

## MISCELLANEOUS SCIENTIFIC INTELLIGENCE.

1. *American Geological Society*.—The American Geological Society was formally organized at Ithaca, N. Y., on December 27th, 1888. The report of the Committee of Organization showed that 98 Geologists belonging to the American Association for the Advancement of Science had become Original Fellows; and that ballots received from 74 Fellows had elected the 17 candidates for admission to the Society. The names of 19 new candidates were presented and were referred to the Executive Council.

A committee was appointed to prepare a permanent Constitution; and another to take into consideration the whole matter of publications; both committees to report at the next meeting of the Society.

The officers for 1889 are: President, James Hall; 1st Vice-President, James D. Dana; 2nd Vice-President, Alex. Winchell; Secretary, John J. Stevenson; Treasurer, Henry S. Williams; Members of the Council, John S. Newberry, J. W. Powell, Chas. H. Hitchcock.

The Society adjourned to meet in Toronto on Wednesday, in August, 1889, immediately after the adjournment of Section E of the American Association for the Advancement of Science.

We are indebted for the above notes to the Secretary of the Society, Prof. J. J. Stevenson.

The Society, thus auspiciously inaugurated, promises, through the free interchange of views it will promote and in other ways, to be of great service to American Geology. No better choice for the position of President could have been made. Professor Hall began his labors early in the thirties, and, ever since, geology and paleontology have had his undivided attention. His works—making more than a dozen great volumes with over 700 plates of fossils—have laid the foundations of American Geology, and have been a chief source of its progress. J. D. D.

2. *Mineral Resources of the United States*; calendar year, 1887, DAVID T. DAY, Chief of division of Mining Statistics and Technology. 832 pp. 8vo. Washington, 1887 (U. S. Geol. Survey).—This, the fifth volume of the series, appears with most commendable promptness, and contains the usual large amount of valuable information in regard to the development of the mineral interests of the country during the calendar year 1887. The tabulated list of useful minerals, arranged according to states and territories, has been much improved by additions and general revision; this work has been in the hands of Albert Williams, Jr.

3. *Index der Krystallformen der Mineralien* von Dr. VICTOR GOLDSCHMIDT. Vol. II, Part 4, vol. III, Parts 2 and 3.—This continuation of Goldschmidt's important work on crystallography (see xxxi, 475; xxxii, 485; xxxv, 501) embraces the species, alphabetically arranged, from idocrase to kupfervitriol, and rals-tonite to syngenite. The same exhaustive thoroughness is shown in these parts as in those before issued.

## APPENDIX.

ART. XVIII.—*Restoration of Brontops robustus, from the Miocene of America*; \* by Professor O. C. MARSH. (With Plate VI.)

1889

Am. J. S.

3. d. 50

37

THE largest mammals of the American Miocene were the huge *Brontotheridæ*, which lived in great numbers on the eastern flanks of the Rocky Mountains, and were entombed in the fresh-water lakes of that region. They were larger than the *Dinocerata* of the Eocene, and nearly equalled in size the existing elephant. They constitute a distinct family of perissodactyles, and were more nearly allied to the rhinoceros than to any other living forms.

The deposits in which their remains are found have been called by the author, the Brontotherium beds. They form a well-marked horizon at the base of the Miocene. These deposits are several hundred feet in thickness, and may be separated into different subdivisions, each marked by distinct genera or species of these gigantic mammals.

The author has made extensive explorations of these Miocene lake-basins, and has secured the remains of several hundred individuals of the *Brontotheridæ*, which will be fully described in a monograph, now well advanced towards completion, to be published by the United States Geological Survey. The atlas of sixty lithographic plates is already printed, and the author submitted a copy to the section. The last plate of this volume is devoted to a restoration of *Brontops robustus*, one-seventh natural size, and a diagram enlarged from this plate to natural size was also exhibited.†

\* Abstract of a paper read before Section D, of the British Association for the Advancement of Science, at the Bath meeting, Sept. 7th, 1888.

† The present plate (VI), one twenty-fourth natural size, shows a reduced copy of the same restoration.

The skeleton represented in this restoration is by far the most complete of any of the group yet discovered. It was found by the author in Dakota, in 1874, and portions of it have been exhumed at different times since, some of the feet bones having been recovered during the past year. It is a typical example of the family, and shows well the characteristic features of the genus and species which it represents.

The most striking feature of the restoration here given, aside from the great size of the animal, is the skull. This is surmounted in front by a pair of massive prominences, or horn-cores, which are situated mainly on the frontal bones. The nasals contribute somewhat to their base, in front, and the maxillaries support the outer face. These elevations, or horn-cores, vary much in size and shape in the different genera and species. They are always very small in the females.

The general form of the skull and lower jaw is well shown in the figure. The prominent occipital crest, the widely-expanded zygomatic arches, and the projecting angle of the lower jaw, are all characteristic features. In general shape, the skull resembles that of *Brontotherium*, but may be readily distinguished from it by the dental formula, which is as follows:

Incisors  $\frac{2}{1}$ ; canines  $\frac{1}{1}$ ; premolars  $\frac{4}{4}$ ; molars  $\frac{3}{3}$ .

The presence of four premolars in each ramus of the lower jaw is a distinctive feature in this genus. This character, with the single, well-developed lower incisor, marks both the known species.

The number of teeth varies in the different genera. The form of the teeth, especially in the molar series, is more like that in *Chalicotherium* and *Diplacodon* than in any other known forms. The teeth in the allied genus *Brontotherium* have already been figured and described by the author.

The vertebræ are somewhat similar to those of the existing rhinoceros. In the present genus, *Brontops*, the neural spines of the dorsal vertebræ are elevated and massive. There are four sacral vertebræ in this genus, and in the known species the tail is short and slender, as in the individual here described.

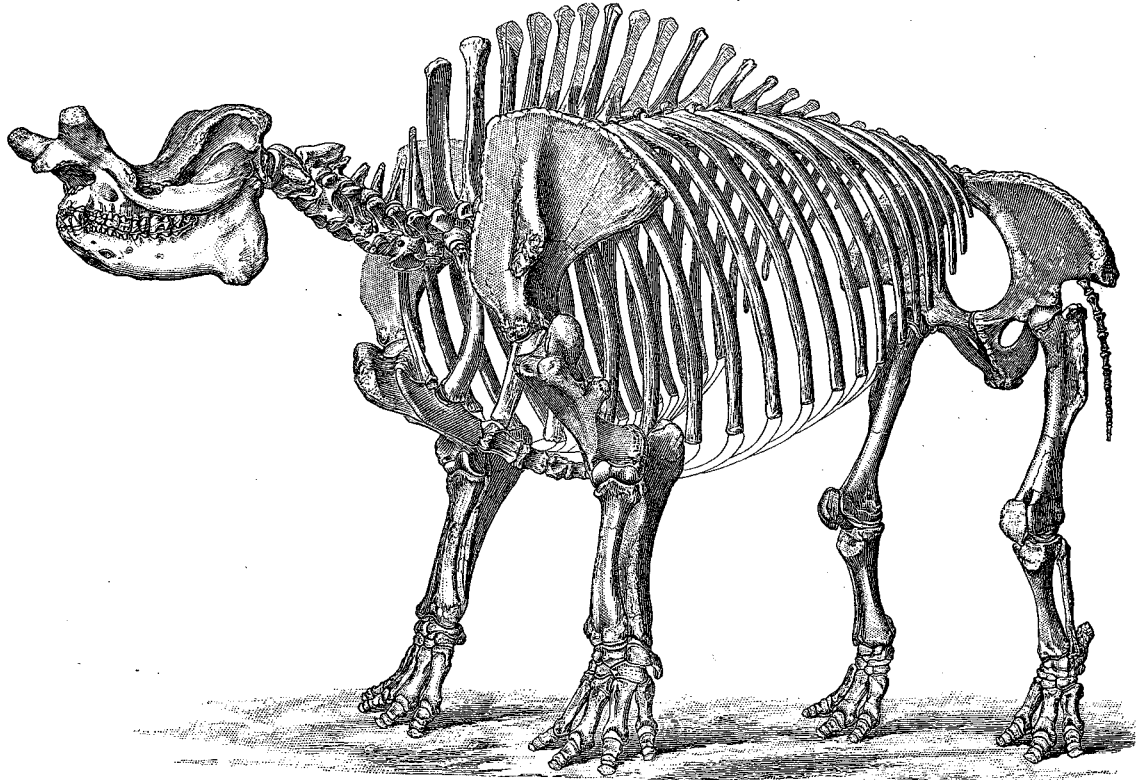
The ribs are strong and massive. The sternal bones are compressed transversely. The exact form of the first one is not known with certainty, and is here restored from the rhinoceros. This is the only important point left undetermined in the restoration.

The fore limbs are especially robust. The humerus has its tuberosities and ridges very strongly developed, and the radius and ulna have their axes nearly parallel. There are four well-developed digits in the manus, the first being entirely wanting.

The pelvis is very wide, and transversely expanded, as in the elephant. The femur is long, and has the third trochanter rudimentary. The tibia and fibula are quite short. The calcaneum is very long, and the astragalus is grooved above. There are only three digits in the pes, the first and fifth having entirely disappeared.

*Diplacodon* of the Upper Eocene is clearly an immediate ancestor of the *Brontotheridæ*, while *Palaosyops* and *Limnolagus* of the Middle Eocene are on the more remote ancestral line. The nearest related European form is the Miocene *Chalicotherium*. No descendants of the *Brontotheridæ* are known.

*Menodus*, *Megacerops*, *Brontotherium*, *Symborodon*, *Menops*, *Titanops*, and *Allops*, all belong to the family *Brontotheridæ*, and their relation to the genus here described, and to each other, will be fully discussed in the monograph, to which reference has already been made.



Restoration of BRONTOPS ROBUSTUS, Marsh; one twenty-fourth natural size.