certain covariant relations,' by H. S. White; 'Formentheoretische Entwickelung der in Herrn White's Abhandlung über Curven dritter Ordnung enthaltenen Sätze,' by P. Gordan; 'Sur la définition générale des fonctions analytiques, d'après Cauchy,' by E. Goursat; 'On a class of particular solutions of the problem of four bodies,' by F. R. Moulton; 'Definition of the Abelian, the two hypoabelian, and related linear groups as quotient-groups of the groups of isomorphisms of certain elementary groups,' by L. E. Dickson; 'Note on the unilateral surface of Moebius,' by H. Maschke; 'On regular singular points of linear differential equations of the second order whose coefficients are not necessarily analytic,' by M. Bôcher; 'The elliptic sigma-functions considered as a special case of the hyper-elliptic sigma-functions,' by O. Bolza; 'On the groups which are the direct products of two subgroups,' by G. A Miller; 'On certain crinkly curves,' by E. H. Moore; 'A new definition of the general Abelian linear group,' by L. E. Dickson.

THE February number of the *Bulletin* of the American Mathematical Society contains the following articles: Report of the annual meeting of the Society, by the Secretary; a report of the December meeting of the Chicago Section, by Professor T. F. Holgate; 'On cyclical quartic surfaces in spaces of n dimensions,' by Dr. Virgil Snyder; 'On the singular transformations of groups generated by infinitesimal transformations,' by Professor Henry Taber; 'Proof of the existence of the Galois field of order p^r for every integer r and prime number p,' by Professor L. E. Dickson; a review of Méray's Infinitesimal analysis, by Professor E. Lovett; 'Notes'; and 'New Publications.'

THE contents of the March number of the *American Journal of Science* are as follows:

'Hot Water and Soft Glass in their Thermodynamic Relations,' by C. Barus.

'Conrad's Types of Syrian Fossils,' by C. E. Beecher.

'Electrical Thermostat,' by W. Duane and C. A. Lory.

'Toxic Action of a Series of Acids and of their Sodium Salts on Lupinous Albus,' by R. H. True.

'Explorations of the *Albatross* in the Pacific,' by A. Agassiz.

'Ægirite Granite from Miask, Ural Mountains,' by L. V. Pirsson.

'Illinois Gulch Meteorite,' by H. L. Preston.

'Silurian-Devonian boundary in North America,' by H. S. Williams.

SOCIETIES AND ACADEMIES.

THE ANNUAL MEETING OF THE NEW YORK ACADEMY OF SCIENCES, FEBRUARY 26, 1900.

PROFESSOR HENRY F. OSBORN, President of the Academy, opened the meeting with a brief address in which he spoke particularly of the needs of the Academy in reference to a permanent home, and a larger publication fund; of the work of the sections of the Academy, particularly of that of the Section of Anthropology and Psychology, in association with the recently organized Ethnological Society; and of the Section of Astronomy and Physics, which has lately added Chemistry to its field of operations. Professor Osborn paid brief tribute to certain of our distinguished Honorary members who have died during the year, particularly to Professor Bunsen, Dr. Geinitz, Sir William Dawson, and Sir William Flower.

The Recording Secretary reported a total of 333 resident members, and analyzed the 82 papers given before the Academy during the last year, as to their subjects, showing that the largest attention has been given to anthropology, astronomy, geology, paleontology, petrography, physics, and zoology. The Recording Secretary also reported that the annual reception and exhibition which was held in April, in the American Museum of Natural History, was, like its predecessors, extremely successful. For the first time since the reception has been held in the American Museum it was possible to have an unoccupied room, whereby there was no confusion between the Academy and Museum exhibits. The same plan will be followed during the coming year. The Academy feels that it owes a great deal to the President and Trustees of the American Museum of Natural History, for their kindness and courtesy in allowing the Annual Reception to be held in the Museum, under such favorable auspices, and at such a moderate expense to the Academy.

The Council feels that the success and increased interest evident in the meetings since

the removal of the meeting place to its present building (12 West 31st Street) is a very pleasing feature in the Academy's work. Almost without exception the meetings of the various sections have been individually and as a whole largely increased in attendance during the last year and a-half.

" The work of the Recording Secretary's office has been systematized and in many ways improved during the last year, so that the necessary and frequent details are managed more efficiently and with less expenditure of energy and time."

The Treasurer reported cash on hand $2239.11, with total assets of $15,059.11.

The Librarian reported that the library consisted in round numbers of about 9000 volumes, of which hardly 5 per cent. are in separate title. During the year the library has been well housed in Schermerhorn Hall, Columbia University, the card catalogue and shelf list have been rearranged and the library in every way has been made more workable and serviceable.

The Editor reported that Vol. XII. of the *Annals*, now in press, of which one part has already appeared, contains 14 papers, and about 600 pages. He also reported the appearance of Part I., Vol. II. of the *Memoirs*, devoted to ' The So-Called Devonian Lamprey, *Palæospondylus gunni*,' by Dr. Bashford Dean. The edition of the *Annals* has been increased from 1000 to 1250, and the exchange list has been extensively revised.

The following Honorary and Corresponding Members were then elected, and nine resident members were, ' because of their scientific attainments and services,' made Fellows:

Honorary Members.—Julius Hann, Ph.D., University of Graz; Edward Charles Pickering, LL.D., Harvard University; Jules-Henri Poincaré, F.R.S., Faculty of Sciences, Paris; Henry Augustus Rowland, LL.D., Johns Hopkins University; Edward Burnett Tylor, D.C.L., LL.D., F.R.S., University of Oxford.

Corresponding Members.—Albert De Lapparent, École Libre de Hautes Études, Paris; William Henry Holmes, United States National Museum, Washington, D. C.; Kakichi Mitsukuri, Ph.D., Imperial University of Tokyo,

Japan; George Howard Parker, Ph.D., Harvard University, Charles Richard Van Hise, Ph.D., University of Wisconsin; Sho Watasé, Ph.D., Imperial University of Tokyo, Japan.

Fellows.—Dr. W. S. Day, Secretary Section of Astronomy, Physics and Chemistry; James Douglas, President American Institute of Mining Engineers; Jonathan Dwight, Jr., Ornithologist; Dr. Marshall A. Howe, Curator Columbia University Herbarium; Professor Charles H. Judd, Professor of Psychology, New York University; Dr. E. G. Love, Entomologist; Alfred W. Trotter, Mining Expert and Civil Engineer; Dr. Henry S. Washington, Petrographer; Dr. Theodore G. White, Paleontologist.

The list of officers given below was then elected by ballot:

President: Robert S. Woodward.
First Vice-President: Charles A. Doremus.
Second Vice-President: Franz Boas.
Corresponding Secretary: William Stratford.
Recording Secretary: Richard E. Dodge.
Treasurer: Charles F. Cox.
Librarian: Livingston Farrand.
Councillors: Daniel W. Hering, Frederic S. Lee, Harold Jacoby, M. I. Pupin, Edw. L. Thorndike, L M. Underwood.
Curators: Harrison G. Dyar, Alexis A. Julien, George F. Kunz, Louis H. Laudy, E. G. Love.
Finance Committee: Henry Dudley, John H. Hinton, Cornelius Van Brunt.

After a brief address by the President-Elect, the retiring President delivered his presidential address, entitled ' The Geological and Faunal Relations of Europe during the Tertiary period, and the Theory of the Successive Invasions of the Ethiopian Fauna,' which will be printed in this JOURNAL.   RICHARD E. DODGE,
Recording Secretary.

AMERICAN MATHEMATICAL SOCIETY.

THE first number has recently appeared of the *Transactions of the American Mathematical Society*, published quarterly by the Society with the coöperation of Harvard University, Yale University, Princeton University, Columbia University, Haverford College, Northwestern University, Cornell University, The University of California, Bryn Mawr College, The University of Chicago; edited by Eliakim Hastings

Moore, Ernest William Brown, Thomas Scott Fiske; New York, The Macmillan Company. The *Transactions,* which is devoted to the publication of important researches presented at the meetings of the Society, is quarto in size, and the annual volume will contain not less than five hundred pages. The contents of the first number are noted elsewhere.

The Annual Register of the Society has recently been issued, and contains a directory list of publications, list of officers and members, Consitution and By-Laws, and annual reports. Copies may be obtained from the Secretary.

A regular meeting of the Society was held at Columbia University on Saturday, February 24, 1900. As usual, the programme occupied a morning and an afternoon session. President R. S. Woodward occupied the chair. A part of the afternoon was devoted to a joint meeting with American Physical Society, at which a paper on Latitude Variation was presented by Professor J. K. Rees.

A revision of the By-Laws, affecting mainly their arrangement, was adopted. Notice was also given of a proposed amendment of the Constitution enlarging the Council by making the ex-presidents permanent members and increasing the number of elected members by three. The following persons were elected to membership in the Society: Professor Anne L. Bosworth, Rhode Island College, Kingston, R. I.; Mr. H. L. Coar, University of Illinois, Urbana, Ill.; Dr. F. R. Moulton, University of Chicago, Chicago, Ill.; Mr. F. G. Radelfinger, Hydrographic Office, Washington, D. C. Two applications for membership were received.

The following papers were presented at this meeting:

(1) DR. ALEXANDER MACFARLANE: 'On the nabla of quaternions.'

(2) DR. M. B. PORTER: 'On the number of roots of $F(\alpha, \beta, \gamma, x)$ between zero and 1.'

(3) MR. H. W. KUHN: 'List of the imprimitive groups of degree fifteen.'

(4) DR. G. A. MILLER: 'On the groups of isomorphisms.'

(5) DR. J. I. HUCHINSON: 'The Hessian of the cubic surface, II.'

(6) PROFESSOR MAXIME BÔCHER: 'Some theorems concerning linear differential equations of the second order.'

(7) PROFESSOR J. K. REES: 'Results of seven years' observations for variation of latitude and the constant of aberration, made at the Columbia University Observatory.'

(8) DR. G. W. HILL: 'On the extension of Delaunay's method in the lunar theory to the general problem of planetary motion.'

(9) PROFESSOR E. B. VAN VLECK: 'On linear criteria for determining the circle of convergence of a power series.'

(10) PROFESSOR F. MORLEY: 'The metrical geometry of the plane n-line.'

(11) PROFESSOR L. E. DICKSON: 'Two triply infinite systems of non-isomorphic simple groups of equal order.'

(12) PROFESSOR L. E. DICKSON: 'Isomorphism between certain systems of simple linear groups.'

(13) DR. L. W. REID: 'A table of class numbers for cubic number bodies with the method of their calculation.'

After the meeting many of the members dined and passed a pleasant evening together. The next meeting of the Society will be held on Saturday, April 28th. The Chicago Section meets at Northwestern University, Evanston, Ill., on Saturday, April 14th. The summer meeting of the Society will be held in New York, in June, in affiliation with the meeting of the American Association for the Advancement of Science. F. N. COLE,
                                  Secretary.

COLUMBIA UNIVERSITY.

THE TEXAS ACADEMY OF SCIENCE.

THE regular monthly meeting of the Texas Academy of Science was held in the Chemical lecture room of the University of Texas on Friday evening, January 12th, President Simonds in the chair.

The first paper on the program, entitled, 'The Red Sandstone of the Diablo Mountain, Texas,' was by Mr. E. T. Dumble, of Houston, formerly State Geologist. The sandstone here discussed is found north of Allamore station on the Texas and Pacific Railway, and is the rock enclosing the copper vein, a part of which has been known for some years as the Hazel mine. Professor Streeruwitz in one of his reports on the region states that this formation is possibly Devonian, basing his statement, as Mr. Dumble

understands it, entirely on the petrographic character of the rock, as it contains no fossils, and on its relation to the Carboniferous deposits in the hills north of the mine. Mr. Dumble has studied this sandstone, if it really be such, with considerable care, and finds it to occupy a position much lower in the geological scale than had been previously thought—that it is, in fact, below the Texan Group of Comstock—that is, at the very base of the sedimentary series. He does not believe that it is a part of an immense mass or boss of igneous material.

Mr. A. C. McLaughlin, for several years past connected with the Geological Survey of Maryland, gave an account of the work as conducted by that organization in the western part of the State.

Professor T. U. Taylor, of the Department of Engineering, read and commented upon a communication received from Professor W. H. Echols, of the University of Virginia, on the ' Measure of Earthwork,' in which the prismatic formulæ were employed.

Dr. S. E. Mezes followed with a paper on ' Monogamous Marriage,' in which he gave an account of this institution and of the rules and customs by which it has been maintained. That this institution is adapted to the highest civilization was shown in the fact that by it, and it alone, could be made a home, and that the home-training of children produced the highest and best results socially. The paper was both thoughtful and candid and received the hearty approval of all who heard it.

<div align="right">F. W. S.</div>

UNIVERSITY OF TEXAS.

DISCUSSION AND CORRESPONDENCE.

MARGINAL TABS FOR LOGARITHM TABLES.

TO THE EDITOR OF SCIENCE : Will you permit me, through the columns of SCIENCE, to bring to the attention of users of my ' Computation Rules and Logarithms,' a set of ' Marginal Tabs ' for use in that book. The tabs are arranged for the five-place tables of logarithms of numbers and of the trigonometrical functions. They not only materially lessen the time required to find any logarithm or antilog in the use of the tables to five places, but they render the table even more speedy than the ordinary four-place table for obtaining the logarithms or antilogs to four places, while also much lessening fatigue and liability to mistake, no interpolation being required. The printed tabs, with directions for their application and use, form a leaflet which will be mailed by the author on receipt of twenty-five cents. Copies of the *errata* of the first (very thick paper) impression of the Tables, but which have been corrected in later impressions, will be mailed to holders of that edition on receipt of a stamped and addressed envelope.

<div align="right">S. W. HOLMAN.</div>

18 ELM STREET, BROOKLINE, MASS.,
    February 24, 1900.

NOTES ON PHYSICS.

IN the London *Electrician* is a report of some recent experiments of Professor S. Lussana on the variation of resistance under high pressures, up to 1000 atmospheres. He found the resistance to decrease with increase of pressure, and obtained the following coefficients per atmosphere.

Lead	194×10^{-7}		
Iron	38	Argentana	9.7×10^{-7}
Silver	32	Nickelina	7.4
Copper	31	Constantea	7.9
Platinum	24	Manganin	5.6
Nickel	19	Brass	4.3

The curves of decrease of resistance were slightly concave toward the axis of pressure, showing a tendency toward a minimum.

The resistance did not return to its normal immediately on removal of the pressure. In the case of platinum which had been under a pressure of 500 atmospheres for one hour, the resistance, on removal of the pressure, increased rapidly for ten minutes, and then quite slowly, taking about one hour to return to approximately its normal. Held under the same pressure for 24 hours, the curve showing its return with time to normal resistance is very interesting, rising in about 50 minutes to normal, going above, returning again to normal in about 7½ hours, falling below, and again becoming approximately normal in about 14 hours, thus showing a series of waves of decreasing magnitude and increasing length.