

after his death. Pontécoulant was one of at least five mathematicians who computed the last return of Halley's comet in 1835. It reached perihelion within a few days of the predicted time. Pontécoulant also made the necessary computations for the next return, and published his results in 1864. His date for perihelion is May 24, 1910. It was to be expected that before the time for its return various astronomers would be sufficiently interested in the problem to redetermine the elements. So far this appears to have been undertaken only by the English astronomers, Cowell and Crommelin. It is interesting to know that the results which they obtain are in substantial agreement with those of Pontécoulant, so that the comet may be confidently expected to reach perihelion passage in May, 1910. Astronomers will not wait till that time, however, for their first view of the comet. Professor O. C. Wendell has published in the February number of *Popular Astronomy* an ephemeris based on the elements of Pontécoulant. From this it appears that at the present time the comet is less distant from the sun than Saturn. Its position, in the northern edge of the constellation Orion, is favorable for observation, but it is doubtful if even the great telescopes of the present day can reach it at present. Owing to the form of its orbit and its distance, the comet is moving in nearly a direct line toward the sun, and as viewed from that luminary would appear to stand nearly stationary in the sky. Owing to the motion of the earth, however, it will sway, during the next year and a half, backward and forward on the borders of Orion, Monoceros, Gemini and Taurus. About the first of October, 1909, its apparent motion will become very rapid as it approaches the sun. After April of the present year it will be unfavorably placed for several months. Next year the conditions will be somewhat similar, except that by January, 1909, the distance of the comet from the earth will be only that of the orbit of Jupiter. By October, 1909, the distance will have decreased to about 300 millions of miles, and by that time, if not before, the comet will probably have been "picked up" photographically or visually.

The mean period of Halley's comet is 76 or 77 years, but, owing to the powerful perturbations of the great planets, this period varies much. Cowell and Crommelin state that the revolution of 1222 to 1301 was the longest on record, taking 79 years and 2 months, while the present round is the shortest, only 74 years and 5.5 months. It is believed that apparitions of this comet have been recorded during the last 2,000 years, but the identity of the earliest appearances has not yet been certainly established.

S. I. BAILEY

HARVARD COLLEGE OBSERVATORY

BOTANICAL NOTES

TREES AND LIGHTNING

In the "Notes from the Royal Botanic Garden of Edinburgh" (No. XIV.) Dr. A. W. Borthwick discusses some of the effects of lightning strokes upon various kinds of trees. He begins by referring to the "widespread popular belief that certain trees are less liable than others to be struck by lightning, and that during a thunderstorm it is quite safe to stand under a beech for example, while the danger under a resinous tree or an oak is respectively fifteen or fifty times greater." This and other questions, as of the exact nature of the injury done to the tissue of the tree, the author takes up and examines with care. He concludes with reference to the first point "that no tree is immune" since "lightning will select one species quite as readily as another," and "that the beech is struck quite as frequently as any other species." Apparently the taller trees in a neighborhood are the ones most liable to be struck. Contrary to what is believed by some people the cells are not "ruptured or torn by the formation of steam, as might happen if the heating by the electric current was very great. The cells collapse and shrink up, but are never torn." The root system does not seem to be ever damaged by lightning.

AS TO BIRDSEYE MAPLE

MANY a botanist has puzzled over the question of the nature and cause of the peculiar

structure of the wood in what is called "birdseye maple." Looked at with a lens the fibers of the wood are seen to bend out and around the "eyes," and this gives the peculiar effect. But why there is this bending of the fibers is what has baffled solution. In the "Notes from the Royal Botanic Garden of Edinburgh" (No. XVI.) Dr. A. W. Borthwick publishes the results of some of his studies of birdseye structure in various kinds of wood. He reaches the conclusion that this structure is due to the formation of adventitious roots upon the stem, and that these arise from abnormal medullary rays. In none of the cases examined (with possibly one exception) were such roots due to mechanical injury, or the attacks of fungi or insects. Dr. Borthwick was not able to determine "the conditions which govern the production of the adventitious roots," but he is certain that "moisture plays an important rôle in their subsequent development, as it is only in the moistest situation that they persist for any time after they pierce the periderm."

AN ENGLISH KEY TO THE SYLLOGE FUNGORUM

SEVERAL years ago Professor Doctor Clements, then of the University of Nebraska, and now of the University of Minnesota, and Mr. Raymond J. Pool, now instructor in botany in the University of Nebraska, undertook the preparation of a key to the orders, families and genera of fungi as found in Saccardo's "Sylloge Fungorum." This was typewritten, and used in the classes in mycology in the University of Nebraska. Originally it included only the fungi of the first eight volumes of Saccardo, but it has now been revised and enlarged so as to include the Discomycetes of Abteilung III. (Rehm's) of Rabenhorst's "Kryptogamen Flora." It includes also an index of families, which refers to all of the volumes of Saccardo. At the end of the volume (which covers 137 pages) is added a "Lexicon Mycologicum" in which are given the meanings of all the Latin words used in the Sylloge. The practical value of such a work as this to the student who is troubled in his attempts at using the Latin

keys and descriptions in the Sylloge is quite obvious. Even for those who are fairly good classical scholars it has proved useful in saving much time in doubtful translations.

A few bound copies (typewritten) are still obtainable for \$2.85 postpaid, from the Department of Botany of the University of Nebraska.

BOTANICAL CHARTS

UNDER the title of "Tabulae Botanicae" the Berlin publishers Gebrüder Borntraeger began two years ago the publication of a set of botanical charts of marked excellence. Now that seven charts have appeared it is quite safe to estimate their value to teachers of botany. The charts are of large size (1 by 1.5 meters), and the figures are so large and so distinct that even in a large lecture room they may be easily seen by students. There is no crowding of the figures (one of the common faults of botanical charts) and, as a consequence, students are in no danger of being confused in their study of the objects represented. Another pleasing feature is the fact that these are not copies of figures commonly found in botanical text-books.

The first and second charts are devoted to the *Myxobacteriaceae*, the third to the *Acrasieae*, the fourth to the *Myxomycetes*, the fifth to stomata, and the sixth and seventh to the *Mucorineae*. The drawings (by R. Erlich, of Berlin) are all accurately done, and the coloring is most excellent. The editors are Doctor E. Baur, and Doctor E. Jahn, of Germany, in collaboration with Dr. A. F. Blakeslee, of the United States, and A. Guillemont, of France. The undertaking is thus international, and accordingly the very helpful accompanying text is printed in the German, English and French languages. The high worth of these charts should insure their wide sale, especially when it is known that the price per chart when mounted on cloth, and nailed to wooden strips, all ready for use, is a little more than two dollars (eight and a half Marks). They are by far the best botanical charts for lecture-room use that we have yet seen.

SHORT NOTES ON PAPERS

AGNES CHASE discusses two genera (*Hymenachne* and *Sacciolepis*) of *Panicaceae* in the Proceedings of the Biological Society of Washington (January 23, 1908), enumerating their species, which are mainly tropical.

In his list of the "Sedges of Jamaica," published in the Bulletin of the Department of Agriculture [of Jamaica] Dr. N. L. Britton enumerates 37 species of *Cyperus*; of *Eleocharis* 8; *Stenophyllus* 2; *Fimbristylis* 5; *Abildgaardia* 1; *Scirpus* 3; *Eriophorum* 1; *Fuirena* 2; *Dichromena* 3; *Rynchospora* 13; *Cladium* 1; *Scleria* 9; *Uncinia* 1; *Carex* 5. We record with pleasure that the author did not find it necessary to make any new species!

With this may be noticed the late C. B. Clarke's "Cyperaceae of Costa Rica" (Contrib. N. S. Nat. Herb. X., 6) in which *Kyllingia* has 5 species credited to it; *Pycneus* 6; *Cyperus* 14; *Mariscus* 11; *Torulinium* 1; *Eleocharis* 13; *Fimbristylis* 6; *Bulbostylis* 3; *Scirpus* 2; *Fuirena* 1; *Dulichium* 1; *Dichromena* 2; *Rynchospora* 16; *Scleria* 11; *Calyptracarya* 1; *Uncinia* 2; *Carex* 6; *Hypolytrium* 1; *Mapania* 2. Three new species are described in as many genera (*Cyperus*, *Rynchospora*, *Carex*). In spite of the rule of the Vienna Congress these descriptions are in English! Why should not our National Herbarium observe this salutary rule?

E. Manson Bailey, colonial botanist, continues his "Contributions to the Flora of Queensland" in the *Queensland Agricultural Journal* (February, March, June, September, 1907) adding materially to our knowledge of the flora of that far-away land.

Professor Ramaley publishes in the December (1907) University of Colorado Studies a valuable paper on the "Woody Plants of Boulder County." The eastern third of the county extends out upon the elevated plains (about 5,000 feet altitude), while the remainder is mountainous and rises to 10,000 and even 14,000 feet. Upon this area of a little more than 700 square miles the author finds 112 species of woody plants. Nine conifers are recorded, five cottonwoods, thirteen willows, one alder, three birches, one hack-

berry, and three maples. Neither oaks, elms nor ashes occur in the county.

Professor Doctor J. C. Arthur continues his cultures of Uredineae in order to determine their identity, and their alternate hosts, publishing his results (for 1906) in the *Journal of Mycology* for September, 1907, and (for 1907) in the same journal for January, 1908. By these studies he is slowly unraveling the heteroecismal puzzle of the plant rusts.

Two interesting cytological papers by Professor Doctor E. W. Olive deserve mention here, viz.; "Cell and Nuclear Division in *Basidiobolus*" (in *Annales Mycologici*, Vol. V., No. 5, 1907), and "Cytological Studies on *Ceratiomyxa*" (in *Trans. Wis. Acad. Sci. Arts and Letters*, Vol. XV.). Each is accompanied with a fine plate.

Another recent cytological paper on "Nuclear Structure and Spore formation in *Microsphaera alni*" is by M. C. Sands (in *Trans. Wis. Acad. Sci. Arts and Letters*, Vol. XV.). A good plate accompanies the text.

H. B. Humphrey contributes an interesting paper—"Studies in the Physiology and Morphology of some California Hepaticae"—(*Proc. Wash. Acad. Sci.*, Vol. X.) in which among other things he describes various endophytic parasites which he has observed in certain species.

In the July, 1907, *Philippine Journal of Science*, where we have learned to look for valuable contributions, Oakes Ames, under the title "Orchidaceae Halconenses" enumerates the orchids collected near Mount Halcon on the island of Mindoro of the Philippine archipelago. He catalogues 102 species (39 of which are new), representing 39 genera.

J. H. White describes "Polystely in Roots of Orchidaceae" in the University of Toronto Studies (Biological Series, No. 6), showing that there are two types of roots among terrestrial orchids—the monostelic and the polystelic. The paper is illustrated by six plates.

"The Sporangium of the Ophioglossales" by L. L. Burlingame (with two plates), "Differentiation of Sporocarps in *Azolla*" by Wanda M. Pfeiffer (with two plates), and "Twin Hybrids" by Professor Hugo De

Vries, are reprints of recent papers originally published in the *Botanical Gazette*. In the last named paper the author calls attention to the fact that in making certain crosses of evening primroses two types of hybrids result from the same parents.

In the *Columbia University Quarterly* for December, 1907, N. L. Britton contributes an appreciative sketch of the life and work of the lamented Professor Doctor Lucien M. Underwood. A fine photograph accompanies the paper.

CHARLES E. BESSEY

THE UNIVERSITY OF NEBRASKA

THE UNIVERSITY OF OVIEDO

THE rector of the University of Oviedo in Spain has notified universities, colleges and schools, and the learned world generally, of the celebration of the 300th anniversary of the opening of that university which will take place in September next under the auspices of King Alfonso and the Prince of the Asturias, and he invites the professors of universities and others interested to attend the ceremonies of the occasion which will occupy ten days, from the twentieth to the thirtieth of the month. The documents accompanying the invitation consist of a list of subjects of the orations to be delivered and a program of the exercises arranged for the occasion. These include the ceremony of the unveiling of the statue of the founder, Fernando Valdés y Salas, Archbishop of Seville, which will be performed with religious solemnities; excursions to celebrated places in the neighborhood; a pedagogical exhibition with school festivals; lectures and sessions of various societies; distribution of prizes; theatrical performances, etc. It is interesting to note that the university authorities express a special desire that Spanish Americans should visit Oviedo on this occasion, not only because of their community of blood and language, but also because the sons of the Asturias have left such deep impressions of their lives and deeds in the Spanish countries of the new world.

The invitation to the other university authorities (which is in Latin) concludes as follows: "It is difficult for us to say how pleasant a duty it is to invite you to our

celebration. The founders of your university, as of ours, may be likened to Saviours sent from Heaven to redeem the uncivilized nations of the earth, whose education, inaugurated by them, is entrusted to us to-day, to-morrow it will be carried on by others, and so on, continuously, until that last and highest stage of development shall have been reached when man shall be enabled by this means to become more God-like in his nature. Since this result concerns you no less than us at this university, I feel that I can approach you with full confidence, urging that your university may be represented in some way at our festival, and if a person should come in your name let him be assured that he will receive the warm welcome of a friend and comrade."

SUMMER MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

AT the convocation of the American Association for the Advancement of Science in Chicago, the council decided to have the summer meeting held at Dartmouth College, Hanover, N. H., during the week beginning June 29. Subsequently to this action, the Dartmouth Scientific Association in Hanover appointed the following committee of arrangements, the several members of which are expected to act in the interest of the respective sections of the association as indicated below.

Section A, Mathematics and Astronomy, J. M. Poor.

Section B, Physics, Professor G. F. Hull.

Section C, Chemistry, Professor C. E. Bolser.

Section D, Mechanical Science and Engineering, Professor R. Fletcher (chairman).

Section E, Geology and Geography, Professor C. H. Hitchcock.

Section F, Zoology, Professor W. Patten.

Section G, Botany, Professor R. G. Lyman.

Section H, Anthropology, Professor D. E. Wells; Psychology, Professor H. H. Horne.

Section I, Social and Economic Science, Professor D. E. Wells.

Section K, Physiology and Experimental Medicine, Professor C. C. Stuart.

Section L, Education, Professor H. H. Horne.

This committee desires the cooperation of