Dr. Omori has compared the time of the arrival of the beginning of three of the phases mentioned above, namely the *first preliminary tremor*, the *second preliminary tremor*, and the *quick-period* phase of the *principal portion*, and he has assumed, as he is quite justified in doing, that they originated simultaneously at the seismic origin. He has compared the velocities of transmission of these three phases between Italy and Japan, in ten earthquakes, with results which agree among themselves in the most remarkable way.

The means are, for the *first preliminary*, 12.8 km. per second; the *second preliminary*, 7.2 km. per second, and for *quick period* of the principal portion 3.3 km. per second. The latter quantity, it will be observed, is what is usually thought of in speaking of the velocity of an earthquake wave.

Now no known rock has a modulus of elasticity high enough to transmit a wave, of either compression or distortion, with the speed of the *first preliminary tremor* as shown above, and it seems impossible to avoid the conclusion that this disturbance must be transmitted along some shorter path within the earth's crust, while the *principal portion* undoubtedly travels along the earth's surface. This question is greatly complicated, however, by the fact that the duration of the *first preliminary* at a given observation station is very nearly simply proportional to the *surface* distance from the origin of the disturbance.

It is impossible to close even so brief a notice as this must be, without again congratulating Dr. Omori and his colleagues of the Earthquake Commission upon the splendid way in which they are making use of the rare opportunities which they enjoy for seismological study. The indirect results of this study, especially as they are related to the general subject of terrestrial physics, promise to be of the greatest importance, and the Japanese seismologists may well feel assured that they are practically in control of a field worthy of their highest efforts.

The general form and style of these publications is so excellent that it may be worth while to call attention to the existence of a few blemishes, doubtless due to careless proof-reading. One is tempted to especially mention one of these, which is the frequent appearance of *Alasca* or *Alascan*, in which form alone, indeed, is found the name of the territory, or whatever it may really be, known to us who own it as Alaska.

T. C. Mendenhall.

Beitrag zur Systematik und Genealogie der Reptilien. By Max Fürbringer. Abdruck aus der *Jenaische Zeitschrift für Naturwissenschaft*, XXXIX. Bd. (N. F. XXVII.). Jena, Verlag von Gustav Fischer. 1900. Pp. 1–91.

The paper to which the attention of all who are interested in the class of reptiles is here called is only a portion of an extensive memoir, a summing up of the results of studies detailed in the twenty-seventh volume of the *Jenaische Zeitschrift* and occupying over four hundred pages of that journal. In view of the author's important contributions to zoological literature, especially of his great work on the morphology of birds, anything that he may have to say on the kindred group of reptiles must attract attention.

The author first discusses the position of the most primitive Reptilia and the origin of the Sauropsida (I.); then a survey is made of the systematic and genealogical relationships of the various orders (II.); and finally, these are grouped into subclasses, and their genealogical relation to the other Tetrapoda is treated (III.).

I. Of the living reptiles the Lacertilia and the Rhynchocephalia are regarded as the most primitive; of the latter a single representative exists; of the Lacertilia about 1,600. Contrary to what is generally held, the author does not regard *Sphenodon* as the most primitive reptile, although it possesses many primitive features. A just appraisement of all its characters places it lower than the highest Lacertilia, but higher than the lowest representatives of the latter. The author contends that in the primitive reptiles the quadrate bone was movable (streptostylic), and that its fixed (monomostylic) condition is the result of secondary modifications. Some of the earlier Rhynchocephalia, as *Patteohatteria*, were probably the lowest of known reptiles. Notwithstanding their differences, the Lacertilia and the Rhynchocephalia had a common ancestor.

As to the origin of the Sauropoda, Fürbringer holds that they sprang from amphibian ancestors whose quadrate was streptostylic.

II. The author regards the lizards and snakes as constituting two distinct orders. The snakes are not further considered. The Lacertilia are divided into five suborders, viz., Lacertilia vera, Varano-Dolichosauria, Mosasauria, Amphisbænia, and Chamæleontia. Among the true Lacertilia, the Geckos are the lowest of living reptiles. In many characters the Varanidæ stand apart from other Lacertilia. The Mosasaurs are regarded as Lacertilia which at an early period branched off from perhaps near the ancestors of the Varanidæ, and became pelagic. The author finds in the Chamæleontia numerous points of resemblance with the Lacertilia vera, especially with the Uroplatidæ. They are hence placed closer to the lizards than in the system of Boulenger, but farther removed from them than in the system of Cope.

As regards the Ichthyopterygia, Fürbringer holds that they possess close relationships with the Rhynchocephalia, but are widely removed from the Sauropterygia. The Chelonia are not thought to be related to the Theromorpha, but rather to the Sauropterygia. The special phylogeny of the Chelonia is veiled in darkness. The Trionychidæ are considered to be the lowest in rank of living tortoises, the Pleurodira the highest. The isolated position in which *Dermochelys* has been placed by some writers is not accepted. The small group of Mesosauria of the Permian and Lower Triassic find their relationships with the Sauropterygia, Chelonia and Theromorpha; nevertheless they display many peculiarities.

The Theromorpha appear in the Permian and lower Triassic in great numbers and in varied forms; but with the Triassic they disappear. Many of them became highly specialized, attained considerable size, and developed, to a remarkable degree, stoutness of body and of its component parts. Their relationships are held to be with the Rhynchocephalia, but not close. They have no affinities with the Chelonia. In connection with this group the author discusses the origin of the Mammalia. His conclusion is that they have sprung from no group of reptiles, but directly from the Batrachia.

The Crocodilia are held to be the highest of living reptiles. They have distant connections with the Lacertilia and the Rhynchocephalia; closer ties with the Dinosaurs. The extinct groups Parasuchia and Pseudosuchia are to be retained close to the crocodiles.

In rank the Dinosauria stand above the Crocodilia, with which group they show many affinities. Two characters possessed by the higher forms lift the Dinosauria above the Crocodilia, the upright mode of progression and the development of cavities in the bones. The Dinosaurs are accepted as a single order, to be divided into two or three suborders.

The Pterosauria are estimated to be the highest in rank of all known Reptilia. They are specially related to the crocodiles and the Dinosaurs. Any close relationship to the birds is rejected.

III. Finally, the various orders are grouped by our author into subclasses. The first contains the Lacertilia, Ophidia, Rhynchocephalia and Ichthyopterygia; and for his subclass Haeckel's name Tocosauria is appropriated. The second subclass is constituted by the Theromorpha. A third subclass is formed of the Mesosauria, Sauropterygia and Chelonia; and to this the name Synaptosauria is applied. The Crocodilia, Dinosauria and Pterosauria make up the subclass of Archosauria.

O. P. HAY.

AMERICAN MUSEUM NATURAL HISTORY,
NEW YORK, July 4, 1901.

Allegany County, Maryland. By WM. B. CLARK, State Geologist. Md. Geol. Surv., Baltimore, Md. 1900.

This royal octavo volume of 323 pages, accompanied by a folio of 6 pages containing topographic, geologic and soil maps of the county on a scale of one mile to the inch, is the first of a series of descriptive reports by counties to be published by the Maryland Survey. Not only the geology, mineral resources and physiography are described, but also the soils, climate, hydrography, magnetic declination, forests, flora and fauna. In addition to its general scientific value, it is of unusual interest to the county, presenting invaluable data for the farmer and manufacturer, and furnishing a