A NEW SMALL STEREOSPONDYLOUS LABYRINTHODONT FROM THE TRIASSIC BEDS OF SOUTH AFRICA

By J. W. KITCHING

ABSTRACT

This paper describes an interesting new Amphibian, *Laidleria gracilis* gen. et sp. nov., from the Lower Triassic of South Africa (*Cynognathus-zone*). It is a Stereospondylid Labyrinthodont, belonging to the family Trematosauridae, but it differs in being exceptionally small. Most of the skeleton is preserved and with it are associated masses of small dermal scutes reflecting the nature of the skin. A combination of some peculiar characteristics encourages the recognition of this specimen as representing a new family.

INTRODUCTION

In July 1954, Dr. F. E. Peabody of the University of California at Los Angeles wrote to Dr. A. S. Brink of this Institute, drawing his attention to a small, uncleaned specimen in the Albany Museum, Grahamstown, which he had casually seen in 1948 and which he describes as a "turtle-like Labyrinthodont". He requested this Institute to investigate the specimen, as he considered it of exceptional interest.

In February 1955, while the present author was in the Karroo area on a field expedition, he visited the Albany Museum to see this specimen. It was still unprepared and Dr. Hewitt kindly agreed that the specimen could be taken to the Bernard Price Institute for preparation and description.

This remarkable specimen consists of a complete skull and the greater part of the skeleton, with dermal ossicles associated. It was presented to the Albany Museum by Dr. P. W. Laidler, who collected it at Elucwecwe in the Engcobo district, Eastern Cape Province. When discovered the specimen was in situ, embedded upside down in a slab of hard grey sandstone, the grain of which agrees very favourably with the sandstones of the *Cynognathus*-zone in the Burghersdorp and Lady Frere districts. With this evidence and the close proximity of the Stormberg series to Engcobo, it is almost certain that the specimen comes from the *Cynognathus*-zone and thus from the lower Triassic.

Most of the skeleton and dermal ossicles were exposed by weathering, but the skull was almost completely embedded in the hard sandstone, except the angulars, which were slightly damaged.

The preparation of the skull was very difficult, due to the hardness of the sandstone, but the palate and occipital region could be exposed beautifully. An attempt

was made to clear the matrix from the dorsal surface of the skull, but this endeavour was abandoned due to the bulk and hardness of the sandstone and the extreme flatness of the skull. A small portion of the dorsal surface of the snout was uncovered and it appears that the general preservation of the rest of this surface is most unsatisfactory. The specimen was evidently embedded within a cleavage plane in the sandstone, this plane passing along the dorsal surface of the skull, so that a certain degree of weathering occurred on this surface, while the ventral surface remained beautifully preserved.

Classification

In 1947 Romer recognised the Trematosauria and Stereospondyli as two separate suborders, the latter including the superfamilies Rhinesuchoidea, Capitosauroidea and Brachyopoidea. As the present specimen is stereospondylous, but at the same time showing closer affinities with the Trematosauria than with the other above-mentioned groups, it adds support to the revised classification which Romer used in 1950. Here he excluded the Rhinesuchidae from the Stereospondyli and placed it (with the Lydekkerinidae and Benthosuchidae) under the suborder Neorhachitomi, while the Stereospondyli included the families Capitosauridae, Trematosauridae, Metoposauridae and Brachyopidae.

The present specimen shows a remarkable mixture of Trematosaurid and Capitosaurid characteristics, as well as some Neorhachitomous features, with the scale balancing slightly in favour of the former. It is not unlikely that it may eventually be taken as the type genus of a new family, but provisionally its classification is given as follows:

Superorder Labyrinthodontia.
Order Stereospondyli.
Family Trematosauridae.
Genus *Laidleria* nov.
Species *gracilis* nov.

Laidleria gracilis gen. et sp. nov.
(Figures 16—19)

Diagnosis: Small Labyrinthodont with typically stereospondylous vertebrae. Skull flat, slightly elongated, with pointed snout. External nares large, close together, but still on the lateral margins of the snout. Orbits large, approximately at the middle of the length of the skull, and oval longitudinally. Palatal fossae very large and pterygo-jugal openings very small. Large ectopterygoids separating pterygoids from palatines. Pterygoid-parasphenoid contacts moderate in length, situated far back. Delicate pterygoid-exoccipital contacts not visible in ventral view. Apparently very reduced cartilaginous basioccipital and basisphenoid. Otic notches closed. Basicranial region broad and cultriform process narrow and very flat.

Type: A complete skull with lower jaw and the nearly complete skeleton with dermal ossicles associated, in the collection of the Albany Museum, Grahamstown (Cat. No. 4313), from *Cynognathus*-zone beds (Lower Triassic) at Elucwecwe in the Engcobo district, Eastern Cape Province.

I name this specimen *Laidleria gracilis* gen. et sp. nov., generically after the collector, Dr. P. W. Laidler, and specifically to emphasise its delicate size as compared with other Trematosaurids.

Description

There is no visible distortion of the skull. The skull is small, but adult, rather flat and triangular in outline, with the snout tapering Trematosaurid-like to a narrow point with a breadth of approximately 10 mm. in front of the external nares. The orbits are oval longitudinally and large, placed slightly posteriorly of the middle of the length of the skull as in the Capitosaurids, but on the lateral margins of the skull as in the Trematosaurids, facing dorsally. The external nares are fairly large and round, and placed 12 mm. behind the tip of the snout.

Besides the extreme difference in overall size, this specimen is also rather unlike its Capitosaurid allies in the shapes and positions of the external nares and the orbits. In these respects it agrees fairly well with its Rhinesuchid allies, especially with *Lydekkerina*.

The following is a list of useful measurements, given in millimeters:

Greatest length, from tip of snout to condyles	86
Greatest width, across quadrates	75
From tip of snout straight to quadrate	93
Length of snout in front of external nares	12
Diameter of external naris	6
Inter-narial width	6
Inter-orbital width	16
Distance from back of external naris to front of orbit	23
Length of orbit	16
Width of orbit	9
Distance from posterior border of orbit to occipital border	29
Narrowest width of cultriform process	4
Maximum width of palatal vacuity	16
Maximum length of palatal vacuity	39
Length of internal naris	10
Width of internal naris	3
Shortest distance between internal nares	7
Occipital height (total, constant from left to right)	11

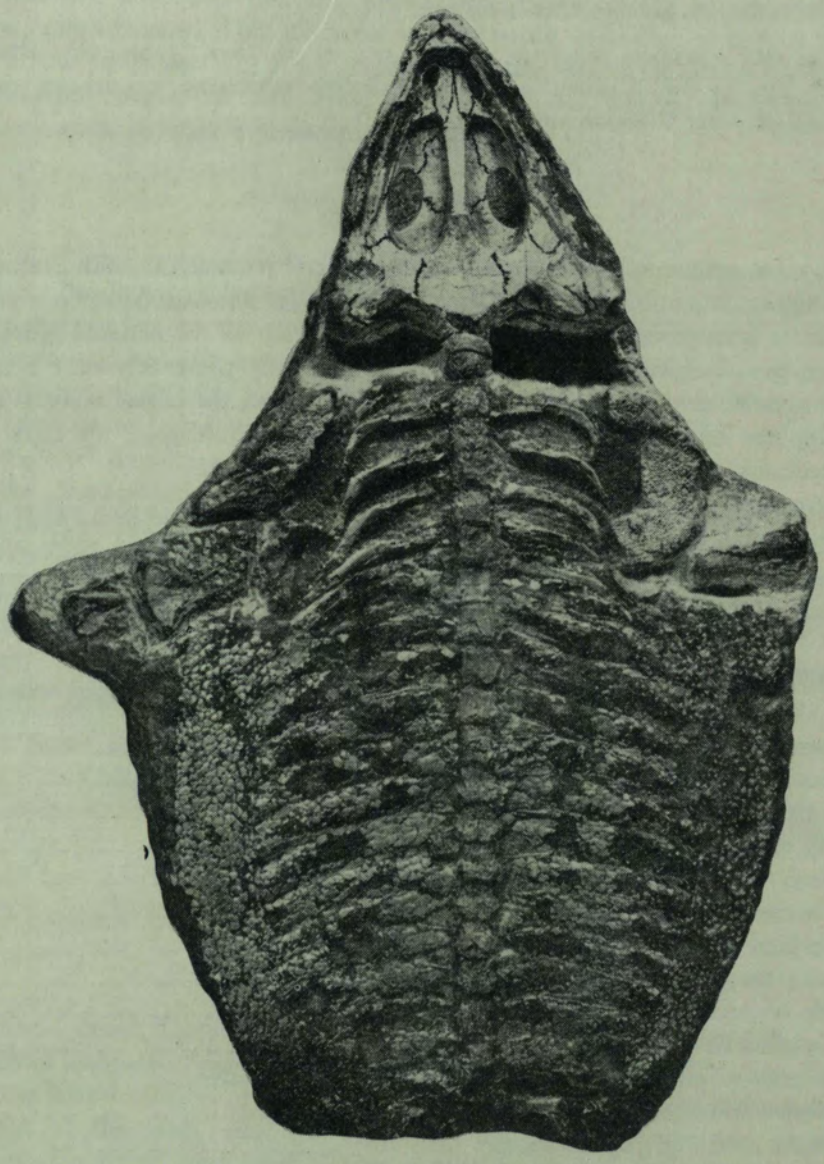

Fig. 16—Photograph of the type specimen of *Laidleria gracilis* gen. et sp. nov. (x½).

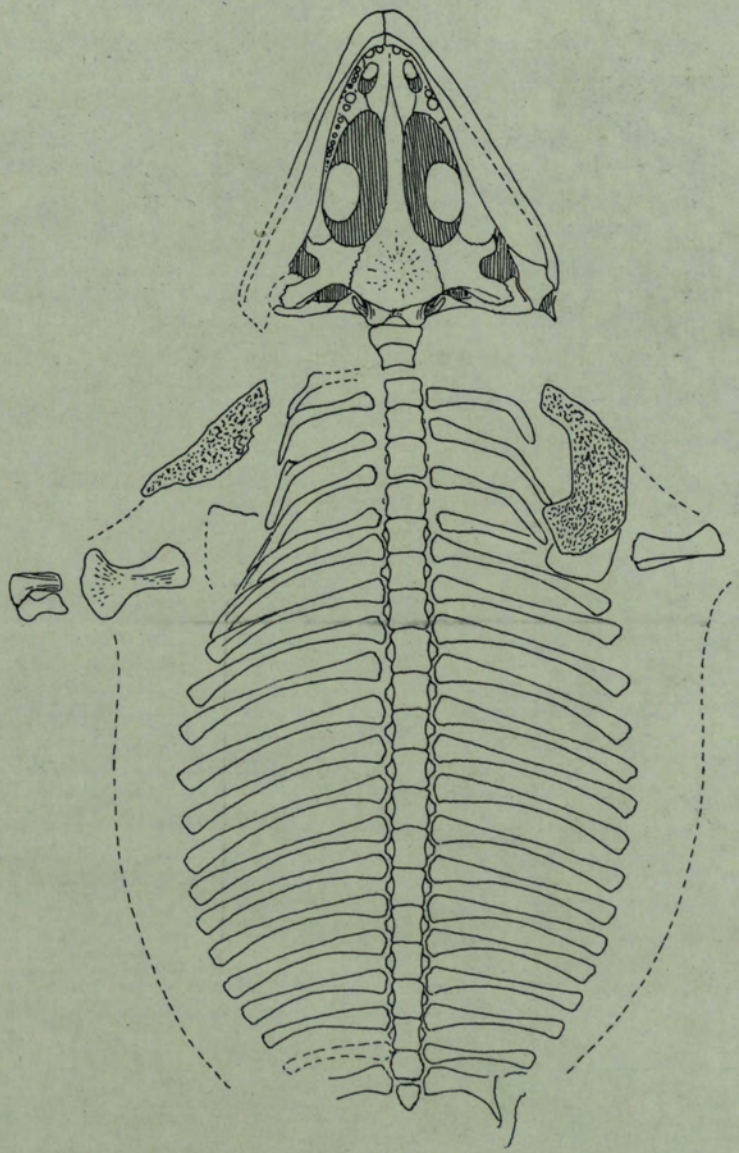

Fig. 17—Trace of figure 16. ($x\frac{1}{4}$)

Fig. 18—Portion of the type specimen of *Laidleria gracilis* gen. et sp. nov. showing details of the dermal ossicles (x 2).

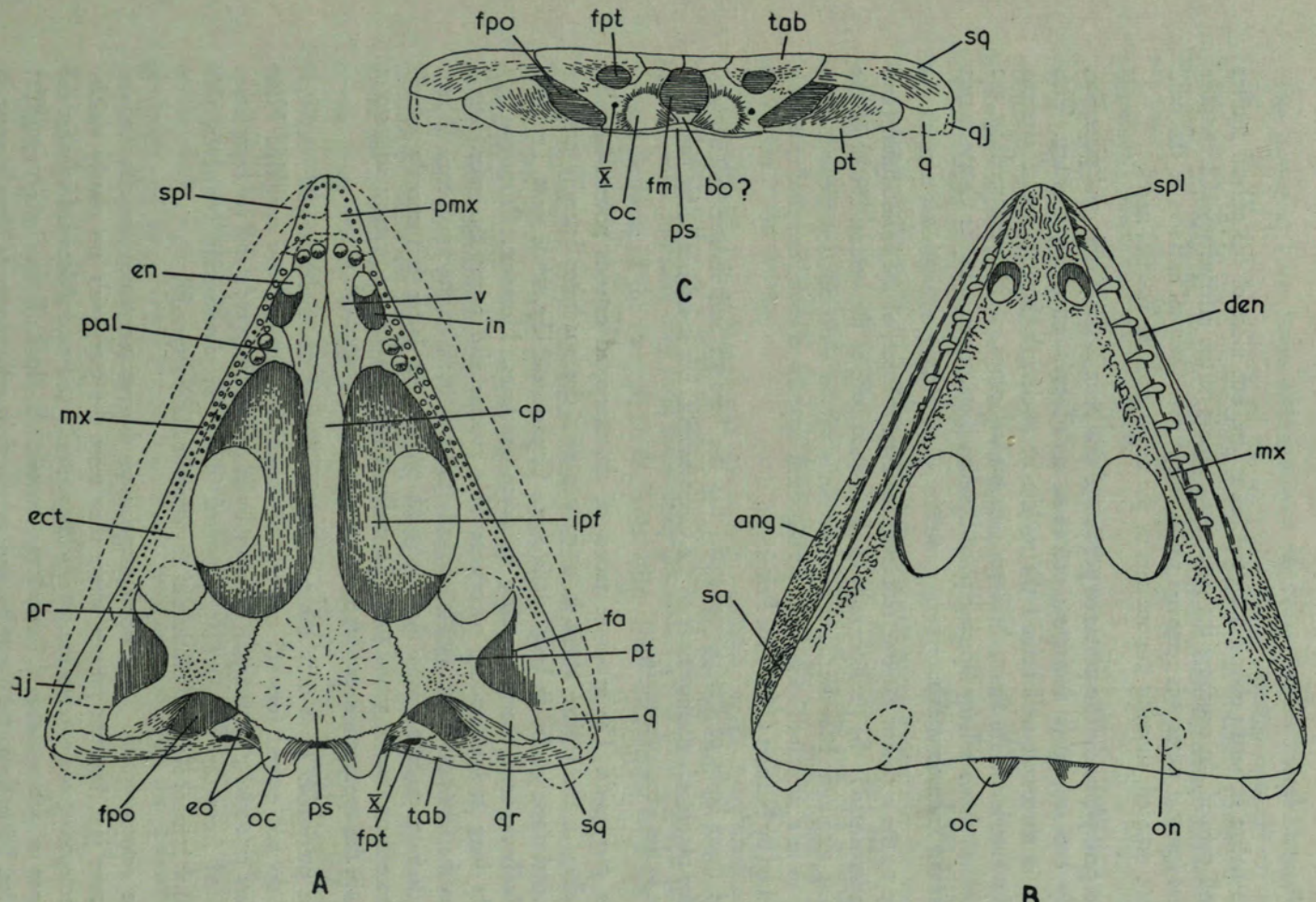

Fig. 19—A — ventral, B — dorsal and C — posterior view of the skull of *Laidleria gracilis* gen. et sp. nov. (Posterior view restored, outline of lower jaw added in ventral view). (x1).

The Palatal Aspect.

The palate is partly obscured by the lower jaw, but most of the palatal sutures are well defined. In exposing the palate, the matrix in the interpterygoidal vacuities and the internal nares was removed to an extent where ventral surfaces of the skull roof are exposed, showing the outlines of the orbits and the external nares.

The *parasphenoid*. The posterior portion of this bone is fairly large and plate-like, slightly concave, with a narrow processus cultriformis extending forward. This process is narrowest well behind the middle of its length, from where it expands slightly anteriorly. In front, between the internal nares, it is overlapped by the vomers and shows a long tapering point between them, more as in the Capitosaurids than in the Trematosaurids.

Due to the apparent extreme reduction, or even absence, of the basioccipital (and the basisphenoid), the parasphenoid tends to contribute to the ventral border of the foramen magnum. However, inward extensions of the exoccipitals prevent it from doing so in a substantial way. The arrangement appears to have been similar to that illustrated by Nilsson (1946) for *Peltostega*.

The main body of the parasphenoid has the breadth and shorter articulations with the pterygoids characteristic of the Capitosaurids, but it extends as far back as is typical in the Trematosaurids.

The *pterygoids*. The quadrate ramus of the pterygoid extends postero-laterally, expanding in the region where it articulates with the quadrates laterally and the squamosal dorsally. In its length it is again Capitosaurid-like, while most Trematosaurids have very short, tapering quadrate processes. However, *Peltostega* has equally long and expanding processes. This process also forms an antero-lateral wall to the fenestra pteroccipitalis, medially to its suture with the squamosal. Where the quadrate process leaves the pterygoid proper, the latter is distinctly pitted, but there is no sign of actual teeth. Laterally to this area lies the fenestra adductoria which, in this specimen, is smaller than in any other Stereospondyl.

The pterygoids form only the posterior borders of the interpterygoid vacuities. They do not extend forward around the lateral borders of these vacuities. Here they are extensively overlapped ventrally by large ectopterygoids and are completely separated from the palatines as is typical in the Trematosaurids. However, this condition is more exaggerated than in any described Stereospondyl.

The *ectopterygoids*. The lateral margins of the ectopterygoids are obscured by the lower jaw, but the sutures where they meet the pterygoids are clearly visible. The ectopterygoids overlap the pterygoids ventrally and extend forward to meet the palatines a short distance behind the anterior borders of the inter-pterygoidal vacuities. Nine sharp teeth can be seen on the right ectopterygoid. They increase in size forward.

The *palatines*. These bones articulate with the vomers medially and form greater portions of the anterior borders of the inter-pterygoidal vacuities than in any other related forms, while their contribution to the antero-lateral borders is smaller. They also form the posterior borders of the closely adjacent, large internal nares. There are two large tusks, situated close together, with a very small tooth in front, immediately behind each internal naris.

The *vomers*. The vomers are Capitosaurid-like in receiving the cultriform process for a long distance between them, the latter being exposed up to the level of the middle of the lengths of the internal nares. Their posterior tapering ends project backward for some distance along the antero-medial borders of the inter-pterygoid vacuities. They are, however, Trematosaurid-like in being very narrow, in contributing very little to the anterior borders of the inter-pterygoid vacuities, but they contribute more substantially to the medial borders of the internal nares. Anteriorly the vomers expand to meet the premaxillaries and in front of the internal nares each carries two tusks, situated transversally, almost as in *Lyrocephalus*, and not one behind the other as is more typical of the Trematosaurids. There are no indications of other small teeth on the vomers.

The *premaxillaries*. These bones are largely obscured by the symphysial region of the lower jaw, but a short suture can be seen on the left side in front of the internal naris. Dorsally they form the sharply pointed snout extending some 12 mm. forward in front of the external nares. They carry teeth conforming with those of the maxillaries.

The *maxillaries*. The maxillaries show four small teeth on the lateral borders of the internal nares. These fall more or less in line with the tusks posteriorly and anteriorly (although they belong to the outer row), an arrangement unlike that found in other stereospondyls.

Only the outer edges of the internal nares, bearing these teeth, represent the maxillaries in palatal view. The lateral views of both maxillaries are exposed. The lower jaw bends sharply outward so that figure 16 does not indicate the actual width of the skull and its acutely tapering outline. For this reason an outline diagram of the dorsal view of the skull is given in figure 19(B). The lateral margin of the snout is virtually concave.

The relationship of the maxillaries to their neighbouring bones is not clear. They are visible on both sides as slender bones, not contributing much to the lateral face of the skull. They show on both sides a very even row of small teeth, increasing gradually in size forward, but anteriorly, in the region of the palatal and premaxillary tusks, these tend to be somewhat irregular in size.

The Occipital Aspect.

The occipital region of the skull is well preserved. It was possible to excavate the matrix between the skull and the first cervical ribs to a depth beyond the level of the dorsal surface of the skull so that the dorsal occipital margin is clearly displayed.

The occiput is rather peculiar in having its dorsal margin virtually straight. The squamosals extend horizontally at the same level as the tabulars, with the quadrates situated not lower than the condyles. The total height of the occiput (11 mm.) is, therefore, the same across the whole width. It is also straight transversely and in the vertical plane.

The *exoccipitals*. These bones are fairly large. Posteriorly they form the double condyles and anteriorly they have a strong sutural union with the parasphenoids. They do not quite meet on the midline, so that the parasphenoid tends to contribute very slightly to the ventral margin of the foramen magnum. However, this interval between the exoccipitals probably housed a small cartilaginous basioccipital, as illustrated by Nilsson (1946) for *Peltostega*.

The exoccipitals have delicate contacts with the pterygoids, not visible in ventral view. Laterally they send out wing-like processes (evidently the paroccipitals). A small foramen for the Xth nerve can be clearly seen on the left side, slightly removed from the margin of the condyle and more on the wing-like process. This process extends a short distance over the fenestra pteroccipitalis and terminates abruptly, but it is evident that at this level it articulated with an extension of the tabular, this bridge being artificially lost on both sides. However, there are on both sides small bones in the position of the stapes. These could actually be the stapes, but they could equally well be interpreted as the dislocated tabular bridges.

Dorsally the exoccipital articulates with the dermo-supraoccipital and here there appears to be a contact with the tabular medially to the fenestra post-temporalis, in addition to the ordinary contact on the bridge between this fenestra and the fenestra pteroccipitalis, which is damaged in this specimen.

The *tabulars*. The relationship of these bones to the exoccipitals is described above (see *exoccipitals*). The fenestra post-temporalis appears to be small. Laterally they articulate intimately with the squamosals, thus closing the otic notches. It is not clear whether these notches are preserved as foramina on the dorsal face of the skull as in *Cyclotosaurus* and *Tertrema,* or whether they have merely been straightened out as in the Brachyopids.

The *squamosals*. The squamosals extend horizontally in posterior view. In the Trematosaurids the closest parallel is found in *Peltostega*. Other Labyrinthodonts in which this condition is vaguely similar are the Neorhachitome *Uranocentrodon* and the Brachyopid *Plagiosaurus*. The squamosals overlap the quadrates laterally and the pterygoids ventrally, and are themselves overlapped by the tabulars medially.

The *quadrates*. Ventrally the quadrate articulates with the quadrate ramus of the pterygoid, showing a triangle between this bone and the prearticular. Only a small, almost circular portion of the bone is visible in posterior view, it being largely covered by the pterygoid and squamosal medially, the quadrato-jugal laterally and the articular ventrally.

The *quadratojugal*. Only the left quadratojugal is preserved and it is a very small bone, situated more on the outer surface of the skull. Most of the bone is obscured by the articular of the lower jaw.

The Lower Jaw.

The lower jaw is virtually complete, but the ventral margins of both rami suffered some weathering posteriorly, damaging the angulars and the right prearticular. The rami are distorted, with the ventral margins displaced farther outward than the dorsal margins. Anteriorly the rami are very slender.

The dentaries are very long and slender, but they bulge substantially on the symphysis, unlike the condition in the average Stereospondyli. Posteriorly their ventral margins have long articulations with the angulars and extend to make delicate contact with the surangulars. Anteriorly the ventral margins of the dentaries articulate with the postsplenials and splenials. These sutures along the ventral margins of the dentaries fall within distinct very straight grooves.

The dentition in the lower jaw is singularly different from its counterpart in the upper jaw. Where the latter shows on each side a double row of small teeth, interrupted anteriorly by short blunt tusks (two each on palatine and vomer), the lower jaw has only one row of teeth. These teeth are all very large, of about the size of the tusks in the upper jaw, but sharper, longer and more slender. They are almost perfectly spaced at intervals of 5 mm. (4 mm. diastemes). There are no small teeth within the diastemes; these were excavated — in one place completely through on to the palatal side — and so sign of teeth, or even pitmarks, could be discovered. A close parallel to this condition is found in the Rhachitome genus *"Loxomma"* (Watson, 1912 — *Orthosaurus* fide Watson, 1926), where the teeth of the lower jaw are larger than the outer maxillary teeth and inclined to be more spaced. It was thought that the condition was somewhat like that of the Crossopterygian Osteolepid fish *Megalichthys* (Watson, 1926), but if smaller teeth had been present between these large evenly spaced teeth in some ancestral form, they are definitely completely lost in *Laidleria*.

The angulars form the great parts of the outer faces of the rami posteriorly and are well pitted. The surangulars are small, situated in the articulation region and their outer faces tone in well with those of the angulars.

On the left, the prearticular covers the articular ventrally so that little information about the latter is available. It extends forward on the inner face of the ramus to meet the dentary. This region on the right side is too badly preserved to yield more detailed information.

The contacts between the angulars and postsplenials, and between the latter and the splenials, are clearly visible. There is no clear fossa marking the entrance to the Meckelian canal and the regions on both sides are not well enough preserved to ascertain the presence and nature of the coronoids. The splenials also bulge on the symphysis and they protrude farther forward than the dentaries.

The Skeleton.

The skeleton is completely flattened within the cleavage plane in the sandstone in which it is preserved. However, individual bones show no indication of distortion as a result of pressure. The upper layer of sandstone was weathered away so that the skeleton was almost completely displayed when discovered. It is fairly complete, except for the caudal vertebrae, portions of the clavicles, right radius and ulna, left and right manus, and most of the hind limbs. The cervical and anterior thoracic ribs are in good condition, but the rest have disappeared, leaving only their impressions and articulation heads.

The vertebrae are stereospondylous, that is the intercentra alone form the whole of the central bodies, completely surrounding the notochord. An excavation was slowly and systematically ground between two thoracic vertebrae with the aid of a dental emery disc, studying the details exposed at short intervals, but no sign of pleurocentra was discovered. No space is allowed between the intercentra for pleurocentra, even had they been very flat, cartilaginous wedges.

The ventral surfaces of 22 well ossified central bodies are exposed. The first two vertebrae immediately behind the occipital condyles are rather short discs. The thoracic vertebrae are slender, but the vertebrae become more robust in the lumbar region, and tend to shorten again in the sacral region. All vertebrae carry ribs. An excavation was made on the side of two thoracic vertebrae, penetrating to the dorsal side, and it was found that the transverse processes and the neural spines are not well developed.

The cervical and anterior thoracic ribs are rather slender, triangular in cross section near the vertebrae, and they bend backward as flat (dorso-ventrally) extensions, evidently supporting the pectoral girdle. The ribs in the lumbar region are more robust and straight. They are all holocephalous, with slender shafts and expanded ends.

Only a portion of the blade of the left scapula is exposed, the rest being obscured by the clavicle. The blade is very thin and concave on what appears to be its outer surface. The clavicles are expanded and heavily pitted on their outer surfaces.

Both humeri are present, well ossified and in size and proportions they are not much different from those of *Lydekkerina*. There is a well developed pectoral crest preserved on the left humerus, decreasing gradually in size distally.

Only the right radius and ulna are preserved. They are both very short, about half the length of the humerus. The proximal end of the radius is small and almost flat. The distal end is well expanded with a process supporting the ulna. Both the proximal and distal ends of the latter are somewhat expanded and round, with the shaft constricted.

The ilium and ischium are present on both sides, but only those on the left are in fair condition of preservation. The ilium is round and slender, expanding distally to form articulation facets for the ischium and pubis. Proximally it articulates apparently directly with two sacral vertebrae, the transverse processes being very highly reduced. The ischium is a small quadrangular bone, not well ossified,

articulating with the ilium and pubis. Very little of the latter is exposed. There is a definite but incomplete acetabular face on the ischium.

The skeleton is elaborately covered with small dermal scutes. Dorsally the scutes are larger, irregular and oblong transversely. They decrease in size laterally to become smaller on the ventral side of the body. The dorsal scutes are seen in ventral view between the ribs and their inner surfaces are smooth. The ventral scutes cover the dorsal ones laterally to the ends of the ribs and their outer surfaces are convex. All the scutes articulate intimately with their neighbours (see fig. 18).

Such dermal scutes are rarely found preserved in fossil Amphibian specimens. Romer and Witter (1941) describe similar scales for *Eryops*, but these appear to be less ossified and to articulate more loosely. The type specimens of *Uranocentrodon senekalensis* (Van Hoepen, 1915) exhibit elaborate skin impressions, but these scales are of a totally different nature. They are very elongated rods, closely and regularly packed to form a distinct pattern.

Relationship

As stated above, the present specimen shows an interesting mixture of Trematosaurid and Capitosaurid characteristics, together with some Neorhachitomous features. However, there can be no doubt that it belongs to the Stereospondyli, for the following reasons:

(1) Pleurocentra are absent.
(2) The intercentra form complete discs surrounding the notochord.
(3) The skull is very flat.
(4) The two distinct occipital condyles formed by the exoccipitals are well separated.
(5) The basioccipital was apparently highly reduced and cartilaginous.
(6) The palatal vacuities are large.
(7) The pterygoids do not reach the vomers.
(8) The cultriform process of the parasphenoid is narrow and flattened.
(9) The quadrates are level with the occipital condyles.
(10) The limbs are very small.

In size and general proportions it has no comparable relative in the Trematosaurids, Capitosaurids and Metoposaurids. As far as size is concerned, the Brachyopids can be taken into consideration, but their proportions and structure are completely different. In these respects the specimen is rather comparable with the local small Neorhachitomous genera *Lydekkerina* (Watson 1920, Broili and Schröder 1937, Broom 1950), *Putterillia* (Broom 1930), *Limnoiketes* (Parrington 1948), and *Broomulus* (Broom 1930, Romer 1947), especially in the size and position of the orbits, but other proportions as well create a general Neorhachitomous impression. However, it differs significantly from these Neorhachitomous forms in that the snout is not broadly rounded; the external nares are not widely separated; the

otic notches are not normal; the skull is greatly depressed; the pterygoids do not reach the palatines; and above all, the vertebrae are not Neorhachitomous.

Laidleria is certainly not closely related to the Brachyopids, although it agrees in having no distinct otic notches; the skull being greatly flattened; the pterygoids not reaching the palatines; and especially the vertebrae being fully stereospondylous. It differs significantly in that the skull is pointed and elongated; the orbits are situated farther back; the basicranial region is not as broad and flat; the pterygoid-exoccipital contact is not as elaborate; and the occipital face is not slanting.

The Metoposaurids are completely different in being very large forms with large external nares and the orbits placed well forward. The cultriform process is broad and the pterygoid-exoccipital contact elaborate. The occiput slopes; the otic notches are normal; and the occipital condyles project behind the level of the quadrates. Only in one respect is there a reasonable point of comparison, that is the intervention of the ectopterygoids between the pterygoids and the palatines. Geographically and to some extent chronologically, they are too secluded a group to have had a significant relationship with *Laidleria.*

Laidleria differs from the Capitosaurids in having a more depressed skull, no pterygoid-palatine contact, and in the vertebrae not being neorhachitomous. The orbits in this group are also situated too far back. However, it agrees in having the snout moderately elongated. In the Trematosaurids the skull is also not depressed, but they have the ectopterygoids intervening between the palatines and the pterygoids as in *Laidleria,* and the vertebrae are more inclined to be stereospondylous. The snout of *Laidleria* is more Trematosaurid-like, that is sharply pointed, although not as elongated as in *Tertrema* and others where this conditon is highly specialised. The shape of the snout is more like that of *Platystega* (fide Romer 1947), *Lyrocephalus* (Efremov 1940) and *Rhytidosteus* (*R. capensis* Owen 1884, *"Microposaurus"* Haughton 1925). The latter, however, has smaller orbits, situated far anteriorly, while the former two genera have normal otic notches. Closed otic notches as in *Laidleria* are found in the Trematosaurid genus *Tertrema* and in *Cyclotosaurus* of the Capitosauridae, both genera differing very greatly in most other respects.

The parasphenoid of *Laidleria* is Trematosaurid-like, extending far back to level with the quadrates, but Capitosaurid-like in having moderate articulations with the pterygoids. The palatal rami of the latter bones agree with the Trematosaurids in not reaching the palatines, but the quadrate processes differ in being elongated as in the Capitosaurids. The vomers are small, with the internal nares close together in typical Trematosaurid fashion, but the anterior vomerine tusks align more transversely as in the Capitosaurids. In the general flatness of the skull it is Capitosaurid, and it agrees rather well with *Peltostega* (Nilsson 1946) of this family. *Peltostega* also agrees with *Laidleria* in the relationship of the pterygoids, that is their contacts with the parasphenoid are moderate, the palatal rami short and the quadrate rami elongated.

It appears, therefore, that in the Trematosauridae, *Laidleria* has a more readily comparable ally in *Peltostaga*, and perhaps *Lyrocephalus* (and *Thoösuchus* Efremov 1940) than in its local contemporary *Rhytidosteus*. The other local contemporaries, *Trematosaurus kannemeyeri* (Broom 1909 = *Rhytidosteus?*) and *Trematosaurus sobeyi* (Haughton 1915) are very large forms, while *Tertrema*, *Gonioglyptus* and *Aphaneramma* are too highly specialised to be taken into consideration.

The closed otic notches, the peculiar dentition, the exceptional shortness of the palatal rami of the pterygoids and the peculiar low, straight occiput in *Laidleria*, separate this specimen again from all the described genera of this family to such an extent that it is likely to represent the type of a new family, the Laidleriidae.

Acknowledgements

I wish to express my sincere thanks to Dr. J. Hewitt, Director of the Albany Museum, Grahamstown, for placing this specimen at my disposal and allowing me to clean and describe it. I am also indebted to Mr. A. R. Hughes of the Department of Anatomy at this University for preparing the photographs used in illustrating this description.

Literature Cited

BROILI, F. & SCHRÖDER, J., 1937. Über *Lydekkerina* Broom. *Sitzb. bay. Akad. Wiss., Math.-naturw. Abt.*, 39.

BROOM, R., 1909. Notice on some new South African fossil Amphibians and Reptiles. *Ann. S. Afr. Mus.*, vii, 270.

BROOM, R., 1930. Notes on some Labyrinthodonts in the Transvaal Museum. *Ann. Transv. Mus.*, xiv, 1.

BROOM, R., 1950. A new small Labyrinthodont from the Karroo beds of South Africa. *Ann. Transv. Mus.*, xxi, 251.

EFREMOV, J. A., 1940. Preliminary description of the new Permian and Triassic Tetrapoda from U.S.S.R. *Proc. Palaeont. Inst. Acad. Sci. U.S.S.R.*, x, 6.

HAUGHTON, S. H., 1915. On a new species of *Trematosaurus* (*T. sobeyi*). *Ann. S. Afr. Mus.*, xii, 47.

HAUGHTON, S. H., 1925. Investigations in South African fossil Reptiles and Amphibians. *Ann. S. Afr. Mus.*, xxii, 227.

NILSSON, T., 1946. On the genus *Peltostega* Wiman and the classification of the Triassic Stegocephalians. *Kungl. Sven. Vetensk. Handl.*, (3), xxiii, 3.

OWEN, R., 1884. On a Labyrinthodont Amphibian (*Rhytidosteus capensis*) from the Triassic of the Orange Free State, Cape of Good Hope. *Quart. J. geol. Soc.*, xl, 333.

PARRINGTON, F. R., 1948. Labyrinthodonts from South Africa. *Proc. zool. Soc.*, cxviii, 426.

ROMER, A. S., 1947. Review of the Labyrinthoodonts. *Bull. Mus. Comp. Zool. Harvard Univ.*, xcix, 3.

ROMER, A. S., 1950. Vertebrate Palaeontology. University of Chicago Press, 4th impression.

ROMER, A. S. & WITTER, R. V., 1941. The skin of the Rhachitomous Amphibian *Eryops*. *Amer. J. Sci.*, ccxxxix, 822.

VAN HOEPEN, E. C. N., 1915. Stegocephalia of Senekal. *Ann. Transv. Mus.*, v, 125.

WATSON, D. M. S., 1912. The larger Coal measure Amphibia. *Mem. Proc. Manchester Lit. Phil. Soc.*, lvii, 1.

WATSON, D. M. S., 1920. The structure, evolution and origin of the Amphibia — the "orders" Rhachitomi and Stereospondyli. *Phil. Trans. roy. Soc.*, ccix, B, 1.

WATSON, D. M. S., 1926. The evolution and origin of the Amphibia — Croonian Lecture. *Phil. Trans. roy. Soc.*, ccxiv, B, 189.

Abbreviations

ang, angular; bo, basioccipital; cp, cultriform process; den, dentary; ect, ectopterygoid; en, external naris; eo, exoccipital; fa, fenestra adductoria; fm, foramen magnum; fpo, fenestra pteroccipitalis; fpt, fenestra post-temporalis; in, internal naris; ipf, inter-pterygoid fossa; mx, maxillary; oc, occipital condyle; on, otic notch; pal, palatine; pmx, premaxillary; pr, palatal ramus of the pterygoid; ps, parasphenoid; pt, pterygoid; q, quadrate; qj, quadrato-jugal; qr, quadrate ramus of pterygoid; sa, surangular; spl, splenial; sq, squamosal; tab, tabular; v, vomer; x, foramen for the vagus nerve.