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ON A PAREIASAURIAN REPTILE FROM SOUTH AFRICA, *BRADYSAURUS WHAITSI*

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In 1914, Broom figured (Amer. Mus. Journ., XIV, p. 138) the skull and mandible of a pareiasaurian reptile, to which he gave the name, *Pareiasaurus whaitsi*.

In 1915, Broom published the same photograph together with a brief description (Bull. Amer. Mus. Nat. Hist., XXV, Pt. II, p. 109). The only important point in Broom's diagnosis was his statement that there were two horn-like processes on the ventral border of the lower jaw.

In 1929, Houghton and Boonstra accepted Broom's statement of the presence of two angular bosses and, as no other nearly related pareiasaur possessed two similar angular bosses, we created the new genus, *Bradysuchus*.

In 1933, I gave the following account of this specimen. "As I have not had the opportunity of seeing the type specimen in the American Museum of Natural History, this diagnosis had to be based on photographs kindly supplied by that institution and also on information received from Dr. R. Broom.

"The skull of the single specimen of this form is large; the teeth are badly preserved, but there were probably about 16 teeth with few (less than 9) cusps, probably arranged as in the genus *Bradysaurus*; the interorbital width is appreciably less than the 'tabular width'. The posterior border of the 'cheek' carries well-defined bosses. In general the skull is ornamented with pits and rugae. The maxilla and lacrymal are only slightly bulging. Both behind and in front of the orbit the dorsal and lateral surfaces are separated by a strong ridge. Medially the pterygoids are fused far posteriorly to form a long palate. The quadrate is inclined forwards. The brain-case and the supraoccipital pillar appear to be high. The tabular boss is prominent.

"Except for Broom's statement that the lower jaw carries two bosses on the angular, and the fact that the snout appears to be somewhat pointed, this genus is very similar indeed to the forms included in the genus *Bradysaurus*, particularly to *Br. seeleyi*."

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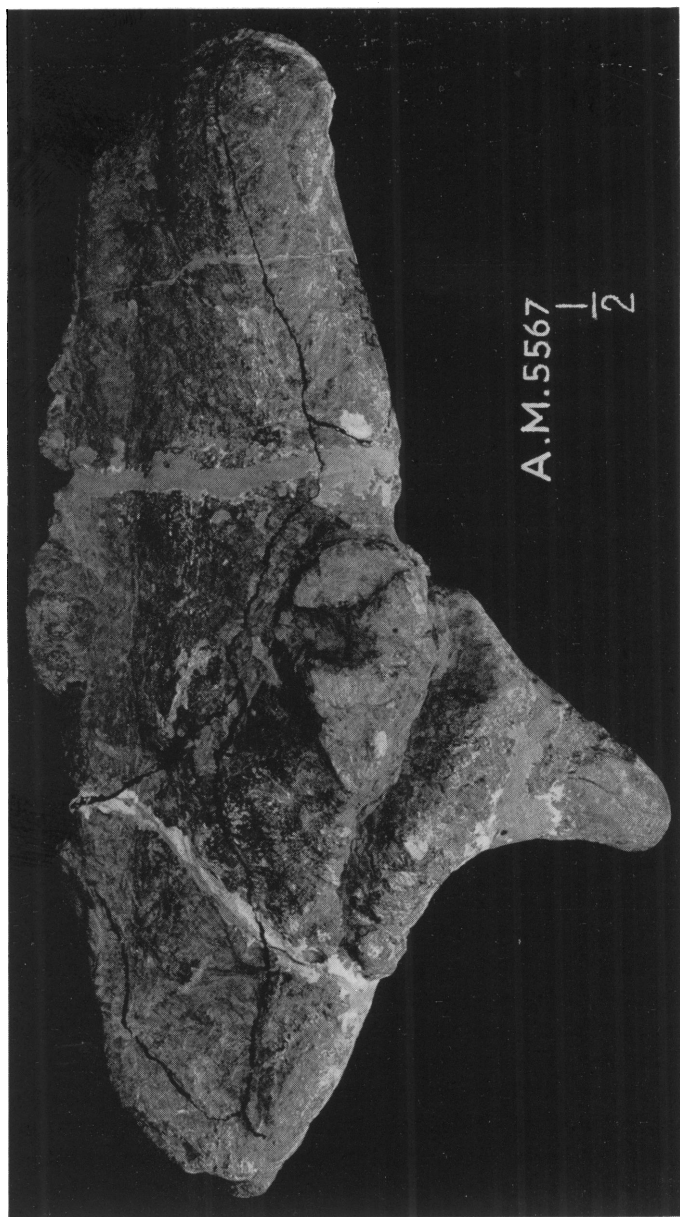


Fig. 1. *Bradysaurus whaiti*. Type. Amer. Mus. No. 5567. Outer view of the right mandible, taken slightly from below to show the angular bosses. $\times \frac{1}{2}$.

I have now had the opportunity of examining the skull and lower jaws and find that my 1933 account is substantially correct—the only error being the acceptance of Broom's statement as to the presence of two normal angular bosses.

I publish here (Fig. 1) a photograph of the outer surface of the right mandible, which clearly shows the true nature of the protuberances on the angular. On the ventral border of the angular there is a large process, shaped roughly like a bovine teat; this process lies in nearly the same position and is of the same nature as in all the larger pareiasaurian species, but differs from that in the smaller species—*Anthodon*, *Koalemasaurus* and *Propappus omocratus*. Immediately above this process and on the level of the lower mandibular border, a deep groove separates the process from the general outer mandibular surface. Immediately above the anterior half of this groove, a large irregular boss is developed. These structures were interpreted by Broom as the normal condition in this pareiasaur, and on them he based his specific diagnosis.

I believe, however, that the development of the upper boss is not normal, but that it really represents a pathological growth. My interpretation is as follows:—the true angular boss is directed more medially than in *Bradysaurus*, *Nochelesaurus*, *Embrithosaurus*, *Dolichopareia*, *Pareiasuchus* and *Pareiasaurus*; this is due to the fact that the boss was fractured during the life of the animal and forced inward; the groove on the outer surface, above the process, represents the open fracture; in the process of healing, proliferation of bony tissues commenced, but, instead of closing up the fracture, produced the irregular mass of bony tissue dorsal to the fracture. I have shown the specimen to Dr. W. Granger, Dr. G. G. Simpson and Mr. E. H. Colbert, and they confirm my interpretation of the pathological nature of the dorsal boss.

Unfortunately, the greater part of the angular is missing on the left mandible.

If this interpretation of the angular bosses of this specimen is accepted, the character on which the genus *Bradysuchus* was created becomes invalid and this skull must be accepted as a representative of the genus *Bradysaurus*.

In 1933, I pointed out that this skull was very similar to that of *Bradysaurus seeleyi*, but that the snout was somewhat more pointed. The accompanying table of the chief skull measurements shows that this specimen, in comparison with *Bradysaurus seeleyi*, has a more pointed snout, a relatively larger and narrower palate, a smaller spread of the "cheeks," as well as a number of other differences in proportions. This

skull thus represents a fourth species of the genus *Bradysaurus*—*Bradysaurus whaitsi*.

CHIEF MEASUREMENTS

| | <i>Bradysaurus whaitsi</i> | <i>Bradysaurus seeleyi</i> |
|---|--------------------------------|--------------------------------|
| Premaxilla to basioccipital..... | 400 mm. | 420 mm. |
| Pineal foramen to premaxilla..... | 260 | 275 |
| Pineal foramen to postparietal..... | 100 | 125 |
| Width across the "cheeks"..... | 395 | 445 |
| Intertabular width..... | 195 | 195 |
| Interorbital width..... | 180 | 195 |
| Premaxilla to front of orbit..... | 165 | 185 |
| Tabular boss to angle of "cheek"..... | 260 | 335 |
| Width across last teeth..... | 250 | 320 |
| Prevomer to interpterygoid vacuity..... | 275 | 250 |
| Interquadrate width..... | 260 | 345 |
| Length of dentigerous border..... | 215 | 205 |
| Number of teeth..... | 16 or 17 | 16 |