

Saniwa orsmaelensis, a new varanid
from the Upper Landenien of Orsmael (Brabant).*

by

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Upper Landenien = Soissonian (Sparnacian) = Lower Eocene = Wilcox Group

1. The formation.—The Orsmael Formation (north of Landen, in the Hesbaye) was discovered in 1883 by M. A. Rutot, etc. He called it “basal gravel” or the upper layer of the Landenien stage to the southeast of Orsmael.

2. The vertebrates.—In these gravels are found numerous remains, very fragmentary, of mammals, reptiles, and fishes. A provisional list and a revised list have been published. But in these lists, it was not possible to identify the reptiles with accuracy. One of these can now be identified generically, and Dollo proposes to present here a brief description, under the name of *Saniwa orsmaelensis*.

3. The American forms.—The authors, who, after me, have particularly occupied themselves with the mammals (Chardin) and the fishes (Leriche) of Orsmael, have already made mention of their affinities with American forms.

Mammals

Phenacodus

Sinopa

Didymictis

Paramys

Reptiles

Saniwa

Fishes

Amia

Lepisosteus

4. The genus *Saniwa* was founded in 1870 by Leidy upon excellent material collected in the Middle Eocene (Bridger Formation) of Wyoming.

Nopcsa, Fejervary, and Gilmore have discussed its relationships.

5. The Varanidae.—

1. No trace of zygosphenes—*Varanus*

2. Rudiments of zygosphenes—*Saniwa*

6. The genus *Saniwa* of Orsmael.—We have collected, specifically, in the Upper Landenien of Orsmael:

1. A right upper maxilla

2. Two dorsal vertebrae

3. A left femur.

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7. The genus *Saniwa* at Erquelinnes.—Now then, from the Upper Landenien of Erquelinnes we also possess, four dorsal vertebrae that are identical with those of Orsmael. Consequently the *Saniwa* of Orsmael is found again at Erquelinnes. And, in that manner, the reptiles confirm the correlation already established between the two formations by means of the mammals (Chardin) and fishes (Leriche).

8. The new species of *Saniwa*.—However, if the genus *Saniwa* is found again at Orsmael and at Erquelinnes, our species is different from *Saniwa ensidens* Leidy 1870 from Wyoming.

Which is not amazing, considering the distance and the difference in age of these formations:

1. Wyoming = Middle Eocene (Bridger) .
2. Orsmael & Erquelinnes = Upper Paleocene (Sparnacian)

1. Size.—The Orsmael species is much smaller, because it attains only a little more than one-third of the Wyoming species.

2. Maxilla.—In the Orsmael species, the upper maxilla is less elevated, and not reflected within, the posterior supradentary foramen is enormous (as in *Varanus salvator*) and hardly obliterated, there are four teeth behind that foramen instead of five, the teeth are crowded one against the other instead of there being spaces.

3. Vertebrae.— In the Orsmael species, the spinal process of the dorsal vertebrae are shorter and their anterior border is more depressed posteriorly.

I know therefore that the Orsmael species is a new species, and therefore I will give it the name *Saniwa orsmaelensis* Dollo 1923, as a reminder of the locality of Hesbaye which has already furnished a very important fauna of Paleocene vertebrates.

9. The most ancient varanid.—

By the discovery at Orsmael and Erquelinnes, the genus *Saniwa* maintains its place as the most ancient varanid known, but *Saniwa ensidens* must yield precedence to *Saniwa orsmaelensis* from the Upper Paleocene (Sparnacian) for geological antiquity.

10. Zygosphenes and zygantrum.—1. *Saniwa* raises, once more, the important question of the origin of the significance and of the disparity of the zygosphenes, which already presents itself with respect to mosasaurs. 2. These supplementary articulations of the vertebrae have been duplicated, up to now, in three suborders of lepidosaurs, from among four:

Among ophidians, they exist everywhere. Among lacertillans, we know them, functional or rudimentary, in five families at least: iguanids, teiids, varanids, megalaniids, and dolichosaurids.

With regard to mosasaurs, they have been established in one family, from among three: mosasaurids.

4. Physiologically.—To what sort of movements or of restriction of movement do they correspond? A question to be solved by direct observation on ophidians and iguanids in life compared to other reptiles of the same form and of the same dimensions, but lacking zygosphenes and zygantra.

5. Behaviorally.—The universality of zygosphenes among ophidians makes one think that they represent an adaptation to the serpent-like lifestyle.

But it appears that there is no such thing, because: they are lacking among serpent-like lacertilians—as well among those with vertical undulations (amphisbaenians), among those with lateral undulations like serpents that are protected by an armor of osteoderms (*Anguis*) or that lack it (*Anniella*). Among lepidosaurs they are present in the lizard-like lifestyles (iguanids)—and in the fish-like lifestyle (mosasaurs).

6. Phylogenetically.—At what stage do zygosphenes appear, at what stage do they disappear? Because they do not represent an adaptation to the serpent-like lifestyle, because ophidians certainly descended from lizard-like ancestors, and because zygosphenes are found especially among the lizard-like lepidosaurs,—they have therefore to make their appearance during the lizard-like lifestyle.

Ophidians have, from that moment, simply conserved or transformed them.

Zygosphenes have vanished, not once but twice, in the course of evolution of lepidosaurs.

In the pelagic lifestyle, just as with zygosphenes, there is the tendency toward azygalization: passage from the lizard-like lifestyle to the fish-like lifestyle.

In the terrestrial lifestyle, in fact it is entirely enigmatic, because one cannot see why varanids, which have not left the -like lifestyle, have lost their zygosphenes, which is indisputably demonstrated though the genus *Saniwa*.

11. Conclusions.—Up until now, only one well-defined species of the genus *Saniwa* has been encountered: *Saniwa ensidens* from the Middle Eocene (Bridger) of Wyoming.

We now add a second: *Saniwa orsmaelensis*, from the Upper Paleocene (Sparnacian) of Brabant.

2. These two species can be briefly characterized as follows:

1. Maxillary teeth separated—*S. ensidens* Leidy

2. Maxillary teeth crowded—*S. orsmaelensis* Dollo

3. This discovery strengthens the American affinities, at least concerning the vertebrates, of the fauna from the Upper Landenien of Belgium.

4. *Saniwa orsmaelensis* is currently the oldest known varanid.