SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, April.—Prof. F. N. Cole gives an abstract of the *Proceedings* of the February meeting of the Society. For nearly a year plans have been under discussion for providing facilities for the publication of the increasing number of original mathematical papers produced in America. The Committee appointed at the last summer meeting have reported that it is desirable and feasible that the Society should undertake the periodical publication of *Transactions*, and that a commencement should be made in January 1900.—Nineteen papers were presented at the meeting.—Abstracts are given of papers by Prof. Macfarlane (on the imaginary of geometry), by Prof. Osgood (on a means of generating a function of a real variable whose derivative exists for every value of the argument, but is not integrable), by Prof. Lovett (on a certain class of invariants), by Dr. Snyder (lines of curvature on annular surfaces having two spherical directrices), by Dr. Miller (on the primitive groups of degree 17), by Dr. Dickson (concerning the abelian and hypo-abelian groups), by Mr. Hedrick (on three-dimensional determinants), and by Dr. Ling (an examination of groups whose orders lie between 1093 and 2000).—Prof. Webster exhibited a large number of curves traced by the motion of a rotating top.—Prof. J. M. Peirce follows the above notice with an abstract of his paper on determinants of quaternions, read at the above meeting.—The largest linear homogeneous group with an invariant pfaffian, by Dr. L. E. Dickson, was read at the October meeting of the Society.—Asymptotic lines on ruled surfaces having two rectilinear directrices, by Dr. Snyder, was communicated (partially) at the August and December meetings. There are several diagrams. The theorem discussed is every ruled surface contained in a linear complex has an asymptotic line, all of whose tangents belong to the complex (*cf.* Clebsch, "Ueber die Curven der Hauptstangenten bei windschiefen Flächen," *Crelle*, vol. lxviii.; and Bonnet, "Théorie générale des Surfaces," *Journ. de l'École Polytechnique*, vol. xxxii.).—There are reviews of "Theoretical and Practical Graphics," by F. N. Willson, of "The repertorio di matematiche superiori, i. Analisi per E. Pascal," and of "D'Ocagne's Cours de Géométrie descriptive et de Géométrie infinitésimale." The last two notices are by Prof. Lovett, who also contributes a translation of Prof. G. Darboux's obituary sketch of Sophus Lie (*Comptes rendus*, February 27).—Interesting notes and publications close the number.

Bollettino della Società Sismologica Italiana, vol. iv., 1898, No. 8.—Obituary notice of P. Landi.—On the different methods of determining the position of the epicentre in distant earthquakes of unknown origin, by G. Agamennone and F. Bonetti. The authors argue that methods which depend on the length of the interval between the two series of undulations and on their direction cannot give trustworthy results. They prefer one based on the time-records of a particular phase of the movement, and they would make use of the slow-period pulsations rather than the earlier tremors, since the latter may traverse the body of the earth with a velocity depending on the density, while the former travel along the surface with a nearly constant velocity.—Two-component seismoscope, by C. Guzzanti.—Notices of the earthquakes recorded in Italy (November 27–December 31, 1897), by G. Agamennone, the most important being the Umbria and Marches earthquake of December 18–22.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, April 20.—"Studies in the Morphology of Spore-producing Members. IV. Leptosporangiate Ferns." By F. O. Bower, Sc.D., F.R.S., Regius Professor of Botany in the University of Glasgow.

An attempt has been made in this memoir to strengthen the characters derived from the sorus by a fresh examination of its details, and certain of its features are used for purposes of general comparison which have hitherto received little attention; they are:—

(1) The relative time of appearance of sporangia of the same sorus.

(2) Certain details of structure of the sporangium, including its stalk.

(3) The orientation of the sporangia relatively to the whole sorus.

(4) The potential productiveness of the sporangium as estimated by its spore-mother cells, and the actual spore-output.

Observations of these features extending over all the more important living genera, coupled with data of habit and the characters of the Gametophyte as collateral evidence, have led the author to divide the homosporous ferns thus:—

Simplices	Marattiaceæ Osmundaceæ Schizæaceæ Gleicheniaceæ Matonineæ	Eusporangiate
Gradatæ	Loxsomaceæ Hymenophyllaceæ Cyatheaceæ Dicksonieæ Dennstaedtiinæ	Leptosporangiate
Mixtæ ...	The bulk of the Polypodiaceæ	Leptosporangiate

The effect of the observations and comparisons in this memoir is rather confirmatory of the current classifications than disturbing. The divisions suggested would supersede those of Eusporangiatæ and Leptosporangiatæ, though these terms would still be retained in a descriptive sense. If the sub-orders Osmundaceæ, Schizæaceæ, and Marattiaceæ be transferred from the end of the Synopsis Filicum to the beginning, and grouped with *Gleichenia* and *Matonia*, we have the "Simplices" before us. They are characterised by the simultaneous origin of the sporangia. The Gradatæ, in which the sporangia are produced in basipetal succession, include the Cyatheaceæ, Dicksonieæ (*Excl. Dennstaedtia*), Hymenophyllaceæ, and Loxsomaceæ, sequences probably of distinct descent, and probably derivative from some prior forms such as the Simplices; and in the arrangement of Sir Wm. Hooker they hold a position following on the Gleicheniaceæ. The family of Dennstaedtiinæ, founded by Prantl to include *Dennstaedtia* and *Microlepia*, also has its place here, but it leads on by intermediate steps to undoubtedly mixed forms in which various ages of sporangia appear without regular sequence, such as *Davallia*, *Cystopteris*, *Lindsaya*, and the Pterideæ. But this sequence is already laid out in this order in the Synopsis, and it illustrates one at least of the lines along which mixed forms are believed to have been derived from the Gradatæ. No attempt has been made to follow the natural grouping of the Mixtæ into detail, or to test the arrangement of them in the Synopsis. Sufficient has, however, been said to show that the systematic divisions of the ferns now proposed fall in readily with the system of Sir William Hooker, notwithstanding that they are based upon details of which he cannot have been aware.

"The Physiological Action of Choline and Neurine." By F. W. Mott, M.D., F.R.S., and W. D. Halliburton, M.D., F.R.S.

The cerebro-spinal fluid removed from cases of brain atrophy after death or during life, particularly from cases of general paralysis of the insane, produces when injected into the circulation of anæsthetised animals a fall of arterial pressure, with little or no effect on respiration. This pathological fluid is richer in proteid matter than the normal fluid, and among the proteids, nucleo-proteid is present. The fall of blood pressure is due to an organic substance, which by chemical methods was identified as choline.

The nucleo-proteid and choline originate from the disintegration of the brain tissue, and their presence indicates that some of the symptoms of general paralysis may be due to auto-intoxication; these substances pass into the blood, for the cerebro-spinal fluid functions as the lymph of the central nervous system. We have identified choline in the blood removed by venesection from these patients during the convulsive seizures which form a prominent symptom in the disease.

Normal cerebro-spinal fluid does not contain nucleo-proteid or choline, and produces no effect on arterial pressure.

Our proof that the material we have worked with is choline rests not only on chemical tests, but also on the evidence afforded by physiological experiments; the action of the cerebro-spinal substance exactly resembles that of choline. Neurine, an alkaloid closely related to choline, is not present in the fluid;

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