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A NEW TRIASSIC VERTEBRATE FAUNA FROM SOUTH WEST AFRICA

by

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ABSTRACT

A new fauna of mammal-like reptiles is described from a continental sequence of sediments in South West Africa hitherto known as the Etjo Beds. These include representatives of the Anomodontia (two new forms and one known from the Karroo basin), Bauriamorpha, (one specimen comparable with a known form), Cynodontia (one new form and two known from the Karroo basin) and one small eriopoid amphibian. On the basis of this faunal assemblage it can be shown that there is a disconformity between the upper Plateau Sandstone Formation containing traces of Dinosaurs of possible Carnian–Norian age and a lower Omingonde Mudstone Formation with this new fauna, of essentially Upper Beaufort (Scythian/Anisian) age. The two formations are distinguished on lithological grounds. The Triassic sequence in the neighbouring Doros area is thought to be equivalent to the Plateau Sandstone Formation.

INTRODUCTION

The Karroo formations of South West Africa consist mainly of epicontinental sediments which range in age from Permian to Triassic. Triassic sediments have been found only in the northern part of the territory where they are known as the Etjo Sandstone (Fig. 1) (Table I). Lower Karroo sediments (Dwyka and Ecca) are poorly developed in the north and are absent from the area that was investigated in the Otjiwarongo district where the best outcrops occur. Palaeontologically, the Lower and Middle units of the Beaufort series have not as yet been recognized in the territory.

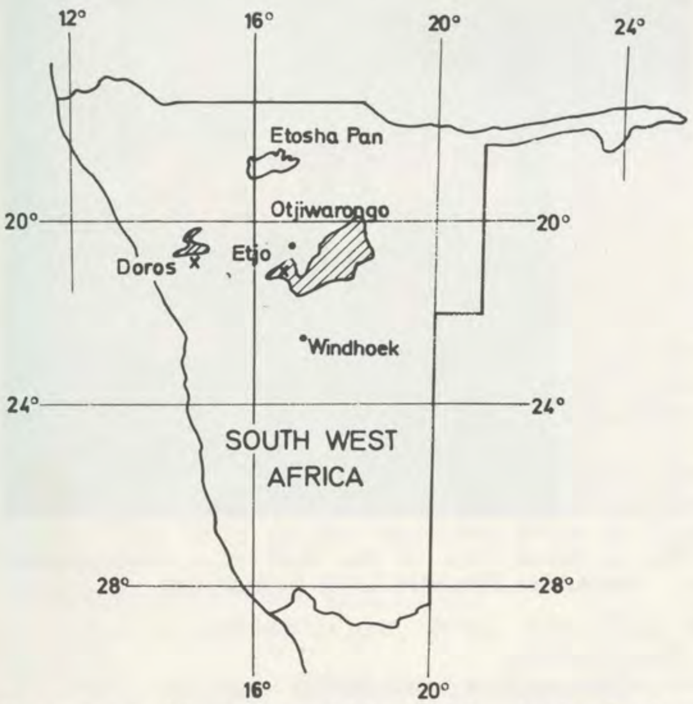

Fig. 1. Map of South West Africa showing the distribution of Triassic sedimentary rocks (Shaded).

The succession in the Otjiwarongo district consists of a basal conglomerate, felspathic grit and arkose followed by an alternation of red and green shales, siltstones, sandstones and grit, the whole being overlain by a thick layer of sandstone, referred to as the Plateau Sandstone by Gevers (1936). The beds below this sandstone are known as the Lower Etjo Beds (Gevers, 1936). The Plateau Sandstone has been described as being of aeolian origin. On Etjo Mountain this conclusion can no longer be drawn, the dune cross-beds that characterise aeolian sandstone deposits were not observable, while trough cross-bedding is common at Etjo and in the Waterberg. The Plateau Sandstone is correlated with the Cave Sandstone of the South African Karroo basin. The Lower Etjo Beds are correlated with the Red Bed and Molteno stages of the Karroo sequence in South Africa (Gevers, 1936).

The Karroo strata in South West Africa have hitherto yielded very few fossils with the exception of the common occurrence of *Mesosaurus* in the Dwyka of the southern part of the territory (see McLachlan and Anderson, 1973 for a review of the occurrence of the genus in S.W.A.). The Triassic beds in the northern part have been regarded as being almost unfossiliferous because very few fossils had been found there prior to 1972. Tracks of a Saurischian dinosaur and another, smaller quadrupedal animal were discovered by Elmenhorst and described by Von Huene (1925a). These are from the farm Otjihaenemaperero immediately north of the farm Etjo Nord. The tracks occur in the Plateau Sandstone. Gevers (1936) mentions that Gröpel discovered a cast of a skull on the farm Breitenbach near Grootfontein in

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1926. This was identified as a "Karroo reptile" by Strömer von Reichenbach (quoted Gevers, 1936).

Von Huene (1925b) described a "mammalian molar" with two roots found by Reuning in the vicinity of Doros, in the Southern Kaokoveld. In the author's opinion this tooth is more likely to be that of one of the larger Triassic cynodonts in which postcanine teeth with two roots are now known to occur.

Fragmentary remains of *Mesosaurus* have also been described from this area by Reuning and Von Huene (1925). These are from a lower horizon of Dwyka age.

The author recently had the opportunity to visit the Doros area as well as the main outcrops of the Etjo Sandstone near Otjiwarongo. The strata at Doros and in the valley of the Huab River appear to have been deposited in a separate basin from the much larger occurrence in the Otjiwarongo district. Some poorly preserved fish remains were collected from a thick bed of friable red shale immediately beneath the "main sandstone bed" which is overlain by the lowermost lava flow in the area. This locality is about 6 km north of Doros. A lumbar vertebra of a dinosaur was seen at the same locality, but could not be collected because of the extreme hardness of the baked shale next to a dolerite dyke. The occurrence of dinosaur remains is indicative of a Red Beds/Cave Sandstone (Upper Triassic) age. The *Mesosaurus* locality could not be found.

The Triassic Etjo Beds occur in an elongated basin with a north-east to south-west strike. This basin extends from near Omaruru to the Okavango River. The greater part of the outcrop is covered by wind-blown Kalahari sands. In the south the sediments lie unconformably on a basement of crystalline rocks of the Damara System and its associated intruded granites. The northern boundary of the outcrop in the Otjiwarongo area is formed by the great Waterberg thrust fault which has elevated the rocks of the Fundamental Complex to the level of the Etjo Beds.

The best outcrops of the Etjo Beds are at the type locality on the farm Etjo Nord.

Etjo Mountain consists of a narrow plateau of Plateau Sandstone which is about 15 km long with an east-west orientation. The edges of the plateau are a series of steep cliffs. The lower slopes are made up of sandstone, grit and shale of the Lower Etjo Beds. Although the slopes are mainly covered in sandstone scree, good outcrops of shale occur in the steeper ravines and slopes.

Vertebrate fossils are found mainly in the argillaceous sediments, but some specimens were recovered from the grit beds. Lime-rich nodules are common in the shales and sandy shales. The sandstone and grit beds tend to be lenticular and individual strata cannot be followed for any distance. On the north-western buttress of the mountain the lower parts of the slopes consist of a large body of grit and conglomerate which probably represents a large erosion channel. There are horizons at which sandstone and siltstone beds are more abundant, and which can be used as markers for subdividing the Lower Etjo Beds on Etjo Mountain. There is no certainty that this subdivision will be usable over the rest of the basin in which these beds were deposited as the outcrop of the Lower Etjo Beds is very poor in other places. The whole succession of the Lower Etjo Beds is fossiliferous and scraps of bone were seen in all the rock types represented.

There are a large number of small chloritized dolerite dykes to be seen on all the large outcrops of sediment on the slopes of the mountain.

Twenty-five specimens of fossil vertebrates were collected from the Lower Etjo Beds on Etjo Mountain, the significant ones of which will be described here to amplify the preliminary announcement (Keyser, 1973). Fuller treatment of the fauna will appear in due course.

SYSTEMATIC DESCRIPTIONS

Class Amphibia (Fig. 2)

A small skull of an eriopoid amphibian resembling *Micropholis* was collected below the lower arenaceous horizon on the northern slopes of Etjo Mountain.

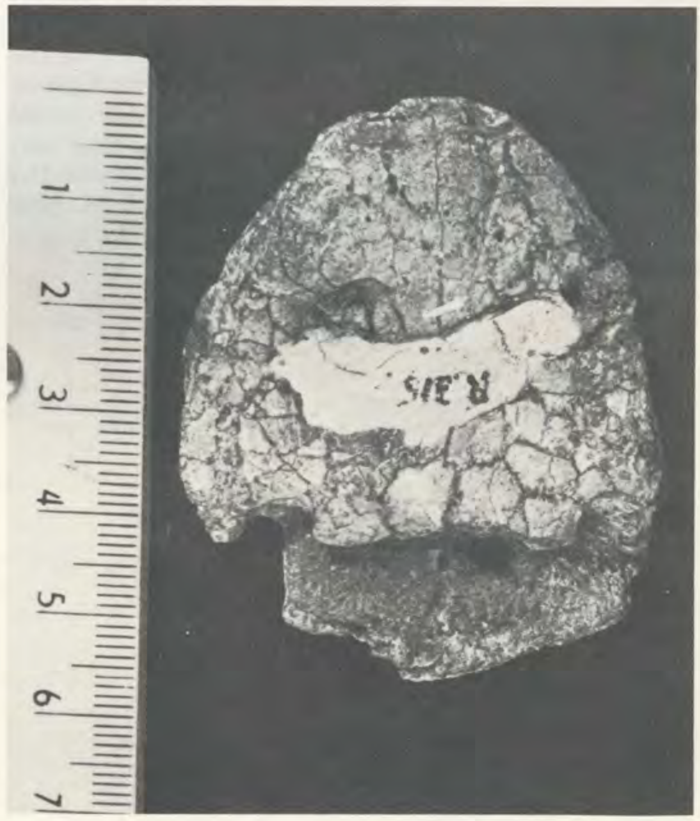

Fig. 2. Dorsal view of the skull of a small eriopoid amphibian. Specimen R315. Scale in mm.

Class Reptilia

Infraorder Anomodontia

Suborder Dicynodontia

Family Kannemeyeridae

Kannemeyeria simocephalus (Weithofer) (Fig. 3)

A large well-preserved skull that had lost its stapes and quadrates prior to burial. The specimen is a large individual with very large caniniform processes and exceedingly wide lateral flanges. The median longitudinal ridge on the anterior and dorsal surfaces of the premaxilla is very prominent. These features could perhaps be used to distinguish this specimen from the species occurring in the Karroo basin of South Africa. However, as the range of variation of these features is not known for the Lower Etjo palaeodeme, it is not at present possible to decide if there is, in fact, a significant difference.

Fig. 3. Anterodorsal view of large skull of *Kannemeyeria simocephalus* (Weithofer). Specimen R313. Scale in mm.

The genus has been described from the *Cynognathus* zone of the Beaufort series of South Africa, the Manda Formation of Tanzania and the Puesto Viejo Formation of Mendoza, Argentina. (Weithofer, 1888; Cruickshank, 1965, 1970; Bonaparte, 1966.)

This specimen was recovered between the lower and middle arenaceous horizons of the Lower Etjo Beds on the northern slope of Etjo Mountain.

Family Stahleckeridae, Cox, 1965.

Dolichuranus primaevus gen. et sp. nov. (Figs. 4 and 13)

Holotype: specimen R334. Skull and partial skeleton in the collections of the Geological Survey, R.S.A.

Type locality: Southern slopes of a hill north of Etjo Mountain, from an horizon below the lowermost arenaceous horizon.

Diagnosis: Large dicynodont. Skull overall length about 370 mm with large tusks. Greatest skull width across the occiput. The snout tapers anteriorly, but the tip is square, and blunt. The temporal fossae and intertemporal bar are short. The postorbitals extend along the intertemporal bar to the level of the posterior margin of the temporal fossae. The secondary palate is very extensive and extends backwards past the middle of the skull. The interpterygoid vacuity is small and is situated at the back of the choanal depression. The margins of this vacuity are raised. A prominent tubercle is found on the pterygoid immediately in front of the footplate of the epipterygoid. The premaxilla extends backwards to the level of the anterior margins of the orbits.

Discussion: This new genus is very similar to *Dinodontosaurus turpior* as characterized by Cox (1965). The most noticeable difference is that the intertemporal bar and temporal fossae are longer in *Dolichuranus* and that the postorbitals are much longer in the new form.

In *Dinodontosaurus* the postorbitals do not extend back farther than the posterior margin of the parietal foramen in any of the specimens that the

Fig. 4 (a)

Fig. 4 (b)

author has seen. This feature is used as one of the main distinguishing features of the genus by Cox (1965). The new form is morphologically intermediate between the Upper Permian genus *Daptocephalus* and the Upper Triassic genus *Dinodontosaurus*. It is possibly more advanced than the Anisian genus *Tetagonias* (Cruickshank, 1967) from the Manda Formation of Tanzania because it has a far more extensive secondary palate. There is a marked resemblance in overall shape to *Kannemeyeria latirostris* Crozier (1970). It differs however in the more extensive secondary palate, which may not have been preserved in Crozier's specimen which in any case is very much smaller. In the author's opinion Crozier's species belongs in this new genus and should therefore be referred to as *Dolichuranus latirostris* (Crozier).

Family Shansiodontidae, Cox, 1965.
Rhopalorhinus etionensis gen. et sp. nov. (Figs. 5 and 14)
Holotype: R320 in the collections of the Geological Survey, R.S.A.
Type locality: Northern slopes of Etjo Mountain between the upper and lower arenaceous horizons of the Lower Etjo Beds.
Diagnosis: Large dicynodont. Skull length overall about 350–400 mm, with prominent nasal bosses and a narrow intertemporal crest. The labial fossae

Fig. 4. Holotype of *Dolichuranus primaevus* gen. et sp. nov. Specimen R334.
(a) Dorsal view.
(b) Ventral view.
(c) Left lateral view.

Fig. 4 (c)

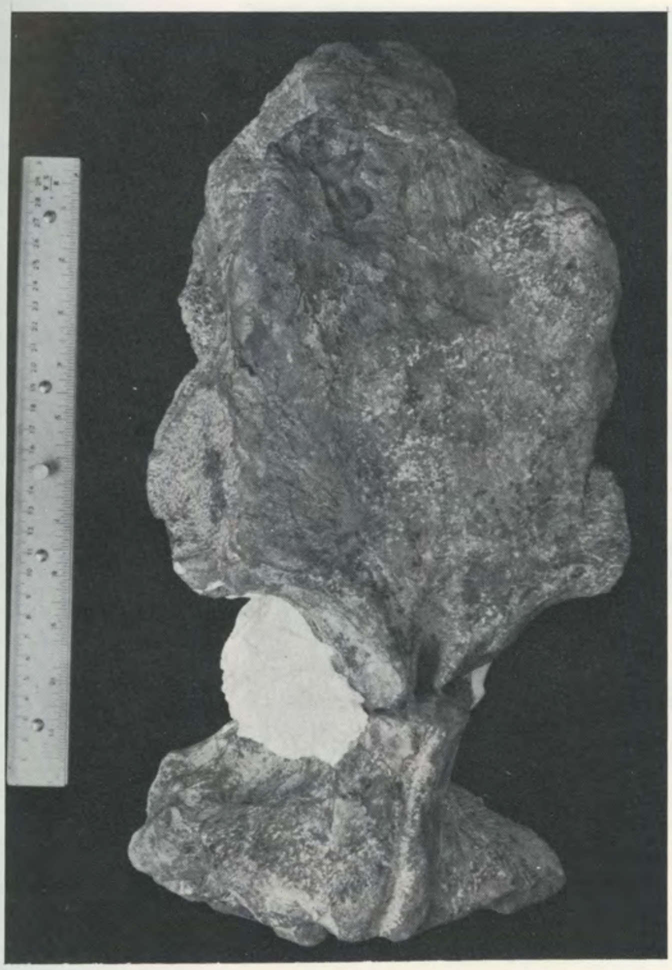

Fig. 5 (a)

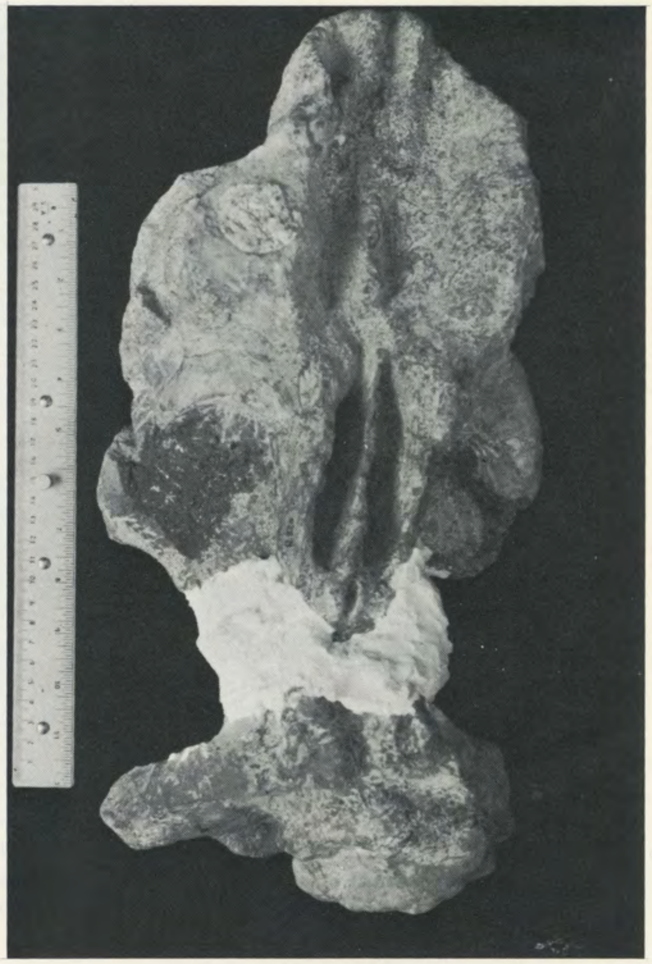

Fig. 5 (b)

Fig. 5.
(a) Dorsal view of type of *Rhopalorhinus etionensis* gen. et sp. nov. Specimen R320.
(b) Ventral view of type of *R. etionensis* gen. et sp. nov. Specimen R320.
(c) Lateral view of type of *R. etionensis* gen. et sp. nov. Specimen R320. Arrow indicates level of interpterygoid space.

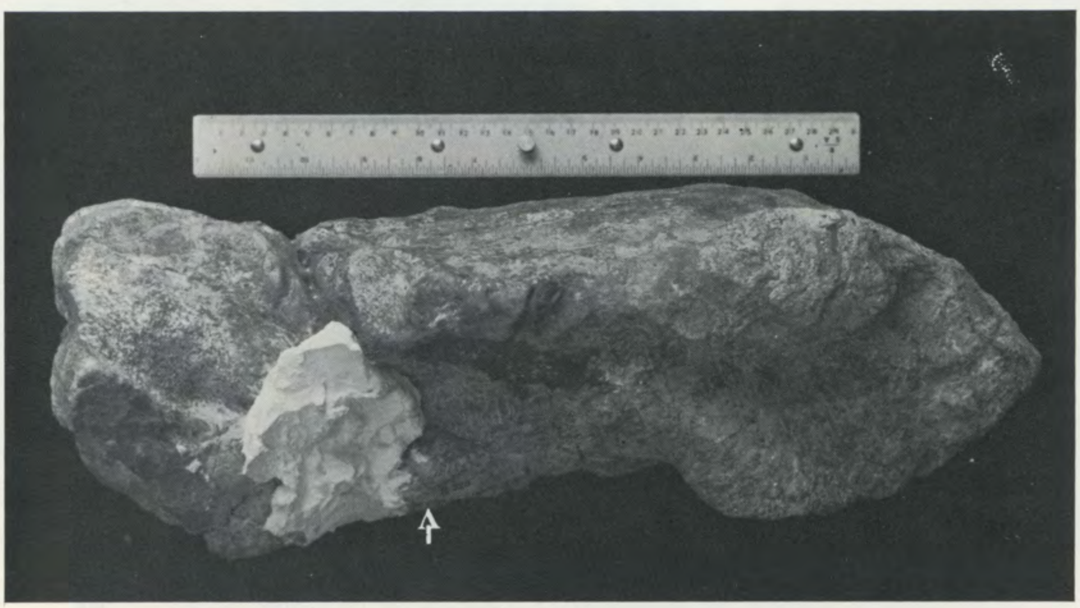

Fig. 5 (c)

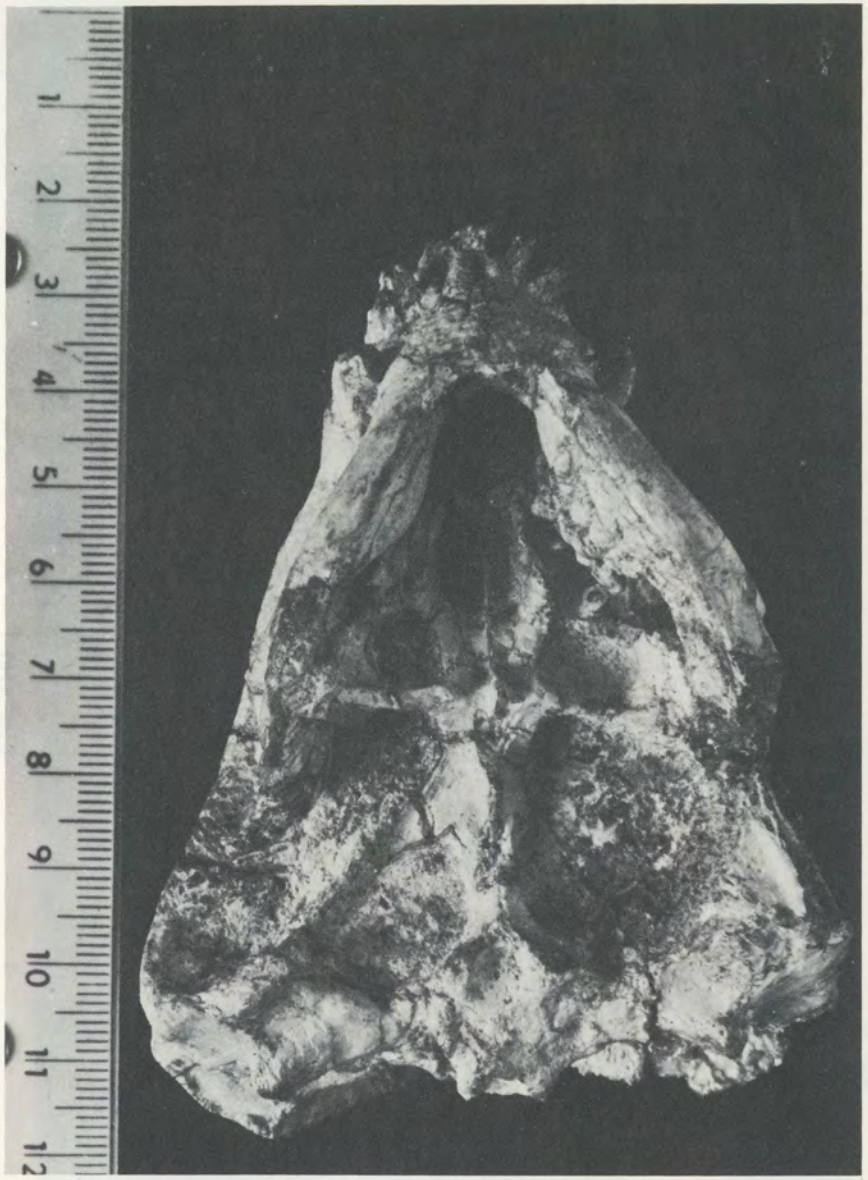

Fig. 6 (a)

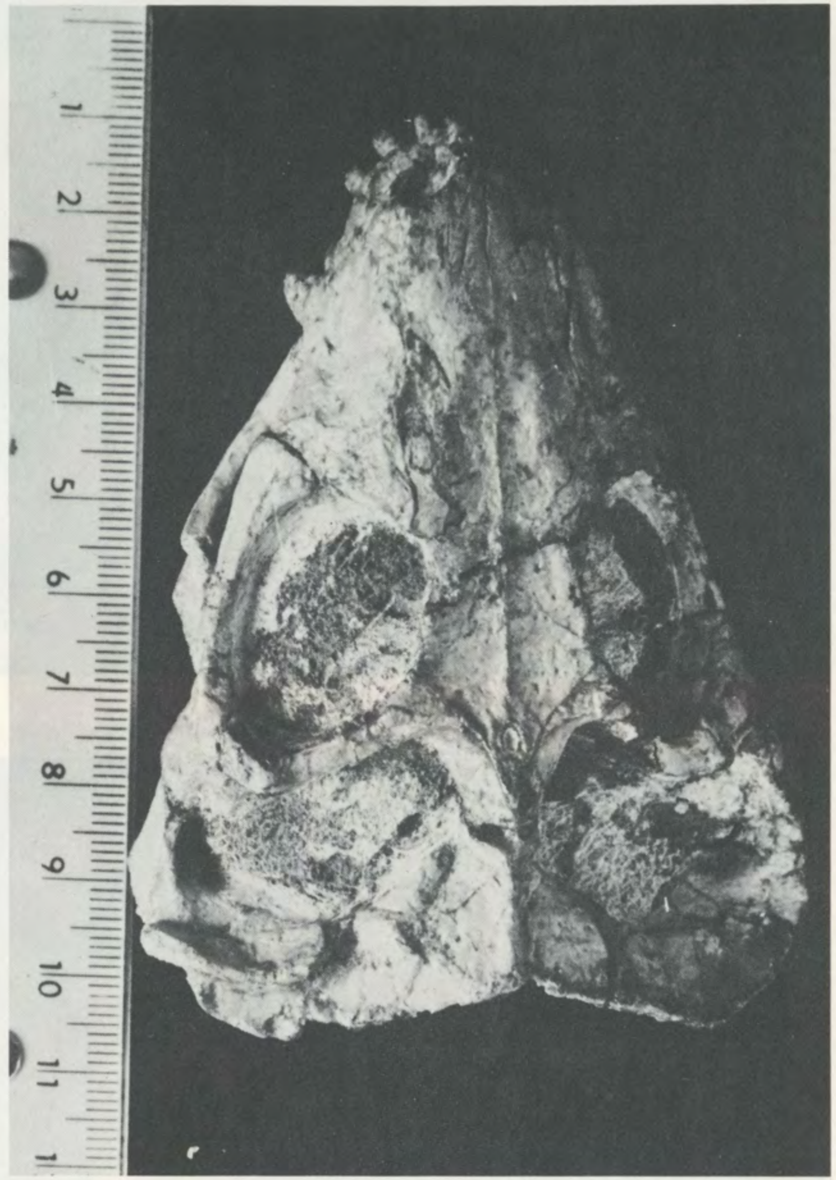

Fig. 6 (b)

Fig. 6.
(a) Dorsal view of *Sesamodon*-like bauriamorph. Specimen R337. Scale in mm.
(b) Ventral view of same.

are very small, and the interpterygoid space very small with raised flap-like margins that are visible in lateral view. The interpterygoid space is placed outside the choanal depression and immediately posterior to it. The premaxilla is long and the beak narrow. The postorbital reaches the squamosal on the intertemporal bar. The tusks are large.

Discussion: This new genus differs from most other Triassic dicynodont genera in the possession of prominent nasal bosses. The only exceptions to this are *Rhinodicynodon* (Kalandadze, 1970) and *Elephantosaurus* (Vjuschkov, 1969) from Cisuralia in Russia. From the former it differs in having an even longer snout and being very much larger. The postorbitals are very much longer than in *Rhinodicynodon* and the snout is also differently shaped. Very little is known about *Elphantosaurus*. The specimens probably belong to the family Shansiodontidae (Cox, 1965) as is evidenced by the broad snout and nasal bosses and in that the intertemporal bar does not form a very prominent raised crest.

Infraorder Bauriamorpha

A small skull resembling *Sesamodon browni* Broom (1905) (Fig. 6) was discovered above the uppermost arenaceous horizon on the western buttress of Etjo Mountain, in the Lower Etjo Beds.

There are five upper postcanine teeth (*Sesamodon browni* has 7). The first upper postcanine is blunt and has a flat crown. In *Sesamodon* this tooth is pointed. The interpterygoid space is very long.

The postorbital arches are complete. There is a small parietal foramen placed anterior to the posterior margins of the orbits. There is no preparietal.

Unfortunately the type of *Sesamodon* is so poorly known that it is at present impossible to identify the new specimen from the available descriptions.

A large reflected lamina of an obviously much larger specimen was found at the same horizon. If it be assumed that this latter specimen is a *Bauria*-like form, then its skull length must have been 280 mm overall.

Infraorder Cynodontia

Family Cynognathidae

A small lower jaw resembling that of *Cynognathus*, associated with an occiput and brain-case was found below the lowest arenaceous horizon on Etjo Mountain (Fig. 7). The symphysis is very long and there are only two incisors on each side. Both canines are lost. The postcanine teeth are poorly preserved, but are clearly sectorial. The available material is inadequate for a more specific determination.

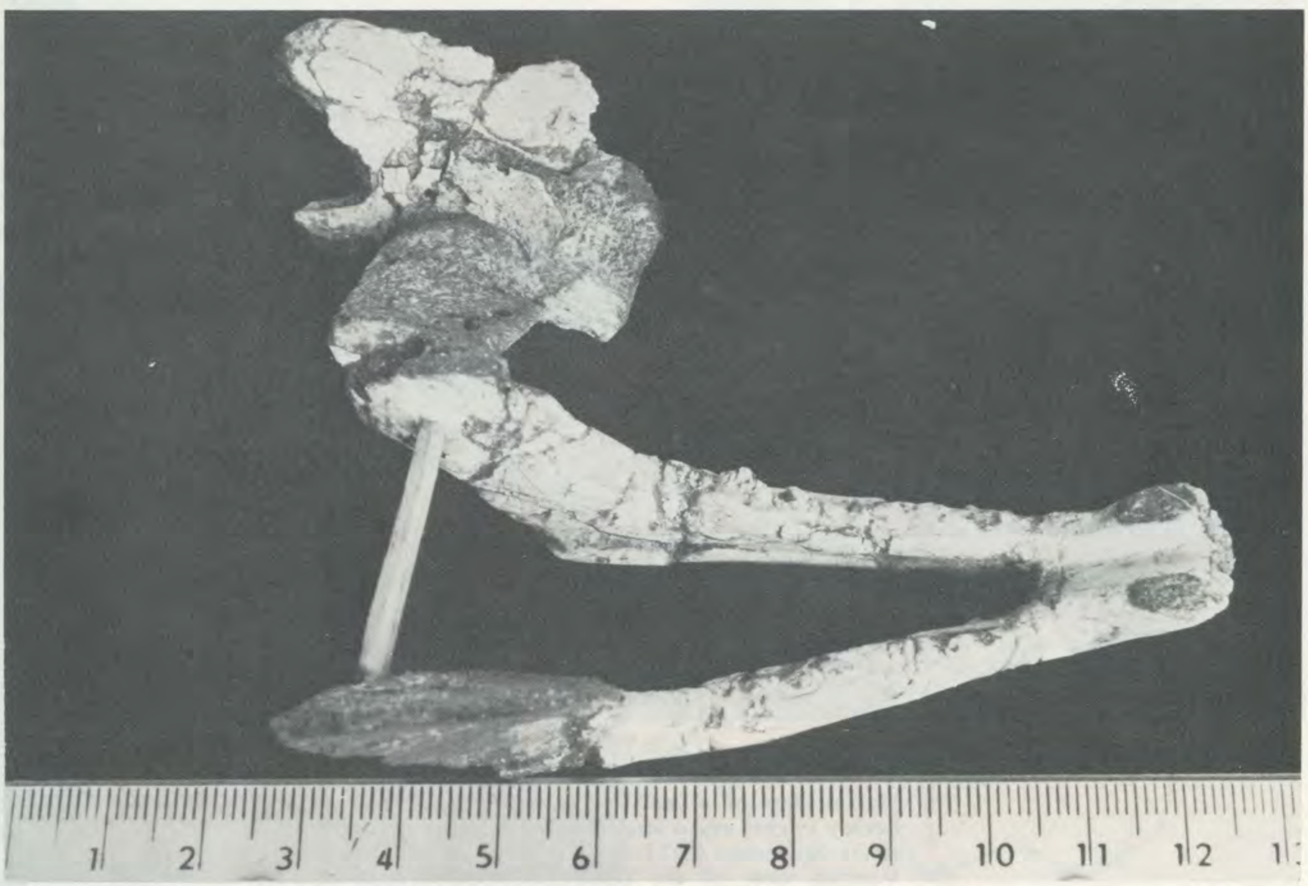

Fig. 7. Dorsolateral view of a lower jaw and braincase of a small cynognathid cynodont. Specimen R314. Scale in mm.

Fig. 8 (a)

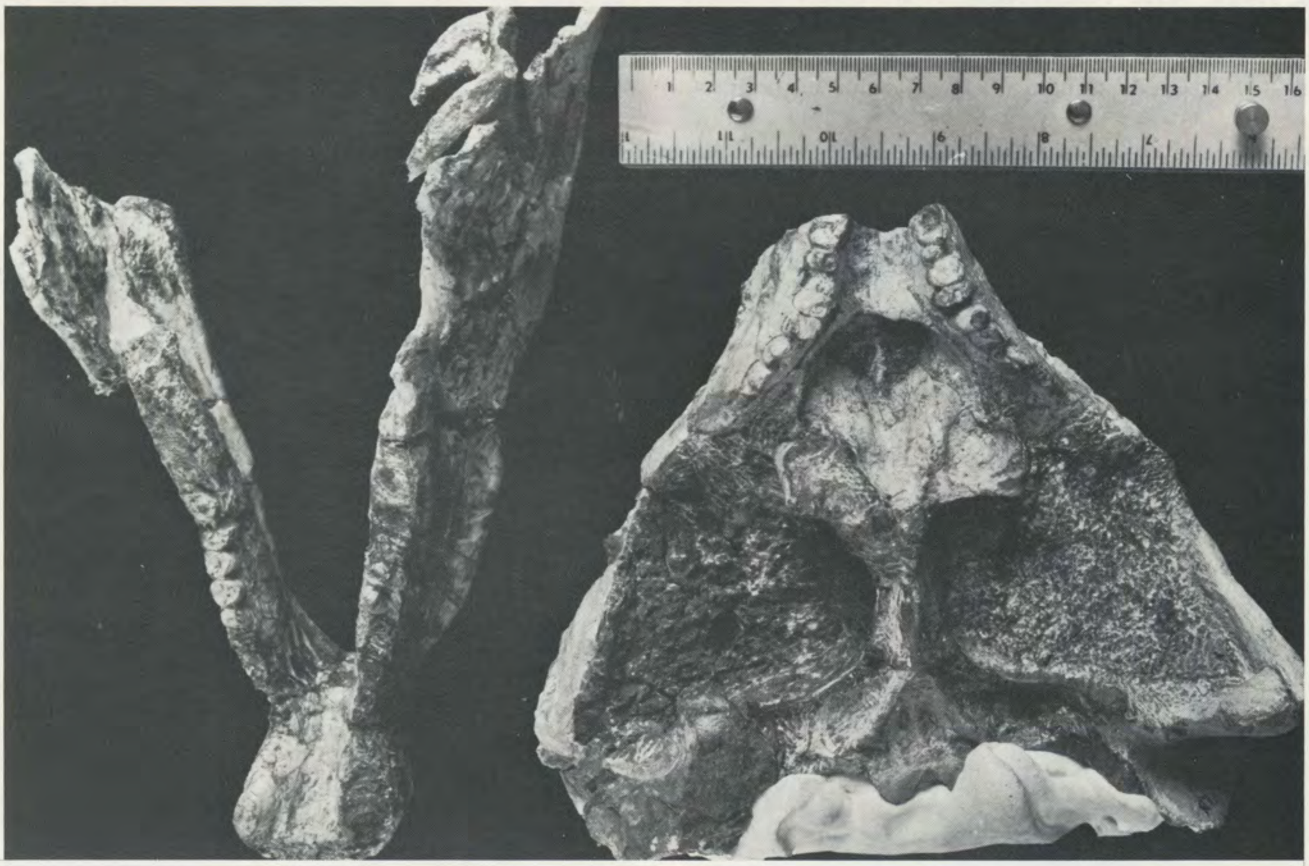

Fig. 8 (b)

Fig. 8.

(a) Dorsal view of a skull of *Diademodon tetragonus* Seeley (right) and a lower jaw of another specimen (left). Specimen R327 and R335.

(b) Ventral view of the same skull (right) and yet another lower jaw (left). Specimen R321. The small element on the inside of the left ramus of this lower jaw is probably a hyoid.

Family Diademodontidae

Diademodon tetragonus Seeley (Fig. 8)

This material was derived from the nodule-bearing shale-beds between the two arenaceous horizons. It consists of the posterior two-thirds of an adult skull with some postcranial elements and two adult lower jaws. The material has not as yet been fully prepared, but exhibits no characters which can be used to distinguish it from *Diademodon tetragonus*. Differences may however appear when the specimens are fully prepared.

Titanogomphodon crassus gen. et sp. nov. (Figs. 9 and 10)

Holotype: Badly preserved and crushed posterior part of a large skull, R322, in the collection of the Geological Survey, R.S.A.

Type locality: Northern slope of Etjo Mountain in a grit bed, in the upper arenaceous horizon.

Diagnosis: Very large gomphodont cynodont with small orbits and one tubercle on the anterior and three tubercles on the dorsal orbital margins. A relatively large parietal foramen is present. The distal end of the postorbital arch has a boss-like thickening. The secondary palate is short and does not reach back to the last gomphodont postcanine, which is peg-like and has a blunt point. It is ellipsoidal in section, with the long axis of the ellipse orientated parallel to the sides of the jaw. The last three postcanines appear to be of similar sectorial types but their long axes swing round, so that the fourth from last postcanine is transversely orientated. These posterior sectorial teeth are preceded anteriorly by large crushing molariform teeth. These teeth are also ellipsoidal in section, and are transversely orientated. They display large lingual and labial cusps placed near the anterior margin of the crown and connected by a transverse ridge. Behind this ridge a basin is present which slopes towards the back of the crowns. The raised sides of the basin coincide with the lateral margins of the tooth. A small cusp occurs on the labial margin posterior to the main labial cusp. There is a sharp ridge on the anteriorly-sloping front of the crowns anterior to the transverse ridge that connects the main cusps. Small additional cusps occur on the posterior margins of the crown. The rest of the postcanine series is not known.

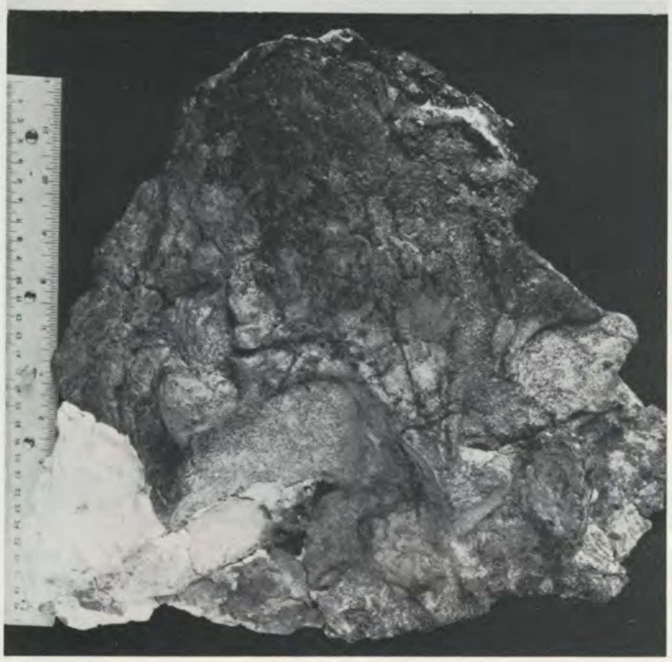

Fig. 9 (a)

Fig. 9 (b)

Fig. 9.
(a) Dorsal view of Holotype of *Titanogomphodon crassus* gen. et sp. nov.
(b) The same. Ventral view.

Fig. 10. Posterior upper dentition of *Titanogomphodon crassus* gen. et sp. nov. Anterior of skull at top of page. Specimen R322. Scale in centimetres.

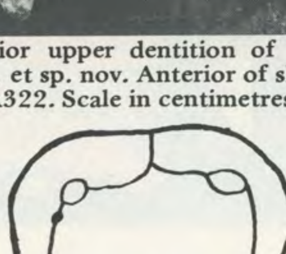

Fig. 11. Upper molariform tooth (No. 5 from the back of the tooth row). Occlusal view. Front side at the top of the page.

Fig. 12 (a)

Fig. 12 (b)

Fig. 12.
(a) Dorsal view of skull of *Trirachodon* sp. Specimen R327.
(b) Ventrolateral view of same.

Discussion: If reconstructed to have more or less the same proportions as *Diademodon* the skull of this species could have been about 430 mm long, which is very much larger than in any known species of *Diademodon*.

This specimen is placed in the subfamily Diademodontinae (Hopson and Kitching, 1972) as there is no indication of a central cusp in any of the available molariform teeth. It shows agreement with the Traversodontinae in the anterior placement of the transverse ridge between the cusps and in the development of a secondary basin in the crowns of the molariform teeth. *Titanogomphodon* therefore appears to be an advanced diademodontid that developed convergently with the traversodont cynodonts.

Trirachodon sp. (Fig. 12)

A complete but poorly preserved skull with much of the postcranial skeleton was found above the lower arenaceous horizon on the western buttress of Etjo Mountain. The bone surface is badly cracked and the matrix does not part from the bone easily. It is clearly very similar to *T. berryi* Seeley, but has apparently no parietal foramen and the intertemporal crest is very much narrower. The skull differs from all of the described specimens of the genus in having a large diastema in both the upper and lower jaws. There appear to be only six postcanine teeth in the maxilla. This specimen is much smaller than *Cricodon metabolus* Crompton (1955) from the Manda Formation.

THE AGE OF THE FAUNA

The fauna of the Lower Etjo Beds contains five genera that are also encountered in the *Cynognathus* zone of the Beaufort series of the Karroo System in the Republic of South Africa. Two specimens of these five genera could be identified specifically with forms from the Karroo Basin viz. *Kannemeyeria simocephalus* and *Diademodon tetragonus*. It is not unlikely that the small cynognathid cynodont, the bauriamorphs and the trirachodontid from the Lower Etjo Beds are also *Cynognathus* zone forms.

This therefore indicates that these strata could be at least as old as the *Cynognathus* zone of South Africa and the Puesto Viejo Formation of Argentina. It is assumed by several workers that the age of the *Cynognathus* zone fauna is equivalent to that of the upper Scythian of Europe, where strata of this age are mainly of marine origin, and the assignment of a Lower Triassic age to the *Cynognathus* zone is based on a comparison of the amphibian fauna of the R.S.A. with European forms (du Toit, 1954).

However the presence of an advanced Cynodont (*Titanogomphodon* gen. nov.) and of several advanced dicynodonts is indicative of a slightly younger age. *Kannemeyeria* also occurs in the Manda Formation of Tanzania (Cruickshank, 1965), which is generally assumed to be of Anisian age. This formation also contains a traversodont cynodont and the dicynodont *Tetragonias njalilus* (Crompton, 1955; Cruickshank, 1967). The latter is very similar to *Dolichuranus* described here.

The Ntawere Formation of Zambia has a fauna of diademodontid and traversodontid cynodonts (Brink, 1963), a species of *Dolichuranus* (Crozier, 1970) and a form referred to the genus *Rechnisaurus* (Crozier, 1970) which was previously known from the Yerapalli Formation of India. Additionally some amphibian material recently described (Chernin and Cruickshank, 1970) indicates that the Ntawere Formation can be contemporaneous with the Manda Formation.

The cynodonts and dicynodonts described here from the Lower Etjo Beds are manifestly more primitive than the forms from the Upper

Table 1

The Chronostratigraphic relationships of Triassic Rocks in S.W.A.

SOUTH AFRICA		Doros and the Huab Valley	Otjiwarongo area after Gevers (1936)	Otjiwarongo area new proposal	Stage	Period
STORMBERG SERIES	*Cave Sandstone Stage* aeolian sandstone	aeolian sandstone	*Plateau Sandstone* aeolian? sandstone	Plateau Sandstone Formation sandstone	Carnian, Norian	Triassic
	Red Beds Stage red sandstone, shale and siltstone	Red shale and aeolian sandstone	Lower Etjo Beds: red shale, sandstone, grit and conglomerate			
	Molteno Stage grit, sandstone, grey shale and coal	? Sandstone and Shale	Lower Etjo Beds: Lowermost part of Lower Etjo Beds grit, conglomerate, arkose	disconformity *Omingonde Mudstone Formation* red shale, sandstone, arkose, grit and conglomerate	Ladinian Anisian	
BEAUFORT SERIES			absent	absent	Scythian	
ECCA SERIES			absent	absent		
DWYKA SERIES		Shale, diamictite, limestone and sandstone	absent	absent		Permian

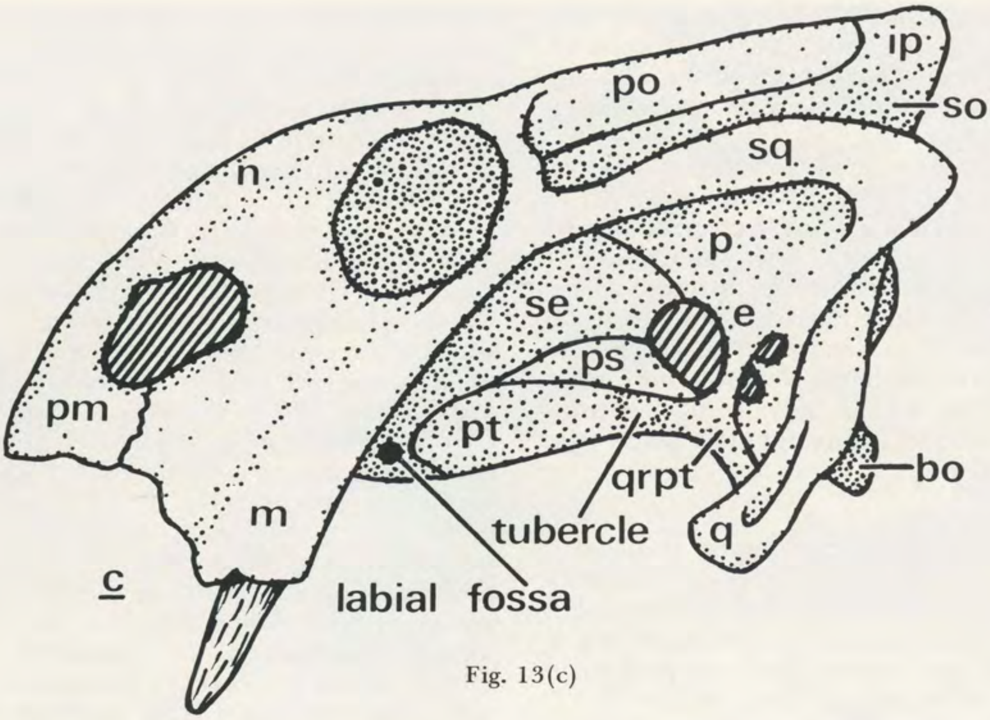

Fig. 13(c)

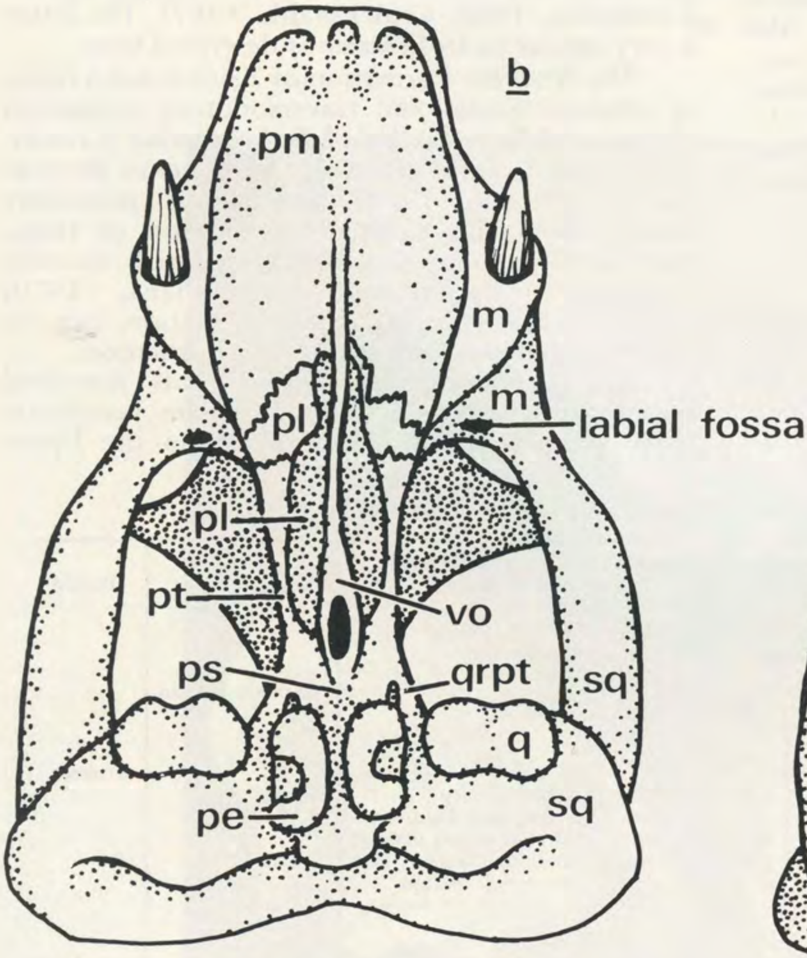

Fig. 13 (b)

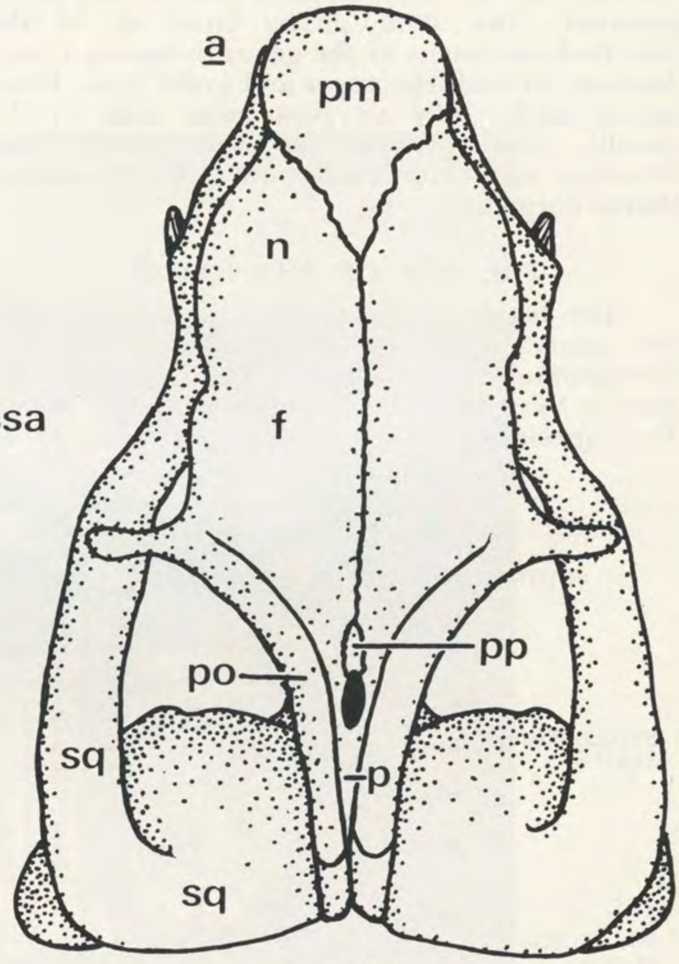

Fig. 13 (a)

Fig. 13.
(a) Dorsal,
(b) Ventral, and
(c) Lateral view of *Dolichuranus primaevus* gen. et sp. nov. (X $\frac{1}{3}$)

Triassic Ischichuca, Ischigualasto and Santa Maria Formations of South America. There are as yet no records of either traversodont or chiniquodont cynodonts in the Lower Etjo Beds, which indicates that they are probably slightly older than the Manda and Ntawere Formations which do contain traversodonts. The dicynodonts of the Lower Etjo Beds are however as highly developed as those of the Manda and Ntawere Formations. Therefore for the present it seems best to correlate the Lower Etjo Beds with the lower part of the Molteno stage of the Stormberg series of South Africa (Table 1).

There is no apparent obvious stratigraphic break in the Karroo System in the area around Molteno in the Eastern Cape Province of South Africa as is the case farther to the north and it would therefore appear that the Molteno Stage extends from the Scythian (?) *Cynognathus* zone to the Carnian (?) Red Beds Stage of the Stormberg Series. This would indicate that the Molteno Stage occupies virtually the whole of the Middle Triassic, assuming that the *Cynognathus* zone is not younger than Lower Triassic in age.

The trackways in the Plateau Sandstone at Otjihaenemoperero are possibly those of a saurischian, which indicates a Carnian or Norian age. According to Colbert (1963) saurischians did not appear until the Upper Triassic. This would then show that the upper part of the Middle Triassic is absent in the succession on Etjo Mountain.

As has been pointed out by several authors (e.g. Sill, 1969) the use of stage names from the European stratigraphic column is as yet premature for the Gondwanaland "Formations" of the Southern Hemisphere. From the above discussion it would seem that the Lower Etjo Beds are probably younger than the *Cynognathus* zone (? Upper Scythian) of South Africa and older than the Manda Formation (? Anisian) of Tanzania. It is therefore clear that the Lower Etjo Beds are either uppermost Scythian or Lower Anisian in age, if the correlation of the *Cynognathus* zone and the Manda Formation with the alpine succession is correct.

As has been pointed out earlier, a disconformity separates the Plateau Sandstone and the Lower Etjo Beds. Additionally, the Plateau Sandstone has been shown to contain trackways probably made by Upper Triassic Saurischians and it has been concluded that a large part of the Middle Trias is missing from the succession in the Otjiwarongo district. This adds to the desirability of regarding the Lower Etjo Beds as a separate formation from the Plateau Sandstone on lithological grounds.

As the name Etjo Sandstone is commonly used to designate Upper Karroo sediments throughout South West Africa, it would be preferable not to use it as a formation name here. The name Omingonde Mudstone Formation is suggested, from the farm of the same name in the Otjiwarongo district, as a designation for those strata hitherto called the Lower Etjo Beds. The best outcrops occur on the western buttress of Etjo Mountain on this farm which may be designated as stratotype. The name Plateau Sandstone Formation is proposed here for those strata above the Omingonde Mudstone Formation. The stratotype being along the same section as the Omingonde Formation. The formal proposal of the new stratigraphic names and the designations of stratotypes has been submitted to the South African Committee for Stratigraphy.

The upper part of the Karroo succession in the area between Doros and the Huab River consists of red shale and aeolian sandstone with an intercalation of lava. As has been pointed out earlier, the Plateau Sandstone is not obviously aeolian and the red shale below it at Etjo is of Middle or Lower Triassic age. The red shale near Doros is of Upper Triassic age, as indicated by the presence of a dinosaur vertebra in it.

In common with current usage, the upper part of the Karroo succession in the Doros area is also commonly referred to as the "Etjo Sandstone". Although there are several outcrops of Karroo strata between Doros and the main occurrence in the Etjo area e.g. at the Erongo Mountains, at a locality south of the Okonjenje Igneous Complex and at the Petrified Forest in the southern Kaokoveld, it is however quite clear that the sedimentation and age of the strata at Doros are quite different from that at Etjo Mountain and that the Upper Karroo sequence in the area between Doros and the Huab Valley should be referred to by another formational name.

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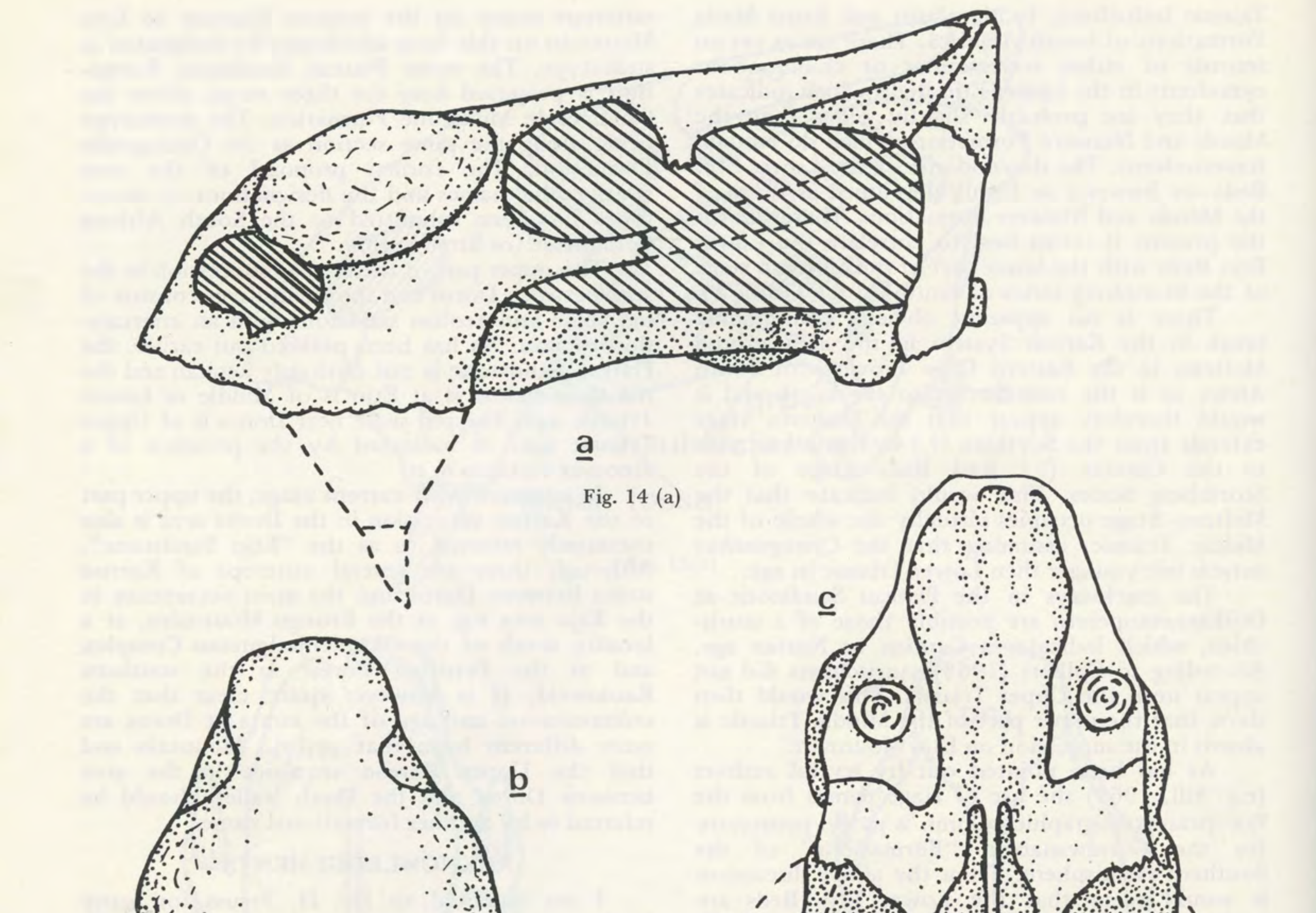

Fig. 14 (a)

Fig. 14 (b)

Fig. 14 (c)

Fig. 14.
(a) Lateral,
(b) Dorsal and
(c) Ventral view of *Rhopalorhinus etionensis* gen. et sp. nov. (X $\frac{1}{3}$)

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