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REVIEWS

The Marine Algae of the Danish West Indies*

Students of the marine algae in general and more especially those interested in the study of the American marine algae will find much of value in Börgesen's copiously illustrated account of "The Marine Algae of the Danish West Indies," of which Parts 1 and 2, dealing with the Chlorophyceae and Phaeophyceae, have already appeared. This critical report is based chiefly upon material collected by the author on three visits to these islands, made in 1892, 1895-96, and 1905-06, though he has had access also to earlier collections made by West, Ørsted, and others. Börgesen had good success in dredging at various points, though here, as in most other parts of the West Indies, the nature of the sea-bottom, owing chiefly to the local abundance of corals, is often unfavorable to dredging operations.

Of the Chlorophyceae, Börgesen recognizes 86 species as occurring in the Danish West Indies. These 86 species are considered to represent 34 genera, of which the largest are *Caulerpa* with 11 species, *Chaetomorpha*, *Cladophora*, and *Udotea*, with 6 each, *Enteromorpha* and *Halimeda*, with 5 each, and *Avrainvillea*, *Codium*, *Penicillus*, and *Valonia*, with 4 each. In comparing the rich chlorophyceous flora of the tropics with the poorer representation of this group in northern waters, Börgesen remarks that whereas on the shores of Danish West Indies he found several kinds of green algae growing in abundance at a depth of about 20 fathoms, in the Faeroes (Lat. about 62° N.) he found only a few red algae at such depths, most of the Chlorophyceae not descending below the uppermost part of the sublittoral region. As novelties of the specific rank, Börgesen in Part 1 describes and figures *Pringsheimia*(?) *Udoteae*, *Cladophora uncinata*, *C. corallicola*, and *Avrainvillea Geppii*. Belonging in this category also, though first described and figured by him in various preliminary papers, are *Enteromorpha chaetomorphoides*, *Dictyosphaeria van Bosseae*, *Struwea elegans*, *Avrainvillea asari-*

* Börgesen, F. The Marine Algae of the Danish West Indies. Part 1. Chlorophyceae. 1-158. f. 1-126 + chart. 1913; Part 2. Phaeophyceae. 159-222. f. 127-170. 1914. Issued separately, with Part 2 repaged, from Dansk Bot. Arkiv 1⁴: 1-158 and 2²: 3-66.

folia, and *Caulerpa Vickersii*. Described earlier also and here maintained are the genera *Cladophoropsis* and *Ernodesmis*, with *Conferva membranacea* Ag. and *Valonia verticillata* Kütz. as types, respectively. Several species, originally described from other parts of the world are attributed to the West Indies for the first time by Börgesen, among them *Boodlea siamensis* and *Acetabularia Calyculus*, the latter having been first known from the Australian region.

Börgesen makes a rather free use of varietal and form names, as is seen especially in his treatment of the *Halimeda tridens* group (for which he prefers the name *Halimeda incrassata*). *Halimeda Monile* and *H. simulans* are considered to be varieties of *H. incrassata*. The present reviewer has seen and handled thousands of plants of this group on the shores of Bermuda, Florida, the Bahamas, Cuba, Porto Rico, Jamaica, and the Isthmus of Panama, and as elsewhere explained* feels convinced that (excluding *H. favulosa*) they represent three absolutely distinct species. They often grow very closely associated, under apparently identical conditions, yet maintain their distinctive characters perfectly. In ninety-nine cases out of a hundred, they may be distinguished at first sight, and in occasionally occurring individuals the position of which may seem at first sight doubtful, a comparison of the size of the peripheral utricles is, we believe, always sufficient for the determination. Börgesen claims to have found cases in which large and small utricles may occur on different parts of a single plant, which may very naturally happen, but if he would use in such cases the *general average* of sizes in making his comparisons we believe his difficulties would vanish. In similar fashion the reviewer has often seen *Caulerpa racemosa* and *Caulerpa clavifera* growing in close proximity, under apparently identical conditions, and is inclined to accept the view of Svedelius that the supposed intergrading of these two forms is apparent rather than real and that their true relationships are best expressed by referring them to the specific category as was done by the earlier writers. Unfortunately, in this genus, there seems to be nothing but external form that one may lay hold of in attempting to limit species.

* Bull. Torrey Club 34: 501-504. 1907.

As minor peculiarities of nomenclature, not sanctioned by any of the current codes, one notes, in *Halimeda*, the change of the Ellis and Solander substantive specific name *Monile* to the adjective form *monilis* and the attributing under *Halimeda discoidea* of a var. *typica* to Howe, which superfluous varietal name was never published or suggested by the person named. If "var. *typica*" were to be used at all in this case it should be made to cover the original plant now preserved in the Muséum d'Histoire Naturelle of Paris and attributed (erroneously?) to Kamtschatka rather than the larger and otherwise somewhat different plant of Florida, to a photograph of which Börgesen refers. In *Caulerpa*, one notes, several times repeated, the name *C. Vickersii* Börg., which, being manifestly dedicated to the late Miss Vickers, seems to violate Recommendation XII of the Vienna-Brussels Rules by appearing in the masculine rather than the feminine form.

The numerous illustrations include half-tones from photographs, habit sketches, and drawings of microscopic details of morphologic or diagnostic importance, and are both excellent and artistic.

The use of a sketch of the graceful *Batophora Oerstedii*, originally described from the Danish West Indies, on title-page and cover, is most fitting and happy.

In Part 2 of "The Marine Algae of the Danish West Indies," which is concerned with the Phaeophyceae, Börgesen enumerates 40 species, distributed in 17 genera. The largest genera are *Dictyota* with eight species, *Ectocarpus* with seven, *Sargassum* with four, and *Dictyopteris* and *Padina* with three each. As novelties are described and figured *Ectocarpus coniferus*, *E. rhodochortonoides*, *Padina Sanctae-Crucis*, and the genus and species *Rosenvingea Sanctae-Crucis*. The new genus, which is dedicated to the author's compatriot, the well-known phycologist, Dr. L. Kolderup Rosenvinge, is placed in the Encoeliaceae, near *Scytosiphon* and *Chnoospora*. Three extra-limital species also, hitherto variously referred to *Asperococcus*, *Encoelium*, and *Hydroclathrus*, are placed in the new genus. The type of the genus, *Rosenvingea Sanctae-Crucis*, presumably came from the

Danish West Indian island of St. Croix, though the locality and habitat seem inadvertently to have escaped direct mention. The common "gulf-weed" of the "Sargasso Sea," *Sargassum natans* (L.) (more commonly known as *S. bacciferum*) has been discussed in detail by Börgesen in an earlier paper,* but is omitted in this enumeration, presumably because it is a floating pelagic form of uncertain affinities and cannot be said to occur attached on the shores of the Danish West Indies.

A peculiarity in nomenclature of a sort that will disappear as soon as the idea of pinning generic and specific names down to definite "types" meets with universal adoption is seen in Börgesen's use of the specific name *variegata* in both *Zonaria* and *Padina*, the name in each case being derived from Lamouroux's *Dictyota variegata*. This practice, which did not originate with Börgesen, seems to rest upon the assumption that the original *Dictyota variegata* of Lamouroux was a mixture of two species, representing two genera of the same family, and that, in spite of the confusion entailed, this specific name was available and valid in each of these two related genera,—a practice that is possibly permissible under the "Vienna Rules" but is distinctly forbidden by the "American Code." In this particular case, the present reviewer has enjoyed the privilege of seeing the specimens of *Dictyota variegata* Lamour. in Lamouroux's herbarium at Caen

* The species of *Sargassum* found along the coasts of the Danish West Indies with remarks upon the floating forms of the Sargasso Sea. *Mindeskrift for Japetus Steenstrup*. Copenhagen, 1914.

Börgesen seems uncertain as to whom the combination *Sargassum natans* (L.) is to be credited, objecting to following Kuntze in attributing it to Robert Brown (1855). Unless something earlier can be found, it seems to the reviewer that the name is to be written *Sargassum natans* (L.) Meyen (Wiegmann, *Archiv für Naturgeschichte* 4²: 185. 1838). If one were to be very scrupulous in the matter, a "*pro parte*" might be added to the citation, for Meyen evidently considered that *Fucus natans* L. [*S. bacciferum* (Turn.) Ag.] and *Fucus natans* Turn. (*S. vulgare* Ag.) were not to be distinguished specifically. Miquel (Over het Sargasso of Zeekroos. *Tijds. Nat. Ges. en Phys.* 4: 25-41. 1837) had taken the same ground as to specific limitations, but had coined the new name *Sargassum Columbi* for the combined "species," to which unnecessary specific name Meyen rightly objects. That the pelagic *Sargassum natans* (*S. bacciferum*) may have been derived from the attached *S. vulgare* or the attached *S. Filipendula*, somewhat as the loose-lying var. *scorpioides* of *Ascophyllum nodosum* has been derived from the attached form of that species is one of the interesting suggestions made by Börgesen in his preliminary paper already referred to.

and finds that they agree with the figures published by Lamouroux in showing only a *Zonaria* (the *Gymnosorus variegatus* of J. Agardh), so that the name "*Padina variegata* (Lamx.) Hauck," employed by Börgesen, would seem to be vulnerable on the ground of historical fact as well as on the ground of nomenclatural theory.

Börgeson in his general discussion of the Phaeophyceae refers to "the well-known fact that the northern brown-algal vegetation reaches a luxuriance which greatly surpasses that in the tropics." In the Faeroes he found 73 species of brown algae; in the Danish West Indies, as already remarked, the recorded number is 40.

The text of "The Marine Algae of the Danish West Indies," as may be inferred, is in English, which will render this helpful work more widely useful and more readily available to American students than might otherwise have been the case. Preliminary papers dealing with the Rhodophyceae of the Danish West Indies have already been published by Börgesen and the appearance of Part 3 of the larger work, taking up the red algae of these islands in systematic sequence, will be awaited with interest.

MARSHALL A. HOWE

Calkins's Biology*

As stated in the preface, the work before us is based upon the course outlined in Sedgwick and Wilson's General Biology, and is prepared primarily for the purpose of meeting the need, felt at Columbia University, for a work along similar lines, but covering about thirty class exercises and as many laboratory periods. The course is based upon a study of types, chosen with a view to their serving "as points of departure for various lines of development in subsequent course work." The plan of the book is quite different, however, from that of Sedgwick and Wilson's text. Organisms of one cell, organisms of tissues, and organisms of organs are taken up in the order named, and "emphasis is laid at the outset on cellular activities, especially on the importance of enzymes in metabolism and development, while animal differentiation for the performance of primary functions of protoplasm is the main theme of the entire course."

* Biology. By Gary N. Calkins, Ph.D., Professor of Protozoölogy in Columbia University. New York. Henry Holt and Company, 1914.