

IMPORTANT NEW ANOMODONTIA

By M. J. TOERIEN

(Department of Anatomy, University of the Witwatersrand, Johannesburg)

ABSTRACT

In this paper descriptions are given of three new Anomodont specimens, to which reference was made in another paper on convergent trends in this group. These specimens are introduced as *Propelanomodon devilliersi* and *Proaulacocephalodon miltoni*, both new genera and species, and *Dicynodon daptocephaloides*, a new species.

In a paper on convergent trends in Anomodontia (in press), three undescribed specimens are mentioned. These three, and a fourth, recently developed under the supervision of Mr. J. W. Kitching in the laboratory of the Bernard Price Institute for Palaeontological Research, represent important morphological stages in the development of some late Anomodontia and therefore warrant description.

Propelanomodon devilliersi gen. et sp. nov.

Type: Almost complete skull without lower jaw, No. 138 in the collection of the B.P.I.

Locality: Wilgerbosch, New Bethesda.

Horizon: *Cistecephalus* zone.

Collector: B. J. Kitching, November 1946.

Diagnosis

Generic features:

Interorbital region broad and flat; nasal bosses prominent and horn-like; prefrontal bosses absent; snout short; postpineal region grooved; postfrontals present but small; temporal arches not laterally expanded; postero-median process of premaxillary absent; palatine in contact with premaxillary; transverse bone small.

Specific features:

Skull relatively small and much longer than wide; intertemporal region relatively narrow; preparietal large; frontals in contact with premaxillary.

This beautifully preserved and undistorted skull (figures 19 and 20) resembles *Pelanomodon* in the following features: The interorbital region is broad and

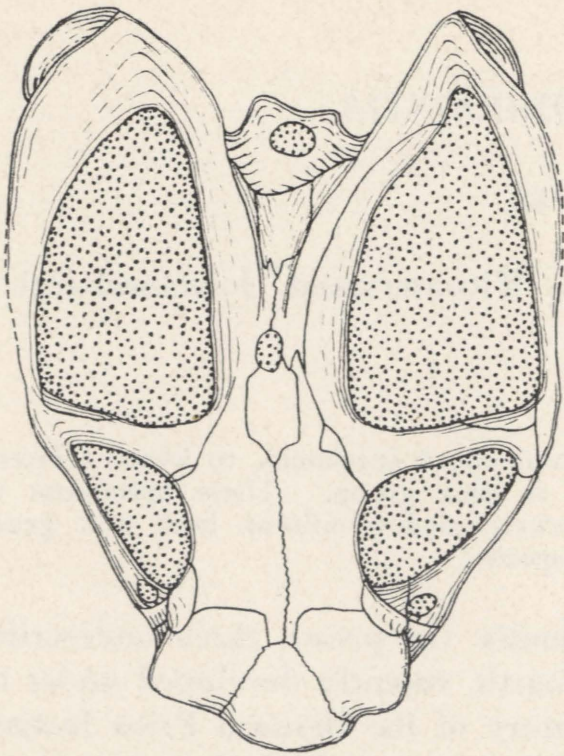


Fig. 19.—*Propelanomodon devilliersi*, dorsal aspect, $\frac{1}{2}$ natural size.

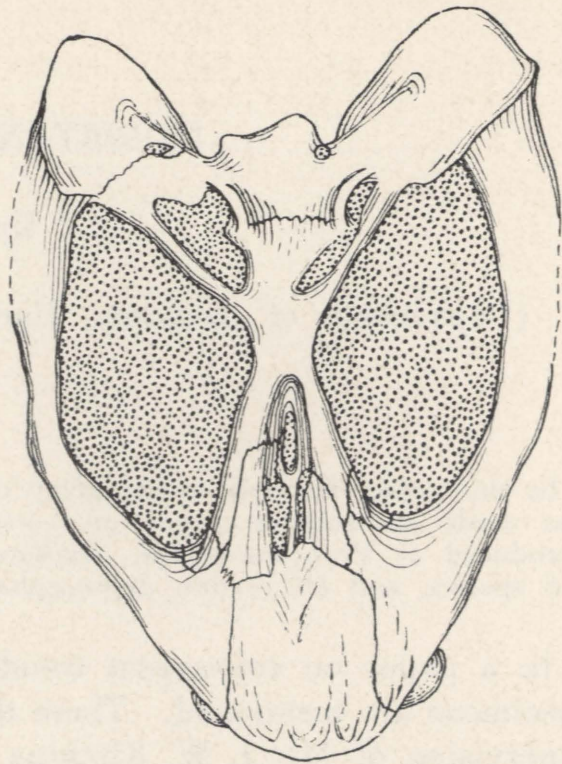


Fig. 20.—*Propelanomodon devilliersi*, ventral aspect, $\frac{1}{2}$ natural size.

flat and two very prominent horn-like nasal bosses project anteriorly and laterally. A postero-medial process of the premaxillary is absent and the anterior process of the pterygoid reaches the maxillary. It differs from *Pelanomodon* and resembles *Oudenodon* (e.g. *O. platyceps*) in the absence of marked prefrontal bosses,

TABLE III

	<i>Pelanomodon rubidgei</i> Broom, 1938	<i>P. moschops</i> ₄ Broom, 1932	<i>P. tuberosus</i> Von Huene, 1942	<i>P. wesselsi</i> Broom, 1948	<i>P. kitchingi</i> Broom and George, 1950	<i>P. halli</i> Broom, 1950	<i>P. halli</i> No. 165 B.P.I.	<i>Propelanomodon devilliersi</i>
Skull length	266	230	290	510	260	245	158	130
Skull width	288	235	290	509	305	245	127	100
Basal length	210	—	230	337	216	200	—	114
Interorbital width	57	60	65	—	70	52	36	38.5
Intertemporal width	56	47	30	—	54	56	38	31
Nasal width	100	—	100	—	119	80	51	55
Intercaniniform width	60	—	—	100	—	—	42	44
Prefrontal width	92	—	—	—	103	84	51	—
Length of snout	—	—	—	—	91	—	48	27
Skull width: length index	109	102	100	100.1	118	100	80	77
Interorb: intertemp. index	98	78	46	—	77	108	106	80
Intertemp: skull length index	21	20.5	14	—	21	23	24	24
Interorb: skull length index	21.4	26	22.4	—	27	21	23	29.5
Snout length: skull length index	—	—	—	—	35	—	30.5	21.5

the unexpanded temporal arches and the very short snout (table III). The postfrontals are not absent as in *Pelanomodon*, but very small. The intertemporal region is relatively narrow but it is grooved as is typical for *Pelanomodon*.

Pelanomodon cf. halli (figure 21)

A specimen from Swaelkrans, Murraysburg (*Cistecephalus* zone), No. 165 B.P.I., resembles *Propelanomodon devilliersi* in a number of features. This specimen is obviously immature as the sutures are open and some of the bones dislocated. As in *Propelanomodon devilliersi*, the squamosals are not laterally expanded and the postfrontals are very small. The palates are also similar in structure. On the other hand the snout is longer (table III) and prefrontal bosses are present. In the latter two features it is similar to *Pelanomodon*. The intertemporal region is as wide as the interorbital region and the preparietal is large and round as in *P. halli* Broom (1950). From the latter species it differs in the absence of lateral pineal ridges, the relative smallness of the prefrontal and nasal bosses and the unexpanded squamosals. The latter bones are absent in *P. halli*, but Broom (1950) estimated the width of the skull to be the same as its length. However, since the features in which the present specimen differs from *P. halli* may change during further growth of the specimen, it was decided to refer it to the latter species.

Although *Propelanomodon devilliersi* is too old stratigraphically (probably middle *Cistecephalus* zone) to be the direct ancestor of *Pelanomodon*, its intermediate nature between the latter genus (especially the immature specimen of *P. halli*) and *Oudenodon*, shows that *Pelanomodon* has developed from a form such as *O. platyceps* (Toerien), (1955).

The specimen is named after Professor C. G. S. de Villiers of the University of Stellenbosch who introduced me to Palaeontology.

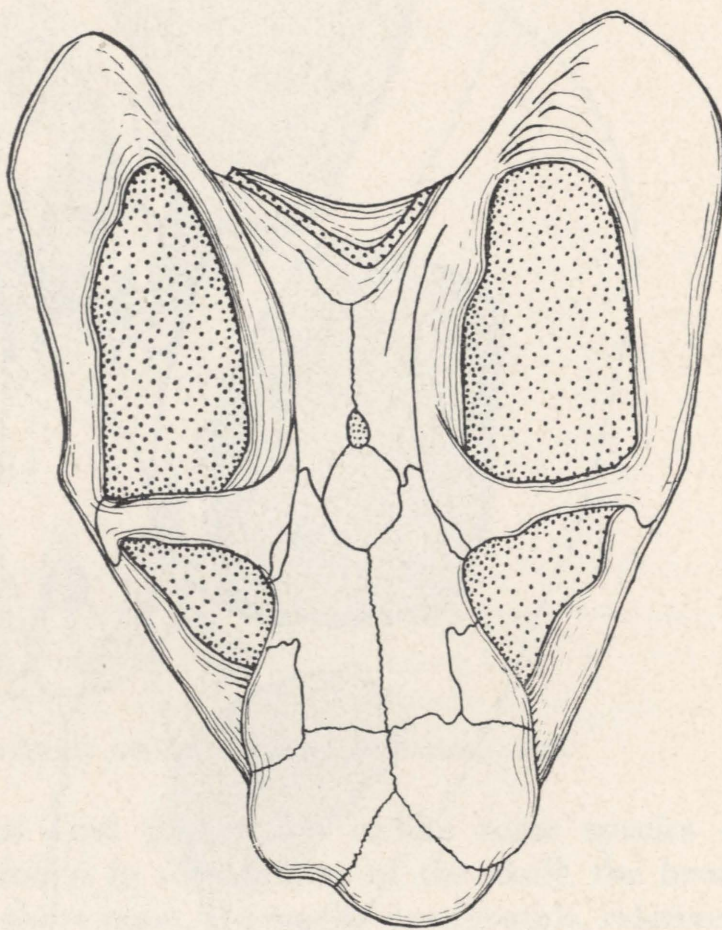


Fig. 21.—*Pelanomodon cf. halli*, dorsal aspect, $\frac{1}{2}$ natural size.

Proaulacocephalodon miltoni gen. et sp. nov.
(figs. 22 & 23)

Type: Almost complete and undistorted skull without lower jaw, No. 187 in the collection of the B.P.I.

Locality: Milton, Murrysburg.

Horizon: Cistecephalus zone.

Collector: S. C. Kitching, November 1947.

Diagnosis

Generic features:

Skull flat; intertemporal region broad and flat; postfrontals absent; snout relatively short; pterygoids long but not in contact with the maxillaries; palatine-premaxillary contact extensive; prefrontal and nasal bosses very insignificant.

Specific features:

Skull of medium size; much longer than wide; interorbital region appreciably narrower than intertemporal region; pineal boss absent.

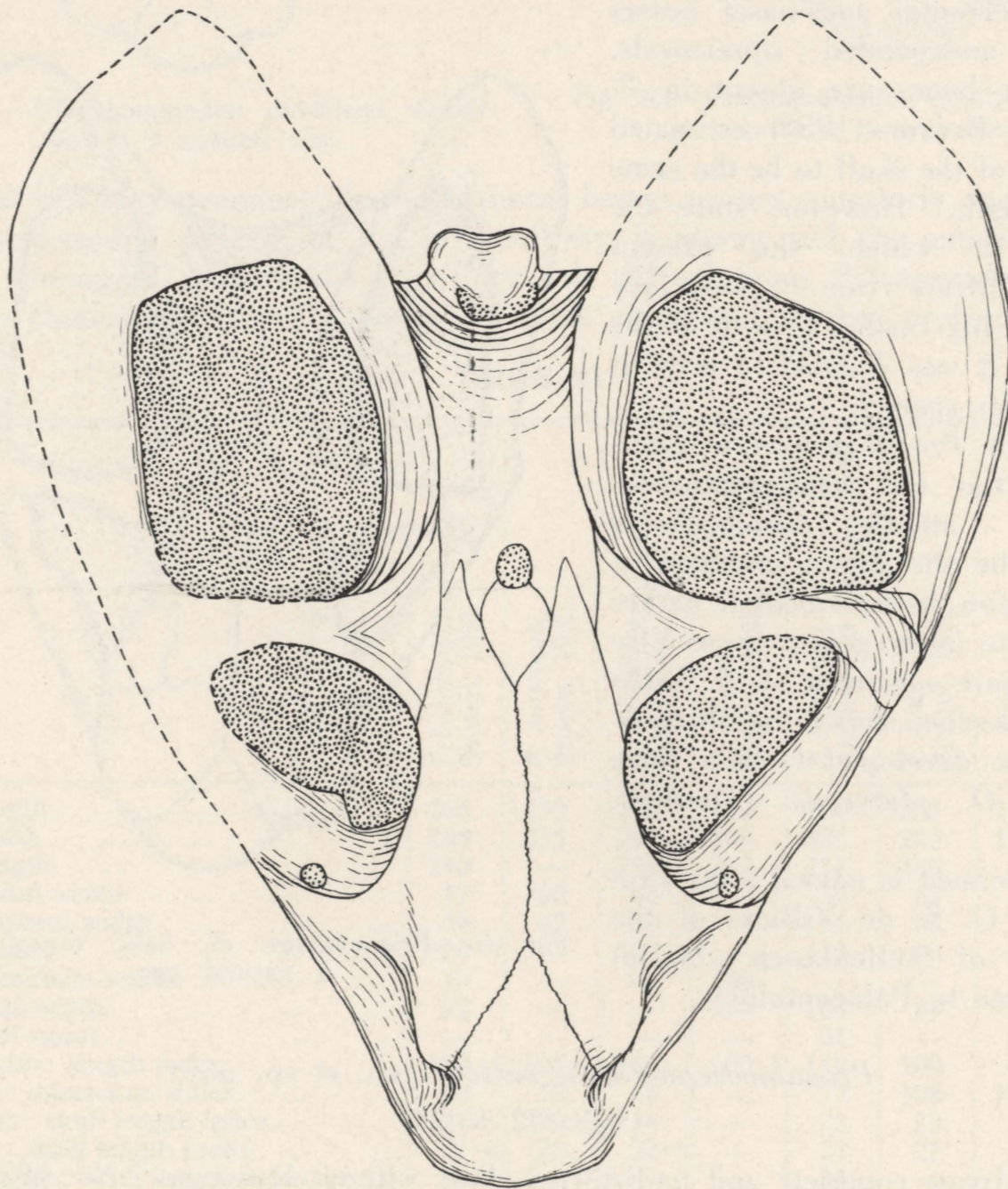


Fig. 22.—*Proaulacocephalodon miltoni*, dorsal aspect, $\frac{1}{2}$ natural size.

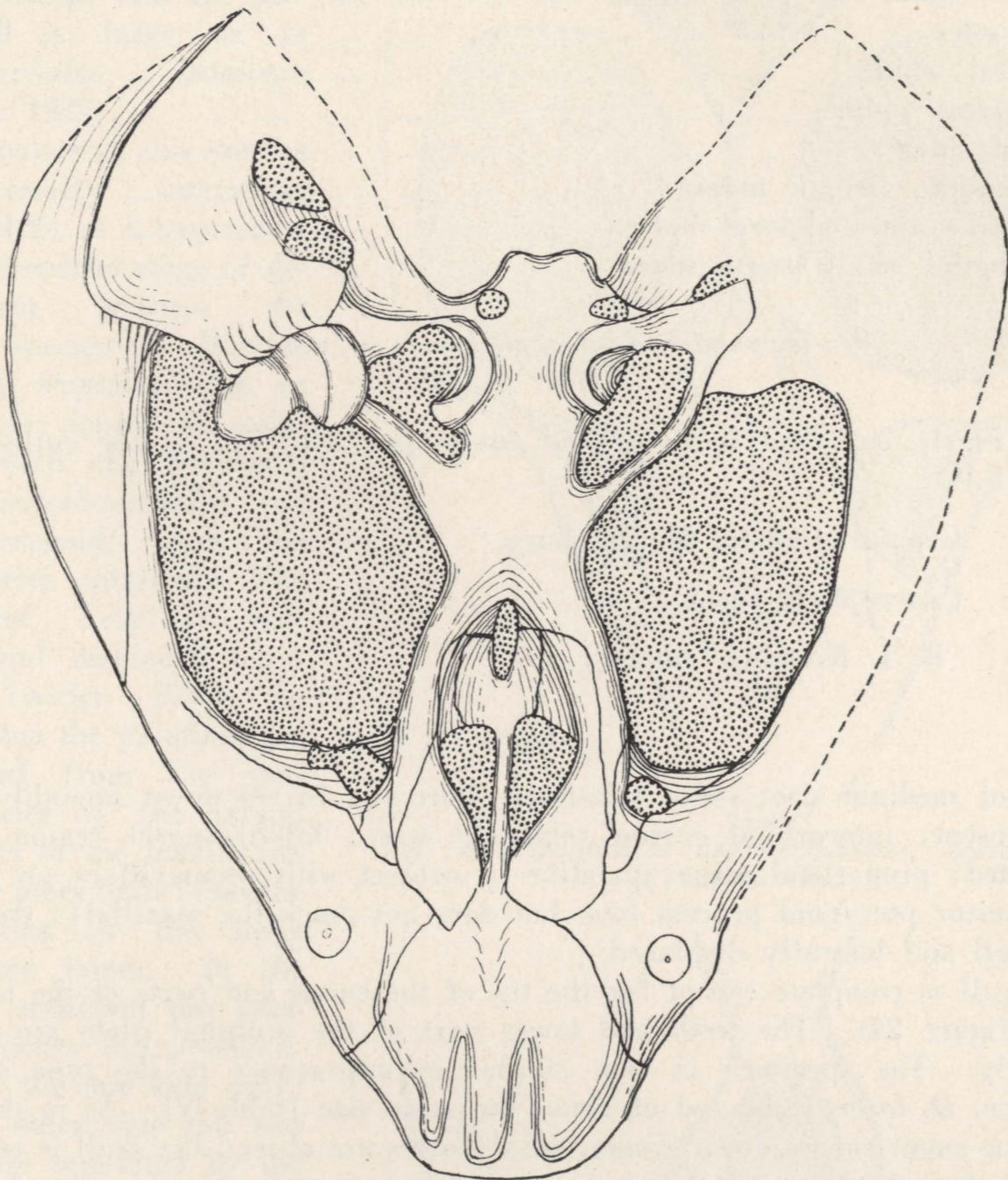


Fig. 23.—*Proaulacocephalodon miltoni*, ventral aspect, $\frac{1}{2}$ natural size.

The skull (figures 22 and 23) is at first glance not unlike some species of *Oudenodon*. It resembles *Aulacocephalodon* in the flatness of the skull, the broad and flat intertemporal region, relatively short snout, absence of postfrontals, relatively long pterygoids which, however, do not reach the maxillaries, laterally displaced transverse bones and premaxillary-palatine contact. On the other hand it differs markedly from *Aulacocephalodon*. The squamosals are not expanded laterally to the same extent as in the latter genus and the nasal and prefrontal bosses are very insignificant. The principal measurements are given in table IV.

This specimen represents an intermediate stage between *Aulacocephalodon* and its most likely ancestor, *Dicynodon* (Toerien 1955). In the latter genus the prominent supero-laterally directed bosses are absent and the temporal arches are not expanded laterally.

TABLE IV

Length of skull		230 mm.
Breadth of skull		198 mm.
Basal length		188 mm.
Interorbital width		39 mm.
Intertemporal width		48 mm.
Length of snout		65 mm.
Skull breadth: length index		86
Interorbital: intertemporal index		123
Snout length: skull length index		28

Dicynodon daptocephaloides sp. nov.
(figs. 24, 25)

Type: Fairly complete skull without lower jaw, No. 177 in the collection of the B.P.I.

Locality: Grootdriefontein, Murraysburg.

Horizon: *Cistecephalus* zone.

Collector: B. J. Kitching, January 1947.

Diagnosis

Skull of medium size; snout relatively short and curves down smoothly; nasal bosses absent; interorbital region relatively wide; intertemporal region narrow and crested; preparietal large; palatine in contact with premaxillary on the one side; anterior pterygoid process long but does not reach the maxillary; transverse bone small and laterally displaced.

The skull is complete except for the tip of the snout and parts of the temporal arches (figure 24). The teeth and lower part of the occipital plate are crushed posteriorly. The specimen is very similar in appearance to the type skull of *Dicynodon*, *D. lacerticeps*, and of about the same size (table V). As in the latter species the snout curves down evenly, nasal bosses are absent, the skull is relatively high and the intertemporal region is narrow and crested. On the other hand the

TABLE V

	<i>Dicynodon lacerticeps</i>	<i>Dicynodon daptocephaloides</i>	<i>Daptocephalus leoniceps</i> (Type)	<i>Daptocephalus leoniceps</i> No. 304 B.P.I.
Skull length	175	180	480	400
Skull width	140	145	350	—
Basal length	150	—	390	—
Interorbital width	28	42	122	90
Intertemporal width	20	23	52	28
Snout length	—	50	—	156
Skull width: length index	80	81	73	—
Interorb: intertemp index	72	55	43	31
Snout length: skull length index	—	28	—	39

interorbital region is relatively much wider than in *D. lacerticeps* and the pre-parietal is large as in *Daptocephalus leoniceps* (Broom 1932).

The palate of this species is extremely interesting (figure 25) as it represents an intermediate stage of development between the typical species of *Dicynodon* and *Daptocephalus*. In the latter genus the palatines reach the premaxillaries antero-medially and the pterygoids reach the maxillaries anteriorly. The transverse bone is very small and displaced laterally (Toerien 1953). In *Dicynodon* the palatines are separated from the premaxillaries by the palatal processes of the maxillaries and the pterygoids from the maxillaries by the large transverse bones. In the present specimen the palatine reaches the premaxillary on the one side only; on the other side the two bones are separated by the narrow palatal process of the maxillary. The anterior pterygoid process is broken off on the one side, but on the other side it approaches the maxillary so closely that it all but reaches it. The transverse bone is small and laterally displaced.

The new species therefore represents the actual *Dicynodon* ancestor of *Daptocephalus*.

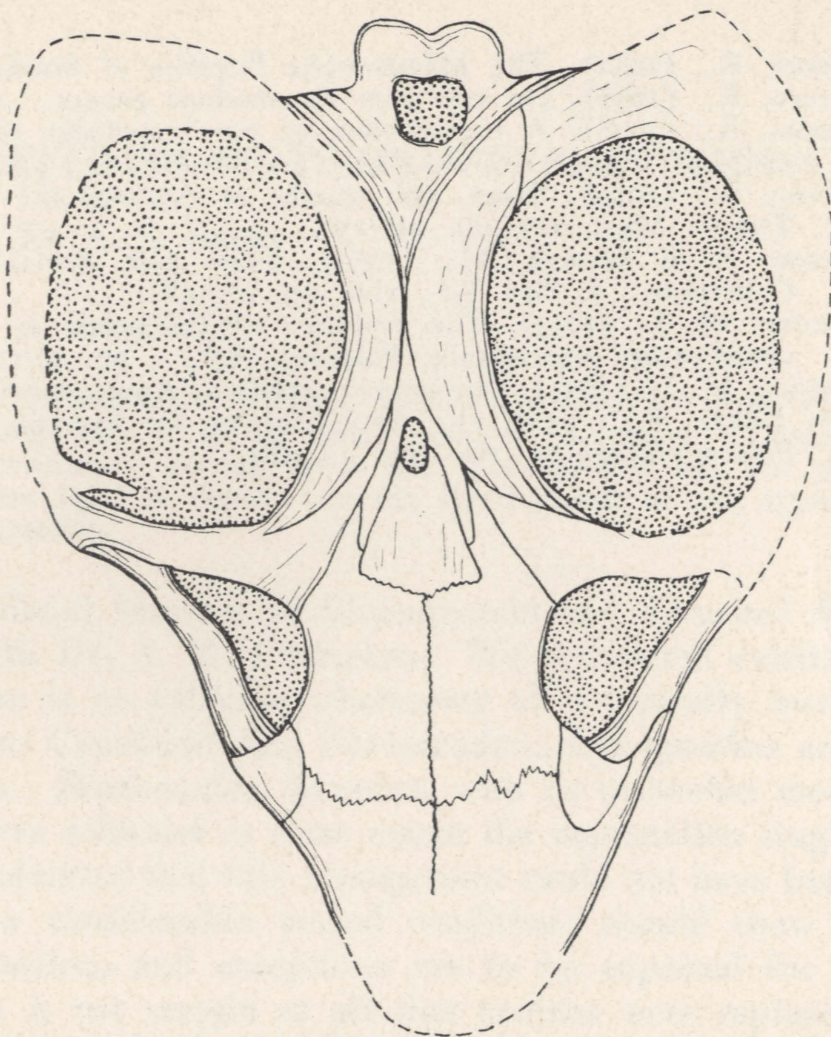


Fig. 24.—*Dicynodon daptocephaloides*, dorsal aspect, $\frac{1}{2}$ natural size.

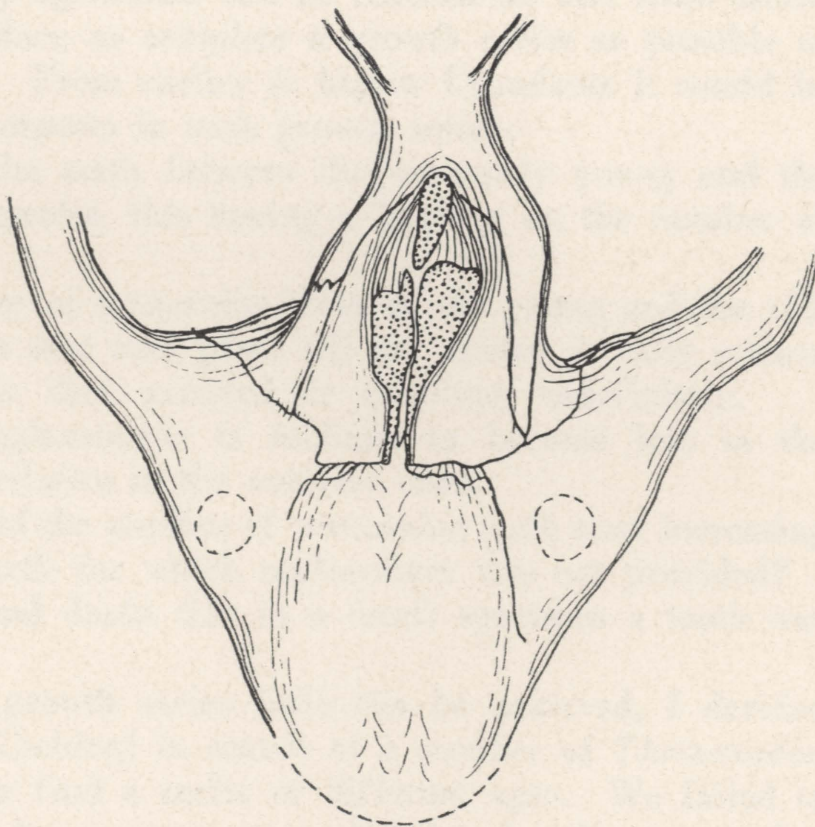


Fig. 25.—*Dicynodon daptocephaloides*, palatal aspect, $\frac{1}{2}$ natural size.

REFERENCES

- Broom, R., (1932), The Mammal-like Reptiles of South Africa. Witherby, London.
- Broom, R., (1938), On two new Anomodont genera. *Ann. Transv. Mus.*, xix, pp. 247-250.
- Broom, R., (1948), A contribution to our knowledge of the vertebrates of the Karroo beds of South Africa. *Trans. Roy. Soc. Edinb.*, lxi, pp. 577-629.
- Broom, R., (1950), Three new species of Anomodonts from the Rubidge Collection. *Ann. Transv. Mus.*, xxi, pp. 246-250.
- Broom, R. & George, M., (1950), Some new Anomodont reptiles in the Bernard Price Collection. *S. Afr. Sci.*, xlvi, pp. 275-278.
- Toerien, M. J., (1953), The evolution of the palate in South African Anomodontia and its classificatory significance. *Palaeont. Afr.*, i, pp. 49-117.
- Toerien, M. J., (1955), Convergent trends in Anomodontia. *Evolution* (in press).
- Von Huene, F., (1942), Die Anomodontier des Ruhuhu-Gebietes in der Tübinger Sammlung. *Palaeontographica*, xlix, pp. 153-184.