4. *The Gorgonopsians,* Aelurognathus microdon *and* Hipposaurus boonstrai, *reconstructed.* By L. D. Boonstra, D.Sc.
(With Plates X–XVI)

In 1934 I described a new species of Gorgonopsian under the name *Aelurognathus microdon.* The specimen consisted of a skull, much of the vertebral column, an excellent pectoral girdle, a good fore-limb with most of the carpus, a good pelvis and most of the hind-limb. (Plate X.)

The fragile nature of the preserved bones has made it impossible to attempt a free mount of the skeleton as preserved. During 1937 Mr. J. Drury, then modeller to the South African Museum, modelled in plaster of paris all the elements preserved, two-thirds natural size. Utilizing our knowledge derived from other gorgonopsians species (see op. cit.) the missing bones were restored.

The resulting mount could be considered fairly accurate and a photograph of it was published in the 'Report of the South African Museum for 1937' and republished in a popular booklet *Miljoene Jare Gelede in die Karoo.* Apparently both these have passed unnoticed by overseas colleagues, and Colbert in his study of *Lycaenops ornatus* does not mention either of these publications.

An augmented set of new photographs of the modelled skeleton (Plates XI–XIII) and of the animal reconstructed 'in the flesh' (Plate XIV), also by Drury, is here presented for comparison with the excellent set of photographs published by Colbert of the remarkable free-mount of *Lycaenops ornatus* as mounted by Charles Lamb after preparation by Jeremiah Walsh.

Aelurognathus microdon has been reconstructed with 29 presacral vertebrae (including the proatlas) measuring 750 mm.; 3 sacrals (90 mm.); 29 caudals (585 mm.). All these measurements are projections. The total projected length of the skeleton is 1,530 mm. and measured over the curvature of the back is 1,650 mm. The shoulder height is 570 mm. and at the hips the height is 368 mm.

The Stance of Aelurognathus

The following remarks should be read in conjunction with the section in Colbert's paper, 'The Skeleton as a Whole', as, after his masterly account, written with the help derived from Schaeffer's movie-film of the alligator, I can here be brief and confine myself to the conditions in *Aelurognathus* without repetition of comparisons with other Therapsids.

Drury's model is mounted showing *Aelurognathus* in the standing position based on views held in 1937, some of which have since been modified necessitating some alterations to the original mount. (Plate XIV.)

The curvature of the spine, as mounted, is probably over-accentuated with the apex of the curve too far forward and I now think that in life the back

would have been much straighter with the curve nearer the sacrum. In this I would be in agreement with Colbert.

The ribs form a complete presacral set. On this point I had in 1937 corrected the erroneous view expressed in 1934 as to the probable absence of lumbar ribs in *Lycaenops*, thereby anticipating Colbert's criticism of 1948 and thus admitting its validity in advance.

The skull hangs downward, dog-fashion, and, in harmony with this, I would now prefer the neck to show a more pronounced downward curve.

The pectoral girdle was preserved in approximately natural articulation and this position is retained with little correction in the model. As mounted *Aelurognathus* has a deep chest—much deeper than *Lycaenops* as shown in Colbert's figure 22. In lateral view the scapula has a slight backward tilt when the animal is in the standing position. When executing a stride, the forward side would show the scapula tilting further backwards with its posterior edge everted, i.e. there would be some rotation of the scapula on its long axis. In anterior view the scapular girdle is V-shaped, but, with the scapular blade somewhat curved, the top edge with the cartilaginous suprascapula would not stand excessively away from the ribs. This I believe to be the natural position of the pectoral girdle, for in this position the glenoid articulation would appear to function properly. When executing a stride the left humerus would, in the forward position, be directed somewhat laterally, and the right humerus be directed backwards close in to the body. To keep both the humeri in articulation the direction in which the glenoids face must be in keeping. This would be achieved by a lateral sigmoidal curvature of the spine accompanied by a slight movement of the scapular girdle as a whole, and also of its two halves individually, in relation to the clavicular girdle. Thus the left half of the scapular girdle would move forwards, sag slightly and rotate on its long axis so that the glenoid is directed more outwards and, at the same time, the right half would concomitantly rotate so that the right glenoid is directed slightly inwards from the backwardly facing position.

In the mount, with the animal in the standing position, i.e. nearly half-way through the stride, the humerus is directed obliquely outwards with the distal end appreciably lower than the proximal end, and the elbow is thus everted but less anteriorly and downwardly directed than would be the case at the commencement of the stride.

The femur, in the 1937 mount, is directed obliquely forward and outward with the distal end much lower than the acetabulum. I now think that the femur was too much everted and that in life the knee would be closer in to the body. This correction has now been made to the mount as shown in the accompanying new photographs—on the right side the femur is brought in closer to the body than the left side. In the stride of the back limbs the spine would be flexed in the lumbar region to complete the sigmoid curve which the movement of the fore-limbs initiated.

Skeleton of *Aelurognathus microdon* laid out in the *in situ* position. About $\frac{1}{6}$ natural size. S.A.M. No. 9344.