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THE INTERNATIONAL AERONAUTICAL CONFERENCE AT MILAN

THE history and organization of the International Commission for Scientific Aeronautics, whose name does not indicate that its purpose is to explore the atmosphere, are briefly described in SCIENCE, Vol. XXI., page 461. The fifth meeting of the commission had been appointed for Rome in 1906, but on account of the exposition at Milan, with its aeronautical section, the place of meeting was changed to the latter city. The conference began on October 1 and lasted through the sixth, there being about forty members of the commission and guests in attendance. The proceedings were opened by Professor Celoria, representing the exposition of Milan, and a further welcome was extended by Signor Gavazzi on the part of the municipality, by Professor Palazzo for the Italian government and by Professor Hergesell as president of the commission. Two presiding officers for each session were chosen from among the foreigners present, who were chiefly Germans. England, however, was unusually well represented by four delegates and guests. The writer was the official representative of the United States Weather Bureau, as well as of the Blue Hill Observatory, and on his proposition Dr. O. L. Fassig, research director at the new Weather Bureau observatory on Mount Weather, Virginia, was elected a member of the commission, as were also M. Lancaster to represent Belgium and Signori Gamba and Oddone from Italy.

of *Cycadeoidea* and *Bennettites gibsonianus*, or allied species, far the larger portion were actually bisporangiate and discophorous. That this conclusion has not resulted from previous studies, and that it has only rarely been suggested in a modified form, is ascribed to the imperfection of the longitudinal sections of cones.

The orthotropous seeds are about the size of a small grain of rye, and each is produced on a separate pedicel. Only one coat encloses the nucellus. In this respect *Cycadeoidea wielandi* is comparable with *Bennettites morierei* from which, however, it differs in detail to such an extent that the two can not be homologized with certainty. The seed coat of the former is nevertheless exactly comparable with *Lagenostoma*, which, of all the existing and extinct forms thus far discussed, affords the most striking structural parallels with American *Cycadeoidea* seeds.

A further parallelism between the American *Cycadeoidea dacotense* and *C. wielandi*, and the European *Bennettites gibsonianus* and *B. morierei*, is to be found in the presence of well-marked dicotyledonous embryos which more or less nearly fill the entire space and indicate a nearly, if not complete, exalbuminous condition. These embryos are strikingly like those of *Gingko*. Evidence has also been obtained with respect to the existence of an earlier or preembryonic stage which has never been found preserved in any other specimen or hitherto observed in any other fossil gymnosperm or other plant. The evidence points to the replacement of the oospore by a homogeneous tissue and the absence of a suspensor. The embryo was therefore formed directly through growth of the oospore which thus represents the proembryo or protocorm. The suggestion arising from these facts is an analogy with *Ginkgo* in which there is a much more simple form of embryogeny than in other gymnosperms.

One of the most striking facts revealed by the studies so far completed, is that the hiatus between the two great Cycadean lines is of a two-fold character. In existing cycads great complication of the cortical bundle system has developed, while the reproductive organs are relatively little changed and primitive. Conversely, in the Cycadeoideæ there is a retention of the primitive cortical system together with the most surprising reproductive changes leading up to the bisexual flower which mimics that of the angiosperms. It is therefore natural to ask if two groups so related shall be included in one greater class, the Cycadales, or the Cycadeoideæ be excluded from the true Cycadales, as Bennettitales or Cycadeoidales? After a careful review of the positions taken by Scott, Zeiller, Potonié and Count Solms, and of the evidence afforded by the paleontological record, it is held that the Cycadeoideæ find their appropriate place amongst the true Cycadales.

An interesting summary of the fern-cycad relations, together with suggestions bearing upon analogies of the ferns and angiosperms, closes a very able treatment of a difficult but intensely fascinating problem. The general tendency of the evidence is to greatly strengthen the current views respecting the marattiaceous origin of the cycads; or, in the pregnant words of the author "The preceding résumé of the principal characters of the two great cycad groups as combined and showing their descent from marattiaceous ferns of the Paleozoic, is not merely conclusive, but one of the great cornerstones upon which the conception of evolution can rest secure."

D. P. PENHALLOW

MONTREAL,
May, 1907

SCIENTIFIC JOURNALS AND ARTICLES

THE April number (volume 8, number 2) of the *Transactions of the American Mathematical Society* contains the following papers:

E. KASNER: 'Dynamical trajectories: the motion of a particle in an arbitrary field of force.'

W. R. LONGLEY: 'A class of periodic orbits of an infinitesimal body subject to the attraction of n finite bodies.'

E. B. VAN VLECK: 'A proof of some theorems on pointwise discontinuous functions.'

L. E. DICKSON: 'Invariants of binary forms under modular transformations.'

E. J. WILCZYNSKI: 'Projective differential geometry of curved surfaces (First memoir).'

J. I. HUTCHINSON: 'A method for constructing

the fundamental region of a discontinuous group of linear transformations.'

E. B. Wilson: 'Oblique reflections and unimodular strains.'

C. N. Moore: 'On the introduction of convergence factors into summable series and summable integrals.'

The May number (volume 13, number 8) of the *Bulletin of the American Mathematical Society* contains: Report of the February meeting of the San Francisco Section, by W. A. Manning; Report of the Fifty-seventh Meeting of the American Association for the Advancement of Science, by L. G. Weld; 'On a Final Form of the Theorem of Uniform Continuity,' by E. R. Hedrick; 'The Groups Generated by Three Operators Each of which is the Product of the Other Two,' by G. A. Miller; 'A Table of Multiply Perfect Numbers,' by R. D. Carmichael; 'The Symmetric Group on Eight Letters and the Senary First Hypoabelian Group,' by L. E. Dickson; 'Double Points of Unicursal Curves,' by J. E. Wright; 'The Mathematical Tablets of Nippur,' by D. E. Smith; 'Osgood's Theory of Functions' (Notice of Professor W. F. Osgood's Lehrbuch der Funktionentheorie), by H. S. White; Shorter Notices (Arnoux's Introduction a l'Etude des Fonctions Arithmétiques, by W. H. Bussey; Neumann's Studien über die Methoden von C. Neumann und G. Robin zur Lösung der beiden Randwertaufgaben der Potentialtheorie, by O. D. Kellogg; Biermann's Vorlesungen über mathematische Näherungsmethoden, by J. W. Young; Ariès's La Statique Chimique Basée sur les deux Principes Fondamentaux de la Thermodynamique, by E. B. Wilson); Notes; New Publications.

SOCIETIES AND ACADEMIES

THE IOWA ACADEMY OF SCIENCES

The twenty-first annual session of the Iowa Academy of Science was held at Drake University, Des Moines, Iowa, on April 26 and 27. The meeting was well attended and much interest was manifested in the papers presented. In addition to the regular program, illustrated lectures were given on the evening of the twenty-sixth by Professor H. L. Russell, of the University of Wisconsin, on 'Recent Discoveries with Reference to Insect-borne Diseases,' and by Professor W. W. Campbell, director of the Lick Observatory, on 'The Solar Eclipse in Spain.'

The officers elected for the ensuing year are:

President—John L. Tilton, Simpson College.

First Vice-President—C. L. Von Ende, State University.

Second Vice-President—Nicholas Knight, Cornell College.

Secretary—L. S. Ross, Drake University.

Treasurer—H. E. Summers, Iowa State College.

The following program was presented:

The Influence of Science in Forming Ideals. President's Address: C. O. Bates.

Exposures of Iowan and Kansan (?) Drift, East of the Usually Accepted Boundary Line of the Driftless Area: Ellison Orr.

(*a*) *Volcanic Phenomena around Citlaltepetl and Popocatepetl, Mexico;* (*b*) *Physiographic significance of the Mesa de Maya;* (*c*) *Tertiary Terranes of New Mexico:* Charles R. Keyes.

A Visit to the Panama Canal (illustrated): Grant E. Finch.

An account of three weeks of observations on the Canal Zone during the summer of 1906. Impressions of climatic conditions and of problems and progress in the canal enterprise.

(*a*) *The Channel of the Mississippi between Lansing and Dubuque* (illustrated); (*b*) *The Unconformity at the Base of the Saint Louis Limestone* (illustrated): S. Calvin.

(*a*) *Recent Alluvial Changes in Southwest Iowa;* (*b*) *Effect of Certain Characteristics of Formations upon Rate of Their Erosion:* J. E. Todd.

(*a*) *The Loess of the Missouri River* (illustrated).

In large part a rejoinder to Professor Todd's late paper on the same subject, especial attention being given to his attempted explanation of the manner in which the shells of molluscs found their way into the deposit.

(*b*) *The Loess of the Paha* (illustrated).