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HITHERTO UNPUBLISHED PLATES  
OF  
TERTIARY MAMMALIA  
AND  
PERMIAN VERTEBRATA

Prepared under the Direction of  
EDWARD DRINKER COPE  
for the  
U. S. Geological Survey of the Territories  
with  
Descriptions of Plates  
by  
WILLIAM DILLER MATTHEW

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## PREFATORY NOTE.

The accompanying plates were prepared and printed by the United States Government for the Report on Tertiary Vertebrata by E. D. Cope, forming Volumes III and IV of the final report of the Geological and Geographical Survey of the Territories, F. V. Hayden in charge. The first part of this Report (Volume III), treating of the Eocene and a part of the Oligocene vertebrates was completed and published in 1885. The second part, treating of the remainder of the Oligocene and all the Miocene vertebrates, was never completed. A large number, but not all, of the plates for this part were prepared and printed, together with seven plates for a contemplated report on Permian Vertebrata.

The specimens illustrated are contained in the Cope Collection, purchased by the American Museum of Natural History. The ownership of certain parts of the collection having been satisfactorily adjusted it seemed proper that the plates should be distributed for the benefit of palæontologists, jointly by the United States Geological Survey and the American Museum of Natural History. The plate descriptions were prepared and the plates bound and distributed by the latter institution.

Illustrations of many of the specimens here figured, copied from these plates, have been published by Professor Cope, chiefly in the *American Naturalist* of 1880-1888. The nomenclature and identification of the material has been materially changed since 1880-1883 when the illustrations were made, and it has been thought advisable to give in the plate descriptions both Cope's identifications and the revision now current (1915). No text is known to have been prepared by the author, but the substance of his views and interpretations of the later Tertiary vertebrates of Western America may be found in his numerous publications dealing with fossil mammals, chiefly in the *American Naturalist*, and *Proceedings of the American Philosophical Society*, between 1880 and 1892, also in *Bulletins and Annual Reports of the U. S. Geol. Geog. Sur. Territories*, 1872-1882 and the *Texas Geological Survey Reports*, 1891-1893.

A number of plates illustrating the Brontotheriidae of the Oligocene of Colorado are included in the Monograph of that family by Henry Fairfield Osborn, and are omitted from the present series.

## SCHEDULE OF PLATES.

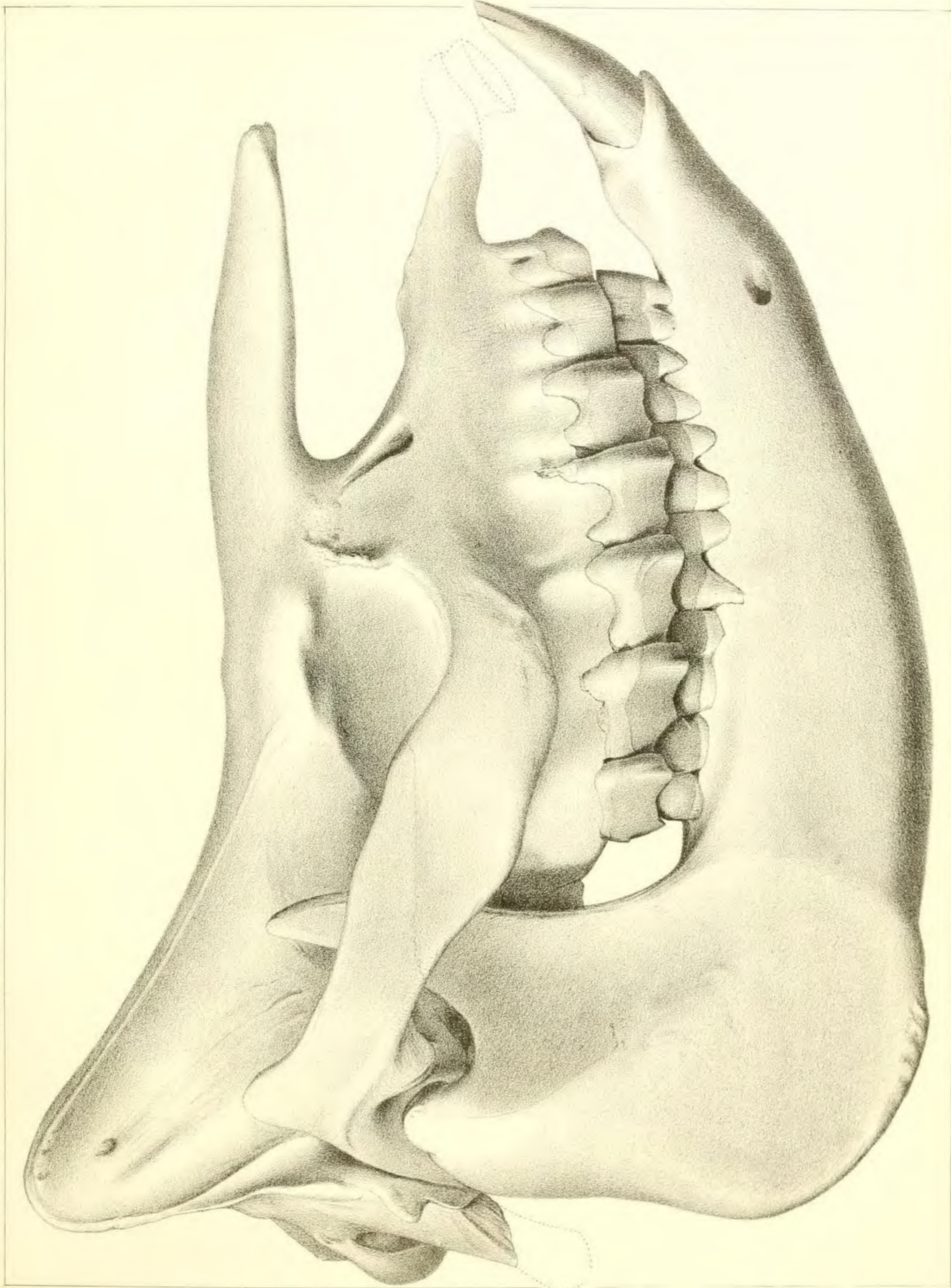
- Permian Vertebrata.* Twelve plates; Nos. 1, 3, 7, 8, 10, 11, 12, 13, 16, 16a, 19, 22.  
*Oligocene Ungulata.* Fifteen plates; Nos. 102, 104, 105, 108, 109, 109a, 110, 110a, 111, 112, 113, 113a, 115, 115a, 116.  
*Miocene Carnivora and Rodentia.* Seven plates; Nos. 118, 118a, 118b, 119, 119a, 119b, 119c.  
*Miocene Proboscidea.* Five plates; Nos. 120, 121, 122, 123, 124.  
*Miocene Rhinoceroses.* Twenty plates; Nos. 125, 126, 127, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 144b.  
*Miocene Equidae.* Seven plates; Nos. 145, 147, 148, 148a, 149, 150, 151.  
*Miocene Camelidae.* Two plates; Nos. 153, 154.

## PLATE CXXV.

### MIOCENE RHINOCEROSSES. SKULL OF APHELOPS<sup>ES</sup> MEGALODUS

*Aphelops megalodus* Cope, 1873. Side view of skull and jaws, half natural size. Type specimen, Amer. Mus. No. 8292, Cope Coll. Pawnee Creek beds, near Pawnee Buttes, Weld Co., Colorado.

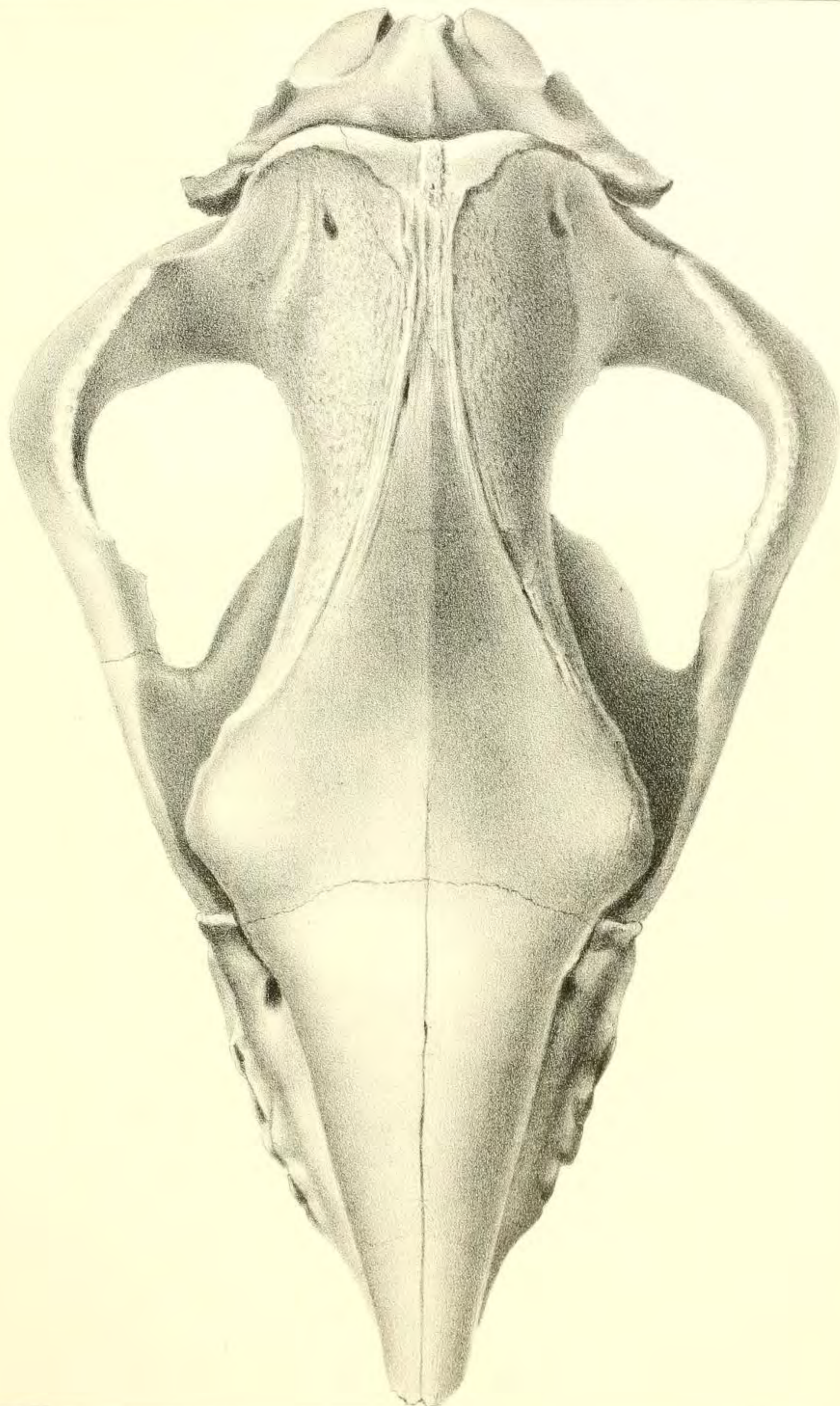
See also Pl. CXXVI-CXXX and CXXXV.



## PLATE CXXVI.

MIOCENE RHINOCEROSSES. SKULL OF APHELOPS MEGALODUS

*Aphelops megalodus* Cope, 1873. Superior view of skull one-half natural size. Type specimen, figured on pl. CXXV, CXXVII-CXXX and CXXXV.



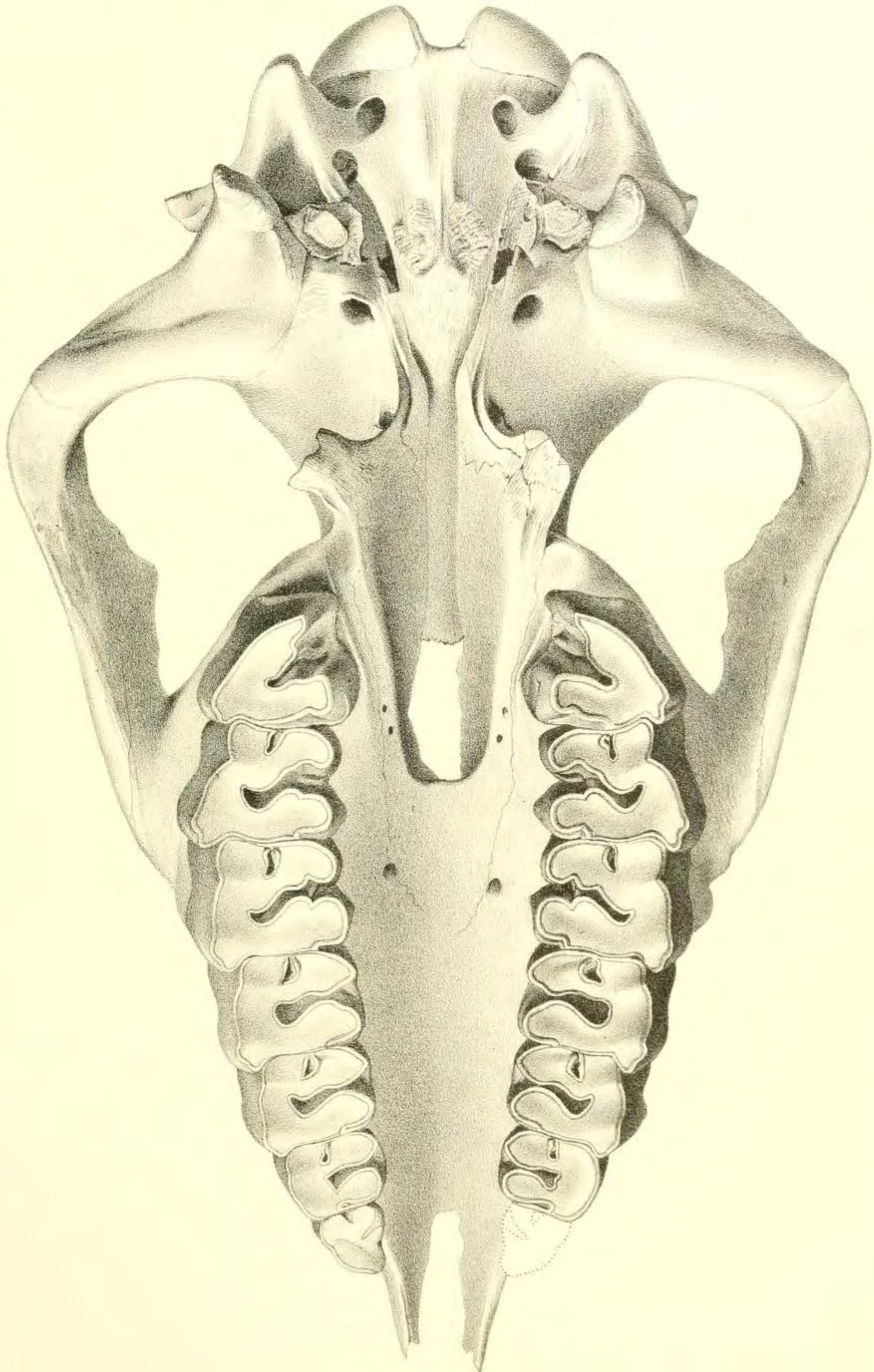
T. Sinclair & Son Lith Philada

APHELOPS MEGALODUS †

## PLATE CXXVII.

### MIOCENE RHINOCEROSSES. SKULL OF APHELOPS MEGALODUS

*Aphelops megalodus* (Cope, 1873). Inferior view of skull, one-half natural size. Type specimen, figured on pl. CXXV-CXXVI, CXXIX-CXXX and CXXXV.



APHELOPS MEGALODUS †



## PLATE CXXIX.

### MIOCENE RHINOCEROSSES. VERTEBRÆ OF APHELOPS

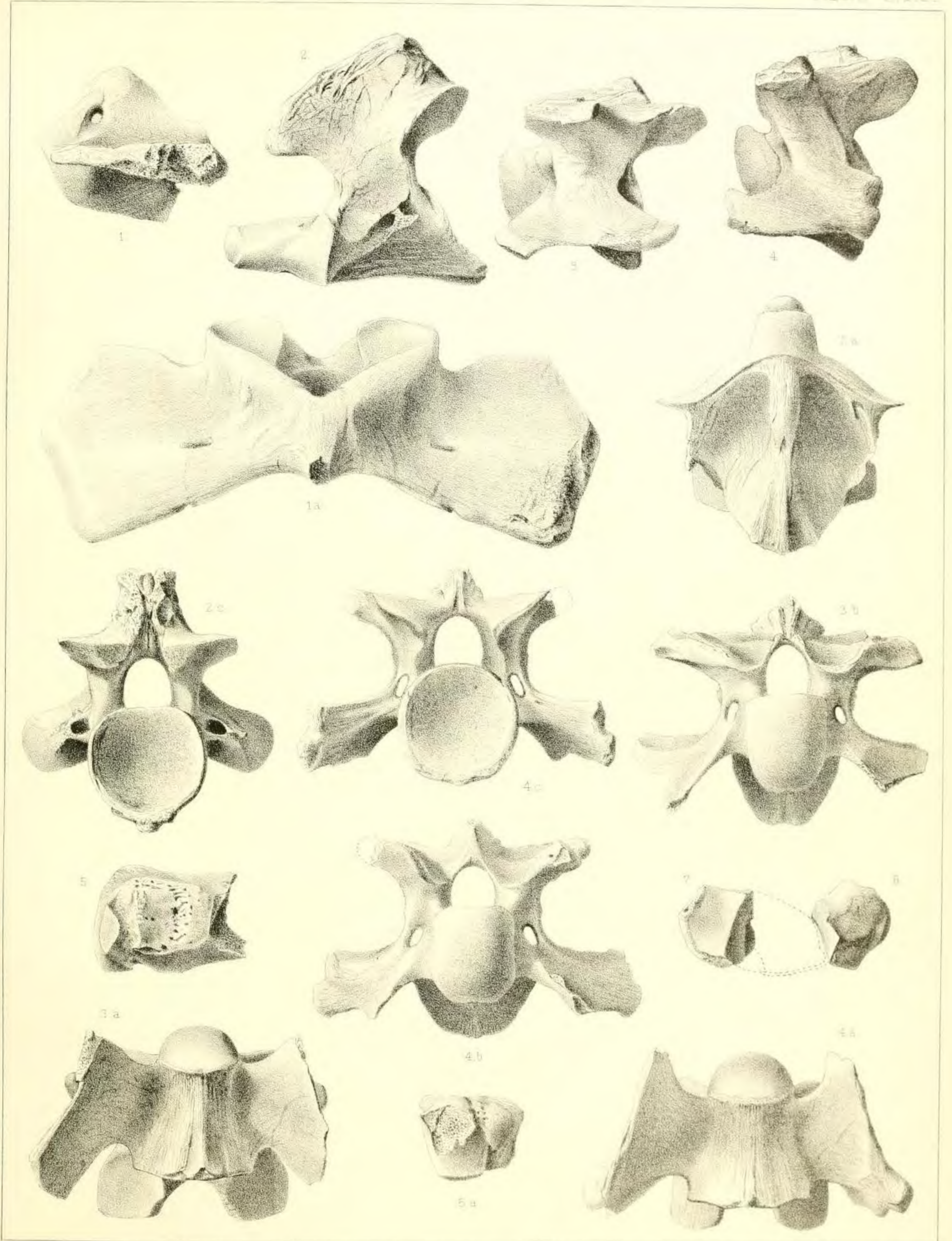
FIGS. 1-4. *Aphelops megalodus* (Cope, 1873). Cervical vertebræ, two-fifths natural size. Type specimen, No. 8292, from Pawnee Creek beds, near Pawnee Buttes, Weld Co., Colorado.

Fig. 1, 1a. Atlas, lateral and inferior views; fig. 2, 2a, 2c, axis, lateral, inferior and posterior views; fig. 3, 3a, 3b, third, cervical vertebra, lateral, inferior and anterior views; fig. 4, 4a, 4b, 4c, fourth cervical vertebra, lateral, inferior, anterior and posterior views.

FIG. 5, 5a. *Aphelops megalodus* (Cope, 1873). Distal end of ulna, paratype, No. 8293, figured on pl. CXXX.

FIGS. 6-7. *Aphelops megalodus* (Cope, 1873). No. 8293a, specimen figured on pl. CXXX, proximal views of metacarpals.

All figures two-fifths natural size.



APHELOPS MEGALODUS †

T. Sinclair & Son, Lith. Philada.

## PLATE CXXX.

### MIOCENE RHINOCEROSSES. LIMB AND FOOT BONES OF APHELOPS

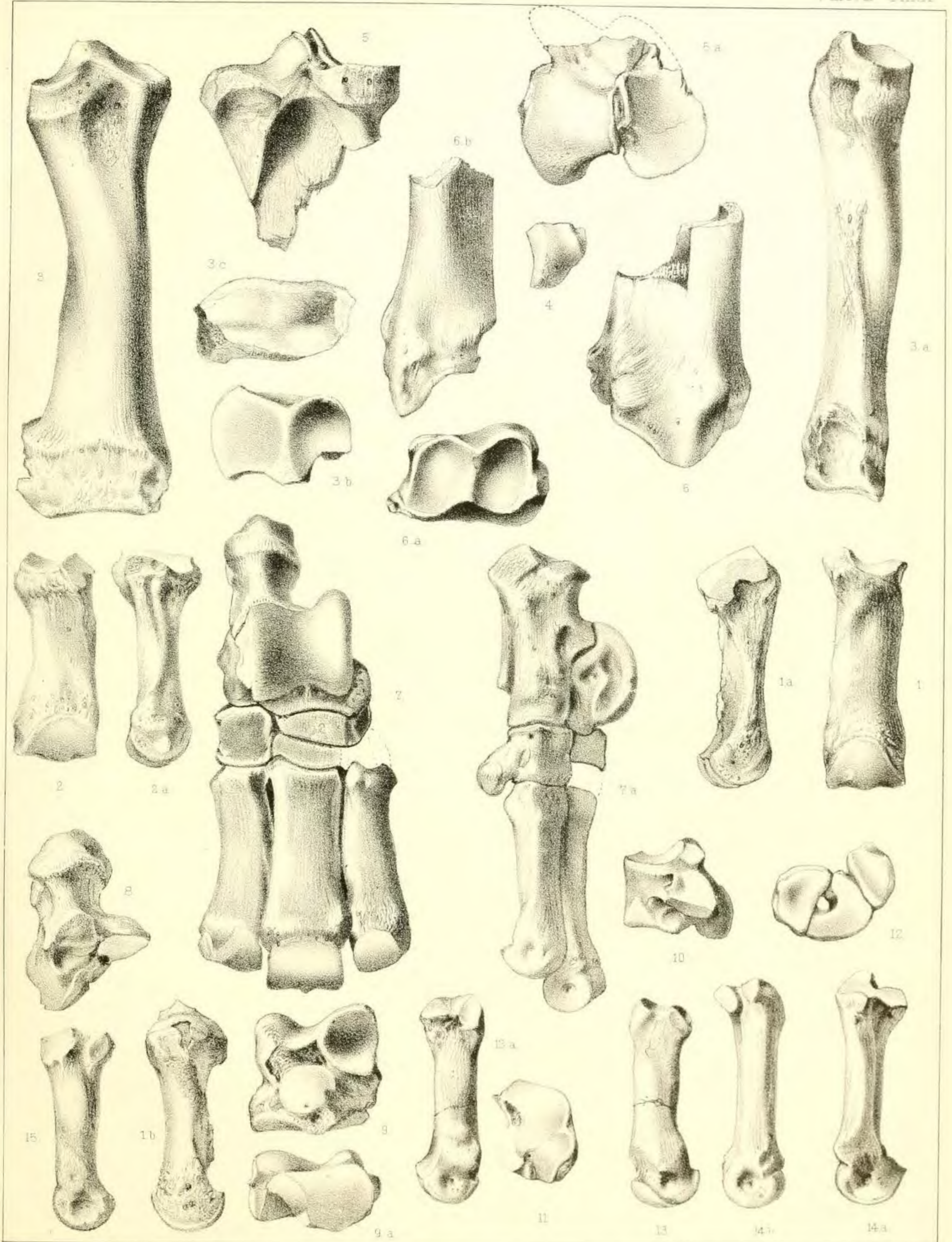
FIGS. 1-15. *Aphelops megalodus* Cope, 1873. Pawnee Creek beds, near Pawnee Buttes, Weld Co., Colorado.

Figs. 1-3. Amer. Mus. No. 8293a, Cope Coll. Fig. 1, 1a, 1b, second metacarpal, anterior, external and internal views; fig. 2, 2a, fourth metacarpal, anterior and external views; fig. 3, 3a, 3b, 3c, radius, anterior, external, proximal and distal views.

Figs. 4-15. Amer. Mus. No. 8293, Cope Coll., paratype. Back of skull figured on pl. CXXXIV.

Fig. 4. Proximal end of second metacarpal; fig. 5, 5a, head of tibia, posterior and proximal views; fig. 6, 6a, 6b, distal end of tibia, anterior, distal and internal views; fig. 7, 7a, hind foot, dorsal and external views; fig. 8, calcaneum, dorsal view; figs. 9, 9a, astragalus, plantar and distal views; fig. 10, cuboid, internal view; fig. 11, navicular, distal view; fig. 12, metatarsals, proximal view; fig. 13, second metatarsal internal view; fig. 14a, 14b, third metatarsal, internal and external views; fig. 15, fourth metatarsal, internal view.

All figures two-fifths natural size.



† Emery & Son Lith. Philada.

# PLATE CXXXI.

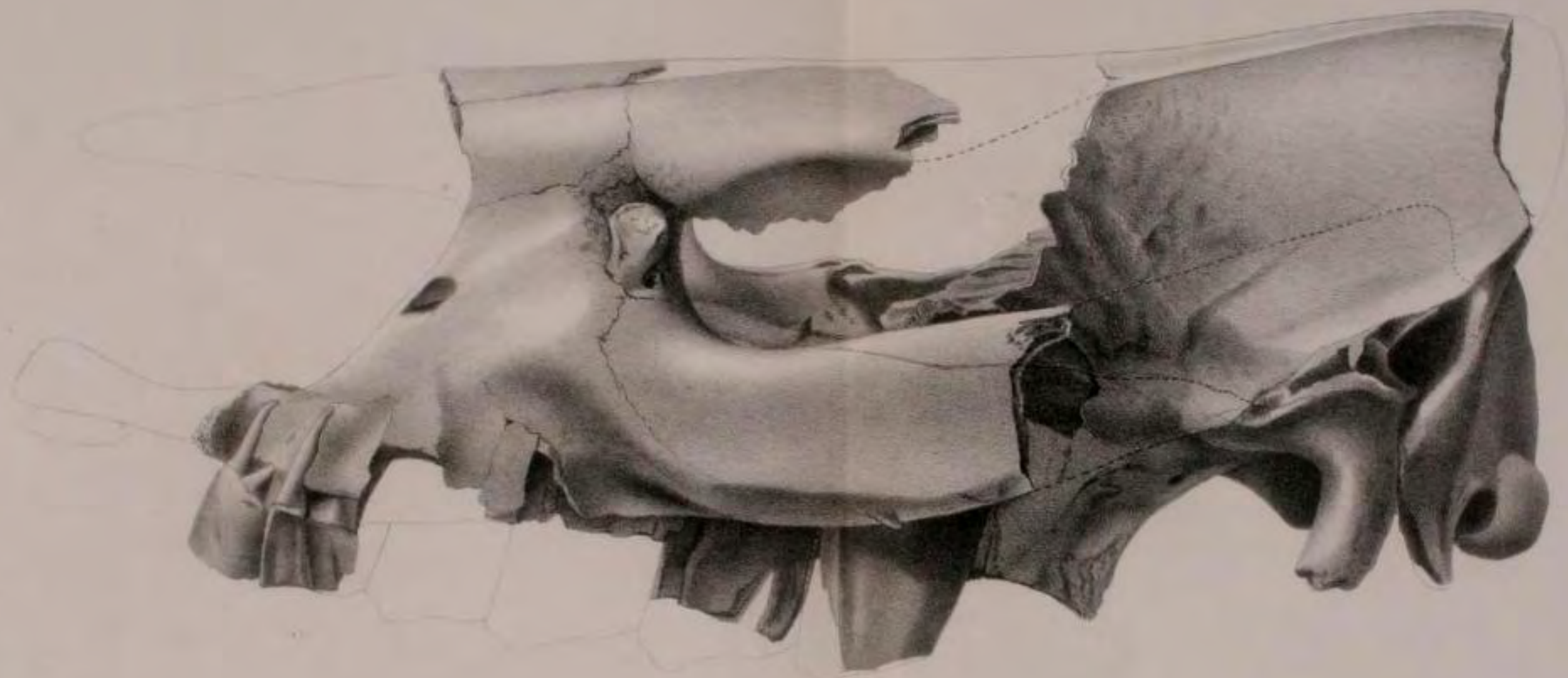
MIOCENE RHINOCEROSSES. SKULL OF TELEOCERAS

Nomenclature

Cope 1880-3  
Aphelops fossiger

Revised 1915  
Teleoceras (= Eusyodon) fossiger

*Teleoceras fossiger* (Cope, 1878). Side view of skull one-half natural size. Amer. Mus. No. 8383, Cope Coll. Republican River beds, Decatur Co., Kansas. Specimen figured on pl. CXXXII and CXXXIV.



APHELOPS FOSSIER. COPE.

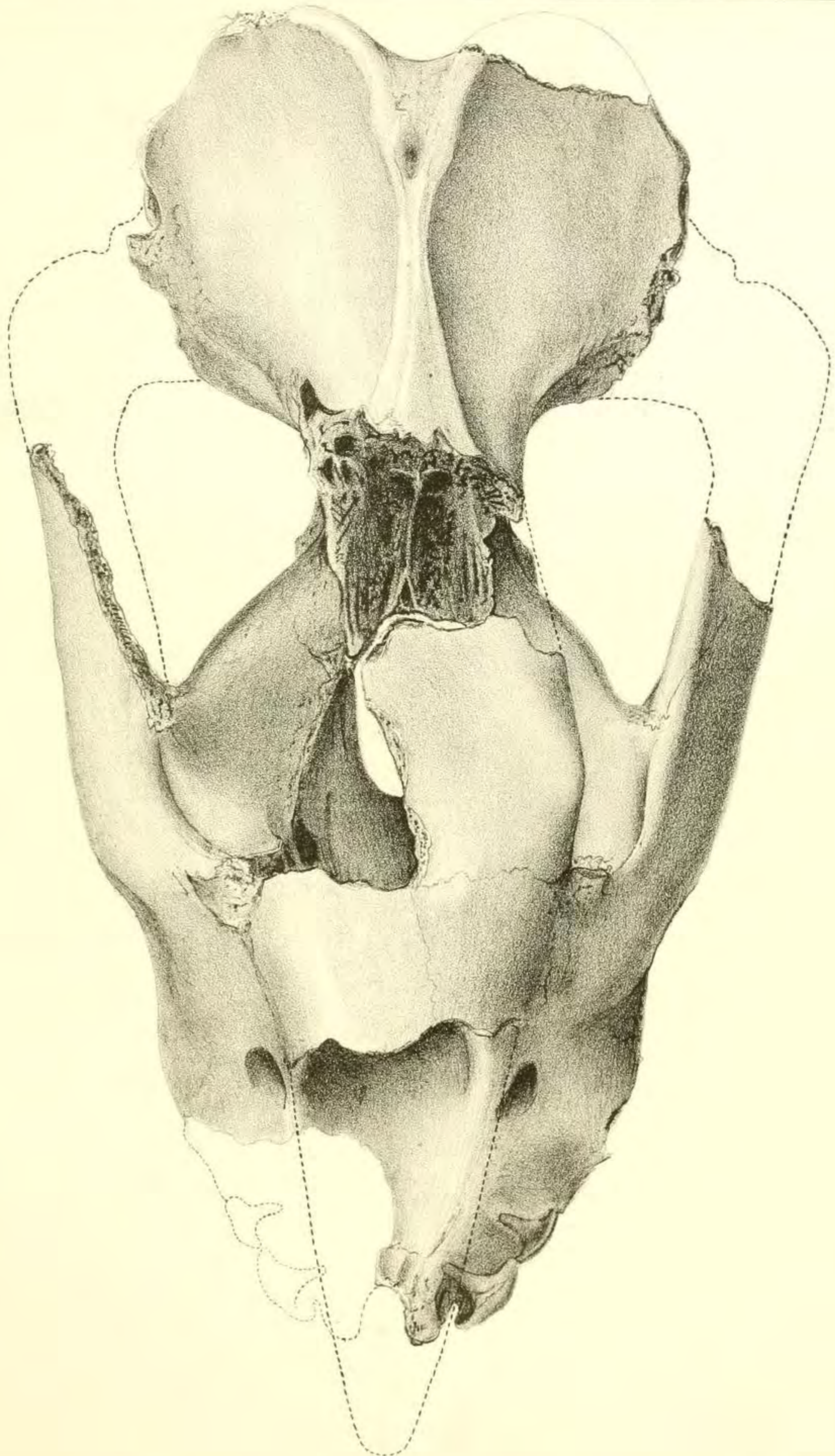
## PLATE CXXXII.

MIOCENE RHINOCEROSSES. SKULL OF TELEOCERAS

### Nomenclature

|                   |                     |
|-------------------|---------------------|
| Cope 1880-3       | Revised 1915        |
| Aphelops fossiger | Teleoceras fossiger |

*Teleoceras* (= *Eusyodon*) *fossiger* (Cope, 1878). Top view of skull, two-fifths natural size. Amer. Mus. No. 8383, Cope Coll. Republican River beds, Decatur Co., Kansas. Specimen figured on pl. CXXXI and CXXXIV.



T. Sinclair & Son, Lith. Philada.

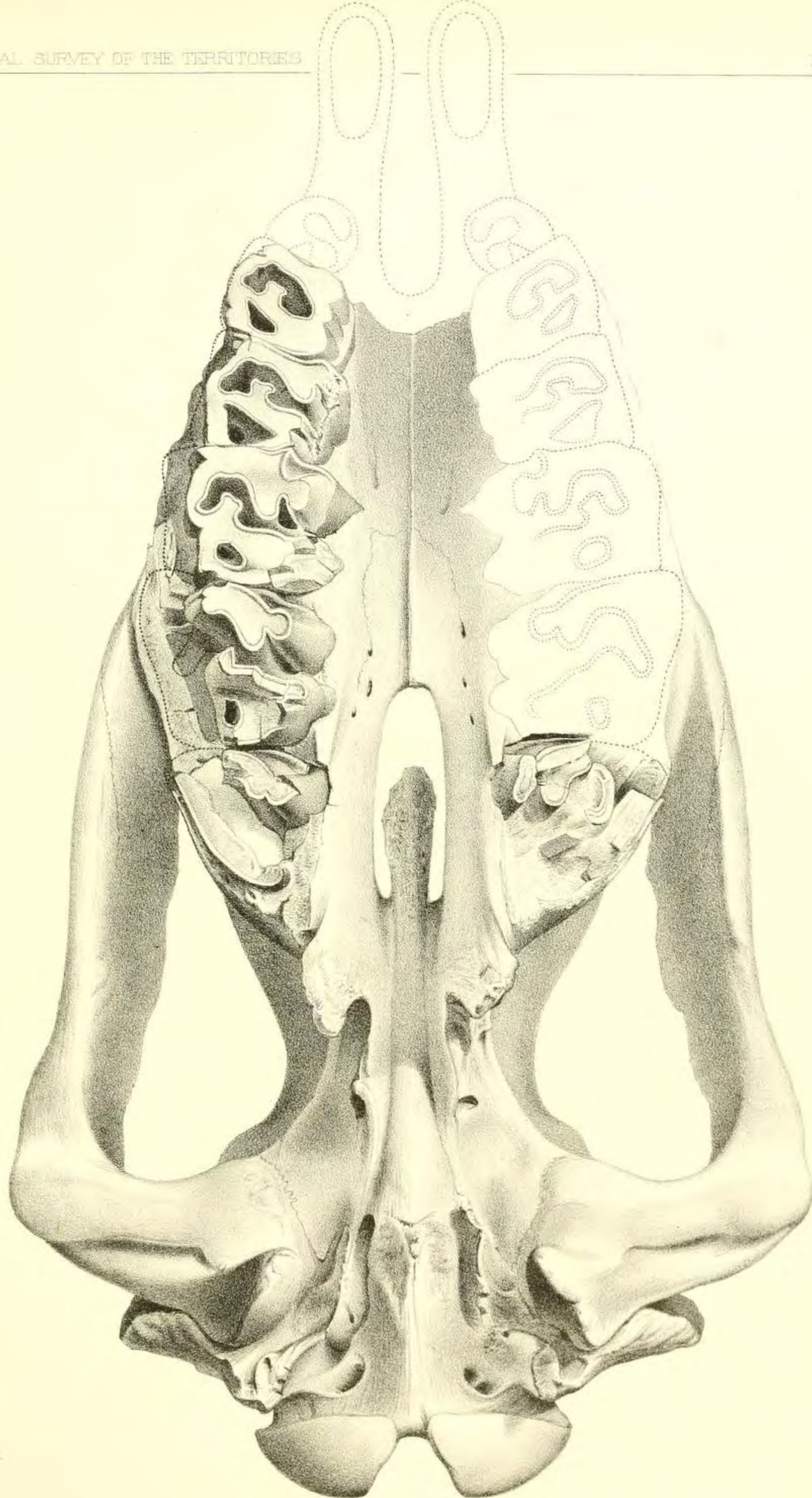
APHELOPS FOSSIGER ♀



## PLATE CXXXIII.

### MIOCENE RHINOCEROSSES. SKULL OF TELEOCERAS

*Teleoceras* (= *Eusyodon*) *fossiger* Cope, 1878. Palatal view of skull, two-fifths natural size.  
Type specimen, Amer. Mus. No. 8390, Cope Coll. Republican River beds,  
Decatur Co., Kansas. Specimen figured on pl. CXXXV.

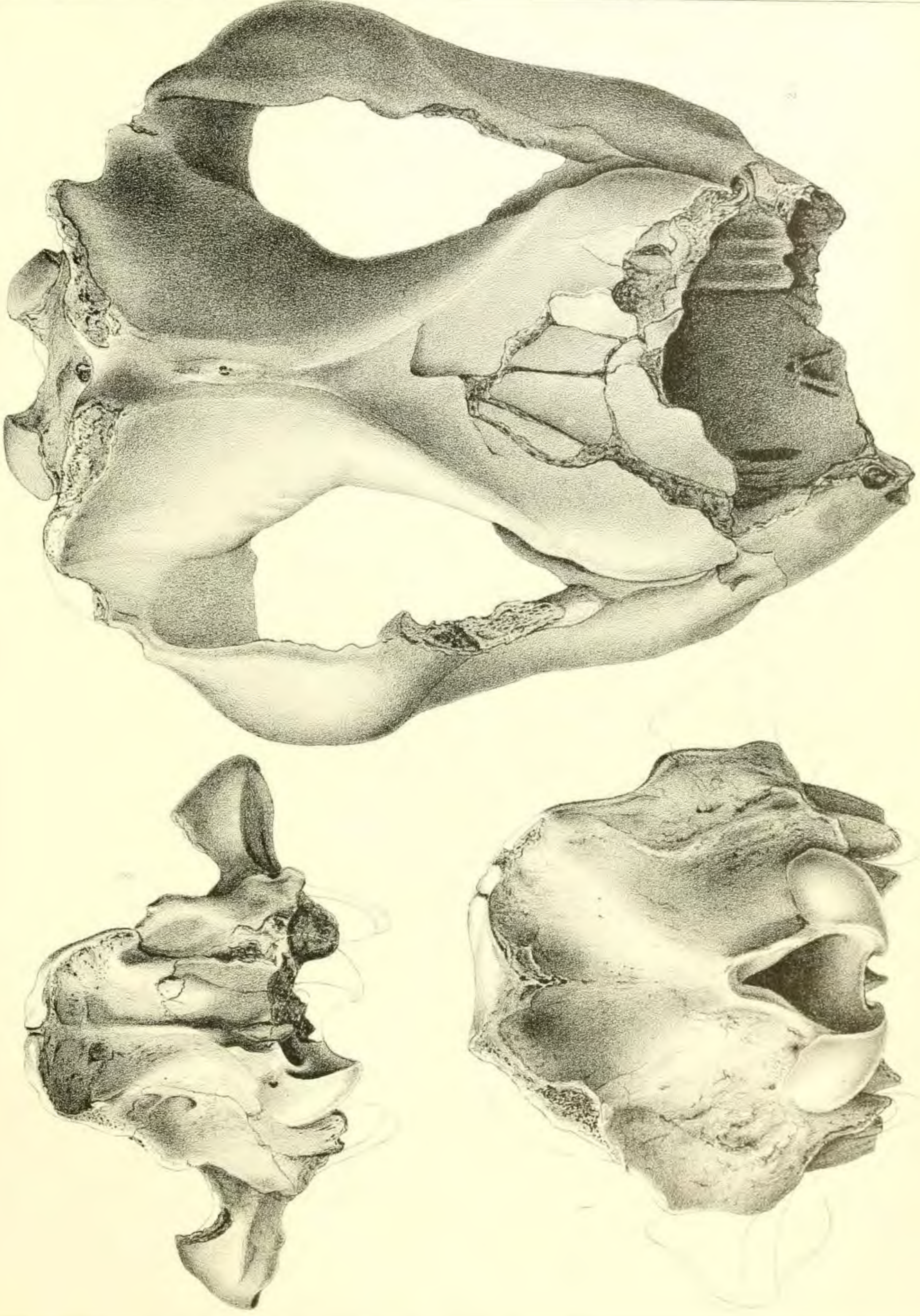


APHELOPS FOSSIGER †

## PLATE CXXXIV.

### MIOCENE RHINOCEROSSES. SKULLS OF APHELOPS AND TELEOCERAS

- FIG. 1. *Teleoceras* (= *Eusyodon*) *fossiger* (Cope, 1878). Occipital view of skull. Amer. Mus. No. 8383, figured on pll. CXXXI-CXXXII.
- FIG. 2. *Teleoceras* (= *Eusyodon*) *fossiger* (Cope, 1878). Top view of skull. Amer. Mus. Cope Coll. Republican River beds, Decatur Co., Kansas.
- FIG. 3. *Aphelops megalodus* Cope, 1873. Occipital view of incomplete skull. Amer. Mus. No. 8383, Pawnee Creek beds, near Pawnee Buttes, Colorado. Specimen figured on pl. CXXIX and CXXX.
- All figures two-fifths natural size.

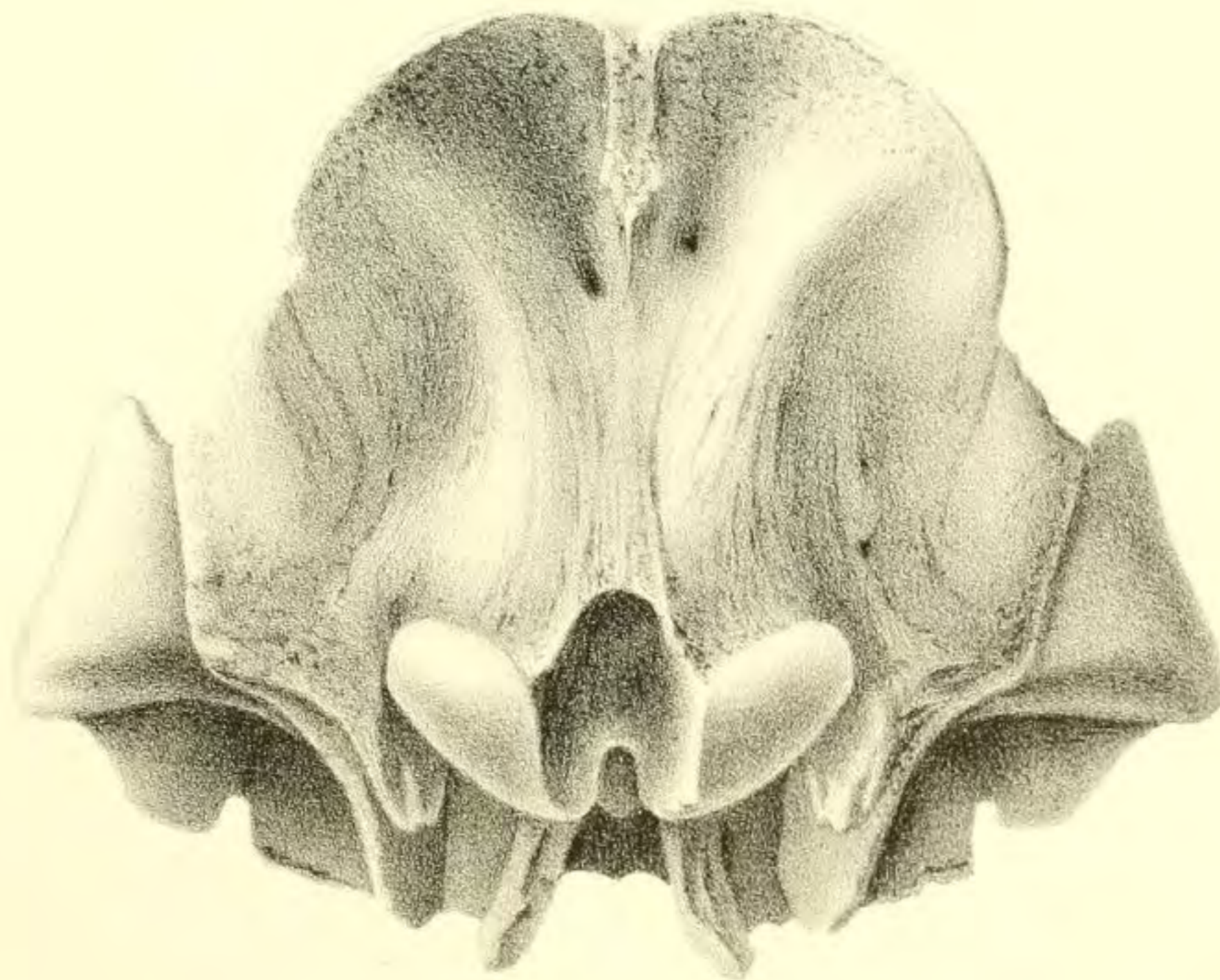
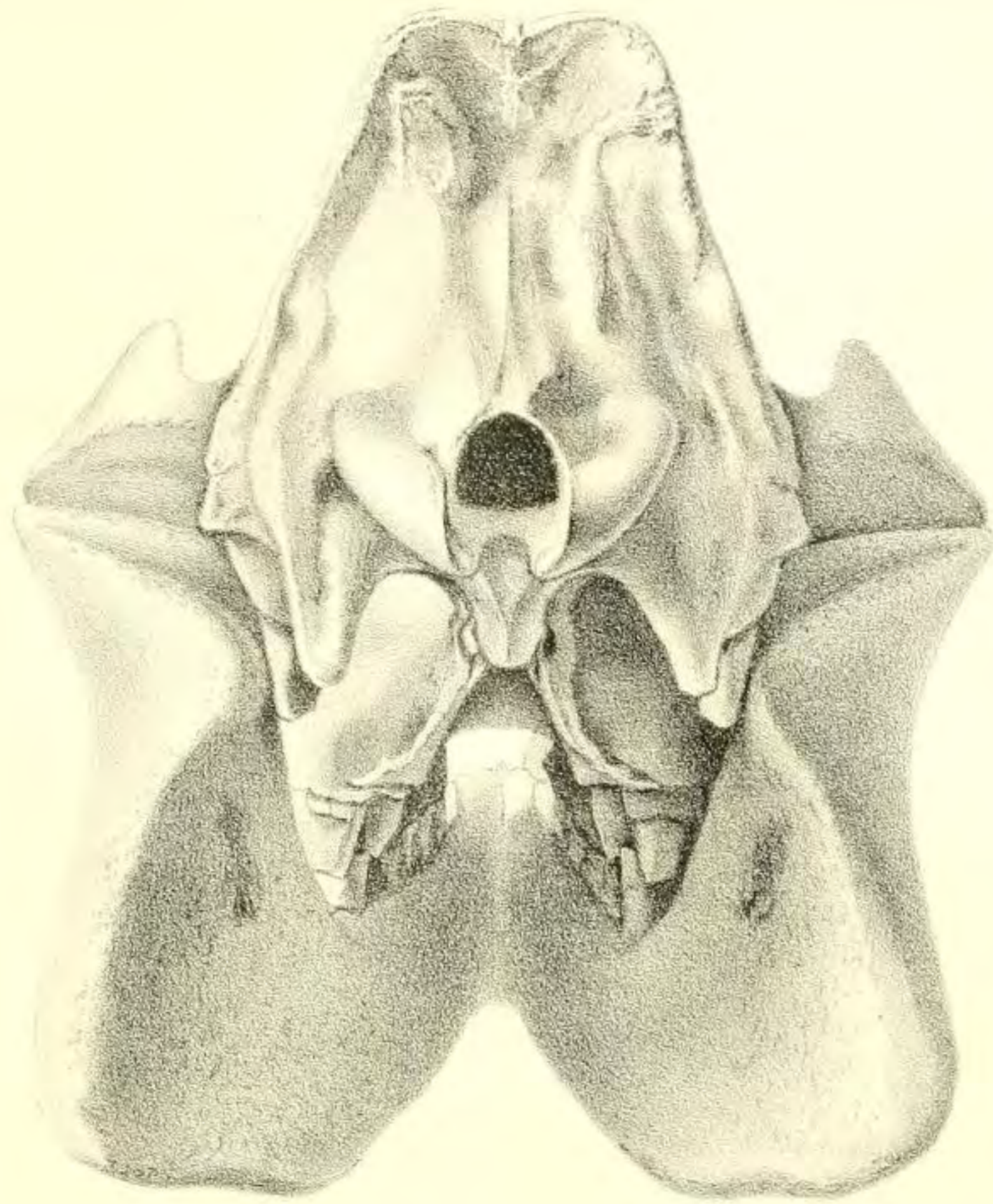


1. *APFELODES FUSCIGER*. 2. *APFELODES MEGALODUS*. \*

## PLATE CXXXV.

### MIOCENE RHINOCEROSSES. SKULLS OF APHELOPS AND TELEOCERAS

- FIG. 1. *Aphelops megalodus* Cope, 1873. Skull and lower jaws, occipital view, one-third natural size. Type specimen, Amer. Mus. No. 8292, Cope Coll., figured on pll. CXXV-CXXX. Pawnee Creek beds, near Pawnee Buttes, Colorado.
- FIG. 2. *Teleoceras* (= *Eusyodon*) *fossiger* (Cope, 1878). Skull, occipital view, one-third natural size. Type specimen, Amer. Mus. No. 8390, Cope Coll., figured on pll. CXXXIII.



T. Sinclair & Son, Lith. Philada.

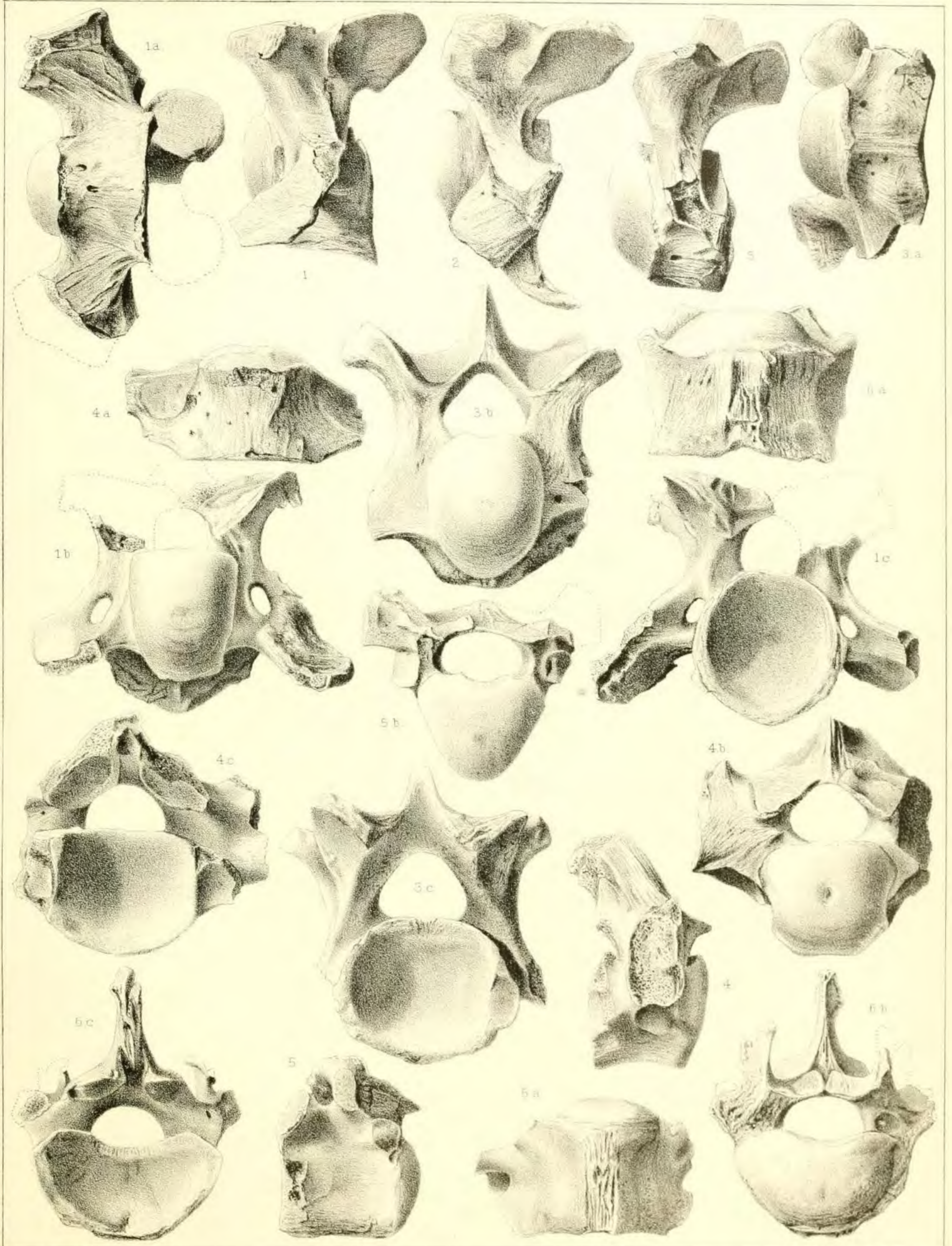
1 APHELOPS MEGALODUS. 2 APHELOPS FOSSIGER.

# PLATE CXXXVI.

## MIOCENE RHINOCEROSSES. VERTEBRÆ OF TELEOCERAS

### Nomenclature

FIGS. 1-6. *Teleoceras* (= *Eusydon*) *fossiger* (Cope, 1878). Cervical and dorsal vertebræ, two-fifths natural size. Amer. Mus. Cope Coll. Republican River beds, Decatur Co., Kansas.



T. Sinclair & Son Lith. Philada.

APHELOPS FOSSIGER †



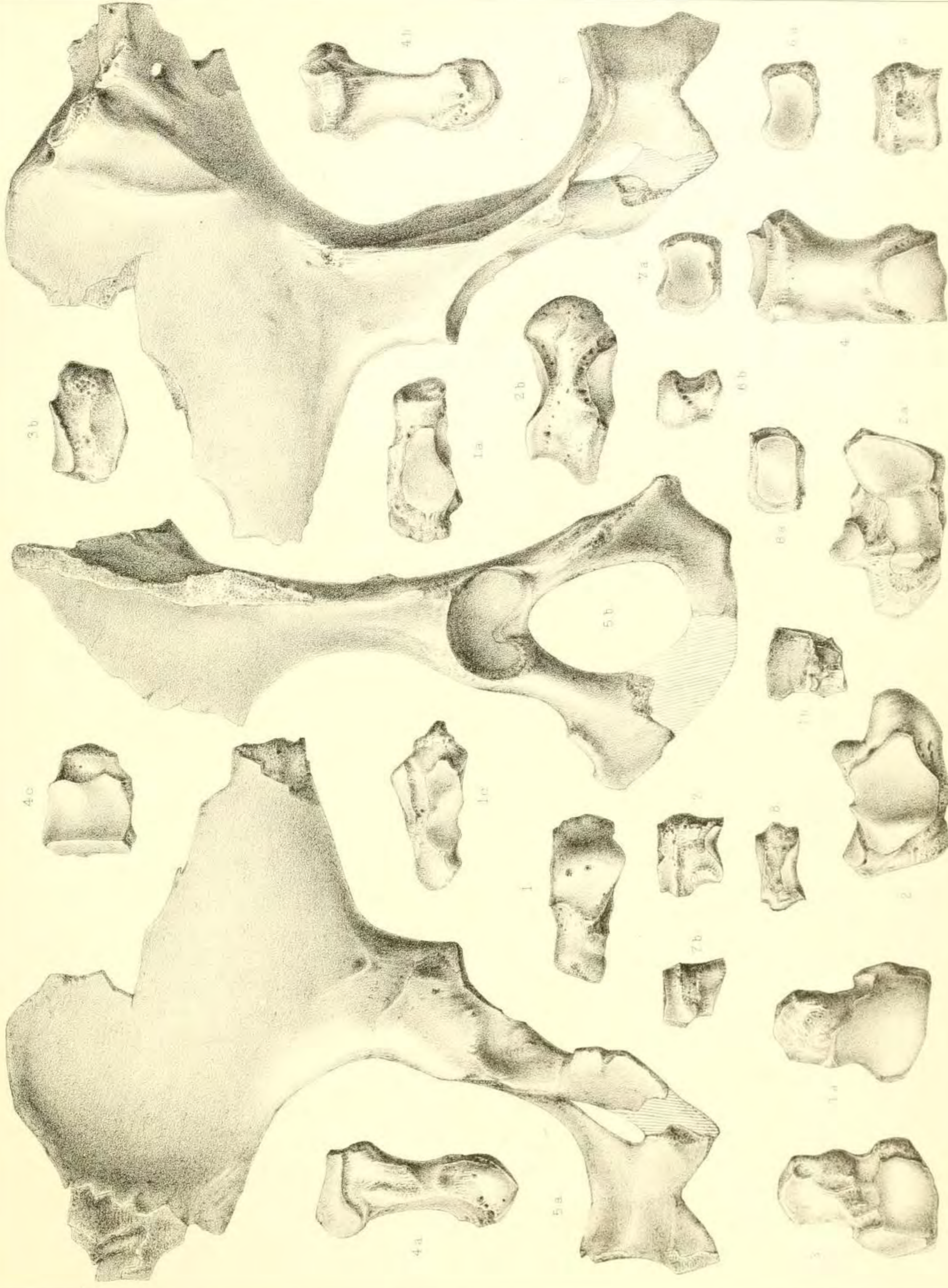
# PLATE CXXXVII.

MIocene RHINOCEROSSES. LIMB AND FOOT BONES OF TELEOCERAS

Nomenclature

|                    |              |
|--------------------|--------------|
| Cope 1880-3        | Revised 1915 |
| Aphelops (in part) | Teleoceras   |

FIGS. 1-7. Pelvis and foot bones chiefly of *Teleoceras fossiger*. Amer. Mus. Cope Coll. Republican River beds, Decatur Co., Kansas.



## PLATE CXXXVIII.

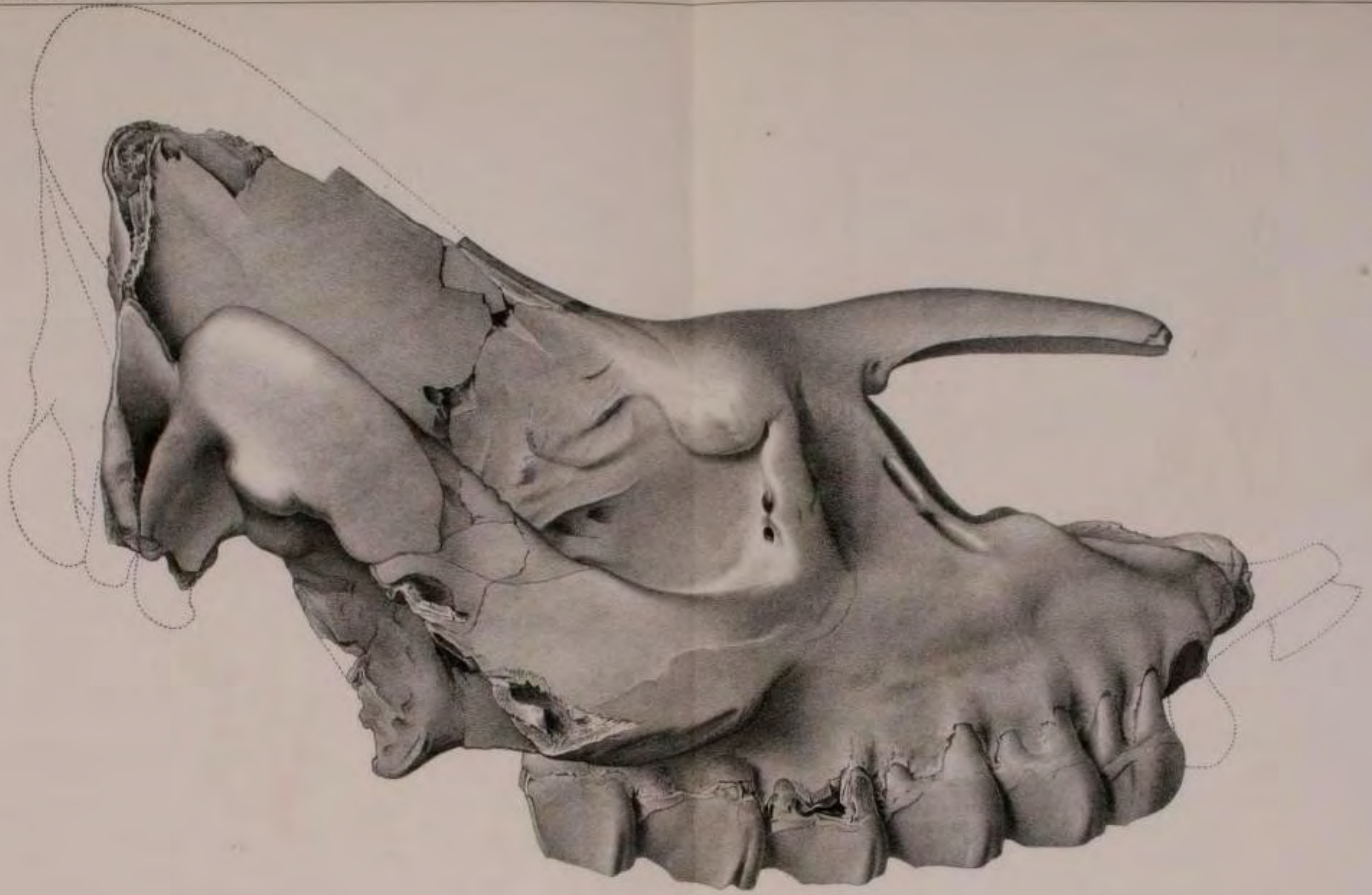
MIOCENE RHINOCEROSSES. LIMB AND FOOT BONES OF TELEOCERAS

FIGS. 1-9. Limb and foot-bones chiefly of *Teleoceras fossiger*. Amer. Mus. Cope Coll. Republican River beds, Decatur Co., Kansas.

## PLATE CXXXIX.

### MIOCENE RHINOCEROSSES. SKULL OF APHELOPS MALACORHINUS

*Aphelops malacorhinus* Cope, 1879. Side view of skull one-half natural size. Type specimen, Amer. Mus. No. 8381, Cope Coll. Republican River beds, Hitchcock Co., Nebraska. Specimen figured on pll. CXL-CXLI.

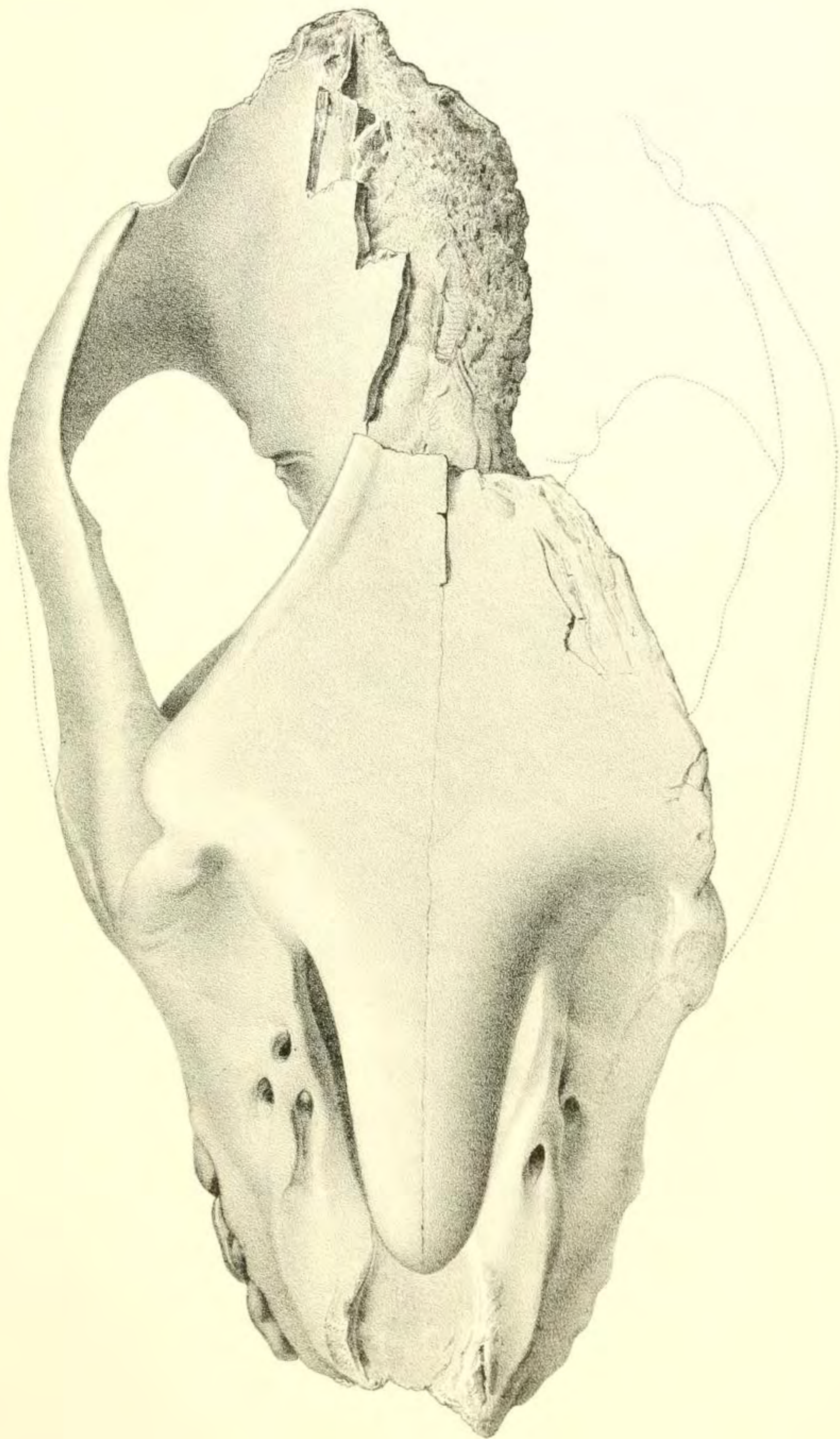


APHELONE MALACODERMIS COPE 75

## PLATE CXL.

### MIocene RHINOCEROSES. SKULL OF APHELOPS MALACORHINUS

*Aphelops malacorhinus* Cope, 1878. Superior view of skull, two-fifths natural size. Type specimen, Amer. Mus. No. 8381, Cope Coll. Republican River beds, Nebraska. Specimen figured on pl. CXLI.



T. Sinclair & Son Lith. Philada.

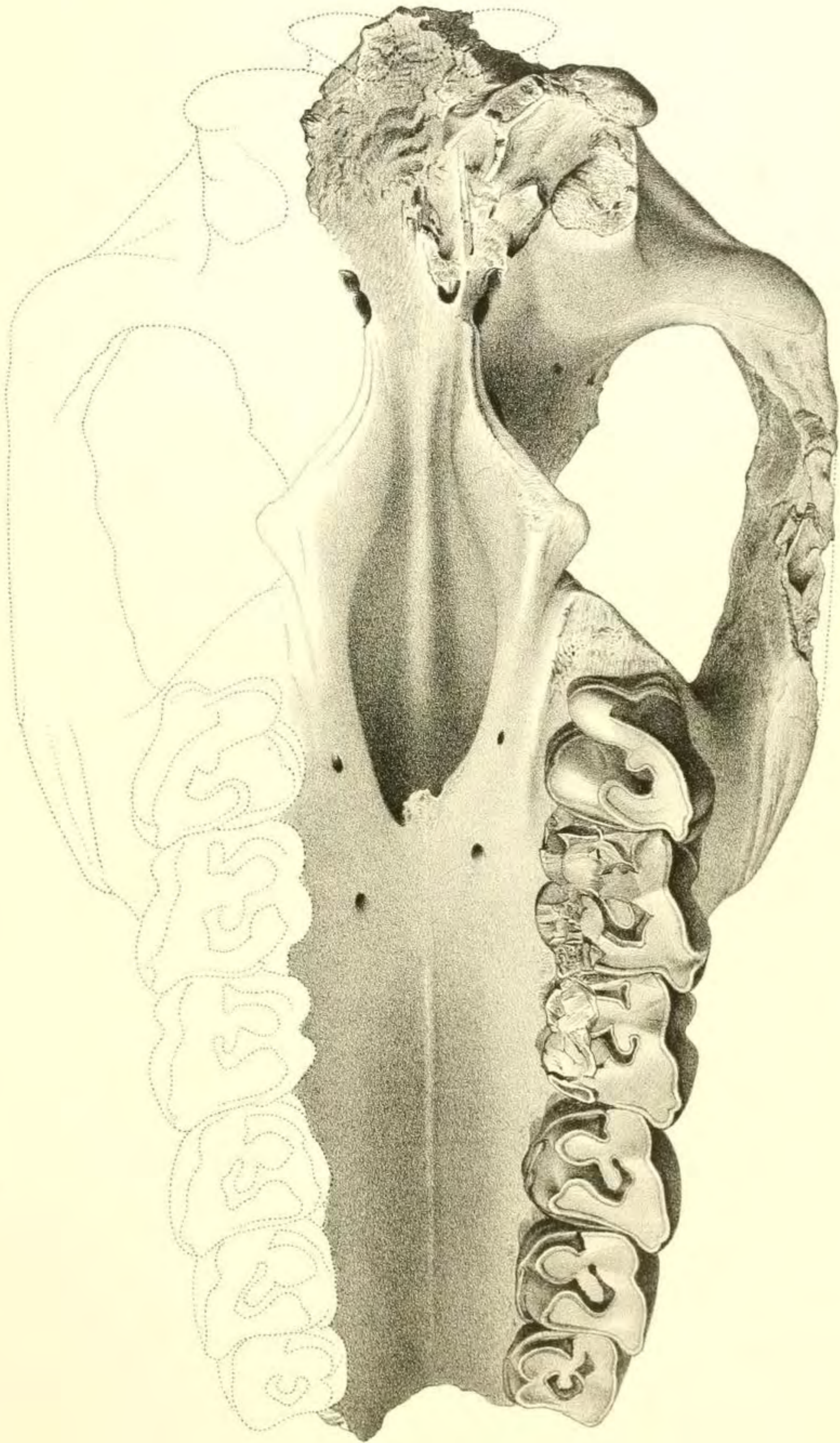
APHELOPS MALACORHINUS 5

## PLATE CXLI.

### MIOCENE RHINOCEROSES. SKULL OF APHELOPS MALACORHINUS

*Aphelops malacorhinus* Cope, 1878. Palatal view of skull, two-fifths natural size. Type specimen, Amer. Mus. No. 8381, Cope Coll., from Republican River beds of Nebraska. Specimen figured on pl. CXL.





T. Streiber & Son Lith. Philada.

APHELOPS MALACORHINUS 5

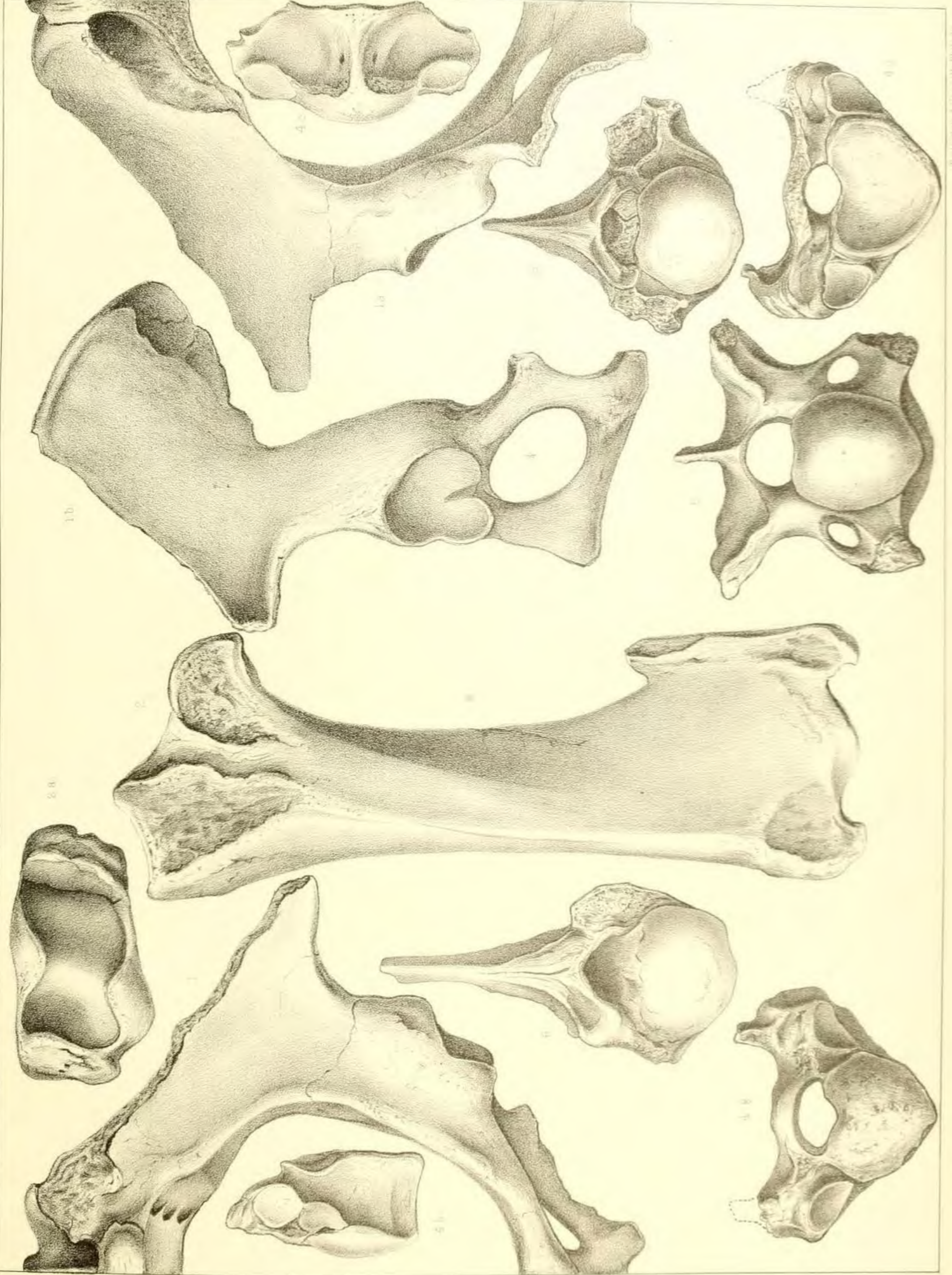
## PLATE CXLII.

### MIOCENE RHINOCEROSES. BONES OF APHELOPS MALACORHINUS

FIGS. 1-6. *Aphelops malacorhinus* Cope, 1878. Skeleton bones referred to this species by Professor Cope. Amer. Mus. Cope Coll., from Republican River beds, Nebraska.

Fig. 1, 1a, 1b, pelvis, anterior, posterior and external views, one-fourth natural size; fig. 2, 2a, tibia, anterior and distal views, two-fifths nature; figs. 3-6, dorsal and a cervical vertebra, two-fifths nature.

These specimens were presumably referred to this species on account of their being found associated with the type or some referred skull material of *A. malacorhinus*; but the record of such association has been lost, and a search through the published references, field records and other possible sources of information has failed to recover any conclusive evidence upon it. The association of skull and skeletal parts in the related species *A. ceratorhinus* Douglass indicates however that these bones are correctly referred to *A. malacorhinus*. (W. D. M.).



# PLATE CXLIII.

## MIOCENE RHINOCEROSES

### SKULL AND SKELETAL PARTS OF APHELOPS ? MALACORHINUS

FIGS. 1-7. Remains of Rhinoceroses, part or all referable to *Aphelops malacorhinus*. Amer. Mus. Cope Coll. Republican River Bed, Kansas or Nebraska.

Fig. 1. Humerus, anterior view.

Fig. 2. Part of maxilla.

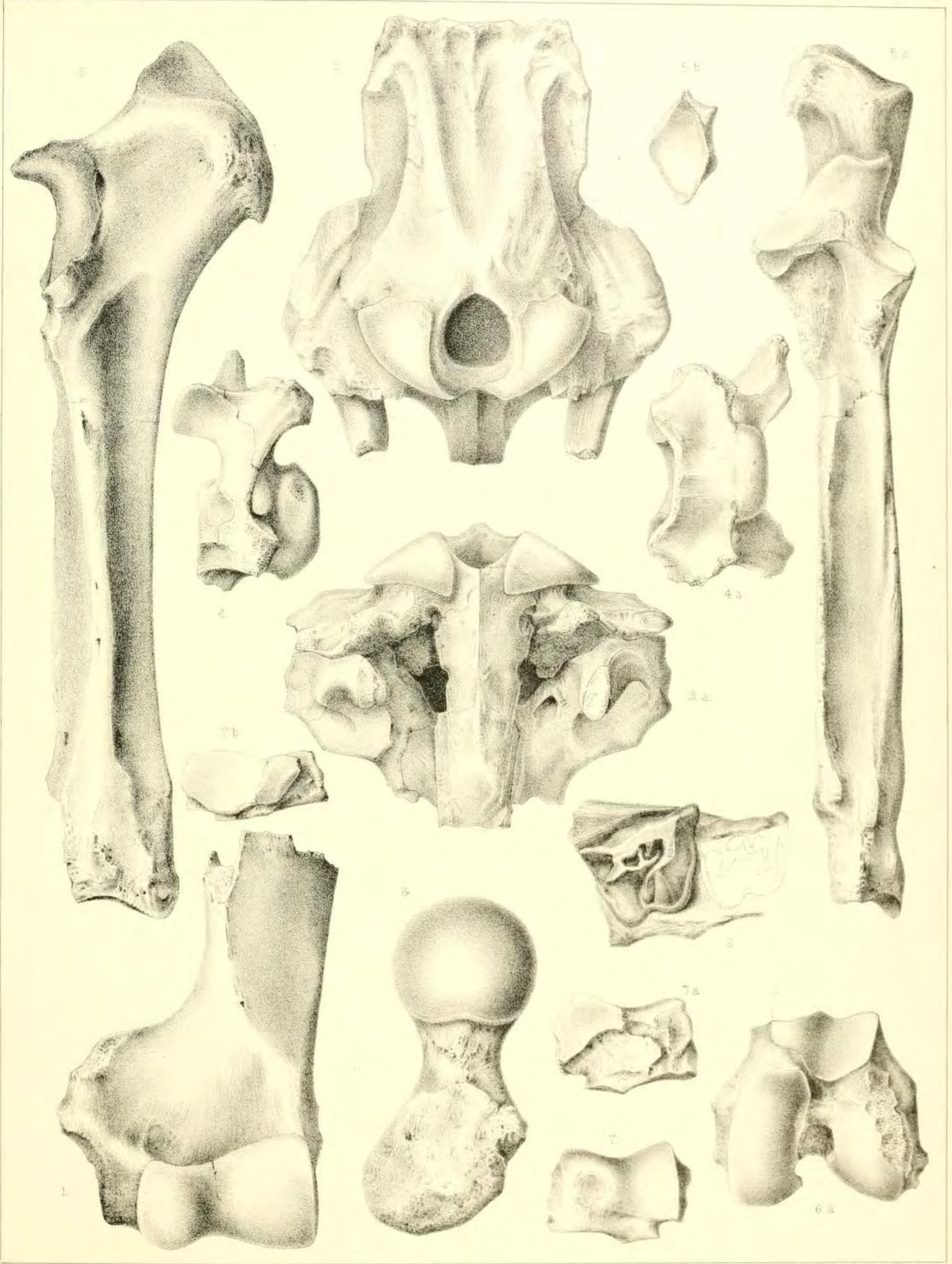
Fig. 3. *Aphelops malacorhinus*, occipital view of skull. Paratype, Amer. Mus. No. 8439, Cope Coll.

Fig. 4, 4a. Cervical vertebra, lateral and inferior views.

Fig. 5, 5a, 5b. Ulna, probably *A. malacorhinus*, external, anterior and distal views. No. 8382.

Fig. 6, 6a. Proximal and distal ends of femur.

Fig. 7, 7a, 7b. Astragalus, dorsal, plantar and distal views.

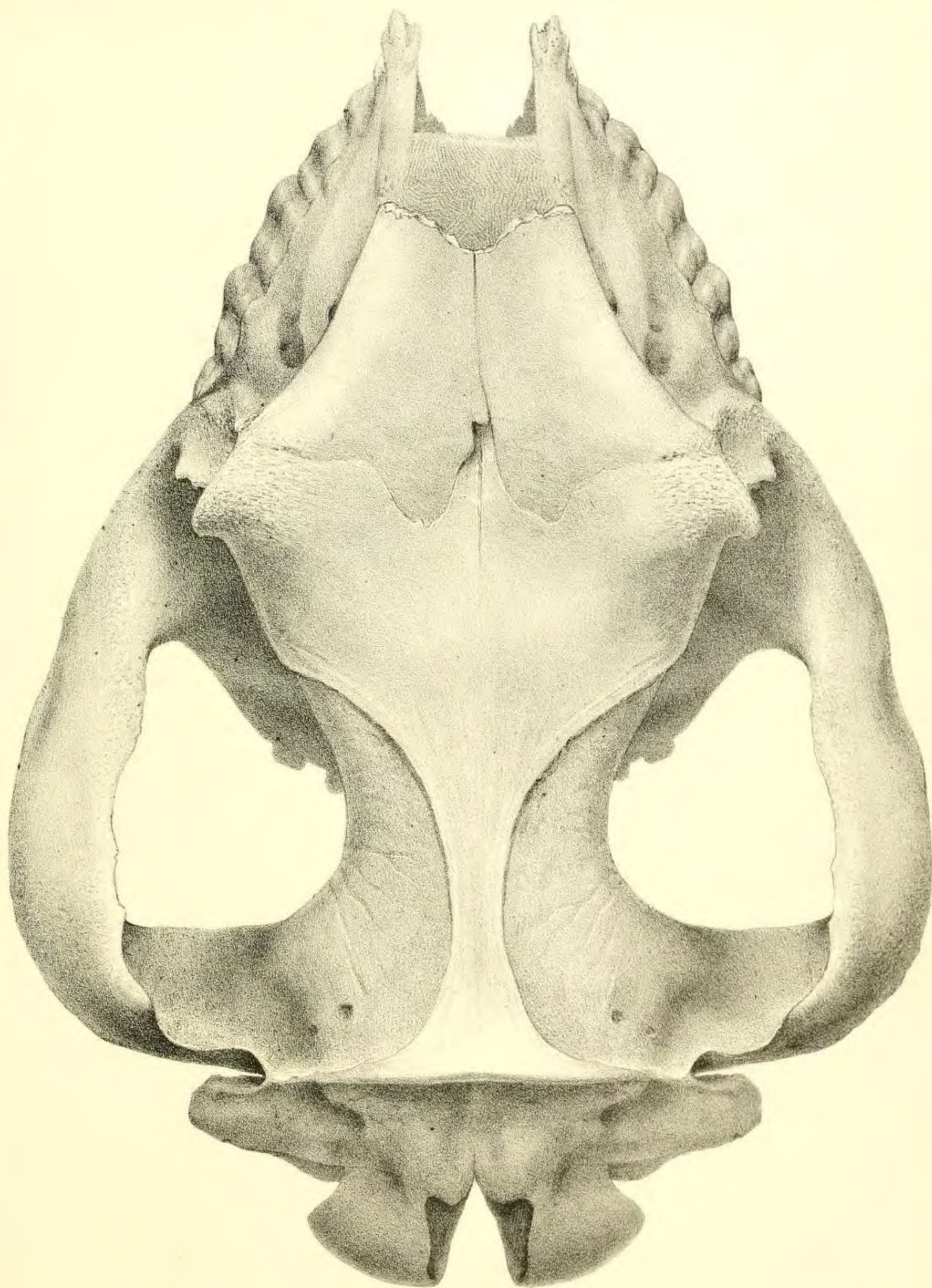


APELOPS

## PLATE CXLIVb.

MIocene RHINOCEROSSES. SKULL OF PERACERAS

*Peraceras superciliosus* Cope, 1880. Top view of skull, two-fifths natural size. Type specimen, No. 8380, figured on pl. CXLIV.



PERACERAS SUPERCILIOSUS 31

T. S. Arthur & Son Lith. Philada

## PLATE CXLIV.

### MIOCENE RHINOCEROSSES. SKULL OF PERACERAS

*Peraceras superciliosus* Cope, 1880. Side view of skull, one-half natural size. Type specimen,  
Amer. Mus. No. 8380. Republican River beds, Nebraska.  
Specimen figured on pl. CXLIVb.





PERACERAS SUPERCILIOSUS COPB. †