Notices* of the Royal Astronomical Society, and the *Astronomische Nachrichten*. Comet II, 1864, was well observed in Europe during the earlier part of its apparition, but the latest published observations depend on the Observatories at Athens, Santiago, and Windsor. It was found at Santiago, in South America, and at Sydney and Windsor, in the beginning of August, and followed till its disappearance at the close of September. The observations at Santiago and Windsor appeared in due course in the *Astronomische Nachrichten*, and were turned to account in a careful investigation of the orbit by Dr. Kowalczyk, of Warsaw, the results of which appeared in that journal for September 2, 1865. It is highly gratifying to find, that out of 191 determinations of position, at seventeen different Observatories, twenty-five were made at Windsor; and that of 144 employed in the formation of the normal places for the final correction of the orbit, ten are from the same place. The fine southern comet of last year was also carefully observed in the Colony, and also at Santiago and Melbourne. It was for some time thought to be the grand comet of 1843, which Sir J. Herschel conjectured might appear about the beginning of 1865. Another interesting event in connection with the writer's small establishment is the discovery of Encké's comet at its last apparition. The circumstances of its apparent track in the heavens were very similar to those attending it when it was detected by Rümker, at Parramatta, in 1822, it being altogether out of reach of the European Observatories. The usual ephemeris was awaited with impatience. Towards the close of June, 1865, the writer felt assured the comet must be in a part of the sky visible to New South Wales astronomers and within reach of a moderately-sized telescope. Its rough positions were accordingly computed, on the assumption that it passed its perihelion on the 1st June, and was moving in the orbit assigned to it by Encké in 1862. A few minutes search, on the evening of the 24th

June, revealed the interesting wanderer as a very faint nebulous object, without any indication of a nucleus or a tail. If there could be any doubt as to the identity of the comet with that of Encké, it was wholly removed by an approximate ephemeris received from the Nautical Almanac Office, by the mail on the 30th June. The observations on the evening of the 24th shewed the comet to be forty-two seconds of time east, and thirty-seven minutes of arc north of the position assigned to it in the ephemeris. The discovery was at once communicated to the Sydney Observatory, and some observations were obtained of it with the large equatorial. The comet was found again after the full moon, with the aid of the ephemeris, but it was so excessively faint that the observations are but mere guesses. The results of the Windsor observations on the 24th and 29th June were forwarded to the *Astronomische Nachrichten* and are the only ones published in that journal up to March 14, 1866—the latest date received.* A vigorous search was made for Biela's comet at the beginning of the present year, in accordance with the ephemeris published by Michez, but without success. Indeed, it appears, from the latest dates of the *Astronomische Nachrichten*, that two of the best European observers had given up all hopes of finding it. It is hoped that this interesting member of the comet family has not altogether vanished from the heavens.

The work of the Government Observatory still goes on, under the direction of Mr. Smalley. His first annual report of the state and progress of the institution has been published. The number of meridian observations during the year 1864 was only 644, the work of the Observatory having been much retarded by a course of repairs to the building, and the unusally rainy season. A series of observations of Comet II, 1864, was made, embracing the period from August 15th to September 20th. The meteorological work had been carried on as usual. A new feature in the labours of the Astronomer, and one of the highest scientific importance, consists in observations at different points of the Colony, preliminary to an accurate magnetic survey. The observations were made at twelve different stations. The work proposed for the future embraces a considerable variety. Meridian observations of Nautical Almanac stars were to be continued; observations for the re-determination of the longitude and latitude of the Observatory were to be made as often as possible; the stars compared with the comet of 1864 were to be re-observed on the meridian; the absolute determination of the magnetic elements to be carried on monthly; and the re-observation of Sir John Herschel's double stars with the Munich equatorial. The meteorological work was to be continued as usual, with the exception of some changes in the positions of the country stations. The writer has frequently drawn attention to the great importance of establishing systematic observations of gales in New South Wales, with a view to the ultimate adoption of weather signals. The subject was discussed with some interest by the Colonial Philosophical Society, at their meeting held in September, 1864, on the occasion of a paper being read on Australian storms. It was therein shewn, from a comparison of the observations made at Adelaide, Deniliquin, Sydney, and Brisbane, that our great

* I have since found that the comet was imperfectly observed by Bruhns and Engelmann, at Leipsic, on the evening of the 13th February, 1865, or long previously to its arrival in perihelion.

atmospheric disturbances move, as a rule, from S.W. to N.E., occupying about two days, on the average, in their transit from the first to the last-mentioned place. It is very gratifying to find that due prominence is given to this important subject, in the report referred to. The Astronomer receives monthly, from the Superintendent of Pilots, a register of gales as observed at the different ports of the Colony. He also suggests the propriety of making it imperative on the master of every vessel entering the port of Sydney, to furnish the Observatory with an extract from the ship's log as to the state of weather over a distance of 500 miles from the coast, up to the time of entering the harbour. Attention is also drawn, at the close of the report, to the desirability of the measurement of an arc of the meridian in the Colony, of obtaining a first-class meridian circle for the Observatory, and of removing the establishment itself to some more eligible site. The most important work expected from our national Observatory is doubtless the formation of a catalogue of stars of the southern hemisphere. The published catalogues of Lacaille and Brisbane, though embracing a great number of stars down to the seventh magnitude, are confessedly too inaccurate for the refined purposes of modern Astronomy. Their defects are almost wholly due to the imperfections of the instruments employed. The telescope employed by Lacaille had an aperture of only half an inch, and 26¼ inches focal length; while the large transit instrument employed at the Parramatta, and subsequently at the Sydney Observatory, had defects of construction which it was impossible to correct in observation. These defects have been pointed out, both by Mr. Rümker and Mr. Scott. An extension of Argelander's survey of the northern hemisphere, southward, has been several times proposed in Europe, but has only recently been taken up, I believe, by the Observatories at Madras, the Cape of Good Hope, Santiago, and Melbourne. I presume Sydney, owing to the want of a first-class meridian circle, does not join in this important work. The four volumes of observations by Mr. Scott, however, are a valuable contribution of our knowledge of the southern heavens.

In closing this brief sketch of the progress and present state of Astronomy in New South Wales, the writer confidently hopes that, before long, private Observatories, of a high class, equal to those in the mother country and on the continent of Europe, will spring up among us, to assist the national establishment in the promotion of the science.

JOHN TEBBUTT, JUNR.

Winsdor, July 10th, 1866.

REMARKS ON THE SEDIMENTARY FORMATIONS OF NEW SOUTH WALES,

ILLUSTRATED BY REFERENCES TO OTHER PROVINCES OF AUSTRALASIA.

By the Rev. W. B. CLARKE, M.A., F.G.S., F.R.G.S., Member of the Geological Societies of France and Austria.

If we inspect the map of Australia, we observe that the coasts of Victoria, New South Wales and Queensland, follow the general directions (with some irregularity) of the Cordillera, or elevated land separating the waters flowing directly to the coast from those which, draining the interior, disembogue to the S.W.

The Murray River receives some part of its tributaries from the highlands of Victoria, and others from New South Wales; whilst the Darling and its tributaries collect the remainder of the supply, from as far north as 25° S.

The Cordillera thus sweeps round in an irregular curve from W. to E. to the head of the Murray—and thence, northerly and north-easterly, to the head of the Condamine; trending north-westerly from that point to 21° S., whence it strikes to the north, terminating its course at Cape Melville, in 14° S, about the meridian of 144° 30′, which is that of Mount Alexander in Victoria.

The more westerly and southerly trend of drainage is represented by the Thomson and Barcoo Rivers, which carry off the waters of the Cordillera at the back of the Barrier Ranges to Spencer's Gulf. The meridian of the head of that gulf is, therefore, the western limit of East Australia.

The Cordillera itself, described in part by Strzelecki in 1845, was traced by him through a considerable part of its diversified course (as understood by him), from the southern point of Tasmania to the parallel of 28°, in longitude 152°; but not further westward than 146° on the parallel of Mount Alexander. It is, however, doubtful whether the ranges between this furthest western point and Wilson's Promontory, where he considers the Chain to be cut off by the sea, is anything more than a spur in that direction.

But the extent of the Cordillera westerly, to its termination on the border of South Australia is so well defined, that there can be no question that the S. W. and W. extension has as true a character as any part of the Northern prolongation. This may be geologically deduced from researches of the Geological Survey of Victoria. That province is limited, at its eastern corner, by a line joining Cape Howe and the head of the Murray, so that the boundary crosses very near the highest point of all Australia, which Strzelecki made 6,500 feet above the sea, but which subsequent observations have shown to be 7,175 feet. This correction

rests on observations made by myself, in 1852, and a re-discussion of them, in comparison with results obtained by Professor Neumayer in 1862. On 8th May, 1852, I made the highest point of Kosciusco, 4,077 feet above my then base, at 3,098 feet above the sea, which therefore came out 7,175 feet; and in February, 1863, Professor Neumayer wrote me word that he made the highest peak in November, 1862, 7,176 feet. This makes Kosciusco's summit above the crossing place of the Indi or Hume River, at Groggan's, 5,425 feet.

The 144th meridian to the northwards limits very nearly all the high land of the East Coast to Cape Melville, whilst the 142nd meridian limits to the westward the basin of the Darling, including part of the drainage along the Thomson and Barcoo from the head of the Flinders, to where it passes into South Australia, on the 141st meridian.

Thus, all this enormous drainage of western New South Wales and south-western Queensland is, as it were, bounded by ranges of high geological antiquity, the Grey and Barrier groups being of undoubted similar age to the mass of the Eastern Cordillera.

It has long been known that the strike of the older sedimentary rocks all through the Cordillera, in Victoria, as well as in New South Wales, is generally meridional; so that in the former province the beds strike across the Cordillera, whilst in the latter they form various angles from parallelism with it to a transverse direction, as the Chain doubles and winds irregularly in its course.

This is the experience of the Victoria Survey, and my own traverses across various points of the Cordillera in New South Wales and Victoria, establish the fact of a normal meridional strike of the older strata So distinct, indeed, is this characteristic, that the settlers in various parts of the country have been accustomed to trace the direction of north and south by the strike of the slates.

It sometimes happens that, owing to the high angle of dip, and the effect of denudation on the overlying formations, the Cordillera itself becomes in places almost knife-edged, so that in New South Wales it presents occasionally a *divisa aquarum* not more than nine paces in width; whilst in Maneero to the south, and New England to the north, it spreads out in a plateau, on which eastern and western waters rise close together, and sometimes overlap. These different features have a variable geological aspect as well as value; for owing to the strike of the older rocks, the breadth of the Silurian formations, which, as in other countries, are repeated by recurring folds, may be more exposed in Victoria than they are in New South Wales; and owing to the curve of the Cordillera, probably the same beds are traceable to the north which occur in the south; as, for example, the auriferous rocks of Omeo and Peak Downs, which are on the same meridian; and thus the meridional strike is exhibited along the north-east coast, where there are alternations of old rocks forming precipitous cliffs, with low valleys and beaches separating those alternations.

Independently of this arrangement, the whole of the Central area inside the Eastern Cordillera has a trend to the south and west, so that the waters collected between 22° and 37° s., on the east of South Australia, find their way to the sea at the eastern corner of that province.

We might naturally assume that this order of deposits is to be expected throughout the Cordillera; but there is a singular exception. Whilst marine deposits of Tertiary age are found along the coast of Western Australia, and along the southern coast from Cape Leuwin to Cape Howe, there are no known *marine* Tertiaries in any part of the coast of New South Wales and Queensland up to the Cape York Peninsula; and the reason of this may be, that, as indicated by phenomena before pointed out by me, but which on this occasion cannot be further dwelt upon, the eastern extension of Australia has been cut off perhaps by a general sinking (which is in accordance with the Barrier Reef theory of Mr. Darwin), and which has some support from the fact that there is repetition of Australian formations in the Louisiade Archipelago, New Caledonia, and New Zealand, in the latter of which occur abundant tertiary deposits, in which case the intervening ocean may be supposed to cover either a great synclinal depression or a denuded series of folds.

Relatively speaking, therefore, the Cordillera of the Eastern Coast has not been subject to the changes which introduced the relics of a Tertiary ocean. At any rate, no evidence is known to me of *marine* Tertiaries on the lands north of Cape Howe.

Another fact worthy of notice, as showing the probable ancient geological vicissitudes of Australia is, that the great Carboniferous series which is so prominent in New South Wales and in parts of Queensland, but which is less distributed in Victoria, and there only partially and irregularly as to the portions still remaining, has been broken up and carried away, so as to have left the various members dislocated, ruined, and separated in such a way as to allow no clear view to be taken of the whole till all the separate portions have been separately examined; and to the want of this personal examination on the part of certain Palæontologists and others, who have never yet seen the Carboniferous formations of New South Wales, is to be attributed the perseverance with which they so long disputed facts as attested by geologists in New South Wales, who are familiar with the latter and with Victoria also.

In consequence of the absence of marine tertiary deposits in New South Wales, and the occurrence of a more complete series of the strata in the sections of the Carboniferous formation, there has arisen a difficulty in collating the gold deposits with those of Victoria; and, in this respect, at present the upper deposits in the former province cannot be assigned with any precision to the epochs adapted by Mr. Selwyn for the latter. And it also follows, that his view of the distinct ages of Pliocene auriferous and Miocene non-auriferous gravels cannot be tested in New South Wales; if, indeed, it has not already been tested by the actual discovery of gold in the so-called Miocene deposits themselves as they occur in Victoria.

So far as is at present known, the gold is derived chiefly from the Lower Silurian formation; but researches conducted for me at H. M. Mint in Sydney, prove that it exists in almost every distinctive rock in New South Wales. In this province the alluvial deposits are not so extensive as in Victoria; but this probably arises from the fact previously mentioned of the strike being in Victoria transverse to the direction of the Cordillera; by which means the currents which distributed the drift had a wider area of gold-bearing materials to denude than in New South Wales, where, I conclude from numerous examples, the principal currents

were to northward, so that in that province they would coincide with the direction of the Cordillera, and not accumulate the deposits in such low-lying extensive regions as those of the Murray Districts. The same objection would obtain, on the supposition of gradual waste and accumulation from less powerful agency than that of a general rush of water. It is not, however, to be doubted, that there is an enormous amount of gold yet untouched in numerous places in New South Wales, not only in the quartz lodes (or reefs), but in gullies and plains where alluvial gold diggings will yet be discovered.

The distinctive differences in material mineral wealth between Victoria and New South Wales are not altogether confined to gold, or tin, which latter metal is well represented in the New South Wales Court; but coal, iron and copper, and perhaps lead, also exhibited, prove more than an equivalent of the great amount of gold at present in Victoria.

At the Universal Exhibition of 1854 the present writer exhibited a collection of rocks and fossils, illustrating the whole of the geological formations of Australia, and these were enumerated in their stratigraphical order in the published catalogue. On this occasion, it has not been possible to complete a similar and more extended collection, owing to the effects of protracted illness; but it may be useful to introduce a few remarks on the various geological epochs as they represent themselves in New South Wales, with a brief statement as to their connection with other portions of Australasia.

Azoic and "Metamorphic" Rocks.

There has not been sufficient evidence yet collected to show that these rocks have been ascertained to exist in Eastern Australia, although in Tasmania rocks of a doubtful class (and which may, perhaps, be only highly altered Lower Silurian) have been referred to them by Mr. Gould The existence of gneissoid strata and of slates of very ancient aspect, has also been well known in New South Wales, with occasional unfossiliferous limestones; but it would be premature to place them, without doubt, under the present head. Some of those mentioned under the First Epoch of Strzelecki have, on close inspection, appeared to the writer to be merely the products of transmutation, nor is such an improbable result, seeing that in Australia some slates have apparently been changed into granitic rocks. It is, at least, certain that such rocks, except in Tasmania, generally occur in the immediate vicinity of granites, though the latter frequently occupy large areas both in Maneero and in New England, as well as along the Cordillera, and in independent masses along the coast. In Western Australia, where an enormous region is occupied by granites, and the older formations are represented only by small patches of slates, whilst the granites themselves remain bare, these patches are found on the flanks of the granitic bosses, and at extremely wide intervals; nor have I been able to detect, among the numerous collections which have passed through my hands, any distinct evidence of any but doubtful examples of those foliated rocks which belong to the so-called Primary epoch. In Southern Australia, also, there does not appear to be any considerable amount of strata which could be referred to this epoch.

Lower Palæozoic Rocks.

Of these there are undoubted evidences in some limited districts of Tasmania, whilst in New South Wales and Queensland considerable areas are occupied by them.

The greater mass of them, in the two latter provinces, appears to belong to Upper and Middle Silurian; the mudstones of Yarralumla, with Encrinurus and Calymene; the Coralline and Pentamerus beds of Deleget and Colalamine; the Tentaculite and Halysites beds of Wellington and Cavan; and the beds with Calymene, Encrinurus, Beyrichia, and others with Illœnus, Harpes, Bronteus; Brachiopoda, including Strophodonta and Radiata embracing Star-fishes, point to the existence of at least the Upper Silurian formation on both flanks of the southern part of the Cordillera. There are also numerous corals included in the list given by me in the Southern Gold Fields (p. 285), which also confirm the same determination; and it may be added that the above, and other fossils of this age mentioned by me elsewhere, have been examined by Palæontologists of eminence in Europe. Such are the genera Favosites, Cœnites, Ptychophyllum, Calamapora, Syringopora, Emmonsia, Alveolites, and Cystophyllum, &c. These, perhaps, might not alone satisfy a doubt, but with them occurs Receptaculites; since 1858, when these were determined, I have detected Halysites, which may settle the question as to Upper Silurian. Wenlock beds seem to be well developed on the Deleget.

In Victoria, numerous species of Grapolites have been found, but during my explorations of New South Wales I discovered none. It is only recently that they have been found in the most southern part of the province on the M'Loughlan River and also in other spots in the basin of the Snowy River, near the boundary of Victoria.

In Tasmania I saw fossils similar to those of New South Wales, from beds on the Gordon and Franklin Rivers; but Mr. Gould has since placed them partly as Lower Silurian. Lower Silurian beds also occur on the Deleget River, where both the upper and lower have a generally meridional strike, but varying dips.

In Queensland, Mr. Daintree has confirmed the fact of the existence there of Silurian rocks identical with those of Victoria; and my own examination of the Brisbane Slates led me to compare them with the auriferous slates of the Anderson's Creek Gold Field. The quartz veins of that neighbourhood were found by me in 1851 to hold gold, and some very recent researches have increased the expectation of valuable deposits there, in addition to those which have already been opened on the Burnet, Crocodile Creek, Mount Wyatt, the Burdekin, Talgai, and Star Creek; about Peak Downs, and in other places.

The Gold Field of Fingal in Tasmania is also partly occupied by rocks of Silurian age, the lithological structure of which is identical with rocks in New South Wales and Victoria.

Copper is abundant in strata which may be referred to the same epoch; but a peculiarity which I have observed in most of the copper localities is, that the ores do not occur in lodes of the usual character, but sometimes, as on Peak Downs in Queensland, they follow the planes of the strata, and generally in New South Wales assume a dome-like form,

rising in bosses at intervals without continuous surface connection. The Burra Burra Copper Mine of South Australia has also something of the same character. I have in my possession Pentamerus from Bombala, in which the shells are embedded in copper ore.

Specimens are exhibited from Bombala and Cavan, not only of Fossils, but of Copper, Lead, and Iron. (No. 475 & 474.)

Middle Palæozoic Rocks.

Mr. Jukes has shown cause why the term Devonian should be eliminated, referring the so-called beds to the bottom of the Carboniferous formation.

It is probable that such will have to be the fate of certain strata in Australia, the fossils of which have at once a Silurian and a Carboniferous aspect; being connected with the former by certain corals, and with the latter by the occurrence of Lepidodendron, Sigillaria, and other Lower Carboniferous plants.

There is undoubtedly a regular passage downwards from the marine fossils of the acknowledged Lower Carboniferous beds of New South Wales, to others which very much resemble the so-called Devonian beds of England; and a series of shells, corals, &c, from the Murrumbidgee, which I submitted some years ago to Messrs. Salter & Lonsdale, through Sir R. I. Murchison, Bart.,* excited doubts as to their belonging to any but Silurian and Carboniferous deposits. Among these were Phanerotinus, Loxonema, Atrypa *reticularis*, Orthis *resupinata*, Murchisonia, Strophomena, and Spirifera of various species, some like Devonian. Loxonema is known to me as occurring in the lower marine beds of the Hunter River basin—certainly below the upper coal beds.

There appears to be an intermixture, and such is the case with certain strata to the westward of Wellington, in which some of the fossils have the Carboniferous type and others the Silurian. In the list before mentioned these are included in Passage beds.

In Victoria, near Mount Tambo, in Gipps Land, and again near the head of the Murray, there are some limestone beds with fossils, which I visited in 1851, and then believed to be of the same age as the lowest Carboniferous rocks of New South Wales. The Victorian geologists consider them Devonian.

In Queensland, the Burnet Range and tracts about the Bowen Gold Feld and Burdekin (in which river limestones with fossils occur), are strewn with spoils of a formation which Mr. Daintree calls Devonian. From the former locality I have had many collections, and among them all I find Productus in alliance with Trilobites which appear to be older than Carboniferous. But, if Mr. Jukes's arrangement holds good these will probably be placed in the latter formation. On the western flanks of the Cordillera, near Yass, and on the eastern, along the Shoalhaven River, and again near the Hanging Rock, New South Wales presents numerous bands of limestone full of such fossils; and it may be doubtful at present

* See Murchison's "Silur'a," 3d ed. p. 293.

whether these lie on the horizon of the Devonian, or whether they belong to some portion of the upper Silurian. As these beds appear to range all through the country on a nearly meridional strike, on both sides of the Cordillera, they are traceable in widely different places; and it may eventually be determined that, though in close contact, there is really a distinction of formations, only to be detected by accurate survey. So far as Lepidodendron is concerned, that plant occurs in some places in association with beds that are decidedly younger than any called Devonian, near Pallal on the Horton River, and on the Manilla River in Liverpool Plains, and in the gold drift of the Turon River, which has been derived from beds of transmuted sandstone belonging to the coal beds at the head of the river. Near Wellington, also, Lepidodendron has been found in hardened rock of similar origin. At Canoona Gold Field, in Queensland, Lepidodendron occurs in hardened shales; and at Goonoo Goonoo, on the Peel River, in New South Wales, it occurs in fine grey sandstone, with Ferns and Sigillaria in close proximity to beds of marine fossils which are certainly Lower Carboniferous.

Besides these fossiliferous evidences of supposed Devonian age, there are beds of grit, sandstone, and conglomerate, occupying positions of extreme doubtfulness as to age, not only in Victoria, but also all along the coast ranges of New South Wales, which, as described by me, and confirmed by Mr. Daintree, are certainly older than some parts of the Carboniferous formation. They make a near approach to the "Old Red" of Europe. In my Report to the Government of New South Wales (6th March, 1852), I have mentioned that I had traced these beds "from the head of the Shoalhaven to the head of the Genoa"; and Mr. Daintree, in his Report to Mr. Selwyn, Director of the Victorian Survey (26th May, 1863), adopts my description, word for word, as applicable to "the Grampian sandstones, the conglomerates south of Mount Macedon, of the Avon River and Tambo, Gipps's Land"; and he adds, "there can be little doubt they are all members of one great formation."

At Mount Tambo, according to Mr. Selwyn (1866), they underlie the limestone of that locality, which he therefore considers as probably Carboniferous; and this, as stated above, was my view in 1851.

About Eden (Twofold Bay), and Panbula and Merrimbula, to the north, there occur a series of beds which, in 1851, I also ranked as Devonian; but, on visiting the district in 1865, I was inclined to think they might be much older. Nevertheless, they are connected with Porphyries, with double-headed hexahedral crystals of quartz, which are common in countries assumed to be of the age of "Old Red." After all, there will have to be an adjustment of this and other questions, which may hereafter distribute very differently parts of formations which at present are considered fixed.

In Western Australia, Mr. H. Gregory indicated on his map, and in his Report, the existence of Devonian rocks near York, and in other parts of that Colony. Having examined the rocks so indicated, I can only state my belief that they have no pretension to any such antiquity, and are probably mere collections of loose granitic matter and other drift cemented by ferruginous paste, which has since become transmuted into concretionary nodules and hæmatite. There are also pebbles of trap, much decomposed, in the so-called Devonian.

Upper Palæozoic.

That this division of rocks is fairly represented in New South Wales there can be no dispute. It has been long determined by all Palæontologists, that the lower Carboniferous marine beds of Europe are represented by the beds immediately below the Upper coal measures of the Hunter River, of the Illawarra, Talbragar, &c.; and we know also, that fossils of the same age occur in a part of Western Australia, near the Irwin River in Queensland; in Tasmania, and in Victoria.

Associated with them, both above and below, in New South Wales, Coal beds of various thickness (from 3 to 30 feet) occur. In the Newcastle basin alone there are at least 16 seams more than 3 feet thick, sections of which have been published by John Mackenzie and W. B. Clarke, and are exhibited. (See No. 477.) Up to a comparatively recent period, it was not known that under the marine beds below these coal seams, other seams occur bearing the same genera of plants as in the upper beds, of which Glossopteris and Phyllotheca are very abundant. When this fact was first published by me, it gave rise to controversy; but the truth of my conclusions has been confirmed since by Mr. Daintree, who, visiting and examining the spot in dispute, found four or five seams in the position to which they had been assigned. Now, below these lower coal measures there is an enormous thickness of fossiliferous strata, in which the fossils (as before stated) gradually assume what has been called a Devonian aspect. The opposition to this determination has arisen from a preconceived idea that strata bearing Glossopteris could not be Palæozoic, and therefore, that the upper coal measures of Newcastle had no right to be considered older than *Oolitic*. But whilst these upper measures produced a fish of undoubted Palæozoic character (Urosthenes *australis*), Cleithrolepis *granulatus*, Myriolepis *Clarkei*, and other Icthyolites, examined and determined by Sir P. de M. G. Egerton, Bart., to be Palæozoic, have been found by me at least 1,000 feet higher, and of which Photographs are exhibited on this occasion. (See No. 351.)

This dispute, therefore, ought long ago to have been settled; but unfortunately it was taken up out of the Colony, and found some support in the writings of De Zigno, author of "*Le Piante Fossili dell' Oolite.*" Since then he has modified his views, and, in a subsequent publication, in the "*Rivista Periodica,*" Padova, vol. xiii., 1863, admits that the Australian coal beds are rather *Triassic* than *Oolitic*. He still, however, does not quite comprehend the whole question.

Above the coal measures, including Urosthenes and Glossopteris, *i. e.*, in the Hawkesbury and Wianamatta beds, in which Cleithrolepis, Myriolepis and Palæoniscus occur without Glossopteris, Baron De Zigno imagines, from the way in which the evidence has been put before him, that beds with Pentacrinites, Ammonites, and Belemnites, which will be mentioned hereafter, interpolate the beds with Palæoniscus, &c. Nothing, however, of the kind has ever been found in Hawkesbury or Wianamatta beds; and the only fossils of the genera named occur in Queensland, full 600 miles distant. Professor M'Coy having believed the coal of New South Wales to be Oolitic, and also believing the Pentacrinites, &c., to be Oolitic also, and Lepidodendron having been stated to be found in beds below the coal in marine beds of assumed Devonian age, it was too hastily inferred that Professor M'Coy and myself were writing of two distinct *coal* epochs.

That the coal measures of New South Wales are, however, truly Carboniferous, has been since determined by plant evidence; for in Queensland, where the Newcastle coal measures can be identified, a plant very near to, if not the same as, Alethopteris *lonchitica*, has been found, and there are in the present Exhibition several examples of it. (See No. 470.) Moreover, near Stroud I long ago detected a magnificent fern, in beds which belong to the Hunter River coal measures, which Sir C. Bunbury has named *Adiantites eximius*.

Whether the masses of coal exhibited look more like a Secondary than a Palæozoic coal, may be fairly left to the decision of competent judges. (See Nos. 214—233.)

Another ground on which the age of the New South Wales coal beds was disputed is, that in Victoria there are certain beds which (*me teste*) resemble some of my Wianamatta beds, and therefore, assuming them to be *Oolitic*, New South Wales was involved in that dictum also. Now, the true European coal measures (according to Mr. Selwyn), "so far as is known at present, do not exist in Victoria"; nor has Glossopteris been found there at all. Moreover, the Survey has sunk through 4,000 feet of consecutive beds, without finding a profitable seam anywhere; and, though the limestones of Gipps's Land are acknowledged as Lower Carboniferous or Devonian, there is not an atom of evidence to be obtained in Victoria as to the Secondary age of the New South Wales coal. Thus stands the question at this moment. If now we turn to Tasmania, we have clear evidence as to the occurrence there of true Palæozoic coal, and if we pass on to Queensland we have equally clear evidence; and, what is more, there are sections on the Bowen River (full 1,000 miles from Sydney), in which the whole history of the coal beds may be read off without error.

Mr. Daintree writes thus:—"The Bowen River Coal series would "afford more conclusive sections in the upper portion than your own; since, "besides the seams of coal lying at the base of the Bowen River series, "*interstratified with beds containing a marine fauna*, which Professor "M'Coy acknowledges to be *Carboniferous*, there are likewise beds *con-* "*taining a nearly similar fauna, resting on beds with abundance of imbedded* "*Glossopteris*."

I learn also, from the examination of both Fauna and Flora, specimens of which were in my possession before Mr. Daintree had visited Queensland, that the former contains the identical species described by M'Coy (*Annals Nat. Hist.*, vol. xx), such as Productus *brachythærus*, Pachydomus *globosus*, Allorisma *curvatum*, whilst the latter contains Phyllotheca *australis* and Glossopteris *Browniana*, and others, which were assumed to be Oolitic at Newcastle, but must be admitted to be Palæozoic on the Bowen River.

The coal seams on the Bowen River are of variable thickness, but a ten-foot seam has been noticed.

Mr. Gould, in his Report to the Government of Tasmania, October, 1861, also states that the Mersey River worked coal-seam belongs to the formation with the same marine fossils as in Queensland, and on the Hunter in New South Wales.

Having visited the Tasmanian locality for the purpose of inspection, I can confirm all that has been stated respecting the occurrence of the marine Palæozoic fossils, Orthonota, Spirifera, Fenestella, Pachydomus, Theca, &c., in association with and immediately above the coal.

So far, then, the question about the age of some of the Australian coal must be considered as settled; and if, as in Illawarra, the coal beds overlie the marine beds, as they do also in the Fingal district of Tasmania, it would appear that all these separate occurrences belong to one thick series, in which marine beds and fresh-water beds interpolate each other. But, assuredly, in that case, the arrangement adopted must express the order as follows:—

1. Upper coal measures.
2. Upper marine beds.
3. Lower coal measures.
4. Lower marine beds.

So far as I know, the latter rest frequently on a conglomerate, which in Tasmania I found to contain undoubted Carboniferous fossils.

Since the Exhibition of 1862, on which occasion, in a paper on the Coal Fields, I noticed the occurrence of Oil-bearing Cannel Coal at the foot of Mount York, and at Colley Creek in the Liverpool Ranges (not on eastern waters), the former has been in great request for the purpose of producing illuminating oils; and the produce has been brought into the market. In the former locality, and in Burragorang, I have made some recent researches, which have satisfied me that these can only belong to the Upper coal measures, for they bear distinct evidence in the fronds of Glossopteris, which are very clearly impressed upon the beds at Mount York; whilst at Burragorang the blocks of Cannel are found in an intermediate position, between the top of the coal measures and the upper marine beds, which, if not the overlying measures, bear the very strongest resemblance to the Hunter River series.

In Illawarra, also, there are shales which are above that geological position, and which produce oil for illumination, but are not of the peculiar character of the Cannel at Mount York, which, in a great degree, resembles the Bog Head mineral of Scotland, only it is more valuable. Specimens of all the products under the present heading will be found in the Exhibition. It has been an object of inquiry whether Petroleum springs exist in New South Wales. Such have been reported from the Corong in South Australia, and from Taranaki in New Zealand, and from Victoria. The former is, we learn, a mistake; being probably at a point where certain animal substances have decomposed. In New South Wales there are also two localities, known to me for many years, in which Petroleum exudes; and there are two or three in Western Australia, the products from which I have examined. Nothing of value has as yet been found. (See Mr. Keene's collection exhibited in London, 1862, and again exhibited, pp. 81–89.)

Secondary Rocks.

I have previously made mention of the Hawkesbury and Wianamatta beds; and a collection of them, illustrated by a catalogue, was exhibited at Melbourne. Some of these were also shown in the Universal Exhibition of 1854, and therefore have not now been repeated.

Whether they be acknowledged hereafter as Palæozoic (which the fishes determined by Sir P. M. de G. Egerton, Bart., would justify), or whether, with Mr. Selwyn, we consider them (against that evidence) to be Secondary—or whether we suppose, with him, that the beds in Victoria

called by him Secondary are a portion of my Wianamatta beds—there is nothing to explain the statement made by de Zigno, in his valuable paper before the Academy of Science, in Padua, on 23rd April, 1863, in which he says:—"Altri depositi pure d' incerta classificazione ci si schierano "innanzi prendendo ad esaminare i terreni a combustibile fossile della "Nuova Galles meridionale e della Tasmania, che il M'Coy aveva fino "dal 1847, collocati nel piano dell' Oolite, mentre Clarke annunciava "di avervi rinvenuto i Lepidodendri dell' epoca carbonifera.

"Successivamente le nuove indagini instituite dal M'Coy lo ponevano "in grado di chiarire come i resti trovati dal Clarke appartenessero a "depositi collocati ad una grande distanza di quelli le cui piante accena- "vano ad un' epoca più recente.

* * * * * * * * *

"Egli cita in questi ultimi depositi la presenza di quattro Cicadee "e di una *Tæniopteris* multo affine alla *Tæniopteris vittata* dell' Oolite di "Scarborough, e nota come presso Volumbilla abbia trovato Belenniti, "Pentacriniti e varie conchiglie che s' approssiomano alle specie proprie "dell' Oolite inferiore, del Lias e del Trias" (p. 148-9).

Now, in this statement are three things to be re-considered:—

1. It has not been said by me that the Lepidodendron, &c., were in the same beds with Glossopteris (though evidence has come out recently to the effect that these plants have been found together at Newcastle), but it has been held that the Glossopteris Coal beds and the Lepidodendron beds are part and parcel of one great formation.
2. In New South Wales no Cycadites and no Tæniopteris have been ever found, though they occur in Victoria in the beds considered by the geologists there to belong to the Wianamatta beds.
3. Neither in the Victoria beds, nor in the Wianamatta beds, has ever been found a Belemnite, a Pentacrinite, or any shell, save a fresh-water Unio in Victoria, and one shell in New South Wales from the fish-bearing shales.

There is, however, a far more important matter to be rectified.

When I first reported the discovery of Secondary fossils from Wollumbilla in Queensland, it was as *Cretaceous or Jurassic;* but Professor M'Coy described them, in September, 1861, as *Lower Secondary,* and as the marine representatives of the formation, to which belonged, in his opinion, the Victoria "carbonaceous" beds, and the coal measures of New South Wales, *i.e.,* of the age of the Scarborough Oolite. Among the Wollumbilla fossils were some which looked older than Cretaceous; and therefore, certainly guided by Professor M'Coy's determination, I adopted his view of an older period, and even considered that some of the fossils indicated a Triassic age; (there was certainly a brachiopod which looked older than Triassic,) consenting to the possibility that the Wollumbilla beds might prove really to be of the same age as the Wianamatta beds. But I have learned two things since, first, that the fishes of the latter are Palæozoic, and secondly, that the Wollumbilla fossils on comparison and examination in Europe, whither I sent them, are by geologists there considered to be really *Cretaceous;* and as

Professor M'Coy has himself published two Cretaceous species from Queensland, in 1865, and as I have collected evidence to geologically connect their localities (Flinder's River) with that of Wollumbilla (though otherwise so widely separate), there will be the less difficulty in allowing the Cretaceous epoch, first suggested by myself as applicable to fossils in *situ*, to be acknowledged as well developed in Queensland. But we shall then see how little is its relationship with the Wianamatta, and how still less with the Victorian beds.

This reference to a very important circumstance leads me to suggest, that whether the Wianamatta series is to maintain a Palœozoic pretension or whether it is to ascend to the Trias, the arrangement which will be found most correct will probably be represented somewhat in this wise :—

1. Cretaceous. Wollumbilla, Flinders, &c., (Queensland) and Western Australia.
2. Inferior, or Great Oolite. Deposits at Wizard Peak, &c., Western Australia.
3. Trias, Victoria.
4. Palæozoic. Wianamatta, Hawkesbury, and Coal beds of New South Wales.

In which arrangement, I would place the Victorian "carbonaceous" above my Wianamatta beds. Of course, subsequent discoveries may modify such a view, and lead to a final settlement of opinion, by enabling geologists to fill up the *gaps* which undoubtedly exist; proving, perhaps, that the Cretaceous fossils picked up in drift by Mr. Selwyn indicate the former existence of Upper Secondary rocks in that province, as the Ammonite brought to me on the Clarence River Coal Fields in 1853, may indicate the former presence there of an Oolitic formation.

That Cretaceous or Jurassic rocks formerly occupied and still occupy an enormous range in Queensland, I can now assert, having obtained some of the additional information which I proposed to collect in 1861. I have now been able to discover that rocks of the above epochs range from the east of Wollumbilla across the Maranoa and Warrego to the Nive and Barcoo; thence along the head of the Thomson to the Flinders, and so round by Tower Hill and the Belyando back to the Amby and Maranoa Rivers; not, of course, in one uninterrupted area, but resting on the Carboniferous and other Palæozoic formations, thus exhibiting a very extensive distribution of Secondary rocks; and it will probably be found that various groups of the Jurassic epoch are represented there.

It is certainly singular that some well-known species of European reputation, or their representatives, are found in the Western Australia Oolite, such as the following of the Great Oolite:—Trigonia *costata;* Ostrea *Marshii;* Ammonites *Moorei;* Lima *pectiniformis;* Avicula *Munsteri*, &c.

None of these have, however, been found in Queensland, New South Wales, in Victoria, or Tasmania; but in the latter island, there are undoubted equivalents of some part of the Wianamatta series, as well as of the Coal measures and lower Carboniferous beds of New South Wales.

In New Zealand the greater part of the Coal measures is not Palæozoic, but some of it is said to be Secondary, to which epoch also belong the Jurassic Plesiosaurus and Ammonites; and Triassic Aviculæ and Monotis.

In New Caledonia, there is also a distinct Triassic series, of which some of the fossils are akin to those of New Zealand. But, at present, neither has this nor the Belemnites of Queensland been found in New South Wales.

So far as the question of Coal is concerned, no Coal seams (but only thin patches or very limited layers) have been found in the Wianamatta or the Hawkesbury rocks, that can be compared even with the alleged Secondary deposits of Victoria; and in Queensland, where workable seams do exist, the fossils of New South Wales are also found. In the Secondary marine beds of Wollumbilla and the Amby, gold in minute visible particles was found by me in some of the quartz pebbles cemented with the shells, and a small quantity was detected by crushing the whole, shells, pebbles, and the calcareous cement together.

Tertiary Rocks.

Throughout the whole of Eastern Australia, including New South Wales and Queensland, no Tertiary *marine* deposits have been discovered. There are, however, in various places of New South Wales patches of *plant deposits* which, according to the frequent notices of geologists, may be referred to some period of the Tertiary epoch. A silicified sandstone, or quartzite, of this kind, full of impressions of ferns and leaves of trees, but not known to be now living occurs at Jerara Creek, not far from Yass. (See No. 475.) It is probably Miocene. On the summit of the Cordillera, near Nundle, above the Peel River Diggings, occurs a ferruginous bed full of leaves. Both these localities are represented by specimens in the Exhibition On the Richmond River occurs a white magnesite, full of yellowish impressions of leaves. At Keewong, in the county of Gowen, there is a bluish deposit of fine aluminous matter with black impressions From a depth of 60 feet in a shaft near Bungonia, a pale yellowish white deposit with similar impressions was brought up; and on the summit of "a made" hill, above Kiandra Gold Field, at a height of 4,000 feet above the sea, and in a region now partly covered with snow many months in the year, there is a deposit of black clay with such casts of leaves as occur in similar clay near Hyde in New Zealand.

No botanist is prepared to declare what is the exact age of such deposits. But some of the leaves are supposed to represent among others the foliage of *Fagus;* yet, it was only in 1866 that a beech forest was discovered, by the Director of the Botanical Gardens, growing on the Clarence River. On comparing the living leaves with the impressions in the various deposits mentioned, I can see no identity. This is a point in Geology not yet fully dealt with.

The most remarkable instance I have met with is on the coast, about forty-two miles north of Cape Howe, where, at a place called Chouta (between Tura and Boonda) a cliff about 100 feet high, formed of sand and white silicate of alumina, contains beds of lignite charged with

sulphide of iron, and which are full of phytolites much allied to the living vegetation. From the clays, some of which are nearly kaolin, articles of pottery have been formed, which, with the clays and sands, are exhibited. (See Nos. 269 & 371.) It has been proved that, by distillation, a fair proportion of lubricating oil may be produced from the lignitiferous clay, and other products are expected to result from these deposits. The cliff is about 60 feet thick from the sea to the top of the clays, and borings below the sea level have shown a still greater thickness.

These deposits lie between the horns of the little bay at Tura and Boonda, resting at one end on the highly undulating Palæozoic rocks, and at the other on a mass of Porphyry. They were, formerly, no doubt, deposited in a depression among the slopes of the hills, but the wearing away of the coast has left a cliff of clay and sand intead of the original cliff of hard rocks. It is remarkable that, at the south end the rocks assume the character of a breccia of quartz, cemented by silicious matter (probably like a deposit mentioned by Mr. Gould as occurring in Tasmania) and in it analysis has detected the presence of gold, though some quartz veins at the north end contained none.

My impression at first was that the lignite was recent, but I place the deposits under the present head because it may be possible the plants are not recent; and some of the hardenened clinker-like sands covering the clays remind me of the sands on the coast of Dorset, at Studland, and Bourne Mouth. If this be really a Tertiary locality, it does not contradict the general assertion at the commencement of this section, for no shells of any kind have been detected in any part of these beds. Swampy and stunted plants still grow on the sands which are very wet, and probably reproducing the phenomena beneath them, with the exception of the white clays which were in part derived from the decomposed felspathic matter of the Porphyry. In various parts of Maneero there are lignite-like local thin deposits, but on analysis they have proved valueless.

It may be well to mention, that although there are no such positive indications as exist in Victoria, as to the age of the Gold drifts which are by Mr. Selwyn referred to Upper and Middle Tertiary, yet there are parallels in New South Wales to certain phenomena that have been observed in that province. Thus, the gold alluvia of the Uralla resting chiefly on granite are covered by a great thickness of basalt, as in various Victorian fields, and at Lucknow, near Orange, as well as at Uralla, under the basalt and with the gold alluvia are found stems and branches of trees, as is the case at Daylesford, in Victoria.

These may be Miocene, or perhaps Pliocene, but the proof must rest on evidence not yet attainable.

Pleistocene and recent accumulations.

In many parts of the existing region, all over the surface, wherever the basal rock is not denuded, as near Sydney, there are local deposits which might be called "till," were any Testacea found in them; and in the interior there are widely-spread accumulations of drift pebbles, which, as on the Hunter and Wollondilly, are rounded by attrition in their long journey from the mountains whence they have been derived. Sometimes, also, the breaking up of conglomerates has contributed to this drift.

In more than one instance, it is clear that the present river channels have deepened since the drift first began to crowd their banks. I have traced one of these drift streams, sometimes at great heights above the valleys, for more than 80 miles. In other places I have found upon the surface, as Strzelecki did in other parts, minerals (especially ores of copper, tin, and lead,) which were at a great distance from their sources; and in two instances, that rare mineral, Molybdate of lead, of which no habitat has ever been yet found.

In the great plains of the interior, bones of various gigantic marsupials, fishes and reptiles, are found bedded in black muddy trappean soil; and on Darling Downs in Queensland univalve and bivalve shells are found in some cases attached to the bones, or deposited over them in a regular series of layers, at intervals of several feet; and of these shells some are yet living in the water-holes of the creeks. These facts are generally known, but it was not till recently that the osseous relics have been found in different creeks throughout the whole of the slopes and plains at the base of the Cordillera in Eastern Australia.

Similar to this are the accumulations of bones in caverns, as at Wellington—at Boree, near the head of the Colo River—at Yesseba on the Macleay River, and other places.

In the Exhibition is a magnificent collection made by Mr. Krefft, from the former locality, and several specimens of bone breccia from the latter place, discovered by Mr. Rudder. (See Nos. 483*e* & 469.)

Along the coast are found ranges of Dunes, with a variety of shells, some of them rare, others recent, as on Port Hacking and Cronulla beach; along the shores of Botany Bay; on the great flat between the Hunter and Port Stephens, and along the Macleay River which now passes for many miles through the shelly accumulations; and about Moreton Bay and in more northern coast openings, shells and marine refuse form deep deposits, from which, as in Illawarra and Broken Bay, a considerable profit is obtained by dredgers and shell-collectors, for the production of lime.

Mr. Rudder illustrates the case of the Macleay by collections of the shells, and by a carefully-drawn map defining the limits of the Pleistocene deposits. (See No. 469.)

All along the coast, from Torres' Straits to Bass's Strait, drift pumice may be found wherever there is a lodgment, generally in the north corner of the little shore bays. That this has gone on for ages is apparent, as in one part of the coast south of Sydney there is an accumulation of water-worn pumice, some distance from the shore, and beyond the reach of the present waves. It is supposed to come in during easterly gales, from the volcanic islands to the north-east.

Raised beaches occur also at various heights on rocky projections of the coast, indicating elevation of the land, of which there is distinct evidence in the recent period, not only in Moreton Bay; near Sydney, and thence to Bass's Strait; but on both sides of that Strait, and as far as Adelaide and King George's Sound. Mr. Selwyn gives data for assuming the elevation of the land to have reached occasionally 4,000 feet in Victoria, but he has no evidence of Tertiary marine fossils above 600 feet. Unfortunately, on the eastern coast, having no marine Ter-

tiaries, we have to found our deductions, as respects New South Wales, on less secure data. Yet we have here evidence of another kind, and pot-holed surfaces of considerable extent have been found by me at various heights from 300 to nearly 3,000 feet.

In a brief abstract like the present, it is impossible to quote authorities, nor has time allowed a more satisfactory digest or a wider range of statements. Nor has opportunity permitted the preparation of sections (save of the Newcastle Coal Field, No. 477,) or map to point out relative positions of the formations mentioned by me in this paper. The places named can, however, be seen on such maps as are probably exhibited by English publishers; if not, reference can be made to Petermann's map of South-east Australia, in Stieler's Hand Atlas, No. 50c.

I have not named the occurrence of the ferruginous deposits of the Cape York Peninsula, (though I possess a map, and collections made from about the new settlement and along the coast), because I am not at present aware whether they are Pleistocene or Tertiary. They are very extensive, and cover the bases of Porphyry hills. On analysis of the ironstone, no gold was detected.

W. B. C.

St. Leonards, near Sydney,
17 January, 1867.

NEW SOUTH WALES COAL FIELDS.

By Wm. KEENE, F.G.S., London; M.A.S., Bordeaux; Corresponding Member Geo. Ins., Vienna; N. S. Wales Government Examiner of Coal Fields.

PALÆOZOIC FOSSILS.

Mr. W. Keene, the Government Examiner of Coal Fields, thus describes a very interesting and valuable collection of rocks, fossils, and minerals, exhibited by him:—

These specimens show the super and sub-carboniferous rocks, and the coal measures, presenting eleven different seams to working, all of which are more or less worked, at various levels—from 450 feet below, to 1,500 feet above the sea.

The first, second, and third seams are worked in the Illawarra District, at Mount Keira, Bellambi, and Bulli; the third, fourth, fifth, sixth, seventh, and eighth seams, are worked at Newcastle and Wallsend, and at Minmi, on the Hunter River; the ninth, tenth, and eleventh, at East and West Maitland, and Branxton, near Dalwood.

The present shipments from the collieries amount to 20,000 tons weekly.

The specimens are arranged in twenty-four compartments:—

COMPARTMENT 1.

A map, coloured geologically so far as the country has been examined by the exhibitor, and a sheet of sections, accompany this collection. Numbers on the sheet of sections, corresponding to the numbers on the specimens, indicate the positions from whence the specimens were taken.

COMPARTMENT 2.

Specimens of the rocks overlying the New South Wales, Sydney sandstone.

Sp. A 1, A 2, A 3, A 4, show the flora of these rocks, chiefly composed of thin narrow reeds, ferns; and a fossil fish sp. A 5, is from the shales intercalating with these rocks. Many perfect specimens of fish with heterocercal tails have been obtained from these shales, by the Rev. W. B. Clarke. They have been called the Wyanamatta shales by this eminent geologist; I have called them "the false coal measures," for they contain only thin bands of coal, and are separated by many hundred feet of sandstone and ferruginous rocks from the true workable coal seams.

Sp. A 6.—Fitzroy iron ore, from the Fitzroy Mines, near Berrima. The iron is derived from the basalt rocks in the vicinity, which by filtration of ferruginous waters from these rocks, convert the black shales of the upper beds of the New South Wales sandstone (such as specimen A 7) into iron ore like sp. A 6.

COMPARTMENT 3.

Sp. B 1.—Sandstone, veined by its proximity to the dark shales.

Sp. B 2.—Sandstone from summit of ranges, 500 feet above the coal, and overlying the coal in level beds.

Sp. B 3.—Coarse sandstone, common above the coal.
Sp. B 4.—Sandstone used for building in Sydney.
Sp. B 5, B 6.—Columnar sandstone from a quarry near La Pérouse's Monument, and is also to be found in two or three other localities near Sydney.
Sp. B 3, B 4.—Used for building in Sydney.

COMPARTMENT 4.

Sp. C 1.—Coal from the top seam worked at Wollongong and Bellambi, 500 feet above the level of the sea. The seam is 7 feet in thickness, of good clean coal; the main drifts are now about 800 yards into the mountain range.
Sp. C 2.—Coal altered and coked by contact with igneous dyke.
Sp. C 3.—Coal rendered anthracitic by proximity to volcanic rock.

N.B.—This top seam is found workable in a frontage of thirty miles in length along the coast range.

Sp. C 4, C 5.—Flora common to all the coal measures.

COMPARTMENT 5.

Sp. D 1, D 2, D 3.—Shales and coal of the second seam, not now worked, but opened at Wollongong and at the Fitzroy Mines.
Sp. D 4, D 5, D 6.—Cherty rock, generally found between the second and third seams.
Sp. D 7, D 8.—Flora in cherty rock.
Sp. D 9.—Fossil wood common in cherty rock, over the third seam.

COMPARTMENT 6.

Sp. E. 1.—Fern in shales between the second and third seam at Newcastle.
Sp. E 2.—Canneiform vertebrate stem, between the second and third seams.

NOTE.—This vertebrate plant is found in all the shales, from the first to the lowest seam.

Sp. E 3, E 4, E 5.—Flora between the second and third seam.

COMPARTMENT 7.

Sp. F 1, F 2.—Flora in bands of shale dividing the third seam.
Sp. 3.—Coal of the third seam, worked by the Newcastle Coal and Copper Company, from day levels, about 60 feet above high-water.

COMPARTMENT 8.

Sp. G. 1.—Cone-in-cone iron ore, over fourth seam.
Sp. G 2, G 3.—Mineralized stems, common in these measures.
Sp. G 3.—Coal formerly worked into from the sea-coast, at various levels, from 10 to 50 feet above high-water. (The fourth seam.)
Sp. G. 4.—Baked shale, with flora, over the fourth seam.
Sp. G. 5.—Sandstone below the fourth seam. This seam is worked at Wallsend, Waratah, Lambton, and Minmi, near Newcastle.
Sp. G 6, G 7, G 8.—Shales from Mount Keira, near Wollongong, in the geological horizon of the fourth seam of Newcastle. These shales are worked by Mr. Graham, of Sydney, and produce about sixty gallons of petroleum oil per ton of shale.
Sp. G. 9.—Plombagine shale, from the same beds.

Sp. G 10, G 11, G. 12, G. 13.—Brown cannel oil coal, occupying about the same geological position at Hartley, worked by the Hartley Company, and yielding from 100 to 150 gallons per ton. These oils compete successfully with the best American imported.

Sp. G 14.—Bitumen oozing out from joints in the sandstone in the Castlereagh District.

COMPARTMENT 9.

Sp. H 1, H 2, H 3.—Flora, overlying the beach seam at Newcastle.

Sp. H 4.—Coal from the beach seam. This seam, worked in the Australian Agricultural Company's F pit, is about 5 feet in thickness. Preferred by blacksmiths for forge coal. The seam is seen at the level of high-water on the Newcastle beach.

NOTE.—A heterocercal fish (urosthenes) was found in the shales over this seam, and is exhibited in photograph above this compartment.

COMPARTMENT 10.

Sp. I 1.—Coal from seam below the beach seam at Newcastle, worked in the Australian Company's F pit.

Sp. I 2.—Flora, between the beach seam and this coal.

NOTE.—A seam 32 feet in thickness crops out on the Australian Agricultural Company's land, near Stroud. For its position, see geological map; and for specimens, see the frames of the Company's coals and minerals.

COMPARTMENT No. 11.

Sp. K 1, K 2, K 3.—Flora of the Bore-hole coal seam.

Sp. K 4.—Sandstone above the Bore-hole seam; good building stone.

Sp. K 5.—Used for building in Newcastle.

Sp. K 6.—Coal from the Bore-hole seam, worked by the Australian Agricultural Company, at a depth of 136 feet from the surface. (Seventh seam.)

Sp. K 7.—Coke, from Bore-hole coal.

COMPARTMENT 12.

Sp. L 1.—From the Four-mile Creek Collieries, near Maitland. The eighth seam, the property of W. F. de Salis, Esq.

Sp. L 2.—Coal from the ninth seam at Four-mile Creek. These coals are of excellent quality, chiefly used by the Hunter River steamers. Seam is about 60 feet below the surface, 7 feet in thickness; and the collieries in work at Four-mile Creek furnish about 25,000 tons per annum to Morpeth and Maitland.

Sp. L 3.—Rock—good building stone, and flora of this seam.

Sp. L 4.—Used for building in Maitland.

COMPARTMENT 13.

Sp. M 1.—Coal worked at Rix's Creek, near Singleton, the property of — Campbell, Esq.

Sp. M 2, M 3, M 4, M 5, M 6.—Fossils, principally Crinoidœa and Fenestella, which overlie this seam.

Sp. M 7.—Excellent building stone, over this seam.

COMPARTMENT 14.

Sp. N 1, N 2, N 3, N 4.—Further specimens of fossils overlying Rix's Creek Coal.
Sp. N 5.—Palæozoic oolite.
Sp. N 6.—Fossil wood, abundant in stems and roots of large trees, over the oolite and the coal.

COMPARTMENT 15.

Sp. O 1, O 2.—Cannel coal, from the Hon. Bourn Russell's Colliery at Stony Creek. Seam 7 feet in thickness, 60 feet from the surface; worked to supply West Maitland and environs: esteemed as a parlour coal. Can be turned and polished, as shewn in sp. O 3.
Sp. O 3, O 4, O 5, O 6.—Fossils overlying this coal (the tenth seam).

N.B.—Specimens of the spirifer are very rare above the tenth seam, and no specimen of bellerophon has been found by the exhibitor below the tenth seam.

COMPARTMENT 16.

Sp. P 1.—Coal from the lowest seam worked in the colliery of the Hon. Bourn Russell, at Stony Creek; 161 feet from the face of bank to top of the seam. Eleventh seam, 4 feet in thickness, 150 feet above the level of the sea.
Sp. P 2.—Coal from the same seam at Anvil Creek.
Sp. P 3, P 4, P 5.—Coal and flora of same seam at Dalwood Creek.

COMPARTMENT 17.

Sp. Q 1, Q 2.—Fossils overlying a seam of brown cannel oil coal, at Burragorang, and which appears to belong to the same geological horizon as the lowest coal.
Sp. Q 3.—Brown cannel coal from Colley Creek, Liverpool Plains, and Sp. Q 4, brown cannel from the Hunter River, both of which appear to occupy the same geological platform.

COMPARTMENT 18.

Sp. R 1, R 2, R 3, R 4, R 5, R 6, R 7, R 8.—Various fossil woods and stems, from below the lowest coal seam.
Sp. 8 shews unmistakably that these specimens are from the fossiliferous platform below the lowest coal seam. They were all worked out by the exhibitor, who possesses larger specimens from the same deposits.

COMPARTMENT 19.

Sp. S. 1.—Flora of the lower chert rock, below the coal and fossiliferous shell beds. Lepidodendron elegans, and cyclopteris, have been found in a pit 60 feet deep, sunk in search for coal at Windermere, 200 feet above the sea level.
Sp. S 2.—Cyclopteris, from lower chert rocks near the Paterson River.
Sp. S 3.—The lower chert converted into iron ore at Lockyersleigh. The upper and lower cherts are "geological constants" throughout the coal-fields examined by the exhibitor.

COMPARTMENT 20.

Sp. T 1, T 2, T 3, T 4, T 5, T 6.—Lowest flora of the coal measures; and sp. T 7, T 8, lowest fauna in the beds conformable with the coal measures.

COMPARTMENT 21.

Sp. U 1, U 2, U 3.—Iron ore, highly magnetic, found near Goulburn, in close proximity to the fossiliferous limestone, of which specimens are in the next compartment.

Sp. U 1.—Pea iron ore from near Bungonia; found in long ridges near to the fossiliferous limestone, of which specimens are in the next compartment.

Sp. U 5.—Limestone, in close proximity to the magnetic iron ore.

U 6.—Iron ore from A. A. Company's land at Port Stephens.

U 7.—Limestone from near Port Stephens.

U 8.—Iron ore from near Booral, Port Stephens.

COMPARTMENT 22.

Sp. V 1, V 2.—Flora, recently found by the exhibitor in auriferous quartzite rocks; and which, so far as his present observations go, he believes to be the flora of the land contemporaneous with the deposits in the sea of the favosites limestones, and of which specimens are exhibited in the compartments following this one.

Sp. V 3, V 4.—Favosites limestones in proximity to the gold-bearing quartzites and shales, and being conformable with them.

COMPARTMENT 23.

Sp. X 1, X 2, X 3.—Fossils in an undisturbed bed of rock, passed through at a depth of 120 feet in sinking for gold, near Bathurst.

Sp. X 4, X 5.—Charred wood or charcoal found in considerable quantities, with fossil wood, below the spirifer rock. (Query? Lower carboniferous beds.)

Sp. X 6, X 7, X 8.—Gold in drift, found below the spirifer bed.

Sp. X 9, X 10.—Shales and quartz gold-bearing rocks, unconformable with the fossil bed, as shewn in the diagram.

Sp. X 11, X 12, X 13.—Fossil limestones, underlying but conformable with the gold-bearing quartz, as shewn in the section.

COMPARTMENT 24.

Sp. Y 1.—Copper ore from near Bathurst.

Y 2.—Copper ore from Carrangara Mine.

Y 3.—Copper ore from Peak Downs.

Y 4.—Porcellannite from the gold measures shewn in the section.

Y 5.—Fossiliferous rocks resting upon the serpentine sp. Y 6.

Y 7.—Granite from New England.

Y 8.—Porphyry from Port Stephens.

Collection of specimens of kidney coal (charbon à rognons), peculiar to and common in the middle seams of coal, which are very rich in bitumen.

Referring to the specimens shewn in this collection, I may now enter upon some further particulars:—

The seam of the Australian Agricultural Company, worked at the colliery known as the Borehole, is 163 feet from the surface, and 150 feet below the sea level. Its average thickness is about 10 feet, with dip to the south-east of 1 in 20. This coal is highly bituminous, and remarkable, in common with the Borehole and Minmi seams, for its tendency to reniform and orbicular fracture—a peculiarity which appears to belong to the middle seams of the series; the upper and lower seams being more disposed to splinty cleavage, and burning to ash with little cinder. This coal is greatly esteemed in the Melbourne and Californian markets. Ships of large tonnage can load at the staiths of the Company, to which the coal is taken from the pit's mouth, by locomotives, a distance of about two miles.

Wallsend Colliery.—The coal in this pit is 127 feet from the surface, and 80 feet below the sea level; 9 feet 10 inches in thickness, including partings, which divide the seam into three bands. The partings are together about 10 inches in thickness. The Wallsend workings are situated about half-way between Minmi and Newcastle, the strata rising towards the North-west ranges. The works connect with Newcastle by a branch railway to join the Great Northern Line at Waratah, about four miles from the port, and the locomotives take coals to the ship's side at the rate of 500 tons or more daily.

The Waratah Colliery, near Newcastle, is worked by a Sydney proprietary, and they ship coal by the public cranes at Newcastle Wharf or at Port Waratah, where they have erected a shipping staith of their own, and at which vessels drawing 14 feet of water can load. They have on one occasion shipped as much as 900 tons in a day, and their present out-put is about 3,500 tons per week.

Lambton Colliery is near to the Wallsend, and belongs to and is worked by the Scottish Australian Company. The seam crops out towards the river, but they have worked to the dip till they are now under 300 feet of cover, and their present extraction is about 200,000 tons per annum.

The price of good large round coal, at all the Newcastle Collieries, is 9s. 3d. per ton delivered on board, and the nut coal 5s. per ton. The Panama line of steamers use Australian coal, and the Dutch Steam Navigation Company, working in the Java and China Seas, send here for their supplies.

The Minmi Colliery Company work the seam at 90 feet from the surface, and 20 feet above the sea level. An outcrop of the seam is visible in a creek about 400 yards from the shaft, rising in a northerly direction 1 in 18. It appears to be the second seam below the chert rock which covers the Coal and Copper Company's seam at Burwood, and is bedded on a hard sandstone grit of good building stone. The coal is much liked by the blacksmiths of the district, and the small makes a good coke, as does the small coal of the collieries of the Newcastle District generally. Messrs. J. and A. Brown, the owners of these mines, raise about 300 tons a day, which is shipped at Hexham, a township on the banks of the Hunter River, 10 miles from Newcastle; or the coal is

sent down in barges laden with boxes, which are hoisted by a steam-crane so as to load ships of any tonnage whilst at anchor in the stream. The seam averages 6 feet of clean coal.

The Four-mile Creek Company carries on its operations in the East Maitland District, near to the head of the navigation of the Hunter River, 15 miles from Newcastle. There are at least three workable seams recognizable in this district; and that worked is 8 feet 6 inches in thickness, 5 feet 6 inches of which is a splint coal of very superior quality, chiefly used by the steamers navigating daily between Morpeth and Sydney.

The admirable regularity with which these ocean steamers perform their service—their engines of 160 horse-power easily kept to the top of their speed with steam to spare and blowing at the valve, give sufficient and constant evidence of the excellenee of the coal; in fact, I have long considered, and often expressed the opinion, that good, clean, hand-picked, New South Wales coal is at least equal if not preferable to the best coals of England, when these latter have been twice transhipped; that is to say, in the state in which English coal can alone be got in Sydney, and at double the price of the best produce of our own mines.

The Four-mile Creek is a hard, splint coal, does not clinker, and burns to a fine dry ash,—is very comparable to the coals shipped from Goole, in Yorkshire, whilst our bituminous coals may be likened in quality to the "Hartley."

Descending the strata, and below all the seams of these collieries, at West Maitland, about five miles north from Four-mile Creek, two seams of cannel and splinty coal are worked, the property of the Hon. Bourn Russell, specimens of which may be seen in compartment No. 15 of this collection.

This cannel coal is most useful, and chiefly employed for domestic purposes.

Fifteen miles to the northward these lower seams again crop out, in Anvil and Dalwood Creeks, and are worked at Branxton. The coal is in good repute as a steam fuel.

Thirty miles further to the northward, at Rix's Creek, near Singleton, a seam of good coal is worked, of which a sample will be found in compartment No. 13, and this concludes the collection from the Northern District.

Sixty miles south from Sydney are the ports of Bellambi and Wollongong; and though they cannot be compared for accommodation with the port of Newcastle, the energy of the coal-owners of the district, and the facility with which coals can be worked by "day-levels" from a seven feet seam, which shews itself in section along many miles of the mountain range, assure to this field a progressive development to prove the inexhaustible resources of New South Wales in mineral fuel; and will be a guarantee to commercial interests that no combination or monopoly can long disturb the regularity of the supply.

By reference to the collection I exhibit, it will be seen that I can recognize eleven distinct seams, which are more or less worked. The same series of seams extends from Newcastle to the Wollongong District, disturbed and broken up only by comparatively modern eruptions of porphyries and basalts.

On the lands of the Australian Agricultural Company, a few miles from Stroud, a seam more than 30 feet in thickness crops out in the length of a creek, and this thickness has been verified by several trial pits sunk on the dip side. There are many partings of shale and fire-clay, and the coal is of various quality in the thickness of the seam; but there is quite sufficient of good coal for profitable working, if its inland position did not render it wholly unavailable, in face of coal so easily assessible from the sea-board as that of Newcastle and Wollongong.

But late researches have laid open very extensive deposits of rich iron ore with limestone in their vicinity, and all near to water-carriage. Such combined advantages may probably dispose so wealthy a Company to make the necessary outlay for establishing an iron manufacture, of which the Colony stands much in need. Specimens of this iron ore, limestone, and coal, may be seen in the Mineral Frame of the Company connected with the coal seam exhibits of New South Wales, which I have had the honor to prepare for the Exhibition.

The discovery of our wealth in brown cannel oil coals, and oil shales, will enable us to manufacture all the oil needful for our own consumption, and even to export the raw article. We know that it exists in many places at wide areas apart, as may be seen by reference to the map, and like to the richness of our coal seams, which richness is not excelled in an equal vertical section in any part of the world, we may expect that the oil shales will be of as great importance in their development; and if we do not find oil springs, we may possess such beds of the solid material as will justify the expenditure of all the capital needful to keep up a steady and unfailing supply of the valuable and varied products which these shales and coals will yield.

The works already in activity at Hartley and America Creek, and others preparing to operate in different localities, with the general approval of the quality of the oil produced, will justify our most sanguine anticipations on this subject.

As regards the geological age of coal in New South Wales, I may repeat what I have already published,—that it would be easy to add pages on this subject, if it were not irrelevant to the question with which I am now occupied, except so far as the geological age of coal is inseparably connected with its commercial value. That is to say—though there may be, and there is, much bad coal in the palæozoic or true carboniferous series, a really good coal in the oolitic, lias, or tertiary deposits, is a thing unknown. To class the mineral fuel of New South Wales as belonging to either of these latter formations, would be at once to discredit and condemn it in the market of the world, until, despite discredit and condemnation, its merits were discovered; when it would be tardily acknowledged that the condemnation had proceeded from an error in science, arising out of deficient or too superficial an investigation, or the too facile application of inapplicable theories.

"A reference to the collection I exhibit will settle this question, which has been so long and ably contested by the Rev. W. B. Clarke; and, for the reasons stated, I may be permitted a few words more on the subject. All the seams of the New South Wales coal field, from the lowest which intercalate with silurian fossils (spirifer, radiata, &c.), devonian flora (lepidodendron, cyclopteris, adiantites), and the bellerophon and

crinoidea of the mountain limestone, to the highest and latest deposited seams, in which the flora (equisetacæa, asterophyllites, &c.), approach the oolitic character, all are deposited conformably and almost in parallelism, one on the other; covered also conformably by a thousand feet of sandstone, upon which again has been quietly deposited the Wyanamatta beds, which I have called the false coal measures; for with all the appearances of being coal-bearing, they contain no coal, but a flora probably nearer approaching to that of the oolite.

"The lower beds of the coal series of New South Wales are, then, geologically older than any worked in Europe; whilst the upper beds represent the most recent of the European true carboniferous formation. And as all the coal seams, from the silurian upwards, are deposited conformably, I must conclude that this portion of the globe was comparatively free from violent eruptions and disturbances from the Silurian to the Permian epoch, and that the alternate submergences and elevations of the land must have been slow and gradual.

"In stating my opinion here as to the age of the carboniferous deposits of New South Wales, I am in part repeating only what I reported after my first examination in this field in 1853. I then wrote: 'The coal is a true coal, not lignite, or a deposit of the tertiary epoch, but belongs to the true coal formation—is overlaid by regular beds of secondary sandstone, lying in conformable strata upon it.'"

W. KEENE,
Government Examiner of Coal Fields;
F.G.S., London; M.A.S. of Bordeaux;
Cor. Mem., Geo. Ins. of Vienna.

Newcastle, New South Wales,
10th January, 1867.

AUSTRALIAN VERTEBRATA,

(RECENT AND FOSSIL),

REPRESENTING ALL THE GENERA KNOWN UP TO THE PRESENT TIME.

WITH NOTES BY GERARD KREFFT, F.L.S., C.M.Z.S., &c.

MAMMALIA.

The arrangement of this group is according to Owen's Cerebral System, as follows:—

Class.	Sub-Class.	Order.	Genus or Family.	Example.
Mammalia	Archencephala	Bimana	Homo	Man.
	Gyrencephala	Carnivora ...	Digitigrada	Dog.
			Pinnigrada	Seal.
		Sirenia..	Halicore	Dugong.
		Cetacea	Delphinidæ	Porpoise.
			Balænidæ	Whale.
	Lissencephala	Cheiroptera...	Frugivora	Flying Fox.
			Insectivora	Bat.
		Rodentia	Claviculata	Rat.
	Lyencephala ...	Marsupialia...	Rhizophaga	Wombat.
			Poëphaga	Kangaroo.
			Carpophaga	Phalanger.
			Entomophaga ...	Bandicoot.
			Sarcophaga	Native Cat.
		Monotremata	Echidna.....	Ant-eater.
			Ornithorhynchus	Duck-bill.

which will shew at a glance the order of Mammals which are represented in this country.

ORDER—BIMANA.

Homo.

Melanian variety.

Bones of the extremities found in a cave at Wellington Valley, being,—left and right femur, left and right tibia, left and right humerus, portion of fibula.

The following are the measurements of some of the skulls of Australian Aborigines in the collection of the Museum at Sydney.

Greatest Length.	Breadth.	Depth from the anterior margin of the occipital foramen to the middle of the coronal suture.	Locality.
$6\frac{5}{16}$	$5\frac{2}{16}$	$5\frac{3}{16}$	Brisbane.
$7\frac{7}{16}$	$5\frac{7}{16}$	———	Hobarton.
$7\frac{8}{16}$	$5\frac{5}{16}$	$5\frac{0}{16}$	?
$7\frac{4}{16}$	$4\frac{12}{16}$	$5\frac{2}{16}$	?
$6\frac{3}{16}$	$4\frac{12}{16}$	5	?
$7\frac{6}{16}$	$5\frac{10}{16}$	$5\frac{6}{16}$	Mudgee.
$7\frac{3}{16}$	$5\frac{3}{16}$	$5\frac{7}{16}$	?
$6\frac{3}{16}$	$5\frac{6}{16}$	$5\frac{1}{16}$	?
$6\frac{12}{16}$	$5\frac{6}{16}$	$4\frac{15}{16}$	?
7	$4\frac{15}{16}$	$5\frac{5}{16}$	?
$7\frac{9}{16}$	$5\frac{4}{16}$	$5\frac{6}{16}$	?
$6\frac{14}{16}$	$4\frac{14}{16}$	$5\frac{1}{16}$	Brisbane.
$7\frac{6}{16}$	$5\frac{3}{16}$	$5\frac{4}{16}$	?
$6\frac{14}{16}$	$5\frac{3}{16}$	$5\frac{1}{16}$	?
$7\frac{0}{16}$	$5\frac{11}{16}$	$5\frac{10}{16}$	?
$6\frac{14}{16}$	$4\frac{12}{16}$	$5\frac{2}{16}$	?
$6\frac{15}{16}$	$5\frac{2}{16}$	$5\frac{1}{16}$	?
$7\frac{6}{16}$	$4\frac{15}{16}$	$5\frac{4}{16}$	?
$7\frac{6}{16}$	$5\frac{3}{16}$	$4\frac{15}{16}$	?
$7\frac{8}{16}$	$5\frac{5}{16}$	$5\frac{5}{16}$	?
$7\frac{1}{16}$	$4\frac{15}{16}$	$5\frac{4}{16}$	Mudgee.
$7\frac{4}{16}$	$5\frac{6}{16}$	$5\frac{8}{16}$	?
$6\frac{14}{16}$	$5\frac{12}{16}$	$5\frac{13}{16}$	?
$6\frac{14}{16}$	$5\frac{10}{16}$	$5\frac{9}{16}$	?
$7\frac{6}{16}$	$5\frac{8}{16}$	$5\frac{10}{16}$	?
7	$5\frac{8}{16}$	$5\frac{2}{16}$	?
7	$5\frac{8}{16}$	$5\frac{5}{16}$	Pine Mountain.
$6\frac{14}{16}$	$5\frac{6}{16}$	$5\frac{7}{16}$	?
$6\frac{15}{16}$	$5\frac{2}{16}$	$5\frac{4}{16}$	Murrumbidgee.
$6\frac{14}{16}$	$5\frac{8}{16}$	$5\frac{8}{16}$	Cape York.
$6\frac{15}{16}$	$4\frac{12}{16}$	5	Bondi.
$8\frac{2}{16}$	$5\frac{10}{16}$	$5\frac{4}{16}$	Port Fairy.
$7\frac{14}{16}$	$5\frac{6}{16}$	$5\frac{10}{16}$	Hunter's Bay.
$7\frac{6}{16}$	$5\frac{6}{16}$	$5\frac{14}{16}$	Rockhampton.
$7\frac{6}{16}$	$5\frac{7}{16}$	$5\frac{3}{16}$	Do.
$7\frac{1}{16}$	$5\frac{2}{16}$	$5\frac{1}{16}$	Kiama.
$6\frac{15}{16}$	$5\frac{4}{16}$	$4\frac{14}{16}$	Do.
$7\frac{11}{16}$	$5\frac{7}{16}$	$5\frac{9}{16}$	Mudgee?
$7\frac{5}{16}$	$5\frac{12}{16}$	$5\frac{6}{16}$	Brisbane.
$7\frac{7}{16}$	$5\frac{8}{16}$	$5\frac{11}{16}$	Cape York.

Order—Carnivora.

Digitigrada.

Canis.

Canis dingo.

Photograph of a fine old male in the Museum collection.

Fossil Digitigrada.

The dingo existed in Australia during the time of Diprotodons. Fossil teeth of a species of dog will be found in the collection from the Wellington Caves.

Pinnigrada.

Stenorhynchus.

Stenorhynchus leptonyx.
Photograph of skull.
The seals of the Australian coast frequently ascend rivers to a great distance, and during the time of floods may be carried into some lake or lagoon, whence, after the subsidence of the water, retreat was impossible. Through animals of this kind being left in some extensive lake, the fable of the Bunyip may have arisen. A large seal now in the Australian Museum, captured in fresh water, had devoured a full-grown platypus (Ornithorhinchus anatinus).

ORDER—SIRENIA.

Halicoridæ.

Halicore.

Halicore australis.
Photograph of young.
The dugong, which in former times had a much wider distribution, is now restricted to the north-east coast, and is seldom found south of Brisbane.

ORDER—CETACEA.

Delphinidæ.

Delphinus.

Delphinus metis.
Photograph of skeleton.
The smaller whales are at times very common in the waters of Port Jackson, but are seldom captured; and for this reason, we are as yet profoundly ignorant as to the fact how many different species visit this coast.

Catodontidæ.

Catodon.

Catodon australis.
Photograph of atlas.
The late Mr. W. S. Maclcay first described this southern sperm whale. The original specimen—a skeleton 35 feet long—is now in the Australian Museum.

Meganeuron.

Meganeuron krefftii.
Photograph of cervical vertebræ.

Euphysetes.

Euphysetes macleayii.
Cast of hyoid bones.
Photograph of skeleton.

Balænidæ.

Balæna.

Balæna australis ?
Photograph of cervical vertebræ.

Macleayius.

Macleayius australasiensis.
Photograph of cervical vertebræ.

Order—Cheiroptera.

Frugivora.

Pteropus.

Pteropus poliocephalus.

Several species of frugivorous bats inhabit Australia, but all are peculiar to the east and north coast. The present species is the most common in New South Wales; its range extending as far north as Brisbane, in Queensland. The "Kalongs" arrive near Sydney at the beginning of the fruit season, about December, and generally remain until January and February. They commit great ravages in orchards, and destroy many times more fruit than they can eat. In 1864 they appeared in unusually large numbers, so that the very streets of Sydney were alive with them at night. During that year they went further south, and were observed even in the immediate neighbourhood of Melbourne. These bats pass the day-time in some secluded spot, far from their feeding grounds, and often accumulate on the trees in such numbers that the branches give way under their weight.

Insectivora.

Scotophilus.

Scotophilus morio.

The smaller bats are well represented in Australia, though we do not know a single genus peculiar to the country. The present species is the most common in New South Wales and Queensland.

Order—Rodentia.

Claviculata.

Hydromys.

Hydromys leucogaster.

This curious family of water-rats is, as far as we know, found only in Australia and Tasmania. All the members of this genus are good swimmers and divers, though I have seen them drown in a tank where they could not rest after half an hour's exertion. This may in a measure account for the strange fact that no hydromys is found on any of the South Sea Islands or on those of the Indian Archipelago.

Hapalotis.

Hapalotis arboricola.

The present species is an example of the many Hapaloti found in this country. Most of them are arboreal, and many build nests in high trees. The animal mentioned above is very destructive to plantations, in particular to oranges when ripe. It is common near Sydney, and owing to its habits, has not yet succumbed to the Norway rat.

There is a very large number of different species of rodents in Australia, about which we know little or nothing. The difficulty to distinguish one from another is very great; and one and the same rat or mouse has often been described twice over in various stages of growth. A great many examples of each kind are required before questions of this kind can be satisfactorily cleared up, and this is one of the reasons why the rodents are so very scantily represented in the present collection.

In the far north, very large rats are found; and the Museum has lately acquired a new species from Cape York, which exceeds in size the largest Hydromys known.

Fossil Rodents.

The Wellington collection of fossils contains bones and teeth of rats, several of which are similar in their structure to those of the genus Hapalotis.

Order—Marsupiala.

Rhizophaga.

Phascolomys.

Phascolomys wombat—

Photograph of dark brown variety. Victoria.

Vertebral formula—cervical 7, dorsal 15, lumbar 3, sacral 2, caudal 11 = 38.

Skull between $5\frac{1}{2}$ to $6\frac{3}{4}$ inches long; nasal bones relatively long and narrow; superatympanic excavation very shallow; postpalatine foramina, oblong and of moderate size; scapula, long as compared with its breadth; body of moderate size, and seldom exceeding 3 feet in length.

This species probably inhabits Tasmania, the Islands of Bass' Straits and Victoria.

Phascolomys platyrhinus.

Vertebral formula—cervical 7, dorsal 15, lumbar 4, sacral 2, caudal 16 = 44.

Skull from 7 to 8 inches long; nasal bones relatively broad to their length; superatympanic cavity moderately deep; postpalatine foramina triangular, large; scapula broad as compared with its length; body large, generally above 3 feet long.

This species was obtained from Dabee, Rylstone, about 150 miles west of Sydney. Mr. Edward K. Cox secured several full-grown males, females, and young, two of which were taken from the pouch of two females. The specimen in the large group is a fine old male; the skeleton that of another male.

Phascolomys latifrons.

Vertebral formula—Cervical 7, dorsal 13, lumbar 6, sacral 2, caudal 19 = 47.

Fur, smooth and silky; muzzle hairy; incisors much curved, forming nearly a semicircle—the enamelled surface directed nearly forwards; skull broad in proportion to length; nasal bones relatively very broad; frontal bones broad, presenting a well-marked surface, orbital ridge, and postorbital process; supra-tympania hollow, very large; foramen magnum oval; transverse processes of caudal vertebræ short and narrow; tail much longer than in the preceding two species; scapula narrow as compared with its breadth.

Further particulars about the recent and fossil species of this family will be found in Dr. Murie's excellent paper, published in the Proceedings of the Zoological Society for 1865, p. 838, from which I have quoted largely; and I can bear witness to the correctness of his descriptions.

Fossil Species of Phascolomys.

The caves of Wellington Valley and the alluvial flats of the Darling Downs have yielded many interesting fossils, among which are several species of the wombat family. The largest of all is—

Phascolomys magnus? Cast of left ramus lower jaw. This species has been obtained at King's Creek, Darling Downs.

There are several other smaller species, one identical with P. platyrhinus, the others probably new to science.

Attention is drawn to the cases containing a series of fossil remains from the Wellington Caves, and to the catalogue of these remains. There existed at least two species of wombat in the neighbourhood of Wellington, both referable to recent animals, namely, the P. platyrhinus and the P. latifrons. The latter species is now only found in South Australia.

POEPHAGA.

Macropus.
Macropus major.

Osphranter.
Osphranter robustus.

Halmaturus.
Halmaturus ualabatus.
mastersii.
dorsalis.
thetidis.
brachyurus.

Petrogale.
Petrogale penicillata.
xanthopus.

Onychogalea.
Onychogalea lunata.

Lagorchestes.
Lagorchestes leporoides.

Bettongia.
Bettongia rufescens.
campestris.

Hypsiprymnus.
Hypsiprymnus murinus.

There is no family of marsupials as largely represented and as widely distributed as the Poëphaga or kangaroos. They are found from Tasmania to New Guinea, and from the shores of the Pacific to those of the Indian Ocean. They are more or less nocturnal in their habits, shy and timid, and some as fleet as the wind. The female is provided with a pouch containing four teats, and produces one young at the time, though now and then two have been taken from the same pouch.

It would be difficult to define the habitats of the different genera of a group of animals so agile in their movements; and in giving a short account of their geographical distribution, I shall not restrict myself to New South Wales, the more so as many of the older writers, in alluding to this Colony, may have referred to localities which are now parts of South Australia, Victoria, or Queensland. The larger species are represented by *Macropus major*, on the south and east side, and in the interior by *Macropus ocydromus*, on the west coast; whilst another large kangaroo, *Osphranter antelopinus*, is found in the far north. The fine red kangaroo *Osphranter rufus* inhabits the plains of the interior, almost from east to west, never approaching the coast; while *Osphranter robustus* is only found in the mountain districts of the eastern parts. Mr. George Masters, who collected the specimens of mammalia exhibited, has informed

me that a very large and savage species of kangaroo was said to inhabit some of the mountain ranges about Spencer's Gulf, in South Australia. We have also had reports from various other travellers, that large kangaroos, far exceeding in size any known species, exist to the north, in the interior of the country. At present, however, no specimens of these large creatures have come to hand.

The smaller species of the genus *Halmaturus* are more restricted in their habitat, still some roam over a very large extent of country. Peculiar to the east coast is *Halmaturus ualabatus*, the only species found near Sydney. Further north occurs *H. ruficollis*, principally on the Clarence River, and on the borders of Queensland another handsome wallaby, *H. dorsalis*, makes its appearance. *H. parryii* is also found in the Northern Districts of N. S. Wales. *H. parma* inhabits the semi-tropical Illawarra District, as does also *H. thetidis*.

In South Australia we find *H. greyi* and *H. derbianus*. On the west coast, *H. hautmanni*, *parma*, *brachyurus*, and the fleet and handsome *H. manicatus*. In Tasmania, *H. billardieri* and *H. bennettii* occur.

Each part of the Australian coast has also one or more different kinds of *Petrogale*, namely:—*P. penicillata*, *longicauda*, and *inornata*, in N. S. Wales—*P. xanthopus* in South Australia—*P. lateralis* in West Australia—and *P. brachyurus* and *P. concinna* on the north-west coast.

The genus *Onychogalea* has a similar distribution. *O. frænata* is peculiar to the plains of the interior, and found from the eastern slopes of the coast range to the junction of the Darling River, where *O. lunata* first appears, and extends within a short distance of the west coast. Another member of this genus, *O. unguifer*, inhabits the north-eastern portion of the continent. Many varieties (I cannot call them species) of the genus *Lagorchestes* roam over the vast plains of the interior, where also the burrowing Bettongias are principally found; the genus Hypsiprymnus inhabiting the forests and scrubs.

Fossil Poephaga.

Macropus.

Macropus—spec. Darling Downs.

Portion of left ramus, lower jaw, with three molar teeth and fragment of premolar in situ.

Macropus—spec. Darling Downs.

Portion of the left ramus, lower jaw, with three molar teeth. This must have been a large animal, and the structure of the teeth shew some approach to the diprotodontoid form.

Macropus—spec. Darling Downs.

Fragment of the left ramus lower jaw of a still more gigantic kangaroo, shewing the last two well-preserved molars.

Macropus—spec. Darling Downs.

Right ramus upper jaw of a large kangaroo, shewing the great premolar tooth, which closely resembles the premolar of Thylacoleo carnifex.

Nototherium.

Nototherium—spec. Darling Downs.

Of this gigantic animal, a left ramus of the lower jaw is exhibited, shewing the root of one of the two incisor teeth, three almost perfect molars, the socket of the first molar, and that of a diminutive premolar; also a left upper jaw.

Diprotodon.

Diprotodon Australis.

Upper and lower jaw, with complete dentition.
Upper incisor of young animal.

Thylacoleo.

Thylacoleo carnifex.

A very complete series of all the fragments of this interesting animal in the collection of the Trustees is exhibited, with a view to prove,—

1st. That the animal did not possess a canine tooth in the lower jaw;

2nd. That in more aged individuals, the crown of the great premolar tooth was worn flat, in a similar manner as the corresponding tooth in a Bettongia, proving that the animal could not have been carnivorous;

3rd. That its lower incisor teeth were comparatively small and weak, preventing the animal from preying upon the huge Diprotodons and Nototheriums.

The fragments exhibited are—

Right ramus lower jaw, almost perfect, containing socket of first premolar, large second premolar, first molar, and socket of tubercular molar.

A cast of the root of the lower incisor fitting into the empty socket of the above jaw.

The anterior portion of the left ramus lower jaw of another individual of a somewhat larger size, shewing large premolar, first molar, and the broken incisor.

The large left premolar lower jaw of a more aged individual, shewing the much-worn crown.

A restored lower jaw, of which the left ramus, except the incisor tooth, is a cast from the original specimen, and identical with the first fragment mentioned above.

The caves of Wellington and many other localities in New South Wales, Queensland, South Australia, Victoria, and probably in Western Australia, abound with fossil remains of the kangaroo tribe, from the gigantic Diprotodon to the small Bettongia. The collection of the Australian Museum contains numerous specimens, many of which appear identical with living species, whilst others are too fragmentary for identification. Upper portions of the skull are very scarce; there are, however, a few complete sets of teeth of the upper jaw, and some almost perfect rami of the lower jaw, besides single teeth in abundance. With regard to other portions of the skeleton, the hinder extremities are predominant, the more delicate bones of the arms, &c., being either altogether missing or are very much broken. It was the intention of the Trustees of the Museum to furnish as complete a series as possible for exhibition; but owing to the short time allowed for the completion of this task, the collection cannot be sent.

Carpophaga.

Phalangista.

Phalangista vulpina.
cookii.
canina.

Petaurista.

Petaurista taguanoides.

Acrobata.

Acrobata pygmæa.

Dromicia.

Dromicia unicolor.

Belideus.

Belideus flaviventer.
sciurus.
breviceps.

Phascolarctos.

Phascolarctos cinereus.

Tarsipes.

Tarsipes rostratus.

This family, comprising the Petauri, the Phalangers proper, and the small genera Dromicia, Acrobata, and Tarsipes, has its stronghold in the southern portion of Australia, in particular on the south-east coast; not a single Petaurus being found on the plains of the interior, though common Phalangers of the genus Phalangista proper abound. Speaking about the plains of the interior, I mean the flat country beyond the coast range, as, even in mountainous districts, 100 or 200 miles from the coast, Petauri occur, but they are totally absent from the plains watered by the Murray, the Darling, and Murrumbidgee, and I believe not a single species has as yet been discovered in South Australia and on the West Coast.

These animals are strictly nocturnal in their habits, and more or less carnivorous. In the immediate neighbourhood of Sydney, and in the coast district of New South Wales generally, we find Acrobata pygmæa, Petaurus breviceps, Petaurus flaviventer, Petaurista taguanoides, and Dromicia unicolor; of Phalangers, both Phalangista vulpina and P. cookii occur; and to the north of the Hunter River, the short-eared Phalanger (P. canina) makes its appearance, and ranges as far as the Clarence and Richmond River, perhaps further north. The female is provided with a regular pouch containing two nipples, and brings forth one young at the time, though occasionally two are produced.

The common opossum (P. vulpina) has the widest range, and is found, I believe, in every part of Australia. The dark-coloured ring-tailed Phalanger (P. viverrina) is found on the southern and western coast, and on the plains of the interior. A species of Cuscus inhabits the extreme north, where the handsome little Belideus ariel is also found. B. sciurus extends from the southern portions of Queensland to Rockhampton and Port Denison. The singular genus Phascolarctos is peculiar to the forests of the coast range, particularly on the extreme south and south-east coast, though it is also found within the tropics, but does not extend very far north.

Fossil Carpophaga.

Since visiting the Wellington Caves I have obtained many fossil remains of Phalangers, which will be found in the Palæontological collection.

ENTOMOPHAGA.

Perameles.

Perameles nasuta.
obesula.

Peragalea.

Peragalea lagotis.

Chœropus.

Chœropus castanotis.

Myrmecobius.

Myrmecobius fasciatus.

This family is but scantily represented, and, like the preceding one, has its stronghold in the south-eastern corner of the continent, and in Tasmania. All the members are gregarious, and nocturnal in their habits; they possess a pouch, entering upwards, and containing eight nipples, the number of young produced being three at a time. The bandicoots live on both vegetable and animal matter, and are very destructive to farms and gardens, though at the same time they destroy many of the smaller rodents. Some of them make extensive burrows, or inhabit hollow logs; others hide during the day in thick scrubs, or build a kind of rude hut or nest with grass and leaves. They are divided into three genera:—Peragalea, with one species; Chœropus, with one species; and Perameles, with seven species, of which several will probably prove varieties only, as the authors by whom they are described give little or no account of their dentition.

In the immediate neighbourhood of Sydney the largest species is alone found (P. nasuta). Another common species is Perameles obesula, the range of which extends over the whole of the southern part of the continent, from east to west. Though not observed near Sydney now, it has probably existed in former times, being either destroyed by the early settlers, or driven from its haunts by the stronger Perameles nasuta.

Peragalea lagotis, Chœropus castanosis, and Perameles fasciatus, inhabit principally the plains of the interior, from the Lower Lachlan and Murrumbidgee to West Australia.

P. gunnii is said to be peculiar to Tasmania, P. myosurus to West Australia, and P. macroura to the far north.

Professor Owen having arranged the curious genus Myrmecobius with this group of animals, it will be necessary to say a few words about it. The banded myrmecobius, or ant-eater, inhabits the western interior, and is first observed to the north of the Murrumbidgee and Lachlan; it extends from there into the Colony of South Australia, and as far as Swan River on the west coast. The teeth of this little animal are very numerous, small, and far apart; its tongue is very long, and well adapted for the capture of ants and their larvæ, upon which it is said principally to subsist.

Fossil Entomophaga.

Of fossil remains belonging to any of the preceding genera we know little or nothing; there is no doubt, however, that a species of Perameles existed contemporary with the extinct Diprotodons, as proved by a fragment of the right ramus lower jaw, obtained from the Wellington Caves.

Since visiting the caves, teeth and fragments of bones of several species of Perameles were obtained (see catalogue of fossil remains from the Wellington Caves); one fragment of lower jaw indicating a Perameles the size of a large Peragalea lagotis.

SARCOPHAGA.

Thylacinus.

Thylacinus cynocephalus.

Photograph of skeleton.

Sarcophilus.

Sarcophilus ursinus.
Photograph of skeleton.

Dasyurus.

Dasyurus maculatus.
viverrinus.
geoffroyi?

Chætocercus

Chætocercus cristicauda.

Phascogale.

Phascogale penicillata.

Antechinus.

Antechinus stuartii.

Podabrus.

Podabrus fuliginosus.

The members of this family represent the carnivores proper among marsupials. They range from the size of the smallest mouse to that of a large cat; or, as in the Thylacinus of Tasmania, attaining the proportions of a wolf. The two most ferocious and destructive species—the so-called Tasmanian tiger and devil (Thylacinus cynocephalus and Sarcophilus ursinus) inhabit the island of Tasmania.

In the first-mentioned species, the marsupial bones peculiar to all other animals of this class are absent. The smaller Dasyures are very prolific, producing as many as ten young at the time; the larger ones have six, and the Thylacinus generally four. In all species the pouch is shallow, in some scarcely indicated or altogether absent (Phascogale penicillata); the number of nipples being from six to ten. Their habits are nocturnal, and the greater portion of this group is arboreal. The genus Podabrus, with fine and slender toes, is terrestrial, and a last new genus which I established for Phascogale lanigera, on account of its long hind-legs and absent thumb, proposing the name of Antechinomys, for it is also terrestrial, and moves by a succession of jumps.

One or two of the Antechini proper are also found in Tasmania, the remaining species being distributed over the continent of Australia. Of the habits and geographical range of these small creatures we know very little; indeed they are all nocturnal in their habits, and travellers have seldom opportunity to observe them.

The largest of the phascogales (P. penicillata) is found in almost every part of Australia, near the coast districts at least, as the Museum obtained specimens from places within the tropics, from the neighbourhood of Sydney, King George's Sound, and other localities.

The second animal forming the group P. calura, is found on the Lower Murray River, in West Australia.

The specimen which furnished me with the typical characters for the genus Chœtocercus inhabits South Australia, and the slender-footed Podabri occur on the coast as well as in the interior.

The spotted Dasyures, known to the colonists as native-cats and tiger-cats, have also a wide distribution.

The large Dasyurus maculatus inhabits Tasmania, and the south and south-eastern portions of Australia, reaching north to almost within the tropics.

The smaller and most common D. viverinus is found in the same district.

D. hallucatus is a native of North Australia. D. geoffrayi prefers the plains of the interior, and a fifth species from South Australia and King George's Sound (probably as yet undescribed) has since been discovered by Mr. George Masters.

Fossil Sarcophaga.

In the collection of fossil remains from Wellington will be found a number of teeth and fragments of bone proving the existence of Thylacinus and Sarcophilus (which are now found in Tasmania only) on the continent of Australia. With these were discovered numerous specimens of bones and teeth belonging to smaller animals of this family, but none as yet referable to the genus Antechinus.

Order—Monotremata.

Echidna.

Echidna hystrix.

The genus Echidna has a very extensive distribution, but is generally found on the rocky coast—never far in the interior; its range on the east coast extends from Cape Howe to Cape York.

Ornithorhynchus.

Ornithorhynchus anatinus.

The so-called platypus or duck bill is found in almost every creek or river of temperate and perhaps tropical Australia; and although by no means scarce, we know as yet little of this curious animal. For further particulars with regard to its habits, I must refer those interested to Dr. Bennett's "*Gatherings*," and to various papers published by the same author, in the Proceedings of the Zoological Society.

AVES.

Order—Raptores.

Falconidæ.

Haliastur.
- sphenurus.
- leucosternus.

Pandion leucocephalus.
Falco frontatus.
Jeracidea.
- berigora.
- occidentalis.

Tinnunculus cenchroides.
Astur approximans.
Accipiter torquatus.
Milvus affinis.
Elanus scriptus.
Baza subcristata.

ORDER—INCESSORES.

Meropidæ.

Merops ornatus.

Coracidæ.

Eurystomus australis.

Alcedinidæ.

Dacelo.
- gigas.
- leachii.

Halcyon.
- sanctus.
- pyrrhopygia.
- macleayi.

Alcyone azurea.

Artamidæ.

Artamus sordidus.

Ampelidæ.

Pardalotus.
- punctatus.
- affinis.

Laniadæ.

Strepera graculina.
Cracticus destructor.
Grallina australis.

Campephaginæ.

Graucalus melanops.
Campephaga humeralis.
Pachycephala.
- pectoralis.
- gutturalis.

Colluricincla.
- harmonica.
- parvula.

Falcunculus frontatus.
Oreoica gutturalis.

Dicruridæ.

Dicrurus bracteatus.

Muscicapidæ.

Rhipidura motacilloides.
Seisura inquieta.
Myiagra plumbea.
Monarcha trivirgata.

Saxicolidæ.

Erythrodryas rosea.

Meliphagidæ.

Pomatorhinus superciliosus.
Meliphaga.
- novæ hollandiæ.
- longirostris.
- mystacalis.
- australasiana.
- sericea.

Glyciphila fulvifrons.
Ptilotis.
- chrysotis.
- sonora.
- leucotis,
- auricomis.
- cratitia.
- flava.
- chrysops.
- penicillatus.
- fusca.

Zanthomyza phrygia.
Acanthogenys rufogularis.
Anthochœra.
- carunculata.
- mellivora.
- lunulata.

Acanthorhynchus.
- tenuirostris.
- superciliosus.

Myzomela sanguinolenta.
Entomyza cyanotis.
Petroica.
- multicolor.
- goodenovii.
- bicolor.

Eopsaltria.
- australis.
- griseogularis.

Menuridæ.

Menura superba.
Psophodes crepitans.
Malurus.
- cyaneus.
- melanocephalus.

Acanthiza lineata.
Epthianura albifrons.

Motacillidæ.

Anthus australis.

Fringillidæ.

Estrelda oculea.

Merulidæ.

Pitta strepitans.

Paradiseidæ.

Ptilonorhynchus.
holosericeus.
smithii.
Sericulus chrysocephalus.
Melithreptus.
lunulatus.
chloropsis.
Myzantha.
garrula.
melanophrys.
flavigula.
Dicaeum hirundinaceum.
Zosterops.
dorsalis.
chloronotus.

Epimachidæ.

Ptiloris paradisea.

Certhiadæ.

Climacteris.
scandens.
picumnus.
Sittella.
chrysoptera.
pileata.

Cuculidæ.

Cuculus.
inornatus.
cineraceus.
Chrysococcyx lucidus.
Scythrops novæ-hollandiæ.

Psittacidæ.

Cacatua galerita.
Calyptorhynchus.
banksii.
leachii.
naso.
Aprosmictus.
scapulatus.
erythropterus.
Platycercus.
bauerii.
tennantii.
semitorquatus.
eximius.
pileatus.
icterotis.
palliceps.
Psephotus hœmatonotus.
Euphema pulchella.
Pezoporus formosus.
Lathamus discolor.
Trichoglossus.
swainsonii.
chlorolepidotus.
concinnus.
porphyrocephalus.
pusillus.

ORDER—RASORES.

Columbidæ.

Ptilonopus swainsonii.
Carpophaga.
magnifica.
luctuosa.
Lopholaimus antarticus.
Chalcophaps chrysochlora.
Leucosarcia picata.
Phaps chalcoptera.
Geopelia tranquilla.
Macropygia phasianella.

Turnicidæ.

Synoicus australis.

ORDER—GRALLATORES.

Charadridæ.

Hœmatopus longirostris.
Hiaticula.
monacha.
ruficapilla.
nigrifrons.
Erythrogenis cinctus.

Tringidæ.

Schœniclus australis.

Rallidæ.

Parra gallinacea.

Order—Natatores.

Anatidæ.

Anseranas melanoleuca.
Bernicla jubata.
Nettapus albipennis.
Tadorna radjah.
Anas superciliosa.
Spatula rhynchotis.
Malacorhynchus membranaceus.
Nyroca australis.
Biziura lobata.

Laridæ.

Larus pacificus.

Sternidæ.

Thalasseus poliocercus.
Sternula nereis.

The labours of Gould, Swainson, and other writers on Australian Ornithology, have made us well acquainted with this country's Fauna, so that it will be scarcely necessary to draw attention to many now well-known facts.

Australia is the land of Parrots and Honey-eaters, of magnificent Lyre-birds, and Mound-building Megapods. There are many other genera peculiar to this part of the world; and, as far as the short time would allow it, these groups have been represented in the Exhibition collection. It is, however, impossible to say much more on this subject at present without encroaching on the writings of well-known ornithologists, to whose labours those interested in this matter must be referred. With regard to the general belief that Australia has no song-birds, I may state that this is a long-exploded fable.

The number of birds known to us at present amount in round numbers to about 670 species.

REPTILIA.

Order—Chelonia.

Chelydidæ.

Chelymys macquaria. spec. } Rivers of New South Wales.
Chelodina oblonga. } King George's Sound, Western Australia.
Chelodina longicollis. } Rivers of New South Wales.

Chelonidæ.

Caouana olivacia. Port Jackson.
Chelonia virgata. Caretta squamata. } East coast of Australia.

Order—Sauria.

Crocodilidæ.

Crocodilus porosus. { Northern Australia.

Varanidæ.

Hydrosaurus varius. N. S. Wales.
Odatria punctata. Port Denison.

Scincidæ.

Lerista spec. Clarence River.
Pygopus lepidopodus. } Sydney.

Hinulia ? spec ? { King George's Sound. Clarence River. Sydney. Warro, Port Curtis. New South Wales. South Australia.
Keneuxia smaragdina. Viti Levu.
Keneuxia spec. Viti Levu.
Mocoa guichenoti. Middle Harbour.
Lygosoma australis. { King George's Sound.

Omolepida casuarinæ. { Botany Swamps.

Siaphos.
equalis. Randwick.
spec. Clarence River.

Trachydosaurus.
rugosus. West Australia.
asper. Adelaide.

Cyclodus gigas. Long Bay.

Egernia cunninghami. Marubra Bay.

Tropidolepisma.
kingii. King George's Sound.
major. Clarence River.

Pygopus spec. } King George's Sound.

Lialis punctulata. { North Shore. Botany. Clarence River.

Hinulia.
quoyii. Rose Bay.
elegans. Clarence River.
greyii. } King George's
labillardieri. } Sound.
tœniolata. Sydney.
whitei. Sydney.

Geckotidæ.

Diplodactylus.
vittatus. { Murray River. Willoughby Falls.
ornatus. South Head.
marmoratus. { Clarence River. Warro, Port Curtis.
spec.? Gray. Clarence River.
spec.? North-east Coast.

Gehyra oceanica. Viti Levu.

Phyllurus.
platurus. { Double Bay. St. Leonards.
inermis. Botany Heads.
miliusii. { North Shore. Manly.

Agamidæ.

Chlamydosaurus kingii. Port Curtis.

Grammatophora.
cristata. Manly.
muricata. Bondi.
barbata. North Shore.
ornata. Murray River.
spec? North-east coast.
spec? Rockhampton.

Moloch horridus. Port Lincoln.

Order—Ophidia.

Innocuous Snakes.

Typhlopidæ.

Typhlops rüpellii. { Manly. North Shore.

Colubridæ.

Tropidonotus picturatus { Clarence River.

Dendrophidæ.

Dendrophis punctulata. Rose Bay.

Dipsadidæ.

Dipsas fusca. Middle Harbour.

Pythonidæ.

Morelia.
spilotes. { Randwick. Port Macquarie. North Shore. South Head.
variegata. { King George's Sound. Clarence River.

Nardoa gilbertii. Port Denison.

Enygrus bibronii. Ovalau. (Fiji Islands.)

Section I. Venomous Snakes the bite of which is not dangerous to man or the larger animals.

Elapidæ.

Brachysoma diadema. { Bondi. / Port Curtis.

Cacophis krefftii. Clarence River.

Petrodymon cucullatum. { Richmond River. / Clarence River. / Randwick. / Bondi.

Vermicella annulata. { Randwick. / Rose Bay.

Diemenia reticulata. { Port Denison. / Sydney.

Diemenia superciliosa. { Sydney. / Western parts of N. S. Wales, South Australia.

Hoplocephalus.

variegatus. { Rose Bay. / Randwick. / Long Bay.

gouldii. { Western Districts. / Flinder's Range.

signatus. { Randwick. / Botany Swamps. / Ditto.

nigrescens. { Pittwater. / Manly.

pallidiceps. Lambing Flat.

coronatus. King George's Sound.

ramsayi. Goulburn.

nigriceps. South Australia.

minor. King George's Sound.

mastersii. Flinder's Range.

Section II. Venomous Snakes the bite of which is dangerous to man.

Hoplocephalus curtus. { Botany Heads. / La Pérouse. / King George's Sound.

Tropidechis carinata. { Clarence River.

Pseudechis porphyriacus. { Botany Swamp. / Randwick.

Acanthophis antarctica. { Randwick. / Botany.

Sea Snakes. Hydrophidæ.

Platurus scutatus. { South Head. / Watson's Bay.

Hydrophis. Australian Coast.

Pelamis bicolor. { Bondi Beach. / Manly.

BATRACHIA.

I. Series.—*Opisthoglossa oxydactyla* (Swamp Frogs).

Ranidæ.

Mixophyes fasciolatus. { Clarence River. / Illawarra. / Clarence River.

Cystignathidæ.

Cystignathus georgianus. { King George's Sound.

Pterophryrnus varius. { Sydney. / Illawarra. / Lake Macquarie.

Platyplectrum marmoratum. { Clarence River.

Limnodynastes.

dorsalis. Sydney.

bibroni. { Adelaide. / King George's Sound.

krefftii. Sydney.

Limnodynastes.

tasmaniensis. { Sydney. / South Australia.

ornatus. Port Denison.

affinis? Clarence River.

spec? N. S. Wales.

Discoglossidæ.

Chiroleptes australis. Port Denison.

Alytidæ.

Heleioporus albopunctatus. { King George's Sound.

Uperoliidæ.

Uperoleia marmorata. { Sydney. / Illawarra.

Asterophrydidæ.

Cryptotis brevis. Clarence River.

Brachycephalidæ.

Pseudophryne australis. } North Shore.

Pseudophryne.
bibroni. North Shore.
var. australis? Lake Macquarie.

II. Series.—*Opisthoglossa platydactyla* (Tree Frogs).

SECTION HYLINA.

Polypedatidæ.

Hyperolius bicolor. { Port Denison. Richmond, Hawkesbury River.

Hylodidæ.

Platymantis vitianus. Viti Levu.

Hylidæ.

Litoria.
aurea. { Sydney. King George's Sound.
spec.? { Richmond, Hawkesbury River.
nasuta. Randwick.
spec.? Clarence River.
freycineti. { Warro, Port Curtis. Pine Mountain, Queensland.
wilcoxi. { Clarence River. Warro, Port Curtis.
spec.? North Australia.

Hyla.
phyllochroa. ewingii. krefftii. peronii. } Sydney.
spec.? Murray River.
adelaidensis. { King George's Sound.
rubella. Port Denison.
jervisiensis. South Australia.
verreauxii. South Australia.
citropus. { Ryde, Parramatta River.

Pelodryadidæ.

Pelodryas cœruleus. Sydney.

The geographical position of Australia, its tropical and semi-tropical climate, rocky coast, and sandy plains, are most favourable for the development of reptile life; and its insular situation prevents those peculiar forms which are essentially Australian to spread to the nearest islands, or to the Indian continent. The close alliance of the Australian Reptilio-fauna to that of South America was first pointed out by Dr. Günther, to whose able papers on this subject, published in the Zoological Society's Proceedings, I must refer those interested.

Of useful reptiles which yield food, oil, or tortoise-shell, I only point out the three species of Marine Tortoises inhabiting our coast:—The well-known Green Turtle (*Chelonia virgata*), the shell-producing Hawk-bill (*Caretta squamata*), and the gigantic "Luth" (*Dermatochelys coriacea*), famous on account of its valuable oil; the largest specimen captured—fully 9 feet in length—may be seen in the Australian Museum at Sydney. Saurian reptiles are also well represented; but, excepting the Crocodile (*Crocodilus porosus*) of the Queensland rivers, none are dangerous to man. In New South Wales no formidable Saurian exists—the largest being the so-called Lace-lizard (*Hydrosaurus varius*), which is fond of eggs, and sometimes devours chickens. All other Lizards are small, seldom exceeding 2 feet in length; and though we have not yet discovered any particularly useful quality in any of them, they may always in cases of necessity serve as an article of food to man, and will easily be found under stones or the bark of trees. The principal Australian genera, with a few from the South Sea Islands, are represented in the collection.

Though Snakes are numerous in some parts of the country, yet the bite of a few only is fatal; there are not more than four highly venomous Snakes in New South Wales, and even these hibernate during the cold season. We are not troubled with deadly Vipers, Puff Adders, Cobras, or Rattle-snakes, as other countries under the same latitude; and the great Boas and Pythons of India, Africa, and America, are represented only by the Carpet or Diamond Snake (*Morelia spilotes*), which will rob a hen-roost or swallow a rat, but could not attack larger animals.

It is strange, though true, that a country like Australia, which has often been reported as arid and dry, abounds with Frogs; in fact, considering the limited knowledge we have of New Holland, it is almost as rich as the South American region, particularly in Tree-frogs (*Hylæ*), which are altogether absent in India.

The principal genera and the most interesting species of our Batrachians are represented in the collection.

PISCES.

MALACOPTERI.

Anguillidæ.

Anguilla australis. } Creeks near Sydney.

Congeridæ.

Murœnesox sp? Hunter River.

Malacopterous abdominales.

Clupeidæ.

Chætoessus come. Murray River.

Salmonidæ.

Retropinna richardsonii. } Waikato River, New Zealand.

Galaxidæ.

Galaxias krefftii. } Creeks of N. S. Wales.

Elopidæ.

Megalops setipinnis. } Rivers of N. S. Wales.

Cyprinidæ.

Cyprinus. { Creeks and lagoons near Sydney.

Siluridæ.

Copidoglanis. Queensland Rivers.

ACANTHOPTERI.

Mugilidæ.

Mugil.
dobula. } Rivers of New South
compressus. } Wales.

Gobiidæ.

Eleotris.
mogurnda. Fitzroy River.
gobioides. Waikato River, N. Z.
grandiceps. Hawkesbury River.
coxii. Cox's River.
australis. Creeks near Sydney.
compressus. Clarence River.

Triglidæ.

Platycephalus tasmanius.
Centropogon robustus. } Pitts Lagoon, Hawkesbury River.

Sparidæ.

Chrysophrys australis. } Hawkesbury River.
Pagrus unicolor. }

Pristipomatidæ.

Macquaria australasiaca. } Macquarie River.
Therapon.
unicolor?
ellipticus. Murray River.

Percidæ.

Oligorus macquariensis. { Murray River.
Psammoperca waigiensis. { Island of Waigu.
Lates colonorum. { Murray and Nepean Rivers.

CONDROPTERYGII.

Plagiostomi.

Hetorodontus phillipii. } Port Jackson.

The collection of fishes comprises principally those of our fresh-water streams, and such of the sea-fishes as enter rivers. There are several true marine forms found in mountain streams, as well as lagoons, for example, *Centropogon robustus*, *Platycephalus tasmanius*, and others.

As may be expected from the nature of the country, the Ichthyofauna is not rich in genera; and, with the exception of the Murray Cod (*Oligorus macquariensis*), all species are of small size, seldom exceeding 10 lbs. in weight. The most common tribes in our lesser streams are eels (*Anguilla australis*), a *Galaxias*, and many *Eleotri*. Such shallow lagoons as are connected by creeks with the sea, swarm during certain periods of the year with young mullet (*Mugil dobula*), and even young sharks have been captured in these waters occasionally. Some years ago a few carp were introduced into the creeks of our neighbourhood, and both *Cyprinus gibelio* and *Cyprinus auratus* are now plentiful in the lagoons around Botany Bay. It has been asserted that no fly-fishing is to be enjoyed in Australia; this, however, is a mistake, the sprat (*Megalops setipinnis*) will rise to a fly as lively as a trout; and though of no large size (seldom heavier than a herring), this fish affords considerable sport. But at present we know very little of the fishes found in Australian rivers; those of the interior and the far north contain many new species, and some very strange forms, as *Scleropages leichhardti* discovered in the river Burdekin, by the great traveller whose name it bears. With regard to marine fishes, we possess a multitude of excellent quality for the table, the most common being the bream and schnapper (*Pagrus unicolor*) in various stages of growth, the delicate whiting (*Silago maculata*), many kinds of flathead (*Platycephalus tasmanius*, &c.), the gar-fish (*Hemiramphus intermedius*), and last, but not least, "Sergeant Baker" (*Aulopus purpurissatus*). It is a healthy sign, that not only our game birds, but also both river and marine fisheries will be protected; and what with the labours of acclimatizers, to whom we have been already much indebted for many good things, we shall soon be able to raise our fisheries to that position which their importance deserves.

FOSSIL REMAINS

OF

MAMMALS, BIRDS, AND REPTILES,

FROM THE

CAVES OF WELLINGTON VALLEY;

COLLECTED AND DESCRIBED BY

GERARD KREFFT, F.L.S., C.M.Z.S., &c.

THE fossils exhibited were collected by order of the Commissioners, in the same caves which the late Sir Thomas Mitchell discovered more than thirty years ago; and as many of these remains may occasion considerable interest amongst scientific men, the following notes will perhaps be of some value :—

The largest cavern, so well described by the late Sir Thomas Mitchell, did not contain any fossil remains. My researches therein were, however, limited; and it is possible that similar deposits as are found in the second, or breccia cave, may yet be discovered.

An attempt to obtain a photographic view of the interior, by the aid of the magnesium-light, failed, and the artist had to content himself with views of the valley and the bold limestone rocks in the neighbourhood of the caves. Five fine pictures were thus secured, many more being spoiled through the myriads of flies, which penetrated everywhere.

The second, or breccia cavern, was entered next, the sides of which consist of a kind of tufaceous limestone, full of animal remains. To obtain good pieces out of this crust is very difficult, as the bones are much more brittle than the crust, and crumble to pieces before they can be loosened. So, after breaking out some pieces, at the cost of the few tools on hand, I began to look for specimens at the bottom of the cave, where a good many fragments of fossil and a few recent bones were found, most of which had been those of very small animals. The examination of other parts of the cavern was followed up, with more or less success, till I found a small passage, about 18 inches high and 2 feet wide, which appeared to communicate with a larger vault, but was so completely filled with stones and fine red dust that it took more than half a day to clear it sufficiently to allow a person to creep through. In this vault the remains of bones and teeth became more plentiful, and a good many specimens were secured. The tedious task of examining great heaps of red dust is difficult to conceive, as the fine particles of the deposit, rising in clouds at every movement of the body, often extinguish the candles, and make breathing difficult.

Nearly every portion of this deposit has been more or less disturbed, and only a single small cavity, about 2 yards long, 2 feet high, and 2 or 3 feet wide, appeared to be in its original state. Inch by inch this was examined, the earth run through a rough sieve, and the fossil remains picked out, yielding a rich harvest of many bones and teeth, among which a left lower incisor of the so-called marsupial lion (Thylacoleo carnifex). This tooth was found within a few feet of the spot where Sir Thomas Mitchell discovered a similar tooth and a premolar of the Thylacoleo, thirty years ago, figures of which are given in the "Three expeditions into the Interior of Eastern Australia" (p. 357, pl. 32, figs. 6, 7, 8, 9, and 10), without name. Professor Owen, in his report on the fossils of the Wellington Caves, does not allude to them.

It will be impossible in this report to give an account of every bone obtained, or to say with certainty whether all the bones belong to animals now extinct in Australia, as the larger number of them are very much broken. I think, however, that with few exceptions, the remains are referable to extinct genera and species.

I have mentioned before, that some of the bones found were those of recent animals. They are distinguished by not being encrusted by breccia, and show all the properties of recent bone distinctly. As numerous opossums and native cats inhabit the caverns, the presence of such bones with the fossil remains is accounted for. I also observed a few skeletons of recent birds, probably carried in by the animals mentioned. The fossil remains found belong to three distinct orders—mammals, birds, and reptiles. In the first group the Marsupials are largely represented by the following genera:—Thylacinus, Sarcophilus, Phalangista, Perameles, Dasyurus, Macropus, Bettongia or Hypsiprymnus, Halmaturus, Diprotodon, Thylacoleo, and Phascolomys, sufficient remains being discovered to prove the existence of the above-mentioned genera; some of which are quite extinct, and some (as Sarcophilus and Thylacinus) are only living in Tasmania now.

The Placental mammals were as scantily represented in those days as at the present time; the remains found being the teeth and bones of Rodents or rats, and those of a dog. In one of the caverns human remains were obtained, but though very old they are not fossil. I also secured some broken pieces of what appears to be the fifth metatarsal bone of a new animal, resembling the same bone in man. I have not had time to compare all the remains, but I have found already that two distinct species of wombats existed in that part of the country, one allied to the broad-faced or hairy-nosed wombat (Phascolomys latifrons) of South Australia, the other similar to the common wombat (Phascolomys platyrhinus). As far as I can learn from some friends in Wellington, no wombats of any kind are found there now. The presence of reptiles and birds is indicated by several portions of the skull and jaws of the former, and of wing-bones of the latter.

LIST OF BONES AND TEETH EXHIBITED.

Marsupials.

1. Macropus titan?—large premolar and 1st molar right ramus upper jaw.
2. Halmaturus sp.—right ramus lower jaw.
3. Do. —portion of left ramus lower jaw, shewing 3 last molars.
4. Do. —1st premolar lower jaw.
5. Do. —right ramus lower jaw, with 3 last molars.
6. Do. —ditto 2 ditto.
7. Do. —left ramus, premolar, and 3 first molar teeth.
8. Do. —anterior portion of right ramus lower jaw, with broken incisor, and one perfect molar.
9. Do. —left ramus lower jaw, anterior portion, with broken incisor, premolar, and two 1st molars.
10. Do. —posterior part of right ramus lower jaw, with 3 last molars.
11. Do. —portion of left ramus lower jaw; no perfect teeth.
12. Do. —fragment of right ramus lower jaw; no teeth.
13. Do. —portion of lower jaw, with one molar.
14. Do. —portion of right ramus upper jaw, with 2 molars.
15. Do. —left ditto with 2 molars, smaller species.
16. Do. —left ramus lower jaw, perfect.
17. Do. —incisor lower jaw.
18. Do. —2nd and 3rd molar left side upper jaw.
19. Macropus—3rd upper incisor left side.
20. Do. —1st ditto ditto.
21. Do. —right incisor lower jaw.
22. Do. —left ditto.
23. Do. —1st, 2nd, and 3rd molars right side upper jaw.
24. Do. —right lower incisor of very large species.
25. Do. —left ditto.

26. Macropus—molar, large species.
27. Do. —ditto.
28. Do. —ditto.
29. Do. —fragment of lower incisor.
30. Macropus—2nd upper incisor.
31. Do. —1st do.
32. Do. —molars.
33. Do. —molars.
34. Do. —molars.
35. Do. —molars.
36. Do. —right lower incisor.
37. Do. —portion of right ramus lower jaw, small species, 3 molars.
38. Do. —portion of left do., and perfect molar.
39. Do. ? —portion of left ramus upper jaw, with 3 much-worn molars, probably Hypsiprymnus.
40. Do. —fragments of lower incisors.
41. Do. —fragments of lower incisors.
42. Do. —fragments of lower incisors.
43. Do. —molar.
44. Do. —1st incisor, left side upper jaw.
45. Do. —molar.
46. Do. —left lower incisors of gigantic species.
47. Do. —molar.
48. Do. —2nd upper incisor, left side.
49. Do. —left lower incisor.
50. Do. —portion of right ramus lower jaw, with incisor tooth.
51. Do. —fragment of large molar.
52. Do. —incisor lower jaw.
53. Do. —first upper incisor right side.
54. Do. —lower incisors.
55. Do. —lower incisors.
56. Do. —lower incisors.
57. Do. —2 molars left side upper jaw.
58. Do. —molar, large species.
59. Do. —fragment of left ramus lower jaw with 2 molars.
60. Do. —fragment of right ramus lower jaw of young animal.
61. Do. —fragment of ramus left lower jaw.
62. Do. ? —anterior part of left ramus lower jaw, with molar much worn, probably Hypsiprymnus.
63. Do. —fragments of lower jaw.
64. Do. —fragments of lower jaw.
65. Do. —fragments of lower jaw.
66. Do. —fragments of upper jaws, 2 molars each.
67. Do. —fragments of upper jaws, 2 molars each.
68. Do. —fragments of molars.
69. Do. —fragments of molars.
70. ? —fragment of large molar tooth, probably type of a new genus of kangaroo.
71. Macropus ?—fragment of gigantic lower incisor.
72. Do. —molar of a very large species.
73. ? —fragment of molar of a large animal of the kangaroo tribe.
74. Diprotodon—fragment of upper incisor.
75. Hypsiprymnus—portion of left ramus upper jaw; the large incisor just pushing through.

76. 77. 78. 79. 80. 81. Macropus—molar teeth.

83. Do. —fragment of 2 upper incisors.

84. Hypsiprymnus—molar tooth.

85. Do. —lower premolar.

86. Macropus—lower incisor.

87. Do.? —lower premolar.

88. 89. Diprotodon—fragments of lower incisor.

90. 91. 92. 93. Do. —fragments of molars.

94. Do. —fragments of incisors.

95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. Hypsiprymnus—22 fragments of lower jaws with teeth in good state of preservation.

117. 118. 119. 120. 121. 122. Hypsiprymnus—6 lower incisors.

123. 124. 125. 126. 127. 128. 129. Do.
- 123. —fragment of right ramus, lower jaw.
- 124. — do.
- 125. —2 upper molars.
- 126. —molar, with fragment of jaw.
- 127. —premolar.
- 128. —2 molars of upper jaw.
- 129. —fragments of upper jar, with premolar and 2 molars.

130. Macropus—fragments of lower jaw.
131. Do. —molar tooth of large species.
132. Hypsiprymnus—anterior portion of left ramus upper jaw.
133. Do. —portion of left ramus upper jaw.
134. }
135. |
136. |
137. |
138. |
139. |
140. |
141. |
142. |
143. |
144. |
145. |
146. } Hypsiprymnus—fragments of upper jaw with teeth, principally of
147. | young animals.
148. |
149. |
150. |
151. |
152. |
153. |
154. |
155. |
156. |
157. }
158. }
159. |
160. |
161. } Do. —molar teeth.
162. |
163. }
164. }
165. |
166. |
167. |
168. |
169. |
170. |
171. } Do. —first incisors, upper jaw.
172. |
173. |
174. |
175. |
176. |
177. }
178. Do.—fragments of lower jaw.
179. Macropus—fragments of upper jaw, with premolar and 1st molar,
much worn.
180. Hypsiprymnus—lower incisors.
181. Cyclodus?—left ramus.

182. ? Left lower jaw of a saurian.
183. Portion of upper jaw of a saurian reptile.
184. Ditto.
185. Lower jaw of ditto.
186. Fragment of the bones of a bird.
187. }
188. } Wing bones of ditto.
189. }
190. }
191. |
192. |
193. |
194. |
195. } Dasyurus—fragments of lower jaws, with more or less perfect teeth of
196. } small species of dasyurus.
197. |
198. |
199. |
200. |
201. }
202. Phalangista ?—1st upper incisor.
203. Dasyurus—canine.
204. }
205. } Do. —2 molars.
206. }
207. } Do. —fragments of upper jaw.
208. Do. —do. of lower.
209. Do. ? —molar tooth.
210. Perameles—posterior part of right ramus, lower jaw, of large species, with 3 last much-worn molars.
211. }
212. | Perameles—fragments of lower jaws. Some of these are too small
213. } and broken to enable me to distinguish them from the same
214. | bones in dasyurus.
215. }
216. ? Portion of bone not unlike that of man in structure.
217. }
218. } Sarcophilus ?—canine teeth.
219. }
220. Do. —canine, of a species of Dasyurus, in structure similar to S. ursinus of Tasmania.
221. }
222. } Do. —canine teeth.
223. }
224. Do. —fragment of canine?
225. Do. —3rd lower incisor, right side.
226. Do. —3rd upper incisor.
227. Do. —1st (?) upper incisor.
228. Do. —2nd upper molar, left side, of a large species.
229. Do. —fragment of molar.
230. Thylacinus—portion of right ramus upper jaw of a young animal showing the protruding permanent 3rd molar tooth.

231. Thylacinus—fractured canine tooth.
232. Do. —2nd molar, upper jaw.
233. Phascolomys platyrhinus ?—portion of left upper incisor.
234. Do. do. —portion of lower incisor.
235. Do. latifrons—anterior portion of upper incisor.
236. P. latifrons—upper molar.
237. Do. —lower do.
238. Canis dingo ?—canine.
239. Do. ?—portion of molar.
240. Do. —3rd upper incisor left side of a young dog.
241. Do. —2nd premolar, left side of a young dog.
242. Do. — do., do. still younger.
243. (?) —portion of premolar (*canis ?*) Root longer than usual in that genus.
244. Canis. 3rd premolar right ramus lower jaw of a young dog.
245. } Hypsiprymnus—fragments, with teeth of upper jaw.
246. }
247. }
248. } Do. —4 premolars.
249. }
250. }
251. } Do. —molars.
252. }
253. } Macropus—molars.
254. }
255. Hapalotis—anterior part of skull, with dentition complete, of a species of rat.
256. Do. —left ramus lower jaw; complete dentition.
257. Do. —left ramus lower jaw of a larger species; complete dentition.
258. Do. —portion of upper jaw, with 2nd and 3rd molar.
259. Do. —left ramus lower jaw, with 2 molars.
260. } Do. —left ramus lower jaw, with 2 molars.
261. }
262. Do. —right ramus, do.
263. }
264. } Do. —molar teeth.
265. }
266. } (?) —posterior part of 5th metatarsal bone, not unlike the same
267. } bone in man.
268. Diprotodon—lower incisor.
269. }
270. } Do. —fragments of molars.
271. }
272. Do. —fragment of incisor.
273. Do. — do. of molar.
274. Do. — do. of incisor.
275. Phascolomys—molar.
276. Do. —premolar.
277. Do. —molar.
278. Do. —p. molar.

279.
280.
281. Phascolomys—molars.
282.
283.

284. Do. —p. molar.
285. Do. —fragment of upper incisor of P. latifrons.
286. Do. —molar.
287. Do. —p. molar.
288. Do. —molar.
289. Do. —lower incisor.
290. Do. —p. molar.
291. Do. —molars.
292. Do. —p. molar.
293. Do. —p. molar.
294. Do. —molar.
295. Do. —molar.
296. Do. —incisor, large species.
297. Do. —lower p. molar.
298. Do. —left upper incisor of P. latifrons.
299. Do. —left lower incisor of P. latifrons.
300. Do. —left upper incisor of P. platyrhinus.

301.
302. Do. —molars, probably of P. latifrons.
303.

304. Do. —molar of P. platyrhinus.

305.
306.
307. Do. —molars of P. latifrons.
308.

309.
310. Do. —top of radius.

311. Do. —upper part of ulna.

312.
313. Do. —portion of scapula.

314. Do. —fragments of ilium.

315.
316.
317.
318.
319.
320.
321. Do. —portions of first (atlas) vertebra.
322.
323.
324.
325.
326.
327.

328. Do. —lower part of radius.

329.
330.
331.
332. Phascolomys—marsupial bones.

333. Do. —portion of atlas.

334.
335.
336.
337. Do. —7 fragments of clavicles.
338.
339.
340.

341.
342.
343.
344.
345.
346.
347.
348. Do. —15 fragments of the scapula of various marsupials.
349.
350.
351.
352.
353.
354.
355.

356.
357.
358.
359.
360. Do. —8 portions of the ulna of various marsupials.
361.
362.
363.

364.
365.
366.
367.
368.

369.
370.
371. Do. —14 fragments of the ulna of various marsupials.
372.
373.
374.
375.
376.
377.

378.
379. Do. —4 do. of ribs of do.
380.
381.

382. 383. 384. 385. 386. 387. 388. 389. 390. 391. Phascolomys—10 fragments of the ulna of ribs of various marsupials.

352. 393. 394. 395. 396. Do. —50 ribs of various marsupials.

397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 16 fragments of ribs of various marsupials.

413. 414. 415. 416. 417. 418. 419. 420. 421. Portion of radius, various marsupials.

422. Radius of Perameles.
423. Do.
424. Radius?
425. Do. Perameles?
426. Tibia of a rodent.
427. Top of radius (marsupial).

428. 429. 430. 431. 432. 433. Phascolomys.—Portions of the sternum of various species of wombat.

434.
435.
436.
437.
438.
439.
440.
441. } Portions of the sternum of various marsupials.
442.
443.
444.
445.
446.
447.
448.

449. 2nd upper premolar Macropus.
450. Molar of Phascolomys.
451. Left lower incisor Hypsiprymnus.
452. } Molars Macropus.
453. }
454.
455.
456. } Fragments of femur (marsupials).
457.
458.

459. ?
460. Vertebra.
461. ?
462. Top of radius (marsupial).
463. }
464. } 3rd metatarsal bone.
465. }
466. Portion of do.
467. } Tarsal bones (Macropus).
468. }
469. } Fragments of fibula. do.
470. }
471.
472.
473.
474.
475. } Do. of skull. do.
476.
477.
478.
479.

480.
481.
482.
483. } Fragments of tibia (Macropus and Hypsiprymnus).
484.
485.
486.

487. 488. 489. 490. Fragments of tibia (Macropus and Hypsiprymnus).
491. Fragment of molar (Diprotodon).
492. Nail (Macropus).
493. Macropus, metatarsal phalanx.
494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. Macropus and Hypsiprymnus, portions of tibia.
508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. Perameles and Dasyurus } Fragments of tibia.
519. Hapalotis. do.
520. 521. 522. 523. 524. 525. Perameles and Dasyurus } do.
526. Hapalotis, fragment of tibia.
527. 528. 529. Perameles and Dasyurus, fragments of tibia.
530. Hapalotis, tibia.
531 to 539. Perameles and Dasyurus, tibia.
540. 541. 542. Macropus, proximal metatarsal phalanges.
544 to 575. 32 metatarsal phalanges of various marsupials.

576. ?
577. ?
578. Metatarsal and phalangeal bones of Macropus, Hypsiprymnus, Dasyurus, Sarcophilus, and Phascolomys.
579 to 639. Metatarsal and phalangeal bones of Macropus, Hypsiprymnus, Dasyurus, Sarcophilus, and Phascolomys.

641 to 652. ?
653. Macropus and Hypsiprymnus, the 3rd metatarsal bones.
654 to 659. Macropus and Hypsiprymnus, the 3rd metatarsal bones.

660 to 665. Do. 6 heel bones (os calcis) of Macropus and Hypsiprymnus.

666. ?
667 to 676. Hypsiprymnus and Macropus, heel-bones (os calcis).

679 to 714. Do. do. phalangeal bones.

715 to 796. Vertebræ of various marsupials.

797 to 868. Femoral bones of marsupials.

869. Do. rodent.
870. Do. marsupial.
871. Do. rodent.
872 to 873. Do. marsupials.
874. Do. rodent.
875 to 880. Do. marsupials.
881 to 887. Do. rodents.
888 and 889. Do. marsupials.
890. Ulna?
891 to 893. Iliac bones do.
894. ? marsupials.
895. ? marsupials.

896 to 909. Vertebræ, marsupials.

910 to 967. Caudal vertebræ, marsupials.

968 to 986. Hypsiprymnus and Macropus, 3rd metatarsal bones

987. Macropus
988. Phascolomys
989. Macropus
990 Phascolomys
to
1,046. tarsal and phalangeal bones.

1,047 to 1,053. Arm bones (humeri) of various marsupials.

1,054. Iliac bone do.

1,055 to 1,060. Humeri do.

1,061. Dasyurus femur.

1,062 to 1,102 Humeri of marsupials and placentals (rodents).

1,103 to 1,193. Vertebræ of do.

1,194 to 1,358. Iliac bones do.

1,359. 1,360. Fragments of bone embedded in breccia.

1,361. Upper jaw Macropus, large species.

1,361 A. A portion of a femur.

1,362 to 1,377. Various fragments of bone embedded in breccia.

1,378. Portion of femur.

1,379 to 1,383. Fragments of bone.

1,384. Piece of stalagmitic crust covering bone deposits.

1,385. Macropus (portion of tibia).

1,386. Fragment of bone of gigantic mammal.

1,387. Do. do.

1,388. Iliac bone, Macropus.

1,389. Fragment of bone of large mammal.

1,390. Metatarsal bone.

1,391. Caudal vertebræ, Macropus.

1,392. Top of tibia, do.

1,393. Fragment of bone do.

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