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A NEW HYAENID (CARNIVORA, MAMMALIA) IN THE VALLESIAN (LATE MIOCENE) OF NORTHERN GREECE

by

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Abstract: *A hyaenid skull and a mandible from the Vallesian (early Late Miocene) of Northern Greece is studied. The characters of the skull as the long snout, the narrower palate, the less compressed jugal tooth row and the more slender premolars (except the p^4) distinguish this from the nominal sub-species of Adcrocuta eximia, allowed us to derive a new sub-species A. eximia leptoryncha.*

INTRODUCTION

Among the fossil mammals recovered during the new field parties in Northern Greece the carnivores remain relatively rare and few specimens of Miocene hyaenids were unearthed (KOUFOS, 1980). But the last campaign yielded a pretty well preserved skull together with a fragmentary lower jaw of a middle size hyaenid. These specimens will be described in this article. The locality where the fossils were found is called «Ravin de la Pluie» and it is well known because numerous remains of a hominoid primate. *Ouranopithecus macedoniensis* have been sampled in this locality (BONIS - BOUVRAIN - GERAADS - MELENTIS, 1974). The deposits have been dated from the Vallesian (early Late Miocene), more precisely they are about 10 myr old (BONIS - MELENTIS, 1975 - KOUFOS, 1980). Most of the Greek fossils hyenids were found in Turolian layers, about 9 to 5,5 myr old. It is the first complete skull ever found in the Greek Vallesian. For the study we will compare the new specimens principally with material coming from the classical localities of Pikermi, Halmyropotamos (Southern continental Greece), Samos (Aegean Greece), Thessaloniki area (Northern Greece), localities of Asia Minor, of China and of Siwaliks (India and Pakistan).

DESCRIPTION

1. Skull

It is laterally compressed but the general shape is not altered. In lateral view, the snout is long and the plan of the nasal opening slopes backward. The infra-orbital foramen opens 29 mm above the neck of

the crown of P^3, just in front of the top of the posterior root, like in other Miocene specimens and not the anterior one as in modern hyaenids. The sagittal crest is normally developed. The paroccipital process and the tympanic bulla do not go down below the level of the occipital condyles versus the recent hyaenids which have longer processes. In ventral view, the palate appears longer and narrower than those of the other Miocene specimens although the breadth of the incisor row is larger, (49 mm versus 42 for Pikermi and 41,5 for Maraghe). The length/ breadth index (L/b × 100) is 154. The breadth is the distance between both distal edges of P^4 and the length is the distance b-d' (fig. 1) because the area of the choana opening is often broken on the other fossil hyaenids and it would be impossible to compare the true palatal length b-d. This index is probably a little bit too high on the RPl specimen because the lateral crushing.

2. Upper teeth

The incisors and the canines are very similar to those of the upper Miocene comparative material. The second incisor is a little larger than the first one but the difference between I^2 and I^3 is very well marked as in the recent genus *Crocuta*. The canine root slopes backward like the nasal opening plane. The jugal tooth row is less compressed than in the specimens from Pikermi or Maraghe. The diastema between C and P^1 is more important and there is another one between P^1 and P^2. There is just a weak contact between the distal wall of P^2 and the mesial one of P^3 without imbrication of the teeth.

P^1 is small and single rooted. The crown rounded in occlusal view but the eocrest is well marked. P^2 and P^3 are more slender than those of the other Miocene hyaenids. The breadth at the level of the neck of the crown is almost the same but the crown itself is less inflated. On both premolars the mesial part of the eocrest turns inside to a small anterior cusp. The posterior one is relatively more developed on P^3 than on P^2. On both a lingual cingulum runs between the two accessory cusps, with a chevron downward at the first third of the crown. The upper carnassial tooth P^4 fits very well with the specimens from Pikermi or Maraghe identified as *Adcrocuta eximia*. The protocone is reduced more than the protocone of the Gaudry specimen. We can observe upper carnassial teeth with a more or less developed protocone in the sample from Maraghe. It seems to be the same on *Adcrocuta eximia variabilis* from China. Taking in account the allometric changes discussed by KURTEN

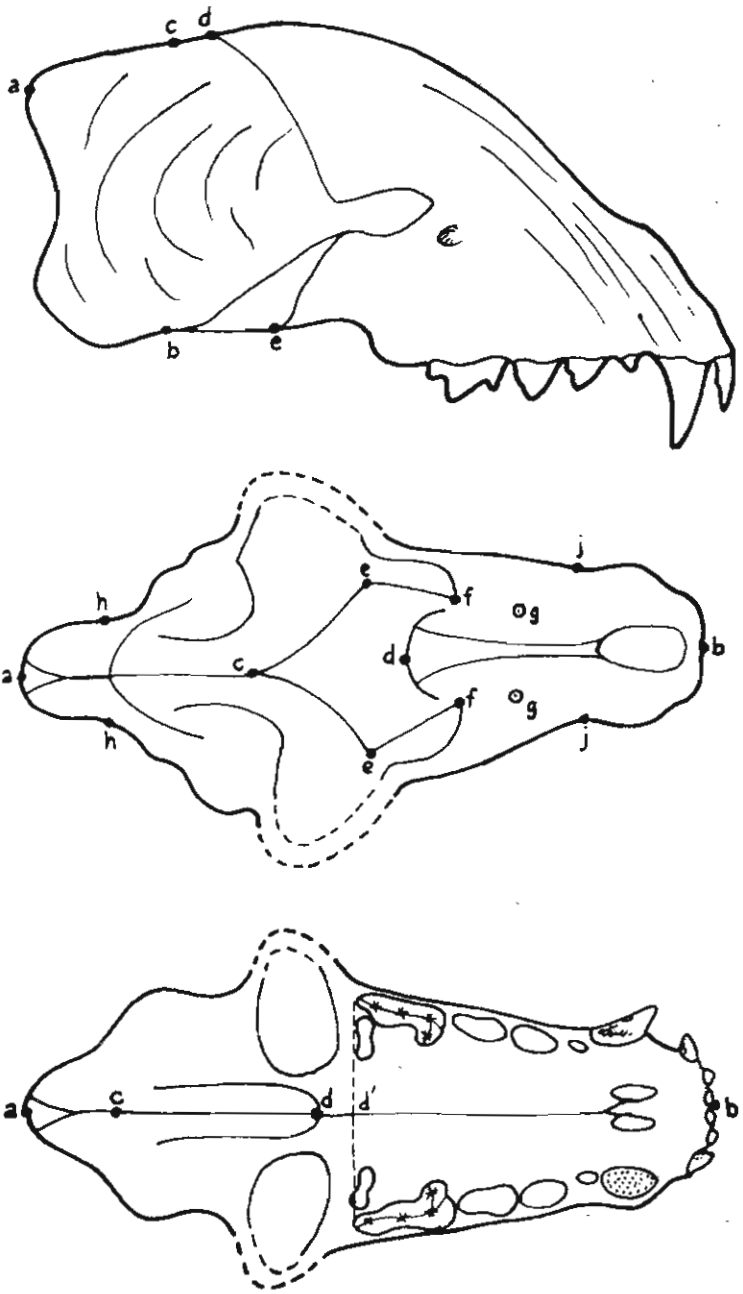

Fig. 1. Measurements of the skull RPl-14. (see Tab. 1).

TABLE 1

Skull dimensions of Adcrocuta eximia leptoryncha (see fig. 1)

Dorsal	Ventral
Length	
1. a-b=295	1. a-b=270
2. a-c=138	2. c-d= 90
3. c-d=120	3. d-b=144
4. a-d=236	4. b-d'=128
5. b-d= 86	5. I^3-C= 8
6. a-e=163	6. Distance between posterior ends of P^4=83
7. b-e=157	7. » » » » » P^3=64
8. b-f=118	8. » » » » » P^2=57
9. b-g=100	9. » » » » » C=46
10. e-f=48	Lateral
Breadth	1. a-b=143
11. h-h=80?	2. b-c=120
12. e-e=110	3. d-e=113
13. f-f= 78	
14. g-g= 59	
15. j-j= 66	

(1956), the other proportions of P^4 (size of the parastyle, length of the metastyle...) fit also with *A. eximia*.

M^1 is reduced as in *A. eximia*. Despite the wear and relatively poor preservation, we can see there exist two distinct external cusps, paracone and metacone as in *A. eximia*.

3. Lower teeth

The lower teeth are not well preserved (RPl-15) and we cannot find any important differences with the mandibles from Pikermi or Maraghe. The size is almost the same but may he, the crowns of the premolars are a little bit more slender. P_2, P_3 and P_4 have a moderate posterior accessory cusp and the anterior one is weakly developed on P_3 and a little more important on P_4. The carnassial tooth is broken

TABLE 2

Dimensions of the teeth of Adcrocuta eximia leptoryncha.

Upper teeth

		I^1	I^2	I^3	C	P^1	P^2	P^3	P^4	M^1
DAP	dex	7,8	9,6	13,3	17	7,3	17,7	22,8	38,5	8,0
	sin	7,7	—	13,5	—	7,1	18,2	23,0	38,8	7,0
DT	dex	5,7	7,3	10,2	13,2	7,0	12,9	15,6	18,2	15,0
	sin	5,5	7,3	10,6	—	6,7	12,6	15,0	17,7	15,2

Lower teeth

	P_2	P_3	P_4	M_1
DAP	13+	18,0	22,3	28,2
DT	9,3?	12,0	11,3	11,9

in the area of the metaconid and it is not possible to see if this cusp is or not present. The talonid moderately developed has two distinct cusps.

METRICAL COMPARISONS

We have compared the cheek dentition of the RPl specimens with other Miocene hyaenids. The standard of comparison is the Pikermi material housed in the Museum National of Natural History, Paris. The other hyaenids are the specimens from China (after ZDANSKY, 1924), the specimens from Maraghe (original measurements) and the best specimen of *Percrocuta* ever found, *P. algeriensis* (original measurements). The relative dimensions of the RPl fossils are not very far from the Pikermi ones and very similar to the samples from China and Maraghe. But they are very different from *P. algeriensis* whose carnassial teeth, P^4 and M_1 are relatively short versus the premolars P2 and P3 (fig. 2).

The palatal idex (L/b × 100) is 154 for RPl, 125 for Pikermi and 117 for Maraghe, which shows the length of the snout of RPl versus the massive snout of other hyaenids. The small lateral crushing cannot explain such a difference.

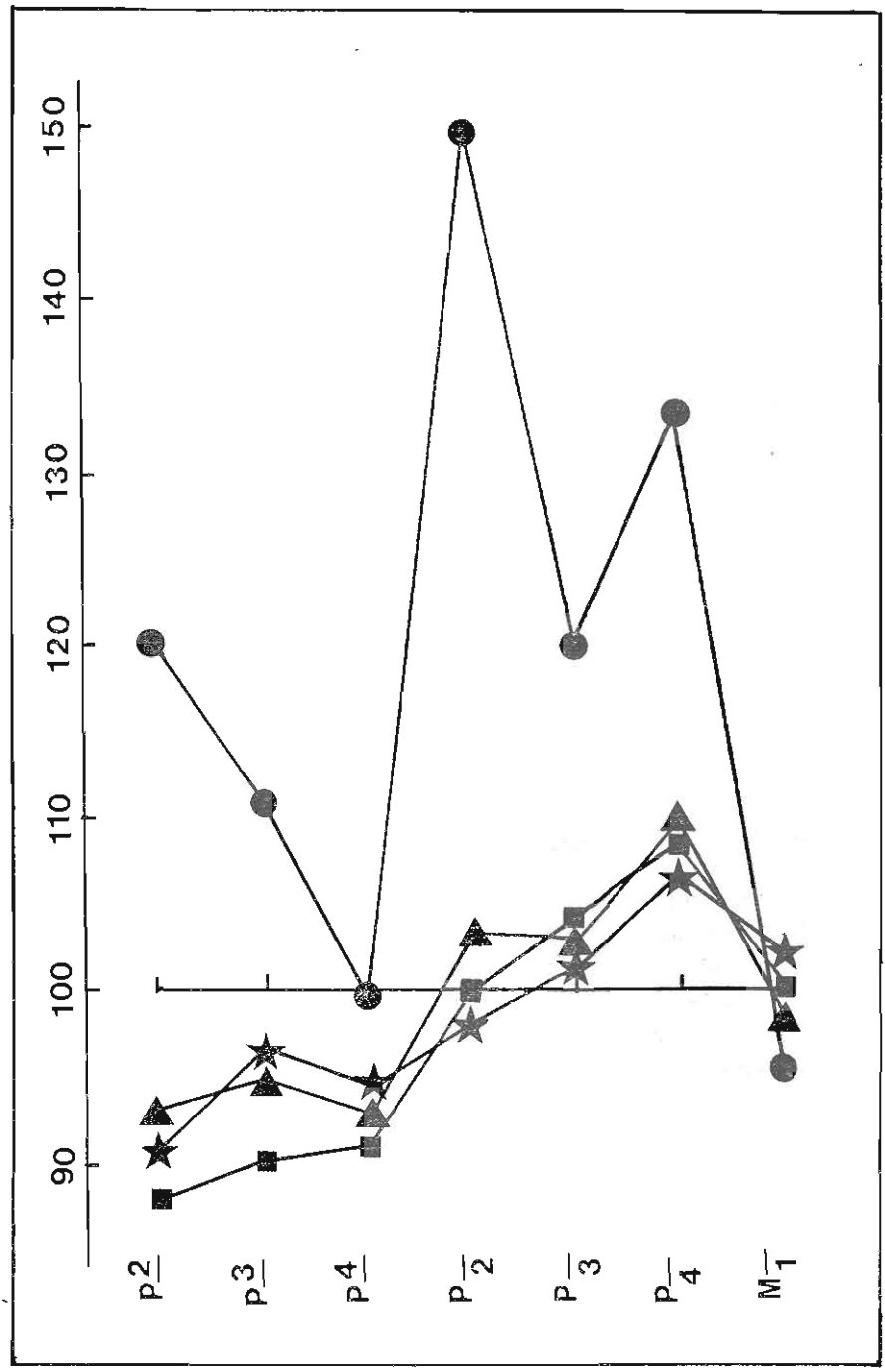

Fig. 2. Ratio diagram comparing teeth measurements of Adcrocuta eximia. (Standard: Pikermi, stars: RPl, squares: Maraghe, triagles: China) and Perocruta algeriensis (circles: Bou-Hanifia).

MORPHOLOGICAL COMPARISONS

The reduced paracone of the upper carnassial tooth allow us to separate the Macedonian hyaenid from the genera *Crocuta* and *Hyaena* (and more or less similar genus *Pachycrocuta, Pliocrocuta...*). The general shape of the dentition is different from that of the «felinoid» hyaenids as *Euryboas* or *Chasmaporthetes*. The two genera *Adcrocuta* and *Percrocuta* are the nearest of the RPl hyaenid. But *Percrocuta* has a protocone less reduced on the upper carnassial tooth and which is more backward. The M^1 is more reduced with a single external cusp. All the features of the RPl fossils fit very well with the genus *Adcrocuta* and the species *A. eximia* described from Pikermi, Samos, Thessaloniki area, Maraghe etc... Nevertheless the new skull differs by a narrower palate, more important diastemas and more slender premolars. *«Percrocuta» tungurensis* from the middle Miocene is a very special species, more derived than the late Miocene hyaenids. The protocone of P^4 is very reduced as is the M^1, the lower P_1 is lacking, the lower carnassial tooth has a reduced and single-cusp talonid and it lacks the metaconid. The phyletic relationships between this species and the other hyaenids are not clear and, maybe, these features would justify a new genus.

A piece of maxilla found near the village of Diavata, not so far from Nea Mesimvria, has been described by ANDREWS (1918) as *Hyaena salonicae*. This specimen has heen discussed by PILGRIM (1931), ARAMBOURG - PIVETAU (1929), KURTEN (1957) and recently, De BEAUMONT (1979). It is difficult to decide about such an incomplete specimen whose age is unknown. But its size, relative dimensions and characters seem to be near *Percrocuta* and different from RPl-14.

CONCLUSIONS

All the morphological characters and tooth measurements show RPl-14 and RPl-15 fall in the limits of the variations of *A. eximia*. But the skull from RPl is different. The snout is longer and so the palate is narrower, the jugal tooth row is less compressed and the premolars except the upper carnassial tooth, are more slender. We think that these features allow to consider the RPl carnivore as a new subspecies, *Adcrocuta eximia leptoryncha*.

The differences described on the skull RPl-14 maybe explained by the age of the locality. The Pikermi fauna is Turolian (later Late Mio-

cene) as are the specimens unearthed by de Mecqenem in the Maraghe quarries and the fossils described by ARAMBOURG-PIVETEAU (1929). It is probably the same for the hyaenids from China described by ZDANSKY (1924) as *Hyaena variabilis* and now considered as *Adcrocuta eximia.* The «Ravin de la Pluie» is Vallesian (early Late Miocene) as indicated by the murid *Progononys cathalai,* the giraffid *Decennatherium pachecoi* and the equid *Hipparion primigenium. Adcrocuta eximia leptoryncha* n. sub-sp. maybe considered as a stratigraphic sub-species.

Taking a look at the hyaenids as a whole, we can observe that the primitive genera, the nearest to the viverrid pattern, have spaced and more or less slender premolars (except P^4) and a long and narrow skull. The characters of *A. eximia leptoryncha* are probably plesiomorphic, the derived state being to have more inflated, heavily built and imbricated premolars with a more powerfull snout.

SYSTEMATICS

Order: Carnivora BOWDICH, 1821
Family: Hyaenidae GRAY, 1869
Genus: *Adrocuta* KRETZOI, 1938
Species: *A. eximia* (ROTH and WAGNER), 1854

Adcrocuta eximia leptoryncha n. sub-sp.

type-specimen: skull RPl-14 housed in the Laboratory of Geology and Palaeontology, University of Thessaloniki, Greece.
referred specimen: mandible RPl-15.
locality: «Ravin de la Pluie», Macedonia (Greece).
horizon: Vallesian (early Late Miocene).
origin of the name: long snouted.
diagnosis: *A. eximia leptoryncha* differs from the nominal subspecies by a long snout, a narrower palate, a jugal tooth row less compressed and premolars (except the P^4) more slender.

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ΠΕΡΙΛΗΨΗ

ΜΙΑ ΝΕΑ ΥΑΙΝΑ (ΣΑΡΚΟΦΑΓΑ, ΘΗΛΑΣΤΙΚΑ) ΑΠΟ ΤΟ ΒΑΛΛΕΖΙΟ (ΑΝΩΤΕΡΟ ΜΕΙΟΚΑΙΝΟ) ΤΗΣ ΒΟΡΕΙΑΣ ΕΛΛΑΔΑΣ

Ὑπὸ

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** *Ἐργαστήριο Γεωλογίας καὶ Παλαιοντολογίας Ἀριστοτελείου Πανεπιστημίου Θεσσαλονίκης.*

Οἱ τελευταῖες ἀνασκαφὲς στὴν κοιλάδα τοῦ Ἀξιοῦ δὲν εἶχαν δώσει ὁλοκληρωμένα δείγματα ὑαινῶν. Ἀλλὰ στὶς ἀνασκαφὲς τοῦ ἔτους 1980 βρέθηκε ἕνα κρανίο καὶ μιὰ κάτω γνάθος ὕαινας στὸ ἀπολιθωματοφόρο κοίτασμα θηλαστικῶν RPl («Ravin de la Pluie»). Αὐτὸ βρίσκεται κοντὰ στὸ χωριὸ Ν. Μεσημβρία τῆς Θεσ/νίκης καὶ εἶναι γνωστὸ ἀπὸ τὴν παρουσία τοῦ πρωτεύοντος *Ouranopithecus macedoniensis*.

Τὸ κρανίο συγκρίνεται μὲ τὰ γνωστὰ κρανία τοῦ Πικερμίου, Σάμου, Θεσσαλονίκης καὶ Maraghe καὶ διαπιστώνεται κατ' ἀρχή, ὅτι αὐτὸ ἀνήκει στὸ εἶδος *Adcrocuta eximia*. Ὑπάρχουν ὅμως ὁρισμένες σαφεῖς διαφορὲς ἀπὸ τὸ βασικὸ ὑποεῖδος *A. eximia eximia*. Τὸ ρύγχος του εἶναι πιὸ ἐπιμηκυσμένο, ἡ ὑπερῶα εἶναι στενότερη, τὰ δόντια εἶναι λιγότερο πιεσμένα μεταξύ τους καὶ οἱ προγόμφιοι ἐκτὸς ἀπὸ τὸ P^4 εἶναι πιὸ λεπτοί. Ὅλα τὰ παραπάνω στοιχεῖα μᾶς ὁδήγησαν στὴ σκέψη, ὅτι τὸ κρανίο πρέπει νὰ ἀνήκει σ'ἕνα νέο ὑποεῖδος ποὺ ὀνομάσαμε *A. eximia leptoryncha*.

Τὸ ἀπολιθωματοφόρο κοίτασμα RPl εἶναι Βαλλεζίου ἡλικίας, ὅπως ἀποδεικνύεται ἀπὸ τὴν εὕρεση τῶν *Progonomys cathalai, Decennatherium pachecoi* καὶ *Hipparion primigenium*. Ἔτσι τὸ νέο ὑποεῖδος *A. eximia leptoryncha* μπορεῖ νὰ ἀποτελέσει στρωματογραφικὸ δείκτη τοῦ Βαλλέζιου.

TABLE 1

Fig. 1. Skull, RPl-14, lateral view. 1/2 Nat. size.

TABLE II

Fig. 1. Skull, RPl-14, dorsal view. 1/2 Nat. size.

TABLE III

Fig. 1. Skull, RPl-14, ventral view. 1/2 Nat. size.

TABLE IV

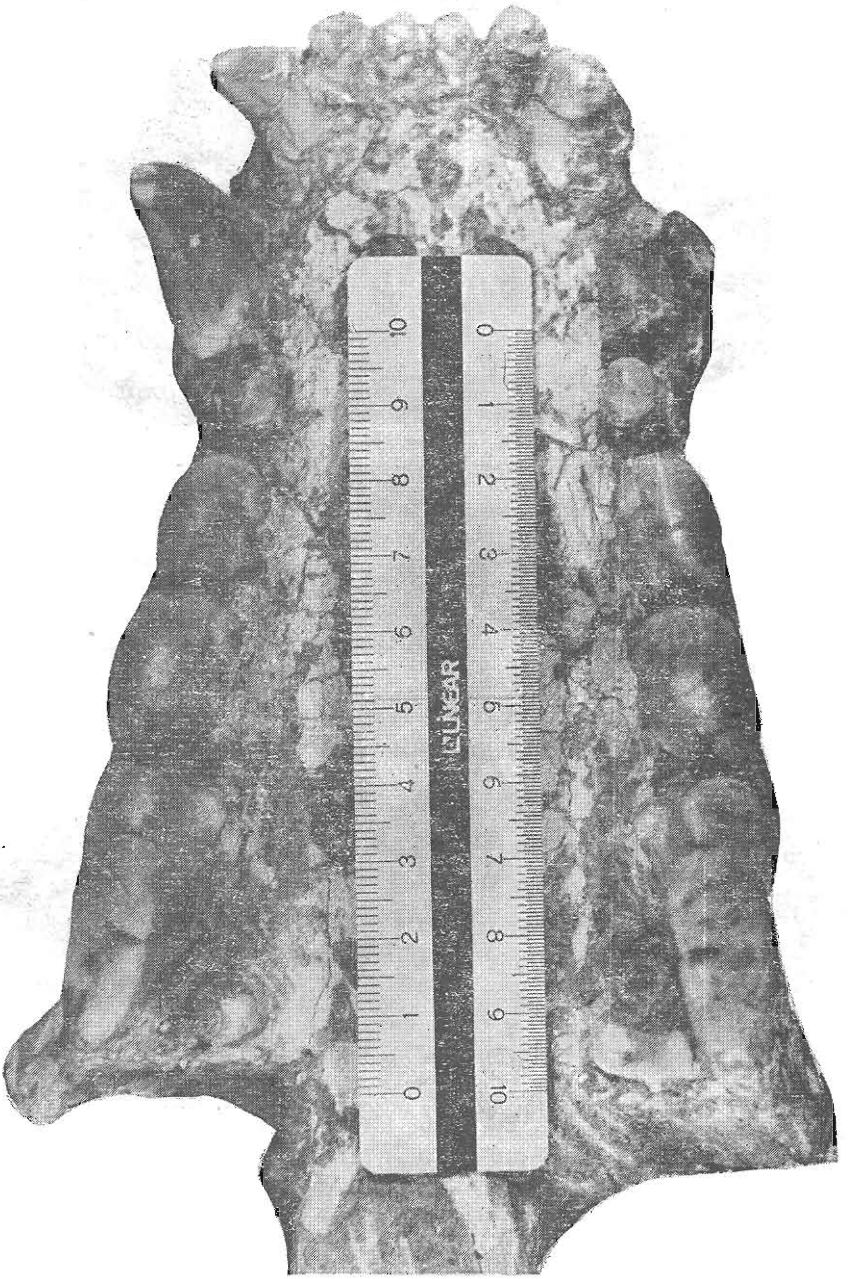

Fig. 1. Skull, RPl-14, upper jaw.

TABLE V

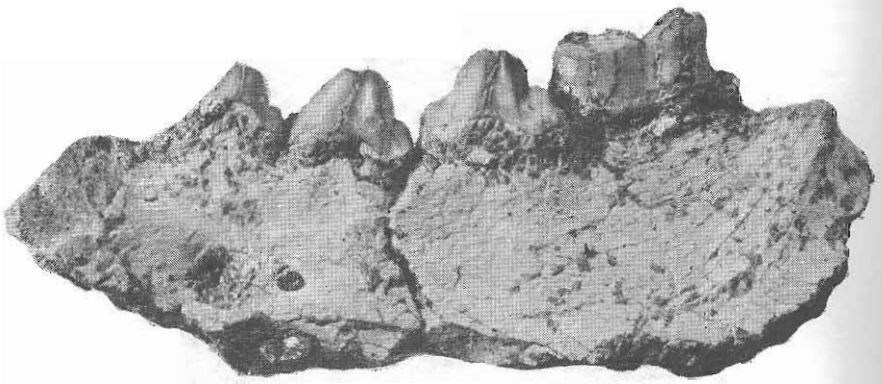

Fig. 1. Mandible, RPl-15, external view. Nat. size.

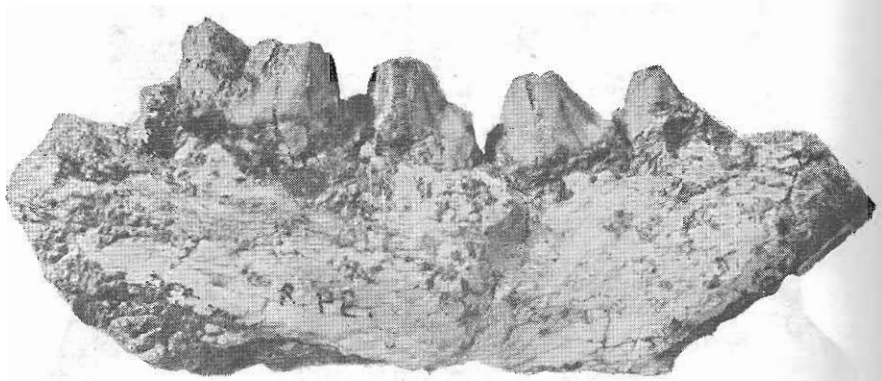

Fig. 2. Mandible, RPl-15, internal view. Nat. size.