products, by BRUNO KERL; translated from the German by W. T. BRANNT. Second American edition, edited with extensive additions by F. LYNWOOD GARRISON. 354 pp. 8vo. Philadelphia, 1889, (Henry Carey Baird & Co.).—This standard and well known work on assaying appears now in its second American edition, increased in completeness and value by the large amount of new and useful matter added by the editor. It gives a clear and concise statement of the methods employed in assaying. The first quarter of the work is devoted to a general discussion of the mechanical manipulations, the chemical processes, assay furnaces, implements and reagents, and the remainder gives the special methods applicable to the different metals. The figures are models of clearness and the whole execution reflects credit upon the publishers as well as upon the editor.

Catalogue of Fossil Fishes of the British Museum, Part I, containing the Elasmobranchii by Arthur S. Woodward, F.G.S., F.Z.S., 474 pp. 8vo, with 17 plates. London, 1889.

La Nouvelle Guinea, IIIe Notice, Le Fleuve Augusta, by Prince R. Bonaparte. 16 pp., with a map. Paris, 1887; and IVe Notice, Le Golfe Huon, 62 pp., with maps.—By the same: Note on the Lapps of Finmark, Paris, 1886, 12 pp.

Glaciation of British Columbia and adjacent regions, by G. M. DAWSON (Geol. Mag., Aug., 1888).

OBITUARY.

JOHN PERCY, M.D., F.R.S.—Dr. Percy, of the Royal School of Mines, the distinguished metallurgist, author of an invaluable series of treatises upon metallurgy, died June 19, 1889, at the age of seventy-two.

MARIA MITCHELL.—Miss Maria Mitchell, the astronomer, died at Lynn, Massachusetts, on the 28th of June, having nearly finished her seventy-first year. The interest which her father, Mr. Wm. Mitchell, of Nantucket, had in mathematics and astronomy, and his telescope, led to the development of similar tastes in the daughter. From the age of eighteen to thirty-eight she was librarian of the Nantucket Athenæum; but her spare time was given to mathematical studies and astronomical observations, and in October, 1847, she made the discovery of a comet, for which she received a comet gold medal from the King of Denmark. In her later astronomical work she devoted herself particularly to the study of the satellites and surface of Jupiter. In 1865 Miss Mitchell became Professor of Astronomy and Director of the Observatory at Vassar College, Poughkeepsie, N. Y., a position she held, with honor to the institution, until January, 1888.

Miss Mitchell was early elected a member of the American Academy of Arts and Sciences of Boston. The degree of LL.D. was conferred on her by Dartmouth College in 1852, and by Columbia College in 1887. On her return from Europe, where she went in 1858 to see observatories, and met with a welcome from many astronomers, she found a welcome back in the form of a telescope purchased for her by American friends.

APPENDIX.

ART. XXI.—*Notice of Gigantic Horned Dinosauria from the Cretaceous;* by Professor O. C. MARSH.

THE remarkable reptiles which the writer recently described, and placed in a new family, the *Ceratopsidæ*,* prove to be more and more wonderful as additional specimens are brought to light. There appear to be two or three genera, and several well-marked species, already discovered, and the object of the present paper is to notice briefly some of their characteristic features so far as investigated.

Triceratops horridus, gen. nov.

The animal described by the writer as *Ceratops horridus*† possesses some remarkable characters not before known in the *Dinosauria*. In addition to the pair of massive horn-cores on the top of the skull, there is a third horn-core on the nose. This is median, as in the Rhinoceros, and is placed on the end of the nasals, which are firmly coössified to support it.

The edentulous premaxillaries are compressed anteriorly, and are strongly coössified with each other and with a third bone in front, which corresponds to the pre-dentary bone below, the whole forming a projecting beak, like that of a tortoise. Over all, there was, evidently, a huge horny covering, like the beak of a bird.

The bone in front of the premaxillaries has apparently not before been observed in any vertebrate, and may be called the rostral bone (*os rostrale*). It is analogous to the pre-nasal ossification of the pig, and of the *Dinocerata*.

Other portions of the skull show features not before seen in the *Dinosauria*. There is a huge occipital crest, extending backward and outward. In the present specimen, this is bent downward at the sides, like the back part of a helmet, thus affording, in life, strong protection to the neck.

* This Journal, vol. xxxvi, p. 477, December, 1888.

† *Ibid.*, vol. xxxvii, p. 334, April, 1889.

The lower jaws are massive, and were united in front by a strong pre-dentary bone. This is pointed anteriorly, and its surface marked by vascular impressions, showing that it was covered with horn, and fitted to meet the beak above.

The skull appears to have been at least two metres in length, aside from the horny beak. It represents a genus distinct from the type of the family, which may be called *Triceratops*. This interesting specimen, which has recently been received at the Yale Museum, was discovered by Mr. Charles A. Guernsey and Mr. E. B. Wilson, in the Laramie formation of Wyoming.

Triceratops flabellatus, sp. nov.

A second specimen of still greater dimensions has since been found at another locality of the same formation, by Mr. J. B. Hatcher. The skull, lower jaws, and a considerable portion of the skeleton, were found together. A striking peculiarity of this skull is the occipital crest, which extends upward and backward, like an open fan. Its margin was armed with a row of horny spikes, supported by separate ossifications, some of which were found in position.

The skull as it lay in the rock measured more than six feet in length, four feet in width, and the horn-cores about three feet in height. These dimensions far surpass any of the *Dinosauria* hitherto known, and indicate to some extent the wonderful development these reptiles attained before their extinction at the close of the Cretaceous.

Triceratops galeus, sp. nov.

A much smaller species is represented by various remains probably from the same horizon, in Colorado. In this species, the nasal horn-core is especially characteristic. It is compressed longitudinally, and its apex is pointed, and directed well forward. It is on the extremity of the nasals, and is thoroughly coössified with them. In front, at the base, it shows indications of union with the premaxillaries, but this connection was slight.

The type specimen was found in Colorado, by Mr. G. H. Eldridge, of the U. S. Geological Survey. The known remains indicate an animal about twenty-five feet in length.

The bison-like horn-cores figured in this Journal (vol. xxxiv, p. 324), probably belong to a member of this group, as already suggested by the writer.* They were sent to him from a locality in which he had himself collected Mastodon remains and other Pliocene fossils. As they agreed in all anatomical

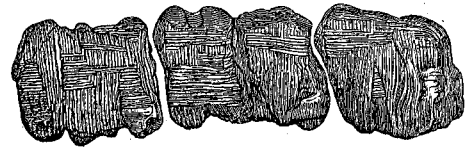
* This Journal, vol. xxxvii, pp. 334.

characters with the remains of cavicorn mammals from that formation, they were referred to the genus *Bison*, under the name *B. alticornis*. The writer has since learned that they were found in the Denver beds, which, although regarded as Tertiary, are probably Cretaceous. Under these circumstances, this well-marked species may be known as *Ceratops alticornis*, until additional remains make certain its true nature.

Nodosaurus textilis, gen. et sp. nov.

Another new member of the *Stegosauria*, from a lower horizon in the Cretaceous, was discovered several years since, in Wyoming, and is now in the Yale Museum. The skull is not known, but various portions of the skeleton were secured. One characteristic feature in this genus is the dermal armor, which appears to have been more complete than in any of the American forms hitherto found. This armor covered the sides closely, and was supported by the ribs, which were especially strengthened to maintain it. In the present specimen, portions of it were found in position. It was regularly arranged in a series of rounded knobs in rows, and these protuberances have suggested the generic name.

Near the head, the dermal ossifications were quite small, and those preserved are quadrangular in form, and arranged in rows. The external surface is peculiarly marked by a texture that appears interwoven, like a coarse cloth. This has suggested the specific name, and is well shown in the cut below.



Dermal ossicles of *Nodosaurus textilis*, Marsh. Natural size.

The fore limbs are especially massive and powerful, and are much like those of the Jurassic *Stegosaurus*. There were five well-developed digits in the manus, and their terminal phalanges are more narrow than usual in this group. The ribs are T-shaped in transverse section, and thus especially adapted to support the armor over them. The caudal vertebræ are more elongate than those of *Stegosaurus*, and the middle caudals have a median groove on the lower surface of the centrum.

The animal when alive was about thirty feet in length. The known remains are from the middle Cretaceous of Wyoming.

New Haven, Conn., July 24th, 1889.