

ART. II.—*The Triassic Reptilian Order Thecodontia*; by  
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During the last several years the writer has been much occupied with reptiles of the order Thecodontia (see Nos. 10-20 of the literature list at the end of this paper) and allied groups. In the present paper I am going to give briefly the results as regards classification and relationship. The latest literature is given at the end, and all other papers will be found quoted in these.

The order Thecodontia (R. Owen 1859) consists of three suborders: Pseudosuchia (Zittel 1889), Parasuchia (Huxley 1875) and Pelycosimia (Huene 1911). The animals constituting these three suborders are of very dissimilar form and size, but are anatomically very nearly related. The Pseudosuchia form the radicle stock of the whole group. Both of the other suborders spring from early Pseudosuchians, but have no descendants themselves; the Pseudosuchians give rise probably to all Archosauria.

The Pseudosuchia I propose to classify as follows:

Proterosuchidæ .....	{	<i>Proterosuchus fergusi</i>
		<i>Dyoplax arenaceus</i>
		<i>Erpetosuchus granti</i>
Sphenosuchidæ .....	{	<i>Sphenosuchus acutus</i>
		<i>Ornithosuchus woodwardi</i>
		<i>Ornithosuchus taylori</i>
Ornithosuchidæ .....	{	<i>Saltoposuchus connectens</i>
		<i>Saltoposuchus longipes</i>
		<i>Pedeticossaurus levisiuri</i>
Scleromochlidæ .....	{	<i>Scleromochlus taylori</i>
Euparkeriidæ .....		<i>Euparkeria capensis</i>
		<i>Browniella africana</i>
Aëtosauridæ .....	{	<i>Aëtosaurus ferratus</i>
		<i>Aëtosaurus crassicauda</i>
Stegomosuchidæ .....	{	<i>Stegomosuchus longipes</i>

With regard to the last of these forms, it was first described as *Stegomus longipes* by Emerson and Loomis.<sup>6</sup> Then the writer re-investigated it at Amherst in 1911 and published his results in 1914.<sup>13</sup> The skull now agreed with some of the other Pseudosuchians, but extremities and dermal plates were different. It has a long skull and less than half of its length is preserved. This form can-

not go generically with the older animal described by Marsh as *Stegomus arcuatus* (see also <sup>13</sup>), which I now take for a primitive Parasuchian. Therefore I propose to call the former *Stegomosuchus* (n. gen.) *longipes* and its Pseudosuchian family *Stegomosuchidæ* (n. fam.).

The classification of the Parasuchia is mostly based upon features of the skull. The essential points are: relative length of the base of the skull, relative length of the snout, position of the narial openings, condition of the supratemporal opening, and palate. The posterior part of the skull (beginning in front with the anterior margin of the nares) in different genera has a relative length of from 48 to 33.3 per cent of the whole skull. In some very primitive genera, however, it cannot yet be measured as the tip of the snout is missing in the known specimens.

The Parasuchia may be classified in the following manner:

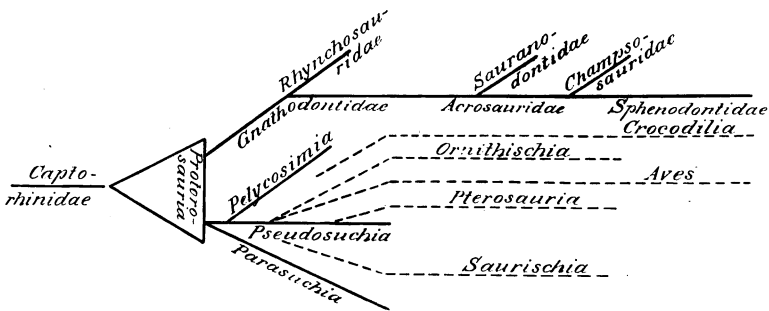
Desmatosuchidæ .....	<i>Desmatosuchus</i>
Stagonolepidæ .....	{ <i>Mesorhinus</i> <i>Stagonolepis</i> ? <i>Stegomus (arcuatus)</i>
Phytosauridæ .....	<i>Phytosaurus</i>
	{ <i>Angistorhinus</i> <i>Palæorhinus</i> <i>Machæroprosopus</i> <i>Rutiodon</i>
Mystriosuchidæ .....	{ ? <i>Episcoposaurus</i> ? <i>Parasuchus</i> <i>Rileyia</i> <i>Angistorhinopsis</i> , n. gen. <i>Mystriosuchus</i>

The *Desmatosuchidæ* and the *Stagonolepidæ* I regard as the most primitive families, of not later than Middle Triassic age. The European ? *Phytosaurus* I take as a persistently primitive form retaining an early stage of Parasuchian evolution in the very long posterior part of the skull and the dermal armature. But the shifting backward of the supratemporal groove and the short base of the skull nevertheless indicate a terminal member of this branch of the Parasuchia. The *Mystriosuchidæ* are a big group which probably in the future will be divided into at least two families, as their feet show very different

structures, but the evidence is not yet complete enough to do this. Further, it might be noted that "*Rutiodon*" *manhattanensis* probably does not belong to this genus but to another.

In a paper still in press<sup>20</sup> an extensive discussion is given of the history of the Parasuchia, and in another a general view of the Thecodontia.

The writer holds<sup>13</sup> that the Pseudosuchia give rise to the Archosauria. The reasons for this need not be repeated here. From forms probably nearly related to the Ornithosuchidæ, the Ornithischia and the Aves probably arose through adaptations and the Pterosauria not very far from them. The Crocodilia also probably came from that part of the stem. But the Saurischia the writer takes to be an offshoot of the very earliest Pseudosuchians in the most ancient Triassic time.



In 1920<sup>17</sup> the writer expressed the opinion that the Rhynchocephalia (with the taxonomic rank of an order) are descendants of the same root as the Thecodontia. If that is true, it would be easy to understand why so many characters are common to both phyla. From this viewpoint, the Gnathodontidæ (*Hovesia*, *Mesosuchus*, *Brachyrhinodon*, *Polysphenodon* and probably *Eifelosaurus*) would form the most primitive family of the Rhynchocephalia. The contemporaneous family Rhynchosauridæ (*Rhynchosaurus*, *Hyperodapedon* and *Stenomtopon*) is little more specialized. The stem of the Rhynchocephalia is represented in later times by the Acrosauridæ in the Upper Jurassic and by the Tertiary and present Sphenodontidæ. In the Upper Jurassic the

Sauranodontidæ, and in the uppermost Cretaceous the Champtosauridæ, branched off from the main line. .

As an Upper Permian Thecodont Broom has described<sup>4</sup> the genus *Youngina*. But this form seems to the writer very nearly related to *Broomia* Watson.<sup>27</sup> Watson has pointed out that *Broomia* is nearly related to *Heleosaurus* and *Heleophilus*. They are also allied with *Adelosaurus*, *Aphelosaurus* and even with the much more specialized *Protorosaurus*, further with "*Eosuchus*" (Watson = *Noteosuchus* Broom). All of these genera should apparently be united in a single inclusive group, the Protorosauria. Watson has pointed out<sup>27</sup> that *Broomia* possibly might be related to the Lower Permian Captorhinidæ, and through these to the more typical Cotylosaurians. If this chain of connections be true, the Protorosauria would form an intermediate link between a group of the primitive Cotylosaurians and the Thecodonts, or, in general, the Archosauria.

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