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be left to woods as to their appropriate crop. The loess clay will never enable its cultivator to compete with his more fortunate fellow-citizen who farms the drift, and the sooner the people of Iowa find it out the better. (2) It is likely that orchards and vineyards will thrive better on the loess than on the drift, as trees generally may be supposed to have been subject to similar discipline in all time and in all parts of the world.

THE NOMENCLATURE QUESTION AMONG THE SLIME-MOULDS.

BY T. H. MACBRIDE.

That a man's difficulties are often of his own creating is a fact patent in science as in other fields. The imperfections of our methods form ever increasing nets of complexity about the feet of our progress. No one feels this more keenly than the naturalist, especially he who would attempt to give more exact account of some limited group or series of animals or plants. No matter how carefully he may arrange his materials, no matter how industriously he may have worked out the various problems of structure and morphology, there comes at last to plague him, to hinder him, to mar his purpose and waste his time, the question of nomenclature; his specimens must be named. This ceremony, the christening, which ought to have been the simplest matter in the world, has really become, if not the most difficult, at least the most annoying and thankless portion of his task. Preposterous also as it may seem, it is precisely the oldest and most universally recognized of the forms with which he deals that are apt to give the most trouble. There has arisen a class of critics among us who have devoted their energies to the unsettling of scientific nomenclature in every department of research, with the result that, rightly or wrongly, every systematic work in the world needs revision if not re-writing, and every herbarium in the world needs a new set of labels. Now, this might all not be so bad if such a revolution were final. If the wheel were only weighted on one side, so that once it came to rest we could feel

that there it would stay, we might put up with temporary confusion in view of the peace that should certainly follow. But the revisers are by no means agreed among themselves. We are watching a wheel which is weighted, not on one side only, but on two or three different sides, and we not only have no idea which side will eventually determine equilibrium, but we are certain that any repose we may secure is liable to be instantly and forever jeopardized by the first crank who chooses to give our wheel again a whirl. Meanwhile revision and re-naming go merrily on. Rules have been adopted by bodies more or less representative, first on one side of the Atlantic then on the other, but neither do these rules agree one with another. The zoologists have their set of rules to which some are obedient, others not. The botanists have their set of rules which have gotten so far as to be liable to be submitted to a world's botanical congress, did such ever convene. Meantime, while nothing is settled, at least by anything like universal consensus of opinion, there are men who devote their energies, not to the pursuit of science, but of priority; who are forever claiming to find in the work of some obscure naturalist of a preceding century for common objects names different from those in universal use, and all the world must perforce stop in its real pursuit of knowledge to see what must be done with these disturbers of the peace, until we are in danger of presenting to our successors, if they heed us at all, the spectacle of a generation of so-called scientific men giving more heed to names than to things.

Now all this is trite enough. Moreover the question of nomenclature is a real one, a very real one, as it has to do with an instrument of research, and it is one of those questions that never can be settled until settled right.

It is not in the hope of being able to contribute far towards such settlement that the present paper is submitted, but rather to point out some of the difficulties to be encountered by one who attempts to deal with nomenclature, even in a group of organisms confessedly small.

As is well known the Myomycetes are a group of saprophytes, for a long time classed with the fungi and especially with the *Gastromycetes*, puff-balls, stink-horns and the like, and only recently, i. e., within twenty or thirty years, thoroughly studied and understood. Although not understood, not primarily properly referred at all, mycologists were continually

collecting them, in a fashion describing them, naming and occasionally figuring them. In 1873-75 Rostafinski, under direction of De Bary, undertook the first systematic presentation of the group as a whole, properly separating the slime moulds from the fungi, basing subsequent classification upon characters unused before, characters chiefly microscopic, and for the first time in the case of the great majority of the forms studied, offered specific descriptions sufficiently exact, and presented intelligible figures. I have said that Rostafinski based his specific descriptions upon characters revealed by a microscope: not only so but it must be considered that his work was effected by the aid of a *good* microscope, one which enabled him to go into details of spore measurement, spore sculpture and so on, to an extent to his predecessors undreamed, to most of them indeed impossible. In the preparation of his classic, he had access to all the literature of his subject and generally employs for genera and species names already in use. Furthermore he gives for all such species a synonymy which must strike every student as liberal in the extreme. For instance, in the case of *Fuligo varians* Sommf., the synonyms quoted number 42. But when it comes to selecting the particular name which he has adopted, Rostafinski was often somewhat arbitrary. Not only does he discard often the specific name which by his list of synonyms has conceded priority, much less does he follow the rule which adopts "the name given first with the genus in which the species now stands," but he seemed often to discard any and all names, and to name his species without regard to any-rule, but purely in accord with his own taste or preference.

For twenty years Rostafinski's work has been unassailed, partly because of its inherent excellence and the great name of his master De Bary, which seemed to stand as a guarantee behind it, and partly no doubt because of the unintelligible Polish dialect in which the book was given to the world. The Germans let the thing alone as *opus perfectum*, the English botanists were content with Cooke's paraphrase and there the matter stood. Masee, in his Monograph of 1892, followed almost implicitly the Rostafinskian nomenclature, and even quoted his synonyms *intoto*. Meantime some continental writers, as Rannkier in Denmark, were becoming reckless, and Mr. Lister the latest English monographer, was preparing to overturn the whole Rostafinskian list. This author is not only extremely radical in his omission and consolidation of pre-

viously recognized species but adopts as his guide in nomenclature the rule "laid down by A. L. Condolle in 1868, * * * that the first authentic specific name published under the genus in which the species now stands shall take precedence of all others;" a rule which seems to me as unfair in its proposals as absurd in the results to which it leads. Under the operation of this rule Rostafinski's synonyms is made to overturn his own nomenclature, and this in a multitude of instances.

Now, I have no disposition to defend Rostafinski. As before said, his nomenclature, whatever apology we may offer, admits in many cases of small defense; but in fact Rostafinski needs no defender. If any man chooses some other prior name for a species listed by the illustrious Pole, upon him devolves the burden of proof; he must show that the form described by Rostafinski is that referred to by the earlier author. No one who has studied these forms and has attempted their specific identification, even with the most carefully drawn descriptions before him, but will appreciate the futility of an effort to apply the old and brief descriptions. Even so-called authentic specimens are hard to authenticate. Slime-moulds are perishable things and labels are liable to become mixed, even in the best herbaria as we all know. To aver of a species described by Rostafinski that it is the same as that sketched in a line or two by Persoon or Link, is an undertaking too bold for me. Even where the species described is figured, the figure is often perfectly valueless for complete assurance. Take Schrader for instance, whose copper plates of a hundred years ago are among the best pre-Rostafinskian illustrations in the group we study, and even these are disappointing in the extreme. The figure of *Dictydium umbilicatum* S. is portrayed in life-like fashion but is unluckily an only species. The species of *Cribraria* to which Schrader gave name, are some of them fairly shown but not in the details by which the species may be everywhere distinguished. *C. macrocarpa* the artist missed entirely and fell instead into a bit of arabesque which has nowhere the slightest counterpart in nature. Schrader's descriptions are very much better than those of most writers of his day, and yet they fail to distinguish as we now discriminate since Rostafinski taught us how. The fact is that when Rostafinski gives credit to his predecessors it is for the most part purely a work of courtesy and grace. There is nothing in the work itself to command such consideration. The man who in his search for

priority ascends beyond Rostafinski, does it therefore at the risk of endless confusion and uncertainty in the great majority of cases. Some years ago the botanists present at the session of the A. A. S., concluded that in describing Phenogams one should not transcend a particular edition of Linnæus; a better rule is that which ascends to the earliest accurate description; no farther. Accordingly for the great majority of slime-mould species I should draw the line at Rostafinski's work, 1875.

The exceptions are the few which the rule of accurate description would carry behind the Polish publication, where Rostafinski discarded a name simply because for some reason or other Rostafinski did not like it. As an illustration, take the little, not uncommon, species called by Rostafinski—

Cornuvia circumscissa (Wallr.) R.

The synonyms, as quoted by Rostafinski, are:

Lignidium quercinum Fr. 1825.

Trichia circumscissa Wallroth. 1833.

Arcyria glomerata Fr. 1849.

Ophiotheca chrysosperma Currey. 1854.

Trichia curreyi Cronan. 1867.

The only names accompanied by their authors by descriptions at all definitive are the last two. The genus *Lignidium*, as defined by Link, certainly referred to forms belonging to the *Physareæ*, if to *Myomycetes* at all, so that that generic name cannot stand, nor can Fries have had our species in mind, since his description refers, probably, to some *Physarum*. *Trichia circumscissa* Wallr. undoubtedly comes nearer to it, but our species is not circumscissile, so that it is doubtful whether Wallroth, even, had in view the same species. Currey, who comes next on the list, by judicious description and carefully drawn figures, having, as we think properly, separated from the *Trichias* the genus *Ophiotheca*, ignored all preceding specific names, supposing any to have been up to this time affixed, and called the species we have before us *O. chrysosperma*. Rostafinski now recognizes Currey's work, but rejects his generic name on the grounds of inapplicability in primary significance to all the species included. He therefore coins a new generic name—*i. e.* *Cornuvia*—and goes back to Wallroth for specific name, a thing that Currey should have done had Wallroth's description been of sufficient exactness to make sure to Currey's mind, as it seems it did to Rostafinski's, that Wallroth was actually describing the same specific form. The criticism of Rostafinski will,

therefore, in this instance, change the commonly received name. Instead of *Cornuvia circumscissa* (Wallr.) R., we shall say *Ophiotheca chrysosperma* Currey, unless we can show that Wallroth actually described the same thing, when, of course, we should write *Ophiotheca circumscissa* (Wallr.), followed by the name of the author who first established the combination, in this case, Masee.

NOTES ON THE FLORA OF WESTERN IOWA.

BY L. H. PAMMEL.

The flora of the loess in western Iowa is unique, in many respects. While it may be said that many parts of the state have a typical prairie flora, certain species being common from Texas to British America, east to Wisconsin, Illinois and Indiana, only occasionally do we find plants of the great plains in our own state. Western species are somewhat unequally distributed in our state; they occupy a larger area in northwestern Iowa than in southern and western. In northern Iowa a few prominent types appear, as in Emmet county. Of these I may mention *Bouteloua oligostachya*, *Agropyrum caninum*, *A. caesium*, *Grindelia squarrosa*, *Helianthus Maximiliani*. The latter is not, however, a typical western plant, though introduced in central Iowa. It crosses our western border on the loess and extends south to Texas.

The loess of western Iowa is peculiar so far as the flora is concerned, nothing like it in Iowa. A number of American writers have written upon the peculiarities of its plant life. B. F. Bush¹ has given us a complete catalogue of the flora of northwestern Missouri.

A. S. Hitchcock² has reported a few of the plants occurring near Sioux City, and in general touches on the flora of western Iowa.

J. W. McGee considers the loess flora of northeastern Iowa. The two regions are however not similar from a botanical standpoint. It may be well to speak of the formation in this

¹Notes on the mound flora of Atchison county, Missouri. Reprint, Sixth Ann. Rep. Missouri Botanical Garden, 1895, pp. 121-134.

²Notes on the flora of Iowa, Bot. Gazette Vol. XIV, p. 127