ments of living men and women will be our final criterion of the strength of mental inheritance, but Dr. Woods's work is an important contribution to psychology and a most admirable lesson to show that history may become a natural science.

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SCIENTIFIC JOURNALS AND ARTICLES.

To the January-February *Journal of Geology,* the opening number of Volume XIV., Dr. S. W. Williston contributes a paper entitled 'American Amphicœlian Crocodiles' and Professor R. S. Tarr an article on 'Glacial Erosion in the Finger Lake Region of Central New York.' E. C. Andrews, of Sydney, New South Wales, discusses 'The Ice-Flood Hypothesis of the New Zealand Sound Basins' and S. W. McCallie describes some 'Stretched Pebbles from Ocoee Conglomerate.' This article is illustrated by three figures. Professor A. P. Coleman, in a paper entitled 'Pre-Cambrian Nomenclature,' reviews certain features of the report of the committee of American and Canadian geologists appointed by the surveys of the two countries to decide upon a suitable nomenclature for the pre-Cambrian formations of the Upper Lakes. The number concludes with an interesting editorial on the revival of the Illinois Geological Survey.

THE April number (volume 7, number 2) of the *Transactions of the American Mathematical Society* contains the following articles:

C. E. STROMQUIST: 'On geometries in which circles are the shortest lines.'

G. A. BLISS: 'A generalization of the notion of angle.'

OSWALD VEBLEN: 'The square root and relations of order.'

EDWARD KASNER: 'The problem of partial geodesic representation.'

R. P. STEPHENS: 'On the pentadeltoid.'

G. A. MILLER: 'The groups of order p_m which contain exactly p cyclic subgroups of order p^a.'

W. A. MANNING: 'Groups in which a large number of operators may correspond to their inverses.'

OSWALD VEBLEN and W. H. BUSSEY: 'Finite projective geometries.'

W. B. FORD: 'On the analytic extension of functions defined by double power series.'

L. E. DICKSON: 'On quadratic, hermitian and bilinear forms.'

PAUL STÄCKEL: 'Die kinematische Erzeugung von Minimalflächen.'

OSKAR BOLZA: 'A fifth necessary condition for a strong extremum of the integral $\int_{x_0}^{x_1} F(x, y, y')\, dx$.'

G. A. BLISS and MAX MASON: 'A problem in the calculus of variations in which the integrand is continuous.'

THE April number (volume 12, number 7) of the *Bulletin of the American Mathematical Society* contains: Report of the February Meeting of the Society, by F. N. Cole; Report of the Fifty-fifth Annual Meeting of the American Association for the Advancement of Science, by L. G. Weld; 'A Proof of the Fundamental Theorem of Analysis Situs,' by G. A. Bliss; 'Determination of Associated Surfaces,' by Burke Smith; 'Note on the Practical Application of Sturm's Theorem,' by J. E. Wright; 'The Movement for Reform in the Teaching of Mathematics in Prussia,' by J. W. A. Young; Review of Jahnke's Vorlesungen über die Vektorenrechnung, by E. B. Wilson; Review of Moulton's Introduction to Celestial Mechanics, by A. O. Leuschner; Shorter Notices: Borel's Géométrie, Premier et Second Cycle, by C. L. E. Moore; Schüssler's Orthogonale Axonometrie, by Virgil Snyder; 'Notes' and 'New Publications.'

The May number of the *Bulletin* contains: Report of the February Meeting of the San Francisco Section, by G. A. Miller; 'An Application of the Theory of Differential Invariants to Triply Orthogonal Systems of Surfaces,' by J. E. Wright; 'Surfaces generated by Conics cutting a twisted Quartic Curve and an Axis in the Plane of the Conic,' by Virgil Snyder; 'Operation Groups of Order $p_1{}^{m_1\mu_1} p_2{}^{m_2\mu_2}$,' by O. E. Glenn; 'A Definition of Quaternions by Independent Postulates,' by Miss R. L. Carstens; 'Note on the Heine-Borel Theorem,' by N. J. Lennes; Review of Borel's Leçons sur les Fonctions de Variables Réelles, by J. W. A. Young; Shorter Notices: Hawkes's Advanced Algebra, by G. D. Olds, Brioschi's Works, by H. S. White,

Verhandlungen des dritten Mathematiker-Congresses, by H. S. White; 'Notes' and 'New Publications.'

The Botanical Gazette for April contains the second paper of Dr. E. W. Olive on 'Cytological Studies on the Entomophthoreae,' being a presentation of the nuclear and cell division of Empusa; a second paper by Professor V. M. Spalding on the 'Biological Relations of Desert Shrubs,' in which the results of experimental work on the absorption of water by leaves is presented; descriptions of numerous new species of Californian plants, by Miss Alice Eastwood; and a sixth paper on North American grasses, by A. S. Hitchcock. The usual book reviews and notes for students close the number.

SOCIETIES AND ACADEMIES.

THE GEOLOGICAL SOCIETY OF WASHINGTON.

AT the 175th meeting of the society on February 14, the following papers were presented:

Paleozoic Stratigraphy of China: BAILEY WILLIS.

Mr. Willis presented certain stratigraphic results of the Carnegie expedition to China of 1903–4 for geological research. Stratigraphic sections were carefully observed in the northeastern province, Shan-tung, in northern Shan-si, and in the central region of south Shen-si and Ssi-ch'uan. In general, the Paleozoic system is extensively represented from late lower Cambrian to Carboniferous or Permian. The basement on which it rests is commonly a metamorphic complex of the general character of the Archean, but locally at least two pre-Cambrian systems, one of which resembles the Huronian and the other the Belt Mountain series, are distinguishable. In north China, north of latitude 34°, the Cambrian and Ordovician constitutes a continuous sequence of limestones, with occasional interbedded shales, about 3,500 feet thick. The basal shale, 350 to 500 feet thick, is distinguished by the prevailing red color of the sediments. The unconformity at the bottom is one of marine plantation across a previously developed peneplain, and is very even. There is no lithologic break at the top of the Cambrian, the passage to the Ordovician occurring in the body of limestones and being recognized only by the fossils. At the top of the Ordovician there is an eroded surface which closely parallels the bedding of the limestones, but exhibits hollows which are occasionally ten or fifteen feet deep and are filled with clay that is useful for pottery. Upon this surface rest shales which carry upper Carboniferous (Pennsylvanian) fossils and contain coal beds. In the upper part of the coal-bearing measures basaltic flows are interstratified with shales. Cross-stratified red sandstones succeed, and above these come in sandstones with coals which carry Jurassic plants. The sequence resembles that of the Permo-Mesozoic of India.

In central China the Paleozoic sequence differs from that in north China in several respects. At the base on the Yang-tzi there is a granite which may be Archean or Algonkian. It is locally overlain by 150 feet of quartzite, upon which rests an early Cambrian glacial till. Limestones approximately 4,500 feet thick rest upon the till and include in the lower layers a conglomerate containing pebbles derived from the till. These limestones represent the Cambro-Ordovician sequence and carry at their top a rich fauna of Trenton age. They pass by transition into thin bedded shales which are in part Carboniferous, suggesting the Devonian black shale of the Appalachian region, and in part greenish shaly sandstone like the Chemung. This formation is about 1,800 feet thick and represents all the Middle Paleozoic. It is overlain in apparent conformity by a limestone 4,000 feet thick, which contains coal beds and about 1,000 feet above its base yielded upper Carboniferous fossils of late Pennsylvanian association. From a layer at the contact of the limestone with the shales a few obscure forms, which may be late Devonian or lower Carboniferous, were obtained. Above the Carboniferous limestone comes in the sequence of Red Beds with thin marine limestone and coal beds, which some 600 or 800 feet above their base contain Jurassic plants. Thus in central