[A translation of A. S. Jensen, 1900 [1901], "Om *Ophiopsiseps nasutus* Du Bocage og dens Stilling i Reptiliernes System," *Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjøbenhavn* 2: 317-328. Jensen's original footnotes are repeated here as footnotes, although the numbering scheme is necessarily different. Quotations in square brackets are the original, given in cases of uncertainty or when some technical distinction might be important; italicized text in square brackets represents my own clarifications. I thank M. Kaplan for help with a few words.]

On *Ophiopsiseps nasutus*[*] du Bocage
and its position in the reptilian system

by

***Adolph Severin Jensen*.**

(with Pl. III.)

(Communicated in the meeting of the 14th of April 1899).

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Some time ago a local private collector, namely H. L. Hauschild, called upon me to identify his rather significant collection of reptiles. It appeared at that time that Mr. Hauschild already owned several forms not in the possession of the the university's zoological museum, and he has since received, namely from a correspondent in Australia, rare and partly very interesting types. With a magnanimity so rare in a collector, Mr. Hauschild offered to hand over to the museum any specimen which was missing or only poorly represented in its holdings, and the Musem has made full use this generosity.

Among the most welcome acquisitions may be held up a specimen of the remarkable Australian lizard which Barboza du Bocage described in 1873[1] under the name *Ophioseps nasutus*.

Du Bocage's description of this animal's exterior is detailed, and, except for a few insignificant departures that fall within the possibility of individual variation, its accuracy may be supported point for point on the specimen before us, which derives from Hochkirch in the Colony of Victoria.

Du Bocage's consideration in his paper was essentially to introduce this lizard – and a few others – as new to science. The animal's peculiar exterior, however, was able to elicit the following expression of more general interest to the knowledgable herpetologists: "Il paraît établir un trait d'union nouveau et plus intime entre les Sauriens et les Ophidiens" [*It appears to draw a line of new and more intimate union between the Sauria and the Ophidia*]. One comes to know that, together with more general points of similarity, it is in particular the prominent,

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[*] Synonym of *Aprasia pulchella*, according to Kluge (1974).

[1] Jorn. Sc. Lisb. IV, p. 231. This journal does not exist in our library, but the paper ("Sur quelques Sauriens nouveaux de la Nouvelle-Calédonie et de l'Australie") is reprinted in the Journ. de Zool., by P. Gervais, II, 1873, p. 289.

swollen snout and the peculiar arrangement of the plates of the head which have given the author this impression; but these and other structural features are described with few words and are not illustrated with a single figure.

No specimen has been reported to have come into the hands of science beyond that of which du Bocage has made us aware. Nor has this rare specimen, which is presumably still reposited in Lisbon's museum, been subjected to renewed examination. Later authors, who could have had du Bocage's diagnosis for guidance, are therefore disagreed on where in the system this form should be placed. In Bronn's "Klassen und Ordnungen des Thier-Reichs," Hoffmann has allotted it a place in the fam[ily] *Sep(s)idae* Gray (Vol. 6, Part 3, Reptilien, 2, 1890, p. 1172 & p. 1178). In the new edition of "Catalogue of the Lizards in the British Museum," G. A. Boulenger prefers to let it remain as an addendum to the Lacertilia (vol. III, 1887, p. 436), to which he premises the following remark, which partly constitutes a criticism of du Bocage's aforementioned opinion: "The following genus, if correctly characterized, is probably the type af [sic] a distinct family. The presence of scale-like papillae on the tongue[2] prevents our regarding it as a connecting link between Lizards and Snakes, as suggested by Bocage." In the same place the generic name is corrected to *Ophiopsiseps*.[3]

Because a fortunate occasion has now brought to light a new specimen of this insufficiently known form, I see it as my duty to subject it to a new examination. The subsequent account, however, does not claim to be exhaustive, and it primarily keeps to the external characters; because it was the desire of the owner that the animal, after study, should pass to the museum's collection, it could be viewed as much as possible, and I have therefore had to restrict myself to removing the cranium, which was feasible without damaging the peculiar plate-covering of the head. The realistic figures in the text and on Pl. III are intended to illustrate the most important structural features, so that other researchers could thereby form an independent estimation of the animal's nature; perhaps I have not understood it aright – I cannot exactly pride myself on possessing special knowledge in the realm of herpetology – but even in this case it is hoped that this paper will not be worthless.

Du Bocage's specimen had a total length of 185 mm, of which the tail constituted circa 2/7, or 52 mm. In the present example the distance from the tip of the snout to the vent ["Gat"] is 55 mm; the tail is broken, but if one adds the same relative length as in B.'s specimen, it would have been 21.5 mm long. The total length of my specimen would therefore be 76.5 mm, which is much (nearly 2½ times) smaller than the type specimen. Also, the incomplete ossification of the head skeleton indicates that the new specimen is a young individual.

Fig. 1 and Fig. 2 (on Pl. III) represent the specimen before us, seen from the back and the front, at 2½ times enlargement. The body is very elongate, *trindt* and with a little, fairly flattened ["affladet"] head. The greatest diameter is just behind the head and comes to 2.5 mm; from this location, the body tapers only slightly in girth ["Førhed"] posteriorly, so that the thickness at the cloaca only comes to 2 mm. The part of the tail which remains is not much thinner than the body, and of the type specimen du Bocage says: "[queué] diminuant un peu en diamètre vers l'extrémité, qui est obtuse" [*diminishes a little in diameter toward the terminus, which is obtuse*].

The head (Fig. 3, 4 and 5) is without a definite boundary with respect to the body, and the width is nearly unaltered toward the eyes; from the posterior border of the orbit, it becomes

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[2] "langue plate, squameuse" (Bocage *loc. cit.*)

[3] Blyth had namely previously used the name *Ophi(o)seps* for an entirely different lizard.

slightly narrower toward the anterior end of the snout, which is broadly rounded. The dorsal surface slopes smoothly downward and is flat, but weakly rounded toward the edges; the lateral surfaces are approximately vertical; the ventral surface rises smoothly upward and is shallowly arched. The head thus evinces in front the form of a rather blunted wedge. The cleft of the mouth makes a sharp arc ["en stejl Bue"] on the understide of the head; its foremost border lies a good bit behind the protruding, obliquely ending ["skraat afskaarne"] tip of the snout.

The body is clad in unossified scales, which cover it successively like shingles and are regularly arranged longitudinally and in oblique rows (*quincuncialt*). The simple scales are comparatively large, hexagonal and unkeeled. Just behind the head there are 15 scales around the body, of which the unpaired one lies on the dorsal side, but thereafter only 12, where the median row of scales on the back side disappears and four scales on the belly-side unite 2 and 2 into a pair of broader, band-like ["skinnelignende"] *ventralia*. A little bit in front of the vent, the *ventralia* divide again into 4 rows of smaller scales,[4] and in the immediate vicinity of the vent, an unpaired row of scales is interposed in the middle of the belly surface (see Fig. 6). Around that part of the tail which is preserved, there are 10 rows of scales, of whihc one lies in the middle on the dorsal side and one in the middle on the ventral surface; even the tip of the tail is, according to du Bocage, "recouverte d'une écaille semicirculaire" [*covered by a semicircular scale*].

The part in front of the cloacal cleft presents certain peculiarities, which deserve further discussion. The cleft is covered over by three larger scales, as seen in Fig. 6. To the sides of them is found a weak, node-like projection, over which the skin makes a flap consisting of two pointed scales (*a*); these inconspicuous scale-flaps are to be seen as a rudiment of hind-limbs, and beneath them are small pelvic bones, as we shall see later. Preanal pores are wanting. Du Bocage does not mention whether the presence of scale-flaps by the anus ["anus"]; he might have overlooked them, but there is also the possibility that they were lacking in his specimen; one namely knows of certain limbless lizards (*Dibamus*) in which the hind-limbs are represented in the male by a flap on either side of the vent, whereas the same in the female is lacking;[5] because neither [*none?*] of the specimens was examined for gender (the present one cannot be cut up), this question will have to remain unsettled. – No trace can be detected of forelimbs.

Figures 3, 4 and 5 illustrate the covering of the head. The tip of the snout is clad in a well-developed rostral; it is visible on the upper side of the head (Fig. 4) as a triangular plate, whereupon [*it*] bends around the anterior margin of the snout and, on the underside (Fig. 5), reaches with nearly parallel lateral margins as far as the cleft of the mouth. On each side there is an enormous nasal, extending from the margin of the mouth and upward, until it meets its opposite along a short suture in the middle of the snout's upper surface and behind the nasal [sic *for rostral*?]; from the nostril, which appears as a little pore in the nasal's anterior margin (Fig. 3), there runs a furrow back to the foremost labial and divides the rostral [sic *for nasal?*] incompletely into an upper and a lower plate. The rest of the snout's upper surface is covered by two fronto-nasalia, which on the sides adjoin the foremost supralabial[6] and dorsally forms a suture in continuation of the nasals' ["danne en Sutur i Forlængelse af Nasaliernes"]. The

[4] Oddly, du Bocage has described the scales in this place, the side he indicates, as arranged in 14 longitudinal rows around the middle of the body; if he has made the measurement further anteriorly, his specimen might have 2 more rows of scales than the present one, a difference that anyways would not affect the species identity.

[5] Cf. The Fauna of British India. Reptilia and Brachia by Boulenger, 1890, p. 229, Fig. 65.

[6] The nasals have evidently subsumed ["i sig optaget"] the true, anterior-most supralabial.

forehead is covered by a large frontal, with an obtuse-angled anterior margin, nearly parallel lateral margins and a convex posterior margin; from the eyes it is separated by a narrow supraocular on either side. In front of the eye there is a small preocular and behind the eye a postocular, likewise of trifling extent. Ventrally the eye is bordered by the second and third supralabial; the latter is tall, extends somewhat behind the eye and meets the postocular. A fourth supralabial sits above the recess of the mouth [“Mundvigen”]. In the area of the parietals there are four scales, somewhat larger than the other scales of the neck. The end of the lower jaws is covered by a highly developed mental, and along its margin lie on either side 3 sublabials, of which the foremost one is by far the largest.

The eye is not very large; it is surrounded by a ring [“Kres”] of very small scales, whose distribution is shown in Fig. 3. The lower eyelid has firmly fused to [“er vokset fast til”] the upper one and forms a translucent membrane in front of the eyeball. An ear opening is not visible externally.

The color is not markedly different from the type specimen. The back is red-brown, the sides lighter, the belly gray-yellow. On either side of the body and the tail run 3 dark longitudinal stripes, following the scale rows. The mid-most stripe is broader than the others, [*and*] continues along the sides of the head and meets with its corresponding stripe on the rostral [“og mødes med sin tilsvarende i rostrale”]. Above these stripes there is one more on each side, very distinct on the anterior portion of the body, but thereafter dissolved into short streaks [“Streger”], one for each scale. Finally a dark stripe is seen on the mid-dorsal scale row of the lower back [“Forrygg”] and tail; by an oversight, the first-mentioned stripe is not incorporated in Fig. 1.

If one were to judge this animal by its exterior alone, as it has been described in detail, one could very well be in doubt whether it belongs to the one or to the other of the two divisions of the squamates [“Skælkrybdyrene”]. Briefly articulated, the main points look like this: body very elongate and round [“trindt”], with a little, somewhat depressed head; forelimbs lacking, hind-limbs are visible (only in the male?) as inconspicuous scale-flaps, as a result of which a touch of the appearance of abdominal bands [“til Gengæld et Tilløb til Uddannelse af Bugskinner”]; head covered in large, regular plates; snout broad and tall, extending strongly forward in front of the mouth; the lower eyelid fused with the upper one and forming a transparent membrane in front of the eye; ear drum not visible. To be sure, these features are by no means specific to snakes alone, for, as is known, one encounters the one or the other or even simultaneously several of them in forms whose lizard nature one recognizes at once; but together in a single form they impart to it a completely snake-like character.

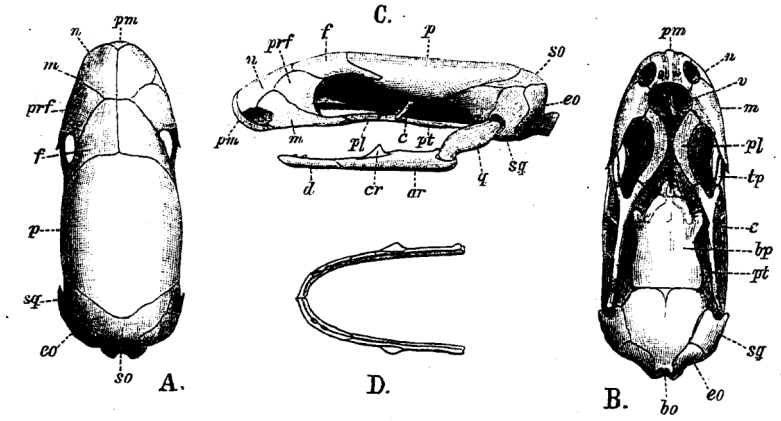
But if we turn to an examination of the tongue, we immediately get a different impression. Fig. 7 shows its structure. In shape it is flat, rather short and with a weak incision in the foremost margin. The upper side is provided with numerous scale-like papillae whose free ends are turned backward. At the base, which is rather deeply incised, there is no sheath into which it can be withdrawn. The tongue is thus built entirely differently than that of snakes, which is smooth, split anteriorly, and can be pulled back into a sheath at the base; on the other hand, it has the same appearance [“Uddannelse”] as in several larger divisions within the division of the lizards.

No further did Du Bocage come in the investigation of this reptile, and one easily grasps the reasons that he saw in *Ophiopsiseps* a new link between lizards and snakes, more profound [“mere inderligt”] than those yet known: the tongue was of a lizard, but the form of a snake. Boulenger on the other hand has another opinion; with the sharp eye of a systematist for the

essential, he places the most weight on the structure of the tongue, which prevents him from seeing *Ophiopsiseps* as an intermediate.

If one is to make a final judgment, meanwhile, knowledge of the main features of the skeleton is necessary. Therefore, in woodcuts ["Træsnittene"] A, B, C and D on [*this*] page, I have rendered the appearance of the skull with the greatest possible accuracy.[7]

As the most important criterion for the decision as to the animal's position within the two divisions of the squamates, it may be emphasized at once that the rami of the lower jaw are tightly connected to one another, not united with an elastic ligament as in snakes; this appears in Fig. D, which presents the lower jaws seen from above. Of other characters, which indicate so clearly the place of *Ophiopsiseps* among the Sauria, it may be mentioned that from the parietal to the pterygoid on either side descends that bone that is so characteristic of many lizards, the so-called pillar-bone or columella (*c* in Fig. B and C).



Skull of *Ophiopsiseps nasutus* (enl[*arged*] 9⅓ times).

A. Seen from above. B. Seen from below. C. Seen from the side.
D. Lower jaws seen from above.

ar.	articulare	*cr.*	coronoideum	*m.*	maxillare	*pm.*	premaxillare	*so.*	supraoccipitale
bo.	basioccipitale	*d.*	dentale	*n.*	nasale	*prf.*	præfrontale	*sq.*	squamosum
bp.	basisphenoideum	*eo.*	exoccipitale	*p.*	parietale	*pt.*	pterygoideum	*tp.*	transversum
c.	columella cranii	*f.*	frontale	*pl.*	palatinum	*q.*	quadratum	*v.*	vomer

To illuminate the remaining structure of the skull, the following shall now be communicated. The foramen magnum is surrounded by the four usual occipital bones; the basioccipitale (*bo*), which is a considerable bone, forms the greatest part of the articular condyle, but the exoccipitals (*eo*) also participate in it; the supraoccipital (*so*) expands strongly to the sides in front of the foramen magnum. The squamosal (*sq*) is firmly wedged between the adjacent bones, whereas the quadrate (*q*) is freely standing ["frit fremtrædende"] and moveable. The basisphenoid (*bp*) forms the floor of the cranium in front of the lower occipital bone and has anteriorly on either side a process against which the long and thin pterygoids (*pt*) abut. The

[7] The study of the diminutive skull has presented great difficulties, which I have not perhaps been entirely able to overcome.

ectopterygoid (*tp*) is inserted between the pterygoids and the maxillae (*m*), and at the foremost end the pterygoids are joined to the palatines (*pl*); in front of these lie the paired vomer (*v*). The premaxilla (*pm*) is unpaired, [*and*] curves far below around the front end of the head and is unusually massive. In front of the orbit is seen a prefrontal (*prf*). The nasals (*n*) are considerable, the frontals (*f*) rather small, the unpaired parietal (*p*) very large, however. The lower jaw consists of a well-developed articular (*ar*), a small coronoid (*cr*) and a short dentary (*d*).

The dentition is very sparing and restricted to small, blunt conical teeth on each dentary, in the region of its tip (see Fig. C). They are directed obliquely backward.

With regard to the remaining skeleton, I can merely report that there is a little pelvis: a transverse ["tværstillet"], V-shaped bone represents the ischia, and at its ends on either side an ilium and a pubis attach; this complex of bones is seen clearly in a series of photographs which Dr. J. Fischer has kindly taken for me using X-rays. Other details these pictures do not show so definitely that I dare enter upon an opinion.

From this information on the skeleton, it follows that *Ophiopsiseps* agrees most closely with the family *Scincidæ*; the absence of scaled forelimbs ["Hudforbeninger"] as well as of zygomatic or temporal arches (postorbital or postfronto-squamosal arches) is an especial impediment to placing *Ophiopsiseps* in this family, of which, however, it may be viewed as a degraded form, in the manner of *Anelytropidæ* and *Dibamidæ*. I lack the necessary comoparative material to be able to decide from which scincid *Ophiopsiseps* descended, but the fused and transparent eyelids could indicate, that *Ablepharus*, which possesses the same peculiarity, is its nearest relative.

The result of our study is that *Ophiopsiseps* – as Boulenger, moreover, has already supposed – may be advanced as the type of a new family, for which the species *O. nasutus* is thus far the sole known representative. In my opinion, this family, which I will call *Ophiopsisepidæ*, is characterized in the following manner:

Tongue flat, split posteriorly, very weakly incised anteriorly, covered with scale-like papillae. Teeth few, only present on the lower jaw. Head without the postorbital bone and postfronto-squamosal arch; premaxilla undivided; columella cranii present. Forelimbs lacking; hind-limbs represented (in the male alone?) by a pair of inconspicuous flaps on the sides of the cloacal opening. Body snake-like, with smooth and unossified scales. Head covered in large, regular plates without ossifications. Eyes covered beneath a transparent eyelid. No ear opening. No preanal pores.

Additionally I view it as not unthinkable, that this family, which from the present standpoint of our knowledge is defensible, will show itself to be unnatural with time; an exhaustive investigation of the diverse group of the scincids can perhaps designate transitions to *Ophiopsiseps* and other forms, transformed on account of peculiar conditions of life, which now appear to us to stand isolated.

If we knew the habits of this lizard, we would doubtlessly thereby achieve an understanding of the structural features, which particularly waked the marvel of its first describer. For my part I imagine that *Ophiopsiseps* roots through the earth ["Jordskorpen"] in order to find larvae or snakes, and that the head's foremost part has acquired the peculiar form and plate-covering for use as a tool with which to dig. The pressure for which the snout part is outfitted has caused the premaxilla and nasal bones to grow in extent; externally, these bones make themselves known by the appearance of the snout, which is "swollen," as du Bocage had it, and projects anteriorly in front of the lower jaws, whereas the jaws in the usual lizard type are

equally long and pointed. Moreover, the scales on the anterior part of the head, where they are subjected to pressure and wear when the snout is used as a shovel, have undergone a union into large plates, which affords better protection than the usual scales or small plates.

If one compares the skull of *Ophiopsiseps* with the typhlopids' or the glauconians' [=leptotyphlopids], one also finds a certain common character in the appearance of the anterior part of the cranium, only that the nasal bones and premaxilla in these small serpentine forms have become even more massively developed in consequence of the completely subterranean life of these animals and their use as an even more efficaceous digging tool. *Ophiopsiseps* hardly goes further than to dig up the soil with the snout; for its eyes, if not especially large, are fully developed sensory tools.

To the snake forms, especially the glauconians, *Ophiopsiseps* presents only a parallel ["Med Ormeslangerne, særlig Glauconierne, frembyder *Ophiopsiseps* endnu en Parallel"], which indicates that it takes similar food to these. The glauconians, like *Ophiopsiseps*, namely possess only very few teeth anteriorly on the dentary and are otherwise edentulous[8]; also *Typhlops* is just as sparely provided with teeth, but they occur in this lineage in the maxilla.

Altogether, the points of similarity which *Ophiopsiseps* presents to the snakes may be seen as analogies ["Analogier"], not as evidence of an especially close relationship. Respecting the construction of the skeleton and the tongue, *Ophiopsiseps* has retained all too primitive traits to be seen as a transitional form between lizards and snakes. *Ophiopsiseps* does not bring these divisions of squamates – such as they are delimited by Alb. Günther[9] – closer to one another than they already are.

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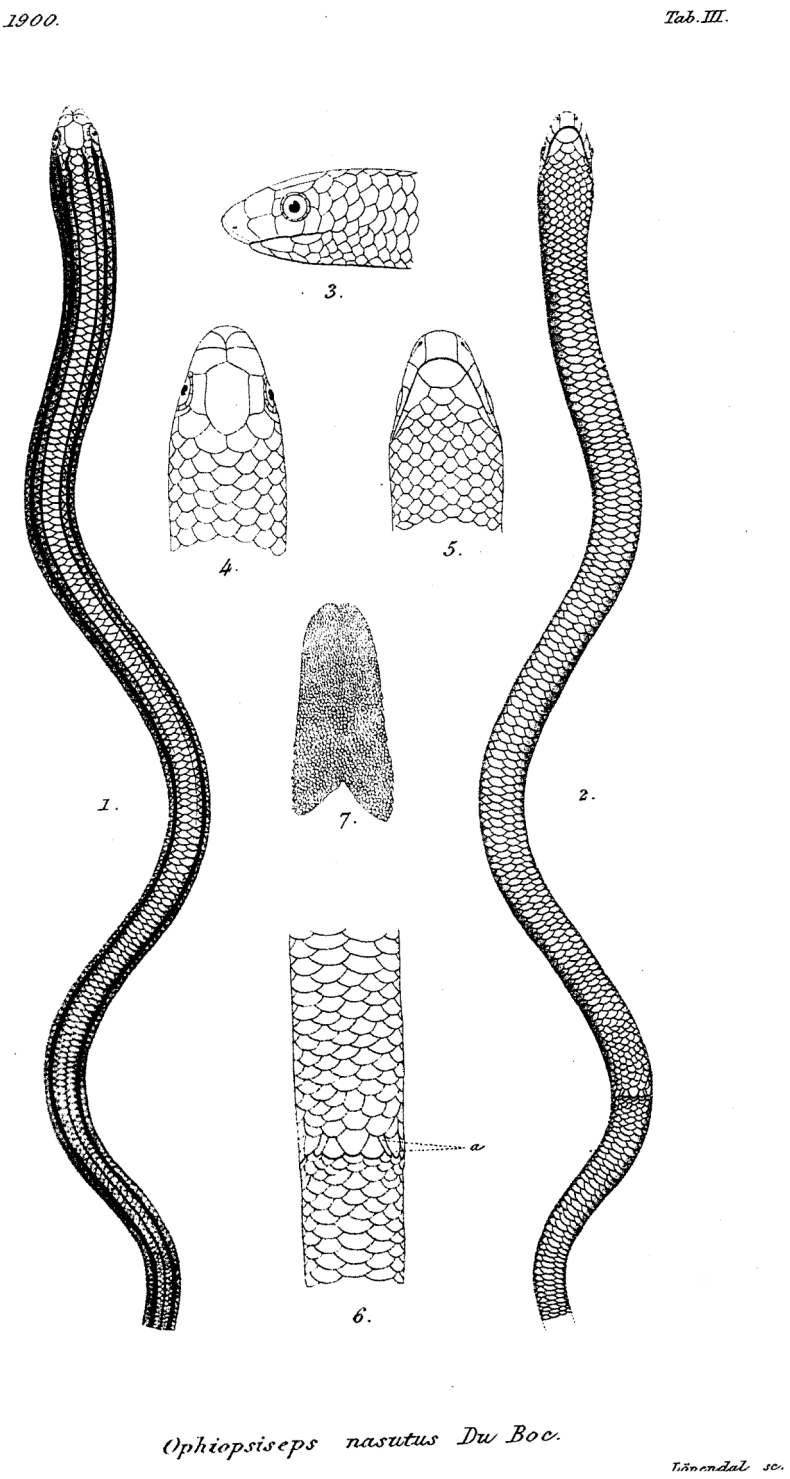
Explanation of Pl. III.

Ophiopsiseps nasutus du Bocage.

Fig. 1. The animal seen from above. 5/2.
– 2. The animal seen from below. 5/2.
– 3. The head seen from the left side. 6/1.
– 4. The head seen from above. 6/1.
– 5. The head seen from below. 6/1.
– 6. The part around the cloaca cleft. a. Rudiment of hindl[imb]. 11/2.
– 7. The tongue seen from above. 12/1.

[8] Cf. the figures in Peters, Reise nach Mossambique, Zool. III, 1882, Pl. XIV A, Fig. 5a & b.
[9] Philosoph. Transact. vol. 157, 1867, p. 625. – Insofar as ["for saa vidt"] Boulenger has modified this stronger distinction, he now views snakes as constituting merely a suborder (*Ophidia*) of the order of scaly reptiles (*Squamata*), equivalent to the suborders of true lizards (*Lacertilia*) and chamaeleons (*Rhiptoglossa*); cf. The Fauna of British India. 1890. Reptilia p. 52.



[Vis-à-vis *the plate, note the lapsus calami explained on p. 4.*]