Art. XXXV.—*Two New Fossil Carnivora;* by Malcolm Rutherford Thorpe.

[Contributions from the Othniel Charles Marsh Publication Fund, Peabody Museum, Yale University, New Haven, Conn.]

Pliocyon marshi, gen. et sp. nov.

(Figs. 1-3.)

Holotype, Cat. No. 10043, Y. P. M. Right lower jaw. Pliocene (Rattlesnake), near Cottonwood, John Day Valley, Oregon. Collected in 1874 by L. S. Davis.

Distinctive characters.—Dental formula I_2, C_1, P_2, M_2; ramus long and slender; angle heavy and rugose; P_1 small and adjacent to C; P_4 with prominent posterior tubercle and heel; M_1 very large, with robust protoconid, prominent metaconid, and low hypoconid medially situated on the talonid; paraconid large and high. M_2 long and stout, gradually decreasing posteriorly in width; symphysis short; canines close together; mental foramen beneath anterior root of P_4 and another below the anterior part of the diastema behind P_1; I_3 in front of C; nearest part of C alveolus but 4 mm. from symphysis.

Dimensions.

	mm.
Ramus, length, C alveolus to condyle, inc.	125
Tooth row, length, C alveolus to M_2 alveolus, inc.	79
M_2 alveolus, length	14.5
M_1, length	22.5
Width	10
P_4, length	13.8
Width	8
C alveolus, ant.-post. diameter	13.5
Transverse diameter	8
Depth of ramus below protoconid of M_1	26
Depth of ramus below middle of Pm diastema	20.5

Geologic horizon.—This specimen was collected about a mile west of Cottonwood, on the East Fork of the John Day River. The enclosing matrix was soft tuff, lying between the basal conglomerate and the capping rim rock of rhyolite, about 3 feet below the lower edge of the latter according to a letter written to Professor Marsh by L. S. Davis, dated Camp Watson, March 15, 1874. This formation is the Rattlesnake of Merriam, and is of middle

Pliocene age. The bone varies in color from light grey to slate, while the teeth are dark blue.

Relationships.—No specimen comparable to this has been described or reported from North America. In fact, it resembles more closely *Simocyon primigenius* Roth and Wagner than any other form, a fact first recognized by Professor Lull. *Simocyon primigenius* is Lower Pliocene in age, and comes from the Pikermi beds, near Athens, Greece.

This European species differs from *Pliocyon marshi* in having (1) but one lower premolar, P_4; (2) a longer and more robust ramus; (3) three incisors; (4) a much wider canine with nearly the same antero-posterior diameter; (5) a greater distance between canines; (6) anterior mental foramen below the middle of the dias-

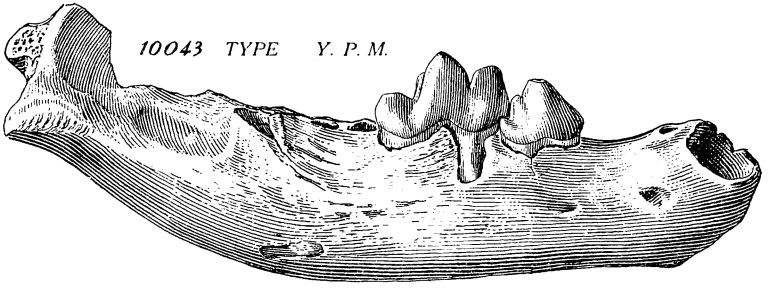

FIG. 1.—*Pliocyon marshi*, gen. et sp. nov. Holotype. External lateral view. × 4/5.

tema anterior to P_4; (7) internal, mandibular foramen much lower and farther from M_1; (8) a longer symphysis; (9) a much greater outward curvature of the ramus; (10) a much greater degree of outward trend below the tooth row; and several other less important differences.

Pliocyon marshi differs from *Simocyon diaphorus* Kaup, on the other hand, in having (1) no P_2 and P_3; (2) a smaller and lower metaconid on M_1, and a larger hypoconid; (3) a much shallower cleft between the para- and protoconid of M_1; (4) a longer and higher P_4, but with less prominent basal heel; (5) M_2 placed nearly level with respect to the tooth row, instead of rising steeply posteriorly; (6) a shorter horizontal ramus; (7) anterior mental foramina closer together, with the anterior one higher; and (8) a somewhat shorter but wider M_1.

The two species, *S. primigenius* and *S. diaphorus,* are so unlike that I doubt the validity of this classification. In fact, it seems that *Pliocyon marshi* is closer to *S. primigenius* than is *S. diaphorus,* but I do not believe that this new form should be considered as a species of *Simocyon. Pliocyon* is of later age than *S. primigenius,* but in some

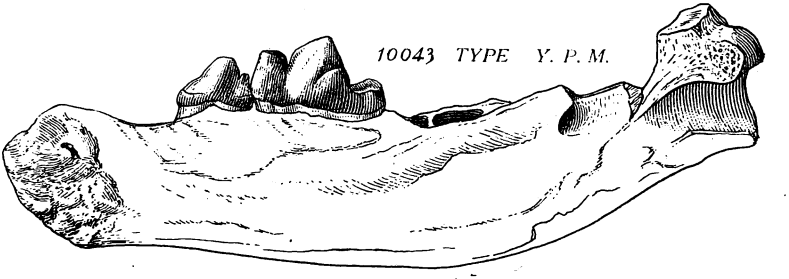

FIG. 2.—*Pliocyon marshi,* gen. et sp. nov. Holotype. Internal lateral view. × 4/5.

respects it seems to show less advanced characters. Both were brachycephalic forms and had, of course, reached a high degree of specialization. The exact taxonomic position of the new North American form can not be determined on the presence of this one ramus. Apparently, however, we can safely conclude that *Pliocyon* is the New World representative of the Pikermi *Simocyon.*

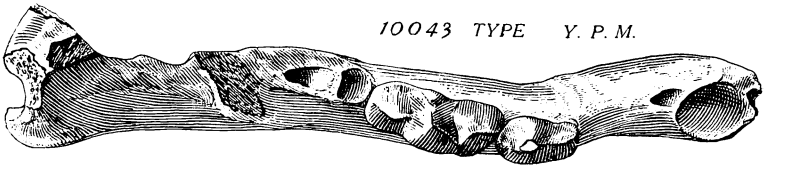

FIG. 3.—*Pliocyon marshi,* gen. et sp. nov. Holotype. Superior view. × 4/5.

Oligobunis Cope.

When Cope described this genus in 1881, he considered it ancestral to *Icticyon* Lund, and as allied to the Canidæ. The type, *O. crassivultus,* is from the John Day beds. In 1907 Matthew reëxamined the type and referred it to the Mustelidæ.

The dental formula is $I\frac{3}{3}$, $C\frac{1}{1}$, $P\frac{4-3}{4}$, $M\frac{2}{2}$. Cope did not know of the existence of M^2 and used its supposed absence in part as a generic distinction from *Icticyon.* The type,

No. 6903, A. M. N. H., consists of the anterior half of a skull with rami, about the size of *Taxidea americana.* The muzzle is short and stout, lacking the constriction anterior to P^4, common to the Canidæ. The zygomatic fossa is short; the orbits small, and the infra-orbital foramen above the interval between P^3 and P^4.

The rami are robust, with deep masseteric fossæ. The condyles are on a line with M_1, while the coronoid is wide and high. The canine is stout, and the premolars short and massive. P^1 is very small; P^2 but slightly ovate; P^3 somewhat obliquely placed; P^4 large, with a well developed deuterocone, and the blades separated by a distinct notch. Matthew says of M^1 (p. 193) that it "is reduced antero-posteriorly and much extended transversely, the paracone nearly median, metacone vestigial and parastyle much extended, protocone compressed, and, as in all primitive Mustelines, it lacks the broad flange characteristic of the modern Mustelidæ." M^2 is small and oval.

The inferior premolars are slightly spaced and P_1 is very diminutive. M_1 has a rather large heel and a well developed metaconid, while M_2 is small and oval, with the meta- and hypoconid of nearly equal height.

Oligobunis darbyi, sp. nov.

(Figs. 4, 5.)

Holotype, Cat. No. 10272, Y. P. M. Skull and jaws. Lower Miocene (Monroe Creek beds—lower Harrison), Pine Ridge, 12 miles north of Harrison, Sioux Co., Nebraska, on the Warbonnet ranch, in Sec. 2, T 32 N., R 56 W. Collected in 1914 by Mr. Fred Darby, after whom the species is named.

Specific characters.—The skull is approximately the same size as that of *Icticyon venaticus,* the South American bush dog (Goldman 1920, p. 149), or considerably smaller than that of *O. crassivultus.* It is strongly dolichocephalic, with a very short muzzle. There is a large infra-orbital foramen above the posterior margin of P^3, the superior contour slopes gently both ways from the junction of the temporal ridges, the length of the zygomatic fossa is equivalent to about one third of the total skull length, the sagittal crest is barely marked, and the zygomatic arches are very slender.

The cranial and basicranial areas of this genus have been unknown heretofore. The bullæ are partly broken

away, although there is sufficient evidence to show that they were moderately inflated and oval in outline. The foramina correspond very closely in position to those of *Megalictis ferox* Matthew (1907, p. 197). The condylar foramen is exceedingly small; the foramen lacerum posterius and the carotid canal are not clearly defined but they were located internally and about medially of the bullæ; the stylomastoid foramen is rather large and the postglenoid foramen small, this latter lying about midway between the external auditory meatus and the base of the postglenoid process; the foramen ovale is moderately large and located internally from about on a line with the postglenoid tubercle; the foramen lacerum medius is likewise large and situated antero-internally from the

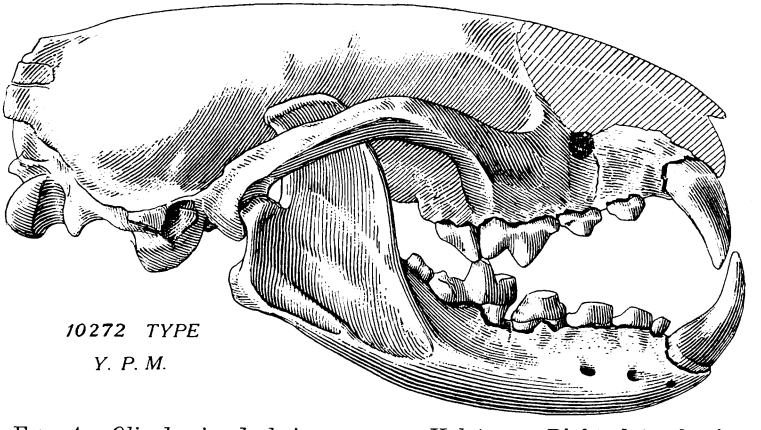

FIG. 4.—*Oligobunis darbyi,* sp. nov. Holotype. Right lateral view. Nat. size.

bulla. The external auditory meatus is quite large and directed forward. The postglenoid process is wide and its lower extremity internally curves downward and forward to a marked degree. The mastoid process is robust and heavy, directed much more outward than downward, while the paramastoid is situated considerably more posteriorly and extends somewhat backward but chiefly downward. The basicranial axis is nearly straight; the pterygoid processes are thin and quite prominent, while the palate was undoubtedly nearly flat.

The canines are stout and of median length. P^1 is small and has no diastema on either side. The other

teeth are not distinctive, except M^2, which is very small, oval, and situated about medially with respect to M^1. The inferior canine is recurved and the tooth row is continuous, with no diastemata. The ramus is slender; masseteric fossa very deep and large; angle prominent; and coronoid wide, thin, and high. The condyle is situated on a line with the dental series. There are three mental foramina in the same horizontal line.

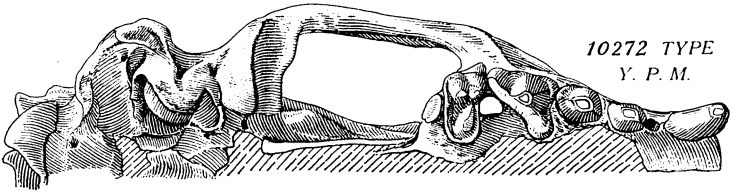

FIG. 5.—*Oligobunis darbyi*, sp. nov. Holotype. Inferior view, right half of skull. Nat. size.

Dimensions.

	mm.
Skull, length, occip. condyles to canine, inc.	96
Bizygomatic diameter	47
Diameter, post-orbital constriction	19.5
Superior dental series, inc. C, length	40
Superior molar series, length	8.2
Superior premolar series, length	25.2
Ramus, length, inc. canine	66
Depth, coronoid to angle	28.5
Depth below middle of M_1	13
Inferior molar series, length	15
Inferior premolar series, length	21.5

In so far as comparable parts are present of both the type of the genus, *O. crassivultus* Cope, and *O. darbyi*, sp. nov., the latter differs chiefly in (1) smaller size, (2) much greater degree of dolichocephaly, (3) a continuous inferior and superior tooth row, (4) larger size of infra-orbital foramen, (5) different size and shape of masseteric fossa, (6) different proportions of anterior zygomatic pedicle, (7) much less prominent angle of ramus, (8) considerably smaller deuterocone of P^4, and (9) different geographical locality and geological horizon. Many minor differences may also be noted.

The new species differs from the type of *O. lepidus*

Matthew, No. 12865, A. M. N. H., in (1) larger size and (2) different proportions. The paratypes of the latter species, Nos. 12866 and 12867, are figured, but not the type. In comparison with the paratypes, *O. darbyi,* sp. nov., differs in (1) somewhat larger size, (2) possession of P^1, (3) greater crowding of the premolars, (4) much larger size of P_1, (5) smaller size and different shape of M^2, (6) less curvature of the inferior tooth row, (7) greater degree of recurving of C_1, (8) straighter inferior outline of the ramus, and (9) greater depth of ramus below the tooth row.

These paratypes Matthew designated in his table of measurements as a new variety, *robustior,* although I think that additional material would elevate them to the rank of a new species, more advanced in development than any of the others. Another paratype of the same species, No. 12868, may well be a male of *O. lepidus,* as it agrees with the type except in being of larger size.

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