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.

F. W. S.

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.

S. W. Holman.

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 | $194 \times 10^{-7}$ | | |
| Iron | 38 | Argentana | $9.7 \times 10^{-7}$ |
| 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 $7\frac{1}{2}$ hours, falling below, and again becoming approximately normal in about 14 hours, thus showing a series of waves of decreasing magnitude and increasing length.

In the same journal of January 26th is an abstract of a Royal Society paper by C. E. S. Phillips, on 'Diselectrification produced by Magnetism.' Foil was cemented on the inner and outer surfaces of a glass tube, and powerful magnet poles were inserted through air-tight flanges. When the tube was exhausted below .2″ of mercury, and the inner coating was connected to the positive side of an electrical machine, an electroscope attached to the inner coating showed a rapid discharge on opening or closing the circuit of the magnet. With higher pressures or when the inner coating was negative there was no effect. When the electroscope was attached to the iron of the magnet poles, it indicated that the charge was transferred to these.

F. C. C.

## *ZOOLOGICAL NOTES.*

### BIRD MIGRATION.

IN a recent issue of the *Proceedings of the California Academy of Sciences*, Leverett M. Loomis gives a fourth part of his 'California Water Birds,' including his deductions from a careful study of their migrations. He concludes that the Shearwaters off Monterey find their position and shape their course by landmarks, and that birds possess no mysterious superhuman faculty for determining direction, or else these same Shearwaters would not have been bewildered in the fog. He also considers that the young are guided from the place of their birth to their winter abode through the experience of the older birds, and that the mere presence of young alone in a locality does not prove that they are migrating independently of the adults, but that older birds have either continued their flight or are migrating farther off. Mr. Loomis sums up by saying that bird migration is a habit evolved by education and inheritance which owe their origin and perpetuation to winter, with its failure of food.

### THE STEREORNITHES AGAIN.

IN the December number of *Communicaciones del Museo Nacional de Buenos Aires*, Senor Mercerat discusses the zoological position of the gigantic birds from the Santa Cruz beds of Patagonia, and considers them as an independent 'gens' of the suborder Ciconiiformes of Fürbringer. While this is all right, Senor Mercerat unfortunately adds that the Stereornithes are a degenerate group of birds, but that they have not progressed so far on their downward course as the so-called Ratitae, and that they present numerous characters similar to those of the Carinatae, combined with others peculiar to the Ratitae. What these ratite characters are, aside from the feeble development of the wings, no one has yet satisfactorily explained, and Mr. C. W. Andrews, in his recent memoir on *Phororhacos*, shows very clearly that the Stereornithes have no kinship with the Ostriches. Size and flightlessness are not morphological characters and have no bearing whatever on the systematic position of the bird. It was a favorite remark of the late Professor Copé that an animal a mile long and an inch wide might belong to the same genus as one a mile wide and an inch long, and this might be paraphrased by saying that a bird with wings twenty feet across might be the nearest relative of a bird with no wings at all.

F. A. L.

## *THE ASSAY COMMISSION.*

THE Assay Commission, which is appointed annually by the President to test the weight and fineness of the coinage of the mints in operation during the preceding year, met at the Philadelphia mint on February 14th. The men whom President McKinley designated to serve for the year 1900 were: Senator John P. Jones, of Nevada; Representative E. J. Hill, of Connecticut; Dr. H. S. Pritchett, Superintendent of the Coast and Geodetic Survey; Professor S. A. Lattimore, of the University of Rochester; Professor H. H. Nicholson, of the University of Nebraska; Dr. J. A. Mathews, of Columbia University; Dr. Cabell Whitehead, Assayer of the Bureau of the Mint; Dr. Marcus Benjamin, of the Smithsonian Institution; Hon. John H. Perry, of Connecticut; Calvin Cobb of Boise, Idaho; Thomas B. Miller of Helena, Montana; Edward Harden, of New York City; E. H. Rich, of Fort Dodge, Iowa, and Francis Beidler, of Chicago. The Commission also includes three ex-officio members, viz., the judge of the District Court of the