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unbranched stem; but these exceptionally tall examples are graceful in the extreme.—MILLER CHRISTY.

JUNCUS ACUTUS L.: A CORRECTION. Mr. Arthur Bennett writes to call attention to the improbability of the record of this species from an inland locality such as Cornard, given by me from the Andrews Herbarium (Journ. Bot. 1918, 351). The plant is labelled by Andrews "Juncus acutus R. S. 3. 432. 3," and by Hemsted "Juncus inflexus." In my transcript of W. A. Clarke's determinations of species in the Dillenian Synopsis this species, "Juncus acutus Ger. 31, acutus vulgaris Park. 1193, etc.... Common hard Rush," is identified as *J. glaucus*, which the specimen in Andrews's herbarium certainly is. I am, therefore, at a loss to explain how I came to enter it as *J. acutus* L.—G. S. BOULGER.

REVIEW.

A Monograph of British Lichens: A Descriptive Catalogue of the Species in the Department of Botany, British Museum. By ANNIE LORRAIN SMITH, F.L.S., Acting Assistant, Department of Botany. Printed by order of the Trustees of the British Museum. Part I., Second Edition, pp. 519: 71 plates and 11 figures in text. Price £1 10s.

THE present volume, which has been awaited with keen interest by lichenologists, brings to completion the *Monograph of British Lichens*—re-written, re-arranged and enlarged by Miss A. Lorrain Smith; it is thus practically an independent work. The Monograph, originally planned by the late J. M. Crombie, was partly prepared during his lifetime, and Part I. was published in 1894, under the above title. After a considerable interval, Part II. following as far as possible the lines of the work previously carried out by Crombie, was prepared by Miss Smith and issued in 1911. The publication of Part II. rendered a second edition of the earlier volume an urgent necessity, for it was at once fully recognised that the value and usefulness of the work would be greatly enhanced if brought uniformly into line with modern views.

A short and lucid introduction of seventeen pages is arranged under the following sections:—The Lichen Plant, Morphology, Vegetative Structures peculiar to the Lichen Thallus, Reproductive Organs, Physiology, Ecology and Distribution, Economic Uses of Lichens, Phylogeny and Classification. In the first section under the sub-head "Algal Elements of the Thallus," a tabulated statement is given as follows:—

"2. *Chlorophyceæ* associated with *Archilichenes*:—

"*Protococcus* (*Cystococcus*, *Pleurococcus*) and *Palmella* in the greater number of the larger lichens and in many crustaceous genera."

With the existing diverse views of writers respecting the algal symbiont of many lichens, it is undoubtedly preferable not to specify particularly the gonidium variously referred to as *Cystococcus*, *Protococcus*, or *Pleurococcus*: there is reason to believe that *Proto-*

coccus viridis Ag., as defined by Wille, is rarely the gonidium of British lichens, as vegetative division by true "cloisonnement" is seldom seen within the thallus.

In the section describing the reproductive organs, four illustrations show the structure of apothecia and perithecia as seen in transverse section. These should prove helpful to the student, as they illustrate the essential points to be considered when a genus is being determined by the structure of the reproductive organs.

In the section Ecology and Distribution, reference is made to a specimen of *Parmelia saxatilis*, kept under observation for a considerable time, which increased in diameter on an average of one centimetre in a year. This probably represents the average increase in diameter of a large number of foliose lichens, but sometimes growth is more rapid: this is the case with *Peltigera spuria*, which often makes an appearance on burnt portions of heath land at the time when the moss *Funaria hygrometrica*, which first occupied the burnt patch, shows signs of exhaustion. The branchia of the thallus of this lichen grow from 2 to 3 cm. in from six to eight months. *Lecanora saxicola* has been observed to grow 2.5 cm. within the same period.

The chief characteristics of Phylogeny and Classification are tabulated and concisely described. We welcome the method introduced in this volume of giving measurements of spores and spermatia in mikrons rather than in fractions of millimetres, as being simpler and clearer than that previously employed. The warning that chemical reactions cannot always be relied upon will save the amateur a certain amount of hesitation and uncertainty when dealing with specimens that require critical determination.

Comparison with the first edition shows that the subject of classification is now approached from a different standpoint. The structure of the reproductive organs has become the touchstone; British lichens are accordingly arranged in two series, *Gymnocarpeæ* and *Pyrenocarpeæ*; the former including the subseries *Coniocarpineæ*, *Cyclocarpineæ*, and *Graphidineæ*.

Each order is provided with a key to the genera. The list of synonyms following the diagnosis of a species has in many cases received additions, and the record of localities shows a wider distribution than was previously indicated. The restriction of general habitat has been occasionally removed; thus *Calicium hyperellum* "in upland wooded districts" (ed. 1, p. 91) now reads (p. 13) "in wooded districts." This recognises a considerably greater latitude in distribution and accords with the actual facts. The sequence of orders and the inclusion, or otherwise, of genera within their limits afford ample evidence of independent opinion and of the exercise of a mature judgement based upon laborious microscopic examination of large numbers of specimens. There is a wide divergence of view as to the genera that should be included in *Usneaceæ*. In this work the following are given as comprising the order:—*Evernia*, *Ramalina*, *Usnea*, *Alectoria*, and *Cerania* (*Thamnolia*). Zahlbruckner (1901) omits *Alectoria*, while Hue (1901) does not include *Evernia*; Harmand (1907) includes *Teloschistes* and Jatta (1909) adds *Cetraria*

and *Platysma*. In the genus *Usnea*, the indispensable nature of the list of synonyms already referred to makes itself evident: both editions begin with *florida*, but the *U. florida*, Web. of the present edition, is *U. ceratina* var. *scabrosa* Ach. of the first; *U. hirta* Hoffm. becomes *U. florida* var. *hirta* Ach. and *U. barbata* Web. replaces *U. dasypoga* Nyl. The genus *Lecanora* has undergone thorough revision. In the first edition it included 197 species, a number now reduced to 92. The sub-genera *Placodium* and *Rinodina* are now included in the *Physciaceæ* and are raised to generic rank—the former on account of the presence of polarilocular spores and the lichen acid parietin, found mostly in both thallus and apothecium, the latter by reason of the distinctly polarilocular brown spores. No fewer than twelve Nylanderian species of *Lecanora* have been, with evidently good reason, transferred to *Placodium*. Each plate represents very clearly the whole plant, natural size if small, or a part of it enlarged, vertical sections of the thallus and apothecium, the ascus with paraphyses, and spores. The magnification of spores and spermatia ranges from 500 to 1800 diameters. Each plate illustrates a more or less typical species; all genera are represented.

It is due to Miss Smith to add, that although this volume appears as the second edition of a work by a former writer, the revision has been so complete that the results of her own research are evident on every page. This must have entailed a vast amount of patient and laborious investigation not only of the herbarium specimens, but also of the extensive literature of the subject. The work does much to raise the standard of British lichenology to a high level, and there is reason to believe that its publication will greatly encourage and assist the reviving interest in the plants with which it deals.

ROBERT PAULSON.

BOOK-NOTES, NEWS, ETC.

THE death of ANNE CASIMIR PYRAMUS DE CANDOLLE, at his home near Geneva on October 3, is for the systematic botanist the breaking of a link with the past. There are a few great classic works in Systematic Botany, and one of these is the *Prodromus Systematis Naturalis Regni Vegetabilis* initiated by Augustin P. de Candolle in 1824, and brought to a conclusion by his son Alphonse in 1873. The penultimate volume (Part xvi. 1864–69), dealing with the families Piperaceæ, Juglandæ, and Myricaceæ, was the work of the grandson, Casimir. Casimir was associated with his father, Alphonse, in the scheme for the continuation of the work of the *Prodromus* by the issue of a series of monographs under the title *Monographiæ Phanerogamarum*, in which the families of the Monocotyledons were to appear and also those families of the Dicotyledons, already elaborated in the *Prodromus*, which stood in need of revision. The first volume issued in 1878 included the Smilacæ (by A. P. de Candolle), the Restiaceæ (by Masters), and the Meliaceæ (by Casimir de Candolle). The ninth and last volume appeared in 1896: in all eleven families of Monocotyledons and eight of Dicotyledons were treated. Casimir de