whether considered geologically or topographically, have a wide range.

It is to be remembered, however, that massive-solid eruptions are but one phase of the volcanic problem and, for their complete elucidation, should not be rigidly separated from other phases of the same process.

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RECENT VERTEBRATE PALEONTOLOGY.

FOSSIL MAMMALS OF MEXICO.

THE mammalian paleontology of Mexico offers a most interesting field for investigation, since it promises to reveal the southern range of many North American Miocene and Pliocene types, as well as the northern range of South American types, Pliocene and Pleistocene, in addition to many types which will be found to be peculiar to Mexico. The literature of the subject is still quite limited, including contributions by Richard Owen,* by Professor Cope† and a recent interesting memoir by Dr. M. M. Villada,‡ of the National Museum of Mexico.

In connection with the proposed visit of the International Geological Congress to Mexico in the summer of 1906 the following cursory notes may be of interest.

The elephant remains in the National Museum have usually been ascribed to *Elephas columbi;* but they include molar teeth not only of this species, but of the much larger form, *Elephas imperator.* In the collection of the Geological Survey of Mexico in the new survey building are the skull and tusks of an *E. imperator* of magnificent proportions, the tusks measuring 5 m. 10 cm., or 16 feet 10 inches, in length; this specimen was secured during the excavations for the great drainage canal of the Mexican Valley. Owen's type of *Equus conversidens* and *Equus tau* from the valley of Mexico belong to the National Museum, but are not at present accessible, owing to changes in the building. There is, however, the skull of a Pleistocene horse from the valley of Mexico referred by Villada to *E. excelsus,* but probably belonging to a distinct and much more massive type of animal with exceptionally powerful postorbital arches. Here also is found the fine carapace of a glyptodon (*Glyptodon mexicanus*).

The new building of the Geological Institute of Mexico is being pushed forward to completion with a view to the visit of the International Geological Congress. The director, Dr. José G. Aguilera, very kindly exhibited to us the chief specimens of mammalian fossils. These include the skull of a mastodon probably related to the South American *M. humboltii,* the palate and teeth of a small variety of horse of the size of a donkey, labeled by Castillo in 1866, but not yet described. Besides the skull above noted there are several single teeth of *Elephas imperator,* molars of the *M. humboltii* type from Chiapas, of the *E. columbi* type from the village of Zacapù in Michoacan, of *E. imperator* from the valley of Puebla. In a bed of lignites, probably of Upper Miocene or Loup Fork age, were found the types of *Hipparion* (=*Protohippus*) *castillei* Cope, and teeth belonging to *Mastodon floridianus,* also teeth of the peccary. Also probably of Loup Fork age from the valley of Toluca is the jaw of a rhinoceros, a very short-skulled type, the canines being separated by very short intervals from the premolars, while the molar teeth are exceptionally long-crowned. Very large horse teeth found in the

* Owen, R., 'On Fossil Remains of Equines from Central and South America referable to *Equus conversidens* Ow., *Equus tau* Ow., and *Equus arcidens* Ow.,' *Phil. Trans.,* 1869, pp. 559–573. 'On Remains of a Large Extinct Lama (*Palauchenia magna* Ow.) from Quaternary Deposits in the Valley of Mexico,' *Phil. Trans.,* 1869, pp. 65–77.

† Cope, E. D., 'Review of Dumeril et Bocourt's Mission Scient. Mexique,' *Amer. Nat.,* Vol. XVIII., 1884, p. 162. 'Gigantic Bird from Eocene of Mexico, *Diatryana Gigantea,' Pr. A. N. S.,* 1876, p. 10. 'Extinct Mammalia of the Valley of Mexico,' *Proc. Am. Philos. Soc.,* Vol. XII., 1884, 117, p. 1. 'Report on Coal Deposit near Zacualtipan, Hildalgo, Mexico,' *Proc. A. P. S.,* XXIII., 122, 1885, p. 1. 'The Comision Cientifica of Mexico,' *Amer. Nat.,* XIX., 1885, p. 494.

‡ Villada, Manuel M., 'Apuntes acerca de la fauna fosil del Valle de Mexico,' *Anales del Museo Nacional de Mexico,* T. VII., Entrega 14, Ma, 1903, pp. 441–451, 8 pll.

valley of Mexico may correspond with the large skull in the National Museum. Of great interest is the skull of a very large true cat, puma-like, found in the excavations of the Grand Canal.

From the Pleistocene near Zumbango, state of Mexico, remains of a large undescribed bear have been found. Here also is the type of *Glyptodon mexicanus*. A complete shield of the same animal is reported to be in the collection of the school of mines. In the same collection is found a fine specimen of *Bison latifrons* and remains of fossil horses.

The gravigrade sloths are represented by teeth from Tequixquiac.

From the state of Chihuahua, northern Mexico, are remains of Upper Pliocene or Pleistocene horses and llamas. Fossils are, however, most abundant in the Lower Pleistocene of Puebla near the city of Puebla in the village of Totemehuacan. A fine collection from this locality was lost by fire while on its way to the United States for study. An older horizon is also represented here. The mastodons were very widely distributed, teeth coming from Hidalgo, from the valley of Toluca, from Teul in the state of Zacatecas. Abundant elephant teeth are also reported by Mr. C. W. Beebe from the Lower Pleistocene, near Guadalajara.

In 1903 the Mexican government made provision for the increase of the staff of the Geological Institute which had been created by congress in 1888. The staff now includes the director, Dr. José G. Aguilera, an assistant director, six geologists, three assistant geologists, one chemist and assistant, three topographers. The director is now giving his most active attention not only to the actual field work of the survey, but to the extension of the library and to the arrangement of the collections, in preparation for the visit of the International Geological Congress.

H. F. O.

MUSEUM PUBLICATIONS.

The Annual Report of the Director of the Field Columbian Museum for 1903–1904 chronicles the steady growth of this great museum and emphasizes the necessity for having its collections transferred to permanent quarters as soon as possible.

This museum probably has the largest and best display of botanical material of any institution in the United States, and judging from the plates the specimens are very well exhibited. The collections illustrating mineralogy and economic geology are also large, well displayed and well labeled. But when it is stated that 500 labels were needed to *complete* the labeling of the gold and silver ores alone, it leads one to ask if there may not be such a thing as displaying too many specimens. We have all heard of the man who could not see the forest for the trees, and there is danger that the museum visitor may fail to grasp a few general and important facts on account of the number of details. The modern tendency of museums is to lessen the amount of material on exhibition and to increase its educational value, and there is no doubt that a small number of specimens well displayed and well labeled are more effective than a multitude of objects.

The list of Museum Publications is a strong one and the two volumes of Elliot's 'Land and Sea Mammals of Middle America and the West Indies' were most acceptable. Zoologists may not agree with Mr. Elliot in all his conclusions, but it remains to be said that no one but he has had the courage to attempt the task of bringing together and systematizing the present knowledge of the mammalian fauna of North America.

The Prize Essay Contest, published by the Carnegie Museum, forms a pamphlet of 68 pages, containing the addresses delivered on the occasion of awarding the prizes, with lists of the prize winners and contestants; although the essays themselves are not printed as has heretofore been the case.

Undoubtedly these contests do much to bring children to the museum, but it is a little questionable if they do not think more of the possibility of winning a prize than of the objects in the collections, and it would be interesting to know how many go again.

It is surely a good thing to induce the public to visit a museum, but might not the machinery of the Prize Essay Contest have