The elaborate stream-measurements thus go for naught. They give no clue whatever to the absolute rate of continental lowering through erosion. They merely emphasize the fact of the relative impotency of stream-work in general. They bring into strong contrast the tremendous effects of other geologic agencies of degradation and of aggradation which we have long been accustomed entirely to ignore, or to give only scant consideration.

Charles Keyes

CLADONEMA

In looking up the date for the species of the flagellate protozoon, *Cladonema laxum* Kent 1871 (*Anthophysa laxum* Kent), I found that Seville Kent had proposed for this species the name *Cladonema*,[1] having derived it from the Greek, *klados*, branch, and *nema*, thread. His type species is *C. laxum*, of which he wrote: "This species was first briefly described by the author, with an accompanying figure, in the *Monthly Microscopical Journal* for December, 1871, under the title of *Anthophysa laxa;* the isolated instead of clustered mode of attachment of the animalcules to their pedicle, added to the flexible, thread-like aspect and consistence of their structure, distinguishes it, however, so conspicuously from the representatives of either the genus *Anthophysa* or other allied forms described in this treatise, that a new generic name has been created for its reception," *i. e., Cladonema.*

References to *Cladonema* in the literature earlier than 1880 lead the writer to trace back the name to 1843. In *Ann. des Sci. Nat.* for that year, 11e serie (Zoologie), Tome 20, pp. 370–3, Dujardin listed a new medusa, for which he proposed the name *Cladonema radiatum.* This form had developed from the hydroid *Stauridium* (see description, p. 372). Krohn in 1853[2] accepted the name for the medusa, and only differed from Dujardin's interpretation in minor points in the development into the *Stauridium.* Others to recognize the name *Cladonema* for the medusa prior to 1880 are: Kefferstein und Ehlers, 1861, *Zool. Beitraege,* Neapel, Messina, p. 85, taf. 13, Fig. 5; Van Beneden, 1866, *Mem. Acad. Roy. Belgique,* Tome 36, p. 139, pl. 12; Hincks, 1868, "Hist. Brit. Hydroid. Zooph.," p. 62, pl. 11; Allman, 1872, "Monog. Tubul. Hydroids," pp. 216, 357, pl. 17, Figs. 1–10; and Haeckel, 1879, "Syst. der Medusen," p. 109.

Mayer, in his "Medusa of the World," Pt. I. (Carnegie Inst. Pub.), 1910, recognizes the name *Cladonema* for the medusa form and gives the full bibliography (p. 99). In Pt. III. of this work, p. 719, he writes under the caption "Preoccupied Generic Names":

> The establishment of the Commission upon Zoological Nomenclature and the general recognition which the code that controls its decision has won for itself among naturalists makes it more than ever desirable that the validity of the generic names we now use should be firmly established. Accordingly, the tenability of each and every generic name adopted in this work has been made the subject of thorough research, and I am somewhat surprised to find that names which have been used for generations without question of their priority are actually preoccupied for other groups of animals and can not be applied to the medusæ.

He lists five such cases, *Corynitis, Slabberia, Turris, Tiara* and *Laodicea. Cladonema,* however, remains established for the medusa form.

It seems evident from the above that Kent proposed the name *Cladonema* for the Infusorian without knowing that the name was already occupied. Hence the former name *Anthophysa* Bory, 1822 (?), must be revived for the reception of this species, or a new name proposed.

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[1] Manual of the Infusoria, Vol. I., London, 1880, pp. 264–65.

[2] *Mueller's Arch. f. Anat. u. Physiol.,* 1853, p. 420.

SCIENTIFIC BOOKS

The British Rust Fungi (Uredinales), their Biology and Classification. By W. B. Grove, M.A. Cambridge, at the University Press. 1913. Pp. xii + 412.

The author of the excellent four-hundred-page volume treating of the British rust fungi has most appropriately begun his preface by reference to the eminent achievements of Plowright embodied in a similar volume twenty-four years previously. Plowright's volume contained a large amount of original matter derived from observation and experiment. In his conception of the *Uredinales* Plowright stood head and shoulders above his English co-workers. He was a leader among British uredinologists.

The volume by Mr. Grove is a worthy successor to Plowright's commanding work. Even if it does not measure up to its prototype in leadership, it can justly be said to present the interesting group of rust fungi, as represented in England and Scotland, in a serviceable and acceptable manner.

In the eighty-four pages devoted to the general part of the work the author has begun by giving in detail the life history of *Puccinia Caricis,* sensibly selecting it instead of the usual *P. graminis* as a typical example of a rust, supplemented by a briefer account of eight other species. Then are successively discussed spore-forms and groupings in accordance with their succession, sexuality including nuclear division, specialization, immunity and phylogeny.

In the larger systematic part of the volume about two hundred and fifty species are described, and nearly all illustrated with original outline drawings. The general plan of the systematic part is modelled after Sydow's "Monographia Uredinearum." The illustrations are superior to those in that work, and approach those of Fischer's "Uredineen der Schweiz," while the method of description is similar to that introduced by the writer in the "North American Flora." Recognition of the diagnostic value of the pores in the urediniospores is especially noteworthy. The technical description is followed by helpful notes for most of the species. Placing that part of the technical description derived from extra-territorial material in brackets promotes clearness and accuracy. The synonymy is said "to show the origin and authority of the name used," as well as to include references to well-known works, the name for each species being selected in accordance with the "principle of priority" as restricted by the International Rules of 1905 and 1910, yet to one who has carefully looked into the history of rust names the result appears to accord more with what one might designate acceptable usage rather than the rigid application of any uniform rules.

If one accepts the conservative standpoint of the author there is nothing of importance in the work that calls for adverse criticism. Both author and publisher are to be commended for the excellence of the volume.

It may be pointed out that in the author's zeal to illustrate with British material a kind of spore which does not occur in connection with any rust in Great Britain, the identical cut which does service as a urediniospore on page 208 is reproduced on page 34 in the general part as an amphispore, although the text says it is only the "nearest approach" to be found among British species. What harm could have come from illustrating a kind of spore not found in Britain by an extra-British example is a mystery to a non-Britisher.

It may also be said that the author has doubtless been led into error by accepting the assignment to the genus *Hemileia* of three species of *Uredo* on orchids. The writer has examined original material on which this assumption is founded, and believes that no teleospores have yet been discovered, those supposed to be such being only oblong urediniospores. The morphology of these rusts, as well as their host relationship, is entirely against their inclusion in the genus *Hemileia.*

Exception must be taken to the author's statement that "the genus *Milesia* is now dropped [for the later *Milesina*], because it was founded on an imperfect state which might belong to any one of several genera." It is true that it was founded on an "imperfect state," if the uredineal sori are to be spoken of as such, but wholly untrue that the spores of this stage are not distinctively characteristic

of the genus. Even the author himself shows the fallacy by his drawings, by a statement at bottom of page 377, by his omission of other spore forms in describing the several species, and in his ability to include a species which had not before been assigned to the genus without having seen other than uredinio-spores. The attempt to base modern procedure on antiquated and discredited ideas, which this instance well illustrates, accounts for the unfortunate rule of the Brussels Congress throwing out all names for priority not applied to the telial stage. It is this rule which the author is trying to follow.

There is much to be commended in the author's attempt to bring together so-called species which might more properly be considered races or varieties. His nomenclatorial method of using a collective name and description under which constituents are maintained as if autonomous is, however, contrary to De Candolle's fundamental law of nomenclature that a plant can only bear one name of the same grade, a law that has been upheld by every botanical congress since its enunciation in 1813. If *Puccinia Digraphidis, P. Orchidearum-Phalaridis, P. Winteriana* and *P. Phalaridis* are to be grouped as biological races under *Puccinia sessilis,* which seems quite correct, the nomenclature should be adjusted accordingly. We hope with the author that some one may be found with "more knowledge, or more courage," as he says in the preface, to carry this process to other forms.

It requires both more knowledge *and* more courage to advance the lines of classification beyond familiar grounds than most authors are willing to incorporate in their works. To illustrate from the work before us: On pages 73–75 the author technically describes the five families of the order *Uredinales* and gives a key to the twenty-two genera into which the British species may be distributed, using the now generally accepted succession beginning with the fern rusts and ending with *Uromyces* and *Puccinia,* but in the systematic part of the volume the order is reversed to accord with the old and more familiar way. If the makers of manuals will not incorporate what they believe to be the best knowledge available, how can the general student get a working familiarity with it? Too great conservatism is as injurious to the diffusion of substantial information as too pronounced radicalism.

The author deplores the lack of a suitable way to subdivide the genus *Puccinia* with its enormous number of species, "more than 1,300 are already known." After discarding Schröter's and Fischer's classifications because they "separate nearly allied species," he says "Arthur's is a pathless chaos," and decides to arrange the species according to hosts, instead of introducing a "new imperfect scheme." It is evident that the author did not master the classification proposed by the writer, which is founded upon the combination of life histories and morphological characters. That classification can justly be called imperfect, but not artificial, and by no manner of means chaotic. It is imperfect because more information is demanded than was available when it was proposed, and must be emended and changed to accord with knowledge as it comes to hand, as likely to occur in the establishment of a natural system of any group of plants.

The author has not indicated whether the spore-forms which he describes under each species are all the spore-forms belonging to the species, or not, and without such information species can not be distributed in the Arthur system. How to ascertain this important item was pointed out by the writer in 1904. *Puccinia bullata,* for instance, is credited with pycnia, uredinia and telia, but no mention is made of aecia, and *Puccinia Calthae* has pycnia, aecia and telia described, but no uredinia. About one half the species in the book are thus lacking in definite information. It is no wonder the author saw in the Arthur system only "a pathless chaos."

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Textbook on Wireless Telegraphy. By Rupert Stanley, Professor of Physics and Electrical Engineering, Municipal Technical