

of one ring of teeth, in many of two rings, and in one foreign genus (Dawsonia) there are as many as four circles of teeth.

The object served by this complicated structure is not, perhaps, very certain, but it seems to be intended to secure the retention or exclusion of the spores from the spore sac in such conditions of the atmosphere as will best conduce to their germination. In the gymnostomous mosses (*i.e.* those without peristome) it is observed that the spores sometimes germinate within the capsule, an event which is probably adverse to the prospects of the race. The following table will illustrate in a few cases selected as illustrations the different behaviour of the teeth of the peristome under different hygrometric conditions, and suggests what is the probable advantage in each case:—

TABLE D.

Genus.	Condition of teeth		Reason suggested.
	in dry weather.	in wet weather.	
Bartramia ...	Erect ...	Convergent	That spores require <i>dry</i> weather when first emitted
Orthotrichum .	Erect or re- flexed ...	Ditto ...	Ditto
Funaria ...	Reflexed ...	Ditto ...	Ditto
Bryum ...	Convergent...	Expanded..	That spores require <i>wet</i> weather when first emitted
Fissideus ...	Ditto ...	Ditto ...	Ditto

The motion of the teeth of the peristome appears to be due to the action of a ring of specialized cells which surrounds the mouth of the capsule at the base of the teeth; and the opposite ways in which these cells act in the same condition of moisture in different genera, is a remarkable circumstance.

To anyone who studies the subject, the immense variety as well as beauty of the peristomes of mosses becomes very impressive. If the sole end be the protection and extrusion of the spores in the proper weather respectively, why is there this infinite wealth and variety of form and of colour? The question can be asked, but hardly can be answered, and the mind of the beholder is left, as it so often is, when contemplating the richness of Nature, in a state of admiration and wonder and ignorance. "Rerum natura tota est nusquam magis quam in minimis."

(To be continued.)

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The regulations for the new Isaac Newton Studentships for study and research in astronomy and Physical Optics are published in the *University Reporter* for February 17, 1891. Mr. Frank McClean, the generous founder, has increased his benefaction to £12,500.

The Museums and Lecture Rooms Syndicate report that a sum of £1450 will be required for the fittings of the new buildings in the Departments of Human Anatomy and Physiology.

The following have been nominated as electors to the Professorships indicated;—Chemistry, Sir H. E. Roscoe; Plumian, Dr. Cayley; Anatomy, Prof. Liveing; Botany, Dr. Vines; Geology, Dr. Bonney; Jacksonian of Natural Philosophy, Prof. Ewing; Mineralogy, Dr. Bonney; Zoology and Comparative Anatomy, Sir G. M. Humphry; Cavendish of Physics, Prof. Liveing; Mechanism, Dr. Besant; Downing of Medicine, Sir G. M. Humphry; Physiology, Sir G. E. Paget; Pathology, Sir G. E. Paget; Surgery, Sir G. E. Paget.

Prof. A. G. Greenhill, F.R.S., and Dr. Routh, F.R.S., are nominated as adjudicators of the Adams Prize to be awarded in 1893.

Mr. Hickson, the newly-appointed Lecturer in Invertebrate Morphology, announces a course on *Cæloenterata* to be given during the remainder of the current term.

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### SCIENTIFIC SERIALS.

THE *American Meteorological Journal* for January contains:—A report upon the features of tornadoes, and their distinction from other storms, considered in connection with the tornado of Lawrence, Mass., July 26, 1890, by Prof. W. M. Davis. He quotes a description of a tornado observed as early as 1687 at Hatfield, in this country, in which the writer (the Rev. A. de la Pryme) minutely describes the whirling motion of the funnel.—The meteorological observatory recently established on Mont Blanc, by A. L. Rotch. This is a reproduction of a paper read before Section A of the British Association last year, and contains a description of a meteorological observatory being erected by M. Vallot at the Rocher des Bosses, at an altitude of about 14,320 feet above sea-level.—The Gervais Lake tornado, by P. F. Lyons. It occurred on July 13, 1890, and did immense damage to buildings and crops, over an area of scarcely more than half a mile in length. The editors of the *Journal* have added what purports to be a photograph of the funnel, taken by an amateur photographer, who happened at the time to be occupied in taking views, about six miles off.—Rainfall in Michigan, by N. B. Conger, with a chart showing the annual fall in that State. This paper closes a series of monthly summaries by the same author.—Prof. H. A. Hazen concludes his account of observations on Mount Washington; and M. H. Faye concludes his articles on cyclones, tornadoes, and waterspouts, which were begun in the number for November 1889, and probably form the most complete exposition of his theory which has yet been printed. The editors of the *Journal* invite the criticism of English-speaking meteorologists.

THE *Journal of Botany* has been recently distinguished for the unusual interest of its biographical notices of recently deceased botanists, or those interested in botanical pursuits. In the numbers for November and December 1890, we find such records of the late Miss Marianne North, whose beautiful flower-paintings are so familiar to visitors at Kew, and of the late Mr. James Backhouse, of York. The other papers in these numbers and in that for January 1891 are mostly either descriptive, or relate to the habitats of rare plants. Mr. John Roy gives a list of freshwater Algæ from Enbridge Lake and its vicinity in Hampshire; Mr. E. G. Baker continues his synopsis of genera and species of Malvæ; Mr. G. Masee describes and figures a remarkable new genus of Hymenocytous Fungi from Madagascar, *Mycodendron*.

THE two most important papers in the *Botanical Gazette* for January are a continuation of Mr. J. Donnell Smith's "Undescribed Plants from Guatemala," which include a new species of *Cephaelis*, and one by Mr. R. Thaxter on "Certain new or peculiar North American Hyphomycetes," in which a new genus of Fungi, *Sigmoideomyces*, is described, allied to *Oedocephalum*.

THE number of the *Nuovo Giornale Botanico Italiano* for January is chiefly occupied by papers read at the Verona annual meeting of the Italian Botanical Society. Neither these, nor the independent papers printed in this number, present any features of special interest to the general botanist.

WE have received the numbers for October, November, and December 1890 of the *Botanical Magazine* of Tokio, which give satisfactory evidence of the cultivation of botanical science in the Empire of Japan. The *Magazine* is published monthly, under the auspices of the Tokio Botanical Society, and is printed on rice paper. By far the greater number of the contributions are in Japanese, while others are in what we take to be Japanese printed in English characters. Those in English are chiefly by Prof. R. Yatabe, the President of the Tokio Botanical Society, and include descriptions of several new Japanese species, and of a new genus, *Kirengeshoma*, belonging to the Saxifragaceæ. The illustrations to a paper (in English) by Mr. N. Tanaka, on two new species of Japanese edible fungi, are particularly good.

### SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, January 20.—Mr. W. T. Blanford, F.R.S., in the chair.—Mr. Sclater exhibited specimens of three species of Purple Waterhens (*Porphyrio poliocephalus*, *P. cæruleus*, and *P. smaragdinctus*), of the Eastern Palearctic Region,