

forms, causing, at the same time, the loss of the lives of young depending upon the parent birds. Much as writers may object to the *battue* of game in an overstocked preserve, yet there is a possible excuse to plead in one case, as game birds are shot at a time when the young are not dependent upon them, and when shot are of value as an article of food.

“Even were the habits of these birds otherwise than harmless, their wanton destruction is pitiable, and if a particle of the strictness extended over the care of a few game were used in the prevention of these excesses, all might be remedied, of which, as remarked in a correspondence with Mr. Thompson, the owners of rocky islets and headlands, where those birds frequent to breed, are highly culpable in permitting such slaughter upon their property, places where, in a few years, whole species will be extirpated, and known only as occasional visitants to the island. Having, in many instances, mentioned Lambay as a breeding haunt for sea-fowl, it may not be uninteresting to enumerate the different species which tenant the precipitous eastern side of the island during the season of incubation:—The common and green cormorants, the common and black guillemots, razor-bill, puffin, shearwater, great and lesser black-backed gulls, herring and common gulls, and kittiwakes.

“Amongst the land-birds which frequent the same face of the rocks, we find the peregrine (rarely of late years), the kestrel, raven, hooded crow, jackdaw, and stare (the chough is also said to nidify in rare instances), the wheatear, window martin, swift, and rock pigeon.”

This last extract is interesting from the fact, that were it not for the murderous attacks made in Lambay and other islands upon the feathered tribe, while preparing their nests, and engaged with the care of their young, we might have a second Bass rock on our Irish coast, and even exceeding it in the variety of its inhabitants. Although we do not wish to be too censorious in our review of this pleasing work, yet we would advise the author to study theology better before hazarding such opinions as those contained in the 64th page. On the whole, we think this volume deserves to be widely circulated, and we heartily recommend it to our readers. It abounds with anecdote, and is written in a popular style. They will find it to be an accurate history of our Irish birds—detailing most of their interesting features. The author has availed himself of the continental writers, as well as those of his own country, and has added the synonyms of Temminck to those of Linnæus and others. The typography and paper are of the best description, reflecting great credit on the publishers.

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NEREIS BOREALI AMERICANA; OR, CONTRIBUTIONS TO A HISTORY OF THE MARINE ALGÆ OF NORTH AMERICA. By William Henry Harvey, M.D., M.R.I.A., Keeper of the Herbarium of the University of Dublin, and Professor of Botany to the Royal Dublin Society. Part I.—Melanospermeæ. Part II.—Rhodospermeæ. Published by the Smithsonian Institution, Washington; and London, Van Voorst.

THESE memoirs, from the pen of Dr. Harvey, already so well known to British algologists, by his *Manual of British Algæ* and *Phycologia Britannica*, will be welcomed by all who are engaged in the study of the

botany of our coasts. They are issued as part of the "*Smithsonian Contributions to Knowledge*." But before we proceed to speak of the memoirs themselves, we will take a glance at the noble institution, in connection with which they are issued. They form part of the general plan adopted for carrying into effect the intentions of James Smithson, of England. This gentleman left his property in trust to the United States, "to found at Washington, under the name of the Smithsonian Institution, an establishment for the *increase* and *diffusion* of knowledge among men;" and these words of the testator were the only guide given for the adoption of a plan to carry out the benevolent intentions of the testator. This trust was accepted by the Government of the United States, and an Act of Congress was passed, August 10th, 1846, constituting the President and the other principal executive officers of the General Government, the Chief Justice of the Supreme Court, the Mayor of Washington, and such honorary members as they might elect, an establishment under the title of the "SMITHSONIAN INSTITUTION FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE AMONG MEN." In carrying out this plan two objects had to be steadily kept in view—the one, the *increase* of knowledge—the other, the *diffusion* of the knowledge thus increased. For these purposes the *annual* income of the institution has been wisely divided into two equal parts—the one part being devoted to purposes of original research and publication—the other to the gradual formation of a library, a museum, and a gallery of art, in accordance with the terms of the Act of Congress. The memoirs already published by the "Board of Regents of the Smithsonian Institution" embrace (besides various reports in octavo), five quarto volumes, displaying considerable originality of thought and laborious research; and we are glad to see one from *the old country* engaging in such honourable rivalry, and taking his stand among his transatlantic brethren; we are much better pleased to recognize the truly friendly spirit which pervades the report of the Smithsonian institution, when speaking of the acceptance of the present memoirs, and which we cannot forbear from quoting as alike honourable to the body from which it issues, and the talented Professor whose name it refers to. "This memoir (*The Nereis Boreali-Americani*) consists of a description of the marine plants or Algæ, which are found along the eastern and southern coasts of the United States, and which are deserving of attention, not only on account of their beauty, variety, and the illustrations they present of the growth and development of vegetable forms, but also on account of their economical value with reference to agriculture and the chemical arts. This volume is in the course of preparation by Professor Harvey, of the University of Dublin, a gentleman who is recognized as the

*first authority in this branch of Botany.* He was induced to visit this country by an invitation to lecture on the Algæ, before the Lowell Institute, and by the opportunity thus afforded him of studying his favourite branch of science in a new region. After completing his lectures, he made a collection of the marine plants of our coast, and offered to furnish drawings of the genera and species of them, with detailed descriptions, *free of all cost*, provided the institution would bear the expense of publication. Upon the warm recommendation of some of the principal botanists of this country, the liberal offer of Professor Harvey was accepted, and he is now (Jan. 1, 1851) engaged in making with his own hand the drawings upon stone. The whole work, besides the time expended in collecting the specimens, will occupy more than a year. This voluntary contribution to knowledge, from a man of science, may surprise those whose minds are not liberalized by philosophical pursuits, and who cannot conceive any object in labour unconnected with pecuniary gain" (*Fifth Report*, 1851). We have transcribed this paragraph entire, as it tells officially the circumstances under which the present memoirs were composed. For the task thus gratuitously undertaken, Dr. Harvey was peculiarly fitted; for many years he had turned his attention to the study of those lowest and simplest forms of vegetable organization—the Algæ; and in addition, as the keeper of an extensive herbarium, he had constant access to specimens collected in every quarter of the globe, and was thus enabled to compare the almost inconceivable varieties of form so often calculated to mislead the unwary. The memoirs before us are the two first portions of this work, and are issued by the Smithsonian Institution, in a style fully equal to any work on the Algæ already published. For the accuracy of the details, we need only again state that the plates are all drawn on stone by Dr. Harvey himself. The portions already published embrace the Melanosperms and Rhodosperms, and will be followed by a third part, descriptive of the Chlorosperms, with an appendix of such species as may have been forwarded to the author since the publication of the previous parts. When speaking of the operations of the Smithsonian Institution, we omitted to state, that memoirs submitted to the "Board of Regents" for publication, are by them referred to competent judges before acceptance. In the case of the present, the judges were Professor J. W. Bailey, and Dr. Asa Gray.

Before entering on the subject of the Algæ, found on the northern shores of North America, Dr. Harvey has prefixed an introduction, in which the peculiarities of this class of plants are ably considered, under the heads of root, frond, colour, fructification, movements of Algæ, habitat, geographical distribution, directions for collecting and preserving specimens, and uses of

the Algæ; from all these heads we would gladly extract, did our space permit; we must, however, confine ourselves to a brief notice of the "Four regions of distribution" into which it is proposed to divide (for the present) the eastern and western shores of the United States.

1st. *The Coast of Cape Cod, extending probably to Greenland.* Among the characteristic forms are, *Laminaria Longicruris* (one of the largest on the coast), *Agarum Turneri*, and *pertusum*, *Rhodymenia cristata*, *Ptilota plumosa*, and *Dumontea ramentacea*. All the species mentioned are northern forms, and confined, in European waters, to very high latitudes, and all appear to vegetate south nearly, as far as Cape Cod, to which limits they are almost all confined. The marine flora of this region, as a whole, bears a resemblance to the shores of Iceland, Norway, Scotland, and the north and north-west of Ireland.

2nd. *Long Island Sound, including under this head, New York Harbour, and the sands of New Jersey.* In comparing the plants of the Sound with those of the first region, a marked difference is observable. We lose the Arctic forms, and their place is supplied by *Sargassum*, two species, by various beautiful *Callithamnia* and *Poly-siphoniæ*, and by abundance of *Delesseria Americana*, and *Dasya elegans*, *Seirosiphora Griffithsiana* is not uncommon, *Rhabdonia Baileyi*, *Gracilaria multipartita* (narrow varieties), *Chrysemenia divaricata* and *C. Rosea* are also characteristic forms. *Delesseria Leprieurii* also belong to this region, but it is a tropical form, at its utmost limit of northern distribution.

3rd. *Cape Hatteras to Cape Florida.* Many species found within these limits are common to those found in the second region; others are here met with for the first time, as *Arthrocladia villosa* and a *Nitophyllum*, found at Wilmington; a noble *Grateloupia*, probably new (*G. Gibbesii*, MS.), and *Delesseria hypoglossum*. I have seen no *Fucoid* plant from this region; but if there were a suitable locality here, we ought to have *Sargassa*; all the estuaries of the district produce *Grateloupia Gibbesii*, and a *Bostrychia*, either *B. radicans* Mont., or a closely allied species. These last are tropical forms, first observed at Cayenne.

4th. *Florida Keys and Shores of the Mexican Gulf.*—Here we have a very strongly marked province, strikingly contrasted in vegetation with the east coast, mentioned in the three regions already noticed. Of 130 species collected at the east coast in February, 1850, scarcely one-eighth are common to the east coast, seven-eighths being unknown to the American coast north of Cape Florida. With this remarkable difference

between the Algæ of the Keys and those of the east coast, there is a marked affinity between the former and those of the south of Europe. The marine vegetation of the Gulf of Mexico has a very strong resemblance to that of the Mediterranean Sea; nearly one-third of the species collected are common to the Mediterranean. Several of them straggle onwards towards the coasts of Spain and France, and even reach the south of England; but scarcely any of those are seen on the east coast of America. From this we may infer that they are not conveyed by the Gulf stream. Those collected at Key-West included 10 Melanosperms, 5 of which are common to the Mediterranean; 82 Rhodosperms, 25 of which are Mediterranean; and 38 Chlorosperms, of which 10 are Mediterranean. Besides these identical species, there are many *representative*, closely allied to the Mediterranean types. This resemblance is clearly shown in the genus *Dasya*, of which *seven* out of *eleven* European species are found in the Mediterranean. At Key-West eight species of this beautiful genus were collected. Among those, *seven* were new, and the *eighth* (*D. Elgans*) was found along the whole coast of North America. Three-fourths, perhaps, of the masses of sea-weed cast ashore at Key-West, belong to *Laireucia*, of which genus several species, and innumerable puzzling varieties, are profusely common. A fine *Hypnea*, (described afterwards as *Euchennia isiforme*, J. A. S.), *H. Wardemanni* MS.), one of the most striking species of the genus is also abundant. *Alsidium triangulare*, *Digenia simplex*, *Acanthophora*, *Amarisia multifida*, and other West Indian Rhodosperms, are abundantly cast ashore. *Sargassum Vulgare* and *bacciferum Padnia Pavonia*, *Zonaria lobata* and sundry *Dictyota*, are characteristic Melanosperms. But this region is especially remarkable for the abundance and beauty of its Chlorosperms, of the groups Siphonaceæ and Caulerpaceæ; 10 species of *Caulespa* were collected, some of which are of common occurrence, and serve for food to the turtles, which, in their turn, are the staple diet of the islanders. *Pencellus*, at least three species, *Udotea*, *Halimeda*, *Acetabularia*, *Anadyomene*, *Dictyosphæria*, *Chamædris*, *Dasycladus*, *Cymopolia*, and others, some of which are West Indian, some Mediterranean, are evidence of the high temperature of the sea round the Keys. Many of the plants obtained at Key-West were cast up from deeper water when the south wind blew strongly, and were not seen at any other time. A visitor, therefore, in the *hurricane* months would procure many which escaped me. Among the species, two new *Delesseriæ*, (*D. involvens* and *D. tenuifolia*) are specially worth notice. These were very plentiful in the beginning of February, but soon disappeared.

Two *Bostrychia* (*B. montagnei* and *B. filicula*, MS.), and a *Catenella*, were found on the stems of mangroves, near high-water mark.

Such is Dr. Harvey's outline of the distribution of the leading types found in each of the four regions into which he proposes to divide the localities, the result of whose examination is contained in the present *Nereis*. We have presented it to our readers, as we feel assured that it will be read with interest by all who wish to form some idea of the characteristic vegetation of the North American shores. The parts which we have extracted are prefaced by a few brief observations on the general causes that appear to affect the geographical distribution of the Algæ. These will be read with confidence and interest by all, as affording, in an able summary, the results of observations made by some of the best algologists, grouped together by one who is himself more capable of appreciating the importance of such generalizations than, perhaps, any of his fellow-labourers in this line of research. We would gladly transfer them to our pages; but we feel that, however unwilling, want of space compels us to draw our present notice to an end. When comparing the genera recorded in these volumes with the same genera as found described by our author in his *Phycologia Britannica*, we are often surprised with meeting old friends under new names, and sometimes names that we were familiarized with, from the pages of *Phycologia*, unceremoniously transferred to new faces. We fear that in this respect some of the Algæ could make out a very clear case against the learned Professor and some of his brethren—as for example, the *Ralfsia deusta* (Berk and Phyc. Brit.), which, after having passed through six different genera, hoped to have found its true name in the pages of the *Phycologia Britannica*; and yet, on the appearance of the *Nereis's Boreali-Americana*, finds that his fair name has been pilfered by an American stranger, patronized by J. Aghard, and, after all his previous sufferings, the poor Alga is again left in quest of a name. We are sure the learned professor “did it all for the best,” and, therefore, will not say a word more than to warn our readers, that the American plant is not the British plant described under the same name.

In the introduction prefixed to the sub-class Rhodospermeæ, Dr. Harvey, after briefly stating the general characteristics of the Algæ included in it, proceeds to an examination of the *double system* of fructification, which forms their most remarkable and distinctive character; “two descriptions of spore-producing organs being found on almost all these plants, and always being developed on different individuals of each species. Thus, then, Algæ are strictly *diœcious*, though in a different manner from other diœcious plants; for here it is not stamens and pistils (or their analogues) which are

borne on different roots; but *some* individuals produce only one kind of pistil, or sporiferous organ; and *others*, of the same species, produce constantly a sporiferous organ of a different kind. The *spores* developed in either system are equally capable of reproducing the species; and as the two kinds are always formed on different individual fronds, the *idea* of each species includes two individuals, and is not complete unless both are known. Hence the necessity, in forming our generic groups, to found them on the characters taken from both fronds. Perhaps the natural explanation of this double fructification is, to regard one form of the reproductive body as a true *spore*, supposed to be fertilized through the agency of an *antheridium*, and to consider the other as merely a gemmule or bud, here reduced to a single cell, cast off by the parent plant, and capable of continuing an independent existence. If this be the true explanation of the phenomena, we have still to decide (and from analogy only, for evidence of fertilization is wanting) to which of these bodies we shall give the name of *spore*, and which we shall call *gemmule*. And here different botanists take different views, the positive evidence, as it seems to me, being nearly equal in favour of either. Having no new facts to bring forward, I shall not argue this question here, but adopt the name *spores* and *tetraspores*, for these reproductive cells respectively." We regret that space will not allow us to follow Dr. Harvey through the rest of this most interesting portion of his memoir. In it he has adopted a classification, based on the structure of the *sporiferous nuclei*, similar to that followed by Professor J. G. Agardh, whose "*Species genera et ordines Algarum*" (Lund., 1848, 1852) is highly and deservedly praised for accurate analysis, careful description, and original conception. We must now take our leave, for the present, of these contributions to the algology of the American coasts, which ably sustain the high character for scientific zeal and laborious research long awarded by his fellow-students to Professor Harvey.

We understand that a similar devotion to science, as that which produced these volumes, has led their gifted author to explore other regions in search of his favourites; and that, probably, while these pages are passing through the press, he is *algologising* on the coasts of Australia. We most cordially wish every success to his labours, and hope that, on his return to his native land, their fruits may equal, if not surpass, those which are presented in the volumes we have been considering, as the result of his American trip.