

mitting him to do so in the character of a Corresponding Member. However inadequate to make a due return for such a distinction, it will always be his pleasure and his ambition to place his poor attainments at the service of the Academy.

Notice of a collection of Reptiles from the Gaboon country, West Africa, recently presented to the Academy of Natural Sciences of Philadelphia, by Dr. Henry A. Ford.

BY EDWARD HALLOWELL, M. D.

Ord. SAURII.

Fam. GECKONES.

HEMIDACTYLUS ANGULATUS, Hallowell. Proc. Acad. N. S., vol. vi. p. 63. Six specimens.

Fam. LACERTIANS.

(Sub-fam. Autosaures cælodontes, D. & B.)

TACHYDROMUS FORDII, nob.

Char. A small plate between the fronto-nasal; back with six complete carinæ and two incomplete; abdomen strongly carinated; femoral pores oblong, oval, numerous; color bronze above with metallic reflections, greenish below.

Description. Nostril in a single plate, the naso-rostral; immediately behind it a small plate, the naso-frenal; two frenals, an anterior and posterior, the latter much the larger of the two; one freno-orbital on the right side, two on the left; that on the right oblong, quadrilateral; rostral broad, pentangular, in contact with the naso-rostral; internasal large, in contact posteriorly with the fronto-nasal and the small intermediate plate between them; laterally with the naso-rostral and the first frenal; the frontal plate is long, hexagonal, slightly excavated at its sides; the supra-orbital consists of two plates as in *Lacerta*; there are two fronto-parietals, two large parietals, an inter-parietal somewhat urceolate in shape, and a small occipital; six plates margin the upper jaw, the fifth, which is beneath the eye, by far the largest; four plates on each side of the jaw beneath the infra-labials, the three first quadrangular, the last less distinctly so, but much larger than the others; auricular openings oval; no palatine teeth; posterior maxillary teeth tricuspid, the anterior conical; tongue slender, bifid in front, chevronée; body slender, covered with large hexagonal plates upon the back, each with a carina running along the middle, constituting six longitudinal complete rows; besides these there are two others, which terminate about half way down the body. Upon the abdomen six rows of plates strongly carinated; flanks covered with small plates; extremities strongly carinated; fourth finger and toe the longest; from 11 to 13 oblong femoral pores on each side; tail very long, verticillate, strongly carinated both above and below. A large scale in front of the anus with two small ones externally.

Coloration. Head black above; sides bluish, body bronze with metallic reflections; tail and extremities bronze above; throat, abdomen, under part of extremities and tail greenish, mingled with yellow.

Dimensions. Length of head 6 lines; greatest breadth 3; length of neck and body to vent 1 inch 5 lines; tail 2 inch 11 lines; (mutilated) of arm 3; of forearm 3; of head to extremity of longest finger 4 lines, of thigh 4 lines; of leg 4; of sole to extremity of longest toe 6.

Habitat. Gaboon contry, W. Africa, one specimen in Mus. Acad. presented by Dr. Henry A. Ford.

Gen. Remarks. This is the first time that the genus *Tachydromus* has been recognized to exist on the African continent, *sexlineatus* being found in China, Cochin China and Java; and *Japonicus* in Japan. This genus is also found in

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the Loo Choo islands. The African genus differs in no respect from the Asiatic, except in the presence of the small plate imbedded between the inter-nasal and frontal and the two fronto-nasals.

Fam. *CHALCIDIANS* or *CYCLOSAURIANS*.

(Sub-fam. *Ptychopleuri*.)

There are two specimens of *Gerrhosaurus* in the collection of Dr. Ford, one much smaller than the other and probably the young. The larger one resembles in its coloration *Gerrhosaurus Bibronii*, of S. Africa, but the measurements differ both from those of that species and of *typicus*.

	<i>Inches.</i>	<i>Lines.</i>
Length from nose to base of tail.....	3	6
Of tail.....	7	9
From nose to meatus externus.....		9
From nose to base of anterior extremities.....	1	4
Distance between fore and hinder extremities.....	2	

These dimensions more nearly correspond with those of *flavicularis*, but in that there are *ten* rows of ventral scutes.

G. validus is a much larger species, and *sepiformis* and *subtessellatus* do not in the least resemble it, (vide Smith, *Illustrations of the Zoology of S. Africa*.) We therefore consider these two specimens as belonging to a new and undescribed species, with the following characters:—

GERRHOSAURUS NIGRO-LINEATUS.

Char. Eight rows of ventral scutes; six superior labials; body slender; tail long, two yellowish vittæ, one on each side of the back, commencing at the occiput and lost upon the tail; within each vitta a black band running the whole length of the back; the interspace marked with black spots assuming more or less the form of longitudinal lines well marked upon the tail; flanks, in the young white spotted, under parts yellowish.

Description. The body is slender, covered above and upon the sides with twenty-five longitudinal rows of carinated scales; the interspace between these and the ventral scutes occupied with six rows of granulations; tail long and tapering, cyclo-tetragonal at base; the rostral plate presents an acute angle above, and articulates on either side with the first labial and the naso-rostral; the nostril opens between three plates, the naso-rostral, the naso-frenal and the first labial; the naso-rostral are well developed, in contact, with a convex anterior margin, the internal quite short, the posterior concave, where they articulate with the inter-nasal; the naso-frenal are in contact inferiorly with the first supra-labial, above with the inter-nasal; the inter-nasal is a large plate, more extended laterally than longitudinally, its inferior and lateral margin in contact with the first frenal; the fronto-nasals are two in number and in contact; the frontal is hexagonal, longer than broad, more narrow posteriorly, its lateral margins excavated; there are two fronto-parietals, a little larger than the fronto-nasals, and like them pentagonal; there are two large parietals, with a small inter-parietal, broader anteriorly; the second frenal is much larger than the first; there are two small freno-orbitars, the first longer than the second; there are four supra-orbitars, with a longitudinal row of as many plates beneath them, and there are six supra-labials; the posterior geneials are considerably larger than the anterior; the mental is broader than long; there are eight longitudinal rows of quadrangular ventral scutes, more or less striated, and fourteen anal pores on each side; the preanal scales are five in number, the lateral ones the most developed; scales upon outer surface of thighs, legs and forearms strongly carinated; there are thirteen transverse rows of scales between the occiput and the anterior extremity; the total number between the occiput and the posterior extremity fifty-one; one hundred and eleven verticillæ upon the tail; auricular opening triangular, with a large scale in front; eight scales upon right temple, nine on left, in three rows, the posterior of the middle row the largest.

1857.]

Coloration. Head olive colored above, spotted with black; two yellow stripes, one on each side of the back commencing at the occiput, and lost nearly midway upon the tail, bordered with a band of black internally; interspace olive, black spotted, having the appearance of lines upon the tail; extremities olive colored above, posterior part of thighs yellow spotted; abdomen cœrulean blue; the remainder of the under surface yellowish. *Young* white spotted upon the sides upon a bluish ground, and a double row of white spots along the back between the black colored bands; sides of tail white or yellow spotted.

Dimensions. Length of head 10 lines; greatest breadth 6; of head and body to vent 2 inch. 10 lines. Total length including tail 11 inch. 5 lines.

Habitat. Gaboon. Two specimens, adult and young.

(Sub-fam. Cyclosaures glyptodermes, D. & B.)

PHRACTOGONUS GALEATUS, nob.

Proceed. Acad. N. S., vol. vi. p. 62. The length of this specimen is 1 ft. 2½ inches; of tail 1 inch 4 lines. A very singular looking animal. The contrast between the narrow mosaic looking quadrangular scutes upon the back, and the two longitudinal rows of broader ones is quite striking; the tail is short and rounded at its posterior extremity, which is protected by a circular mamelonated shield. The figure of the plate in the wood-cut of the nostrils in the volume of the Proceedings referred to, does not appear to be accurate, this plate being more extended longitudinally, reaching to the extreme end of the rostral, where it is quite narrow terminating almost in a point. The single lateral pore on each side of the preanal scutes is very distinct and is no doubt a constant character. This species appears to be allied to the *Cephalopeltis Cuvierii* of Müller, which has two plates upon the top of the head, (*Zeitschrift für Physiologie*, von F. Tiedemann, G. R. & L. C. Treviranus, Vierter Band. Erstes Heft. 1831, Taf. xxii, fig. 5, *a, b, c.* Dr. Smith in speaking of *Monopeltis capensis* observes, that although I have put forward this species as a type of the group, I doubt if its more extended observation will justify the proceeding. It may prove to be only a very aberrant species of *Lepidosternon*, and if so *Cephalopeltis Cuvieri*, Müller, will be a species of the same group, only a degree less removed from the typical form. The most marked difference between the species in question and *Lepidosternon macrocephalum*, Wagl., consists in the covering of the head; in the latter it is formed of many plates, in *Cephalopeltis* of two only, and in *Monopeltis* of one. (Illustrations of S. African Zoology, Reptiles, pl. xvii.)

Fam. SCINCOIDIANS.

EUPREPES BLANDINGII, nob.

Proc. Acad. N. S., vol. ii. p. 58. Six specimens, (four adult,) (one immature,) (one quite young.)

In a specimen from Liberia, the white stripe extends about half way along the side of the body, but it is more extended on the opposite side, and in all the specimens from the Gaboon there are two white vittæ on each side, the lower one commencing in front of the eye and terminating at the posterior extremity; the upper one beginning at the occiput and reaching as far as the root of the tail, the lower band the broader of the two; four narrow black lines along the back, two on each side, becoming lost upon the root of the tail where they assume more the form of spots; the row of white spots passing along the side of the neck and body as far as the extremity of the tail mentioned in the former description, is no doubt identical with the upper lateral vitta; under surface immaculate. I do not observe that the inter-parietal is larger than either of the fronto-parietals in any of the specimens; in the one from Liberia it is longer. In all the Gaboon specimens the fronto-nasal are separate; in the one from Liberia they are almost in contact.

EUPREPES FRENATUS, nob.

Sp. Char. Fronto-nasals in contact; frenals remarkable for their great de-
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velopment, especially the second frenal; scales upon back broader than in *Blandingii*; color olive above, black spotted without any distinct dorsal or lateral vittæ; abdomen greenish with a tinge of yellow, immaculate; the green much more marked upon the sides; 33 rows of scales, tricarinate upon back and sides; total length 5 inch. 4 lines; from extremity of snout to anterior extremity 1 inch; between anterior and posterior extremities 1 inch 4 lines; of tail 3 inches; (renewed) of anterior extremity to extremity of longest finger 10 lines; of posterior to extremity of longest toe 1 inch 1 line.

Habitat. Liberia. One specimen presented by Dr. William Blanding, perhaps a variety of *Blandingii*.

EUPREPES ALBILABRIS, nob.

Char. Supero-nasals not contiguous, inter-nasal much broader than long, fronto-nasals in contact, more extended laterally than longitudinally; fronto-parietal very narrow anteriorly; scales 3-keeled; color olive, black spotted, a black irregular band passing from behind the eye along the sides, margined inferiorly with white; upper lip white; under parts bluish mingled with green upon the abdomen; chin yellowish.

Description. This specimen is much smaller than any of those of *Blandingii*, and differs from them all, even the young, in a marked manner, both in the shape of the cephalic plates and in the coloration. The rostral plate presents nothing remarkable, the supero-nasals are narrow, situated obliquely, a short distance apart; the inter-nasal is hexagonal, much broader than long, with an obtuse angle posteriorly, its lateral margins quite short; the fronto-nasal are closely in contact (separate in *Blandingii*), and are shorter and more extended transversely than in the latter species; the frontal is quite narrow posteriorly, presenting an obtuse angle in front; the fronto-parietal differ much in appearance from those of *Blandingii*, their anterior extremities being very narrow and their lateral margin longer; the inter-parietal is quite slender posteriorly, with a moderately acute angle posteriorly; there are eight supra-labials, the sixth long and quadrangular (fifth in *Blandingii*), and situated immediately beneath the eye; twelve transverse rows upon the back counting from one white lateral margin to that on the opposite side.

Coloration. Bronze or olive above, with irregular black spots; a black band from posterior margin of orbit, broad and well defined upon temples, more narrow upon sides where it appears to be lost near the middle, with an irregular margin superiorly, bordered with white inferiorly; upper lips white; under parts bluish mingled with green upon the abdomen; chin with a tinge of orange.

Dimensions. Length of head 9 lines; greatest breadth 3; length from head to vent $13\frac{1}{2}$ lines; between anterior and posterior extremities $8\frac{1}{2}$; from snout to anterior extremity $6\frac{1}{2}$; arm 2 lines; forearm 2; palm to tip of longest finger 3; of thigh $2\frac{1}{2}$; of leg 2; of sole to extremity of longest finger, $4\frac{1}{4}$ lines, (tail mutilated.)

Habitat. Gaboon. One individual presented by Ford.

A single specimen of a Scincoid described in Vol. VI. of the Proceedings of the Academy, p. 64, under the name *Acontias elegans*, but much larger, and which evidently belongs to a genus distinct from *Acontias*. This specimen measures 8 inches and 8 lines in extent, the tail 2 inches 10 lines, circumference 1 inch 3 lines. There are twenty-two transverse rows of scales, and one hundred and seventy-three longitudinal, including fifty-six upon the tail; there are no eyelids, but the eye may be distinguished situated near the middle of a scale at its anterior margin. The Typhline of Cuvier, from the Cape of Good Hope, the only species of Typhline described by Duméril and Bibron and by Mr. Gray, is represented by the former to be without other cephalic plates than that which encloses the whole face, as in a sort of case, (etui.) Mr. Gray, however, mentions 1857].

an internasal, a frontal, an interparietal and two parietals, but in both descriptions the preanal scale is represented as single.

The scales upon the head, as given by Mr. Gray, are very different from those of the genus under consideration, the characters of which approach nearest perhaps to those of *Feylinia*, Gray, Cat. Lizards of British Museum, p. 129, in which the preanal scales are numerous. *Feylinia* is characterized as having a moderate rostral, no eyes, with scales in front of the vent like those of the belly, and a tapering tail, a description which does not represent our animal. The scales upon the back appear to be somewhat larger than those upon the sides; those upon the abdomen and under part of tail are very finely striated, upon the back also, but the striations are less distinct.

Should no generic name have been previously given to this Scincoid, we would propose that of *Sphenorhina*.

SPHENORHINA ELEGANS, nob.

Syn. *Acontias elegans*, Hallowell, Proceed. A. N. S. vol. vi., p. 616.

Char. Head rather small, depressed; snout enclosed in a single scale; nostrils lateral, with a semicircular slit reaching to the posterior margin of the rostral; three large plates upon the top of the head in a longitudinal line; the first, which is heptagonal, situated immediately behind two small plates posterior to the rostral; the second regularly hexagonal; the third presenting three distinct margins in front, the posterior margin rounded; eyes concealed by a scale, but quite visible; body cylindrical, somewhat depressed, covered with twenty-two transverse and one hundred and seventy-three longitudinal rows of smooth scales, including fifty-six upon the tail; the latter of moderate length, of nearly equal thickness throughout, except at the posterior extremity, where it is conical; four scales in front of the anus, smaller than those which cover the rest of the body. Total length 9 inches 7 lines; tail $2\frac{3}{4}$ inches; circumference 13 lines.

Habitat. Gaboon. Two specimens in Mus. Acad. N. S. presented by Dr. H. Ford.

Order OPHIDII.

Fam. SYNCRATERIANS. (Innocui.)

LEPTOPHIS SMARAGDINUS, Duméril et Bibron.

Syn. *Dendrophis smaragdina*, Boie. MS. Schlegel, Essai sur la Physiognomie des Serpens, La Haye, 1837, p. 237, Id. Traill's Translation, p. 156, 1843.

Ab. scut. 158; a double preanal; sub-caud. 135, in Duméril and Bibron's specimen 154; 15 rows of carinated scales; sides of abdomen very angular. Total length 2 feet 6 lines; of tail 9 inches 4 lines.

One specimen, Gaboon; presented by Dr. H. A. Ford.

Gen. Remarks. *Dendrophis Chenonii*, Reinhardt, appears to be a different serpent; the anterior frontals in the figure of that species (Reinhardt, nye Slangenarter, fig. 13,)* are quite small; in *L. smaragdinus* their internal margin is much larger than that of the posterior, the reverse is the case in *D. Chenonii*. *L. smaragdinus* is now one of the best determined species first described in print, and very accurately, by Prof. Schlegel.

Among the specimens sent by Dr. Ford is an arboricole serpent, having a general resemblance to *Leptophis smaragdinus*, but which, on a careful examination, differs so much in its characters from those of *Leptophis*, that we do not hesitate to make it a distinct genus, and for the following reasons: The head is more robust and not so long, the anterior frontals are smaller comparatively, the vertical is shorter, as are also the occipitals; indeed, all the plates upon the

* Beskrivelse Af Nogle nye Slangenarter ved J. Th. Reinhardt. Kjobenhavn. Trykt I. Bianco Lunos Bogtrykkeri. 1843.

top of the head, although having a general resemblance, differ in fact from the corresponding plates of *smaragdinus*; the nostril, instead of being between two nasal plates, (the naso-rostral and naso-frenal,) is situated between the naso-rostral and the frenal, which, however, may be accidental; the frenal plate is considerably less narrow; the eyes, instead of being oval, as in *smaragdinus*, are round or subround, and much more prominent; the temporal plates are five in number, in two longitudinal rows, three in the inferior and two above; in *smaragdinus* there are four, two below and two above; in another, younger specimen, four on one side, three on the other, but differently arranged; the number of superior labials is the same in each, viz., nine, the fifth and sixth immediately beneath the eye; but the shape of these plates differs in the two animals, no two being alike; the posterior and superior angle of the sixth in *smaragdinus* is much more prolonged upward and backward, and the seventh is much larger; the middle labial and the accessory labials differ in form, but the difference most to be remarked is between the posterior genaeals, which in *smaragdinus* are very long and comparatively slender; the scales in the one snake are long, narrow, and strongly carinated, in the other perfectly smooth, much less narrow and quadrangular, and there is a difference of three and a half inches in the length of the tail. It may be interesting to compare this serpent with *Herpetodryas æstivus* and *Dryophylax viridissimus*, two slender green serpents, the one from Surinam, the other from the United States. *Herpetodryas æstivus* and *Chlorophis heterodermus* are of nearly the same length, there being a difference of about 7 lines; but the difference between the tails is greater, that of *æstivus* being, in the specimen examined, 1 inch $8\frac{1}{2}$ lines longer; but how marked is the difference in the shape of the frontal plate; the nostrils in *Herpetodryas* open in a single plate, and although in both there are but one preocular and two postoculars, they are altogether different in form; in the one the eye rests upon the fifth and sixth supra-labials, in the other (*Herpetodryas*) upon the fourth and fifth. The arrangement and number of the temporal plates is different; in *Dryophylax*, which is a much stouter and longer serpent, the frontal plate differs from either of the others, the prefrontals pass down upon the side of the head as far as the supra-labials, the pre- and postoculars, although the same in number, still differ in shape, the position of the nostril is different, being between two plates, the eye rests on the fourth and fifth supra-labial plates, and the size of the eye differs, being smallest in *Herpetodryas*, largest in *Chlorophis*. If we compare the supra-labials in the three we shall find them each of a peculiar type; in *Dryophylax* the sixth and seventh being remarkable for their large size. The scales upon the body are also different. If we examine the teeth comparatively, we shall find that in *Chlorophis* the maxillaries, which are smooth, present a marked curvature anteriorly, the points inclining backward, the three posterior longer than the other, the two last more especially, which are also much more robust; neither of the posterior teeth appear to be grooved. In *Herpetodryas* the teeth are smooth and resemble each other, (*Aglyphodontes isodontiensis*, D. and B.) In *Dryophylax* the posterior maxillary teeth are longer and channelled, (*Opisthophis dipsadien*, D. and B.) *Dryophylax* is a South American genus, exclusively, so far as is known, but *Herpetodryas*, according to Duméril and Bibron, exists not only in America, but in Madagascar and the Isle of France. The following are the generic characters of *Chlorophis*:

Maxillary teeth recurved, the posterior ones less than the anterior, the three last larger than the others, the two hinder ones especially, which are not channelled; nostrils between anterior nasal, and frenal; frenal remarkable for its large size; one antocular, two postoculars; nine superior labials, the eye resting on the 5th and 6th, and a very small part of the fourth; three anterior supra-labials small, the three posterior large; rostral rather high; two internasals and two prefrontals, vertical, pentagonal, much broader anteriorly, longer than broad, excavated laterally, presenting an acute angle behind; occipitals pentagonal, well developed; supra-oculars not projecting; eyes round and quite prominent; scales smooth, in 15 rows, quadrangular, about twice as long as broad anteriorly, broader posteriorly, the inferior row the largest; a single pre-1857.]

anal scute; tail slender and tapering to a point, of moderate length, not half the length of neck and body.

CHLOROPHIS HETERODERMUS, nob.

Sp. Char. Color green; 15 rows of scales, many of the scales marked with white, more especially upon their external border, sometimes both the internal and external. Total length 1 foot $9\frac{1}{4}$ inches; abdom. sc. 157, sub-caud. 83.

Dimensions. Length of head 7 lines; breadth 4; of tail 5 inches 9 lines.

Habitat. Gaboon. One specimen presented by Dr. Henry A. Ford.

Gen. Remarks. We at first supposed that this serpent might be identical with the *Dendrophis Chenonii*, Reinhardt, from Guinea, but the nasal in that species is between two nasal plates, and according to Duméril and Bibron, the preanal scute is double. They also state that were it not for the difference in the teeth, they would consider it a true *Dendrophis*; now *Dendrophis* has a much larger row of scales along the middle line of the back, which *Chlorophis* has not. Duméril and Bibron also mention that in *Leptophis Chenonii* there are 154 urostega—M. Reinhardt, 108—126.

Fam. *LYCODONTIANS*.

Among the serpents in the collection of Dr. Ford, are three different genera of Lycodontians, three of different ages belonging to the genus *Boëdon*, and two of undescribed genera. We propose to give an account of them, and also a *Boëdon* presented some time ago by Dr. Burtt, U. S. Navy, from the Isle de Los.

The family of Lycodontians is characterized by Duméril and Bibron as "serpents with smooth teeth, or unchannelled, always unequal, the anterior longer than those which follow, distributed in numerous series upon the jaws, and without vacant spaces between them. Body cylindrical; head larger behind than the neck," the essential characters being the existence of smooth teeth (*Aglyphodonts*) "of unequal force and length in both jaws." *Erpet. Gen. tom. vii. p. 357.* The Lycodontians are divided into four tribes: 1, *Boëdonians*; 2, *Lycodontians*; 3, *Eugnathians*; 4, *Pareasians*. In the *Boëdonians* the palatine teeth are unequal, the submaxillary teeth separated; *those above not separated.* In the *Lycodontians* these teeth are *distinct, isolated*; the anterior pterygo-palatine teeth not longer than those which follow; the submaxillary teeth unequal. In the *Eugnathians* the submaxillary teeth are not separated by a free space, the pterygo-palatine equal; and in the *Pareasians*, as in the *Eugnathians*, the mandibular teeth are much longer in front than those which succeed them, but in the former the anterior pterygo-palatine teeth are much longer.

The essential characters of the sub-genus *Boëdon*, belonging to the first tribe *Boëdonians*, and the family *Lycodontians*, the ninth of the *Aglyphodont Ophidians*, in Duméril and Bibron's arrangement, consist in having "the four or five superior maxillary teeth longer by half than those which follow, and which are nearly equal among themselves and regularly spaced; then a free interval; the four or five first palatine teeth longer; the five first inferior maxillaries longer and more curved."

BOËDON QUADRIVITTATUM, nob.

Char. Two white vittæ bordered with fuscous on each side of the head, the inferior commencing behind the eye and extending as far as the angle of the jaw, the superior passing over the eye and upon the temple, expanded inwardly upon the occiput, forming two large white irregular blotches, one on each side, uniting with its fellow on the opposite side, upon the internasals and prefrontals, posteriorly extending about $1\frac{1}{4}$ inch upon the neck, where it is lost. Body and tail uniformly brown above, white beneath with dark colored maculations. 27 rows of scales; a single preanal scute. Total length 2 feet $8\frac{3}{4}$ inches.

Description. The head is of moderate size, depressed, covered above with nine plates; the internasals are considerably smaller than the prefrontals; the latter are in contact laterally and inferiorly with the frenal, posteriorly with the frontal, and by their postero-external margin, which is incurvated, with the

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superior antocular; the frontal is long, presenting a nearly straight margin anteriorly, its sides scarcely incurvated, its posterior angle acute, passing a considerable distance beyond the supra-oculars; the supra-oculars are five-sided; they do not project over the eye; the nostrils are between two plates, their superior margin in contact with the internasal, the posterior margin of the second with the frenal, its postero-superior with the prefrontals; the frenal is oblong, more or less quadrilateral, or rather pentangular, about twice as long as broad; there is one large antocular of singular shape, five-sided, larger above, the surface by which it is in contact with the prefrontal, convex, the postero-superior by which it is in contact with the supra-ocular and the frontal concave, as well as the anterior and posterior margins; there are two post-oculars, the first somewhat quadrangular in shape, the inferior five-sided; the rostral is broader than high, its latero-superior margins excavated, with an acute angle above, its inferior margin also excavated, its lateral margins rounded; there are eight supra-labials, no two of them are precisely alike in shape; the second is higher than the first, and is quite narrow above; the third is quite large, four-sided, about as broad as long, the fourth smaller than the third, the fifth five-sided, the eye resting upon the upper margin of the fourth and fifth, which are excavated to receive it; the sixth also pentangular, but higher than the fifth; the seventh also pentangular, but in a different manner, and broader than the last; the eighth also pentangular, but broader than either the sixth or the seventh, with a more obtuse angle above, and its summit lower than that of either of the two last mentioned plates; the middle labial is long, having an acute angle posteriorly, broad in front; the accessory labials are also long, and pointed behind, the anterior geneials longer and more developed than the posterior; there are seven inferior labials; two parallel rows of large plates upon the temples; superior maxillary teeth of nearly equal size and moderately curved, except the five anterior, which are longer, more robust, and more strongly incurvated; anterior inferior maxillary teeth longer than the others; palatine and pterygoid teeth in two long rows, not straight, but slightly curved anteriorly, presenting an ovoid interspace posteriorly; tongue enclosed in a sheath, with two slender pointed filaments in front; neck not so thick as posterior part of head; body moderately robust, becoming more slender toward the tail, which is of moderate length and tapering, but not pointed at its extremity; the flanks present no remarkable angularity; the scales are smooth, lanceolate and narrow anteriorly, broader posteriorly; there are 27 rows at the middle of the body, 25 near the neck, 20 near the tail, upon which there are from 6 to 15 rows.

Abdom. scut. 235; 1 single preanal; 58 sub-caud. urostega, which are in a double row.

Coloration. Uniformly brown above upon the neck, body and tail, with two vittæ on each side of the head, as above described; chin, throat and neck white; abdomen and under part of tail white, with dark colored maculæ.

Dimensions. Length of head 1 inch; greatest breadth 7 lines; length of body 2 feet 2 inches 10 lines; length of tail $4\frac{3}{4}$ inches. Total length 2 feet 8 inches 7 lines; circumference 1 inch $10\frac{1}{2}$ lines.

Habitat. Isle de Los. One specimen presented by Dr. Burt, U. S. N.

We have in the collection of Dr. Ford three specimens of a serpent formerly described in the Proceedings under the name *Cælopeltis virgata*, but which is a species of *Boedon*, and although allied to the species above described, differs from it in the following particulars: The largest of the specimens is considerably smaller than *quadrivittatum*; the head is shorter and more obtuse anteriorly; the temples more protuberant; the frontal is more narrow anteriorly, less acute posteriorly; the superior labials resemble those of *quadrivittatum* sufficiently, but there is a difference in the form of the frenal and antocular plate; there is also but a single row of temporals, with a single large one situated between the parietal and the three plates constituting this row; 1857.]

the shape of the scales does not differ materially, but the number is less, there being but 23 rows near the middle of the body, from four to 11 rows upon the tail. The two lateral stripes on each side of the head are of a yellow color and more narrow, and meet at the rostral, the interspace forming an acute angle, whereas in *quadrivittatum* they meet upon the internasal and prefrontals, displaying a quadrangular interspace.

BOÆDON QUADRIVIRGATUM, nob.

Syn. *Cælopettis virgata*, Proceed. A. N. S. Vol. vii. (1854) p. 98.

Sp. Char. Head short and thick, more narrow in younger specimens; snout obtuse; frontal plate of moderate breadth anteriorly, posterior angle somewhat obtuse; 23 rows of scales; two narrow yellow lines on each side of the head, the superior commencing at the rostral, passing over the eye and upon the temple, extending about three lines upon the side of the neck; the inferior commencing at the middle of the posterior margin of the orbit, passing obliquely over the inferior post-ocular, the three last superior labials, and crossing the angle of the mouth, extends in an oblique manner a distance of three lines, and terminates at the line of junction between the neck and throat, at a distance of two lines from the superior lateral stripe.

Color uniformly brown above; neck and abdomen yellow; beneath, in the middle, the external portions of the gastrostega brown; the intermediate space spotted with brown; under part of tail brown.

Total length 2 feet 2 inches.

Abd. scut. 205; sub-caud. 45.

Description. The scales are somewhat broader than in the last described species; in the younger specimens the head is more narrow, the temples less projecting, upon which are observed two rows of temporal plates. In each of these specimens there are but 23 rows of scales. In one the internasal and prefrontals are fused together. Gastrostega 202; a single preanal; urostega 47, in 2d 190—55.

Dimensions. Length of head 9 lines; greatest breadth 6; length of neck and body 1 foot 11 inches 3 lines; of tail 3 inches 4 lines.

Habitat. Gaboon, west coast of Africa. Four specimens in Mus. Acad. N. S., presented by Dr. Henry A. Ford.

Sub-Fam. Eugnathians.

The first of the two serpents about to be described, belonging to the sub-family or tribe Eugnathians, presents a series of remarkable characters such as belong to no serpent with which we are acquainted, and which constitute a genus to which the name *Hormonotus* may be applied.

HORMONOTUS,* nob.

Gen. Char. Head Lycodontiform; the temples swollen; the snout rounded; the eyes prominent, looking upward and outward; internasals considerably smaller than prefrontals; vertical long, pentangular; nostril between two plates; a frenal; one antocular, three postoculars; the eye resting on the fourth and fifth supra-labial; two of the anterior teeth of the lower jaw quite large, the posterior stouter at the base, and longer than the anterior; two long anterior teeth in the upper jaw preceded by several small ones, followed by an interspace without teeth, and eight or more maxillaries of nearly equal length; palatine and pterygoid teeth in two long rows, presenting an ovoid space posteriorly; scales smooth, with a larger hexagonal row along the median line of the back; tail of moderate length, tapering to a point, with double urostega; ventral scutes passing up along the sides in a nearly rectangular manner.

HORMONOTUS AUDAX.

Sp. Char. Uniform light brown or reddish as above, yellow beneath; 15 rows of smooth scales.

* ὄρμος, a chain, and νοτός, back.

Description. The head is depressed; the snout rounded; the temples swollen; the nostrils, which are large, are situated in a depression between two plates; the eyes prominent, latero-superior, circular, the pupil ovoid, perpendicular; the rostral plate is pentangular, much more broad than high; the internasals are of moderate size, the prefrontals of much greater dimensions, their external and inferior border in contact with the frenal, their posterior with the antocular, the supra-ocular and the frontal plates; the supra-ocular are pentangular, much more narrow anteriorly; the frontal is five-sided, its lateral margins scarcely excavated, its posterior angle moderately obtuse, two and a quarter lines in length by about one and a half in breadth; the parietals are three lines in length by two in breadth, much more narrow posteriorly; the frenal is rather long and of moderate breadth, in contact inferiorly with the second and third supra-labials; the antocular is larger than either of the three postoculars, and is pentangular in shape; there are two rows of temporal plates, surmounted by a third, of which the posterior is the largest; there are nine superior labials, the eye resting on the fourth and fifth; no two are precisely alike, the first is the smallest, the seventh pentangular, a line in breadth by half a line in height; there are seven inferior labials, each differing more or less in shape, and of which the fourth is of much greater dimensions than either of the others; the mental is triangular, the accessory labials rather long, the first genaeal much larger than the second. The *neck* is much more narrow than the head, is rather long and slender; the body of very moderate thickness; the tail one-fifth of the total length. There are 15 to 17 rows of smooth scales near the middle of the body, 18 upon the neck, 12 near base of tail; the scales are short and quadrangular upon the middle, more narrow upon the neck, broad upon the tail; the scales constituting the dorsal row are considerably larger than the adjoining rows, and each scale is hexagonal in shape; this larger row extends upon the tail, but in the specimen examined appears to be interrupted near its root. Ab. scut. 221; 1 single preanal; 81 bifid sub-caud.

Dimensions. Length of head 9 lines; greatest breadth $5\frac{1}{2}$; length of body 1 foot 8 inches 7 lines; length of tail 5 inches. Total length 2 feet 2 inches 4 lines.

Habitat. Gaboon, west coast of Africa.

Gen. Remarks. The outline of the head and the general arrangement of the plates, has a certain resemblance to the figure of *Lycodon audax* (*Lycognathus scolopax*, D. and B.) in the atlas accompanying the *Physiognomie des Serpens* of Prof. Schlegel, pl. iv. fig. 18, but it is quite a different serpent from the latter, which is found in South America. It has also a certain relation, in the general disposition of the plates upon the head and teeth, with *Lycognathus cucullatus*, a North African serpent, but a comparison of the two proves at once that they belong to different genera. The outline of the head, the relative proportions of the internasals and prefrontals, and the form of the frontal plate, are very different; the nostrils are deeply excavated in *Hormonotus*; in *cucullatus* there is no larger dorsal row, and the scales are shorter, &c. It is also a much smaller animal.

The species which remains to be described is a quite different looking serpent from the last, presenting a series of generic characters quite remarkable, more especially the form of the frontal plate.

Gen. Char. Head cuneiform, eyes small, two small inter-nasals, two large prefrontals, a frontal about as broad as long, presenting an acute angle posteriorly; nostril in a single plate at its posterior margin, two nasals, a frenal, one antocular, two postoculars, seven superior labials, the eye resting on the third and fourth; several small teeth on the upper jaw, followed by a much larger one, after which an interspace, succeeded by a row of small and nearly equal teeth; maxillaries of lower jaw presenting a corresponding system of dentition; but the interspace behind the larger teeth do not exist apparently; body nearly the same thickness as head; tail short; scutes bifid.

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LYCOPHIDION LATRALE, nob.

Sp. Char. Uniformly reddish brown above and olive below, with the exception of two lateral yellow vittæ on each side of the head, the one reaching to the angle of the jaw, the other to the posterior margin of the occiput; 17 rows of smooth scales.

Description. Head cuneiform, flat above, shelving forward, the plates exhibiting the appearance of a polished surface; snout rounded; rostral plate much broader than high, with an obtuse angle at its summit; the inter-nasals are quite small compared with the pre-frontals, their external margins in contact with the nasal and the first frenal; the pre-frontals are quite large presenting an acute angle externally, where they are in contact with the first and second frenal and the antocular; the frontal is short and broad, its posterior angle acute, its anterior and external corners bevelled, the intermediate space undulating; it measures nearly a line and a half in length, by one and a quarter in breadth; the supra-oculars are quite short, about one-half their usual length, broader posteriorly; the posterior half of their external margin in contact with the superior post-ocular; the parietals are large, much longer than broad, in contact anteriorly with the supra-ocular; the first post-ocular, and by a very small facet at their anterior and external angle, with the second posterior ocular; there is one frenal plate, longer than broad, with an acute angle posteriorly; it is in contact above with the pre-frontal; it presents a somewhat obtuse angle, and two surfaces inferiorly, the anterior in contact with the first supra-labial, the posterior with the second; its anterior and superior border is much broader than its posterior, which is externally narrow; the antocular is a remarkably large plate, more narrow above, in contact inferiorly with the second and third supra-nasal, above by an oblique facet with the frontal, anteriorly by a convex margin with the pre-frontal, posteriorly with the eye, and the anterior border of the supra-ocular plate; there are two post-oculars, the inferior the larger of the two; there are eight superior labials, no two precisely alike, the first the smallest, the sixth, which is pentagonal, the largest, the eye resting on the third and fourth; the third is separated from the anterior margin of the orbit; the fourth supra-labial and the antocular intervening; the nasal plate is somewhat quadrangular in shape, the nostril being situated in its posterior half, its posterior border in contact with the anterior border of the naso-frenal, which presents an oblique facet without any sinuation whatever; the plates upon the top of the head are all highly polished; the eye is small, the pupil ovoid, rather than round; there are two rows of temporal plates, three in the inferior, two in the row above, and a large quadrangular plate between these and the parietals; immediately behind the parietals, are two smaller plates than the latter, with a still smaller one between them; the mental and accessory labials present nothing remarkable; the anterior genaeals are quite broad, larger than the posterior, which are much more narrow; four small teeth precede the larger one in the upper jaw, then follows an interspace succeeded by nine or more small teeth of nearly equal size; anterior to the large tooth in the lower jaw are also several smaller ones, succeeded by a row of nine or more small teeth, the anterior a little the largest on the left side, but not in the right; the palatine teeth are in two long rows, and present an ovoid space posteriorly; the neck is of nearly the same thickness as the head behind, the body thicker, the tail short and robust, rapidly tapering to a point; the scales are smooth and shining, those upon the neck more narrow, those upon the body broader, with rounded posterior angles; the inferior row perhaps a little the largest; there are 15 rows upon the neck, 17 upon the middle of the body, 8 near the root of the tail; the scales upon the tail appear to be irregular, about three lines from the vent they are homogeneous, but posterior to this space may be observed two parallel rows of hexagonal scales broader than the others, succeeded by smaller ones, and then a single row of four narrow and quite broad hexagonal plates; the gastrostega are narrow, the sides of the abdomen not angular.

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Coloration. The neck, body and tail are brown above, inferior parts brown with a tinge of olive, presenting a shining and a polished appearance, especially the ventral and sub-caudal scutes; a yellow vitta on each side of the head meeting upon the muzzle, and extending as far as the extremity of the occiput; a more narrow one extending from the posterior margin of the eye to the angle of the mouth.

Dimensions. Length of head 6 lines; greatest breadth $3\frac{1}{2}$; length of neck and body 1 ft.; of tail 1 inch $11\frac{1}{2}$ lines.

Abdom. scuta 176, a single preanal, 44 sub-bifid-caudal.

Habitat. Gaboon country, one specimen presented by Dr. Henry A. Ford.

Gen. Remarks. The serpent above described belongs apparently to the genus *Lycophidion* of Fitzinger, but does not correspond in all respects with the admirable description of the *Eugnathians* by Duméril and Bibron, particularly in the size of the eyes, which they represent as "tres grands", and the form of the abdomen which is described in the species observed by them as flat, in our specimen being much rounded.* In other respects there appears to be a perfect coincidence. But two species are enumerated by them both from South Africa, viz: *L. Horstockii* and *L. semicinctum*; the first is white beneath, the second is brown, but has a series of reddish bands across the back; both want the lateral yellow vittæ of *L. laterale*.

Sub-Order *Opisthophis*, (venenosi.)

OXYBELIS KIRTLANDII.

Syn. *Leptophis Kirtlandii*, nob., Proceed. A. N. S. vol. ii. 1844, p. 62. *Dryophis Kirtlandii*, Id. Proceed. Acad. N. S. vol. vii. 1854, p. 100; *Oxybelis Lecontei*; Duméril et Bibron, vol. vii. p. 821. These specimens measure 4 ft. 2 inches in length, tail 1 ft. 7 inch. 10 lines. I find 19 rows of scales near the middle, 17 upon the neck, 6 near the root of the tail; the nostril is large and ovoid in a single nasal plate; there are two frenal plates in both specimens on each side of the head, the posterior in the one being much larger than the corresponding one in the other, the anterior more narrow than the anterior one of the other in the same side; on the right side in one they are narrow and oblong, in the other the anterior is much smaller than the posterior; one antocular, two post-oculars on the right side, three on the left in one; in the other three posterior on the right, three on the left; eight superior labials; the eye resting on the fourth and fifth in both specimens; posterior genials quite long; the scales are long and slender, the inferior row the largest; the tail at its extremity almost filiform; the plates upon the top of the head, though not corresponding precisely in the cut, have the same general proportions; 170 gastrostega, a double preanal, 166 urostega, 175 in another, urostega 168.

Gen. Remarks. The description of this "Arboricole opisthophis" by Duméril and Bibron is very characteristic of its specific relations, and extremely accurate, but they are in error in stating that it had never before been described, the first account of it having been given by us in the second vol. of the Proceedings of the Academy, 1844, p. 62, a fact for which I am indebted to Prof. Aug. Duméril himself, but who had not previously seen the animal.

The collection of Dr. Ford contains a fine specimen of *Dipsas Blandingii*, Hall., Proceed. Acad. N. S. vol. ii. p. 170, and vol. vii. p. 100. It is, however, not a *Dipsas*, and we propose for it the generic name *Toxicodryas*. This remarkable Arboricole serpent measures 5 ft. 7 inch. (Fr.) in length, tail 1 ft. 4 inch.; 22 rows of scales may be counted at the middle of the body exclusive of the large hexagonal dorsal row, 17 rows more posteriorly. The former description char-

* We had proposed for this serpent the generic name *Lissophis*, but have not well authenticated specimens of *Lycophidion* to compare with it; future observation must determine whether the former or latter name shall be retained.
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acterizes the external form of the serpent sufficiently well, but it may be added that the supra-labials are for the most part bordered with black, and that 25 large blotches may be counted on each side of the body; upper part of neck of same color as occiput, probably green during life. There is but a single channelled posterior tooth on each side in these specimens, and therefore they cannot belong to the genus *Triglophodon* of Dum. and Bibron, which has three; the posterior genaeals are longer than the anterior, but of about equal breadth.

TOXICODRYAS, nob.

Gen. Char. A single tooth channelled anteriorly in the posterior part of the upper jaw, much longer than the others, and more robust; the other superior maxillary teeth smooth, of nearly equal length, well developed, and equally spaced but wide apart, the two anterior somewhat shorter; five or six in number; pterygo palatine teeth well developed, the anterior the longest; three anterior teeth in the lower jaw longer than the others, and stouter, the three posterior the smallest, the three intermediate ones smaller than the three anterior, but larger than the three posterior; unequally spaced; head covered above with nine plates; a rostral broader than long, two broad inter-nasals, smaller considerably than the pre-frontals; a frontal of moderate length, but broader anteriorly; supra-oculars remarkable for their great breadth posteriorly; parietals of moderate size; nostrils large, lateral, between two plates; a quadrangular frenal; two anterior and two posterior oculars; two rows of plates between the parietals and supra-labials; eye resting on the fourth, fifth and sixth of the latter; body very long and much compressed; scales long, narrow and quadrangular; a dorsal row much larger, hexagonal; abdominal scutes extending upon the flanks; sides of abdomen angular; tail long with bifid scutes.

TOXICODRYAS BLANDINGII, nob.

Syn. *Dipsas Blandingii*, vol. ii. p. 170—vol. vii. p. 100.

Sp. Char. 17 to 22 rows of scales; color greenish olive above; three black spots upon the head; one at the internal and posterior angle of the supra-ocular, the other near the internal and posterior margin of the parietals; supra-labials bordered posteriorly with black, one of these spots broader than the rest, reaching up nearly to the eye; body greenish olive above, with 25 large dark colored alternate blotches on either side; upper part of tail marked in a similar manner; chin, throat, abdomen and under part of tail yellow; ab. scut. 274, 1 bifid preanal; sub-caudal 137; circumference 3 inches, total length 5 ft. 7 inch. (Fr.) tail 1 ft. 4 inch.

Habitat. Liberia and Gaboon. Two specimens, one presented by Dr. William Blanding, the other by Dr. Henry A. Ford.

Gen. Remarks. We formerly placed this serpent in the genus *Dipsas*, from its large head, compressed body and the large row of hexagonal scales along the middle line of the back; but a careful examination of the teeth, as well as of the external form, shows that it does not belong to that genus; it is one of the most remarkable of the Arboricole Opisthophis, so characteristic of the herpetological fauna of the western coast of Africa; we had supposed also that this serpent might be identical with the *Dipsas cynodon* of Schegel, (*Opetiodon cynodon* D. and B.) but in *Opetiodon* there is but one pre-ocular, the flanks are rounded, pupil oval, &c. The frontal and supra-ocular plates in *Toxicodryas* are quite different in shape from the corresponding plates in the figure of *Dipsas cynodon* by Prof. Schegel (*Abbildungen*, pl. xi. fig. 10 and 11,) the supra-oculars being more narrow in front, the frontal more narrow posteriorly; the two last supra-labials are different in shape and much larger in *Toxicodryas* than in fig. 11. In *O. cynodon*, the pre-oculars are almost contiguous to the frontal, in *T. Blandingii* they are separated by an interval of about a line, seven or eight temporals instead of five, of which three touch the post-oculars (two in *T. Blandingii*.) *Cynodon* is a native of Java and Borneo. The characters

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of the serpent above described, resemble much those of *Triglophodon fuscum*, also from the Gaboon, (D. and B. vol. vii. p. 1102, Appendix,) but it has *three* channelled posterior teeth. There can be no doubt that although allied, *Toxicodryas* and *Triglophodon* are distinct genera; compared with a specimen of *Triglophodon dendrophilum* from Java, of which we have a fine specimen in our collection, due to the liberality of the administration of the Garden of Plants, through Prof. Duméril, we find that the scales in *T. Blandingii* are more narrow, the tail longer and more slender, and the plates upon the head different; the vertical in *T. Blandingii* is much more narrow posteriorly, the rostral not so high, the parietals are much smaller; there are *two* pre-oculars, and the inferior margin of the orbit is formed by the fourth, fifth and sixth supra-labials; in *Triglophodon* by the third, fourth and fifth, &c. Both have a large row of scales along the middle of the back. *Toxicodryas* is a genus quite distinct from *Tarbophis*, (*Ailurophis*, Bonap.)

Sub-Ord. *Proteroglyphs*.

Among the serpents in the collection of Dr. Ford, is one of the black variety of *Naja*, six feet $3\frac{1}{2}$ inches in length. There is also a younger and much more slender specimen. Besides these we have another and much larger one than either, presented several years ago by Dr. Ford, measuring 6 ft. $9\frac{1}{2}$ inch. (Fr.) in length. Neither of these correspond with the description or figure of the black variety of *Naja haje* in Dr. Smith's work on the Reptiles of Southern Africa. The most striking difference consists in the coloration, the South African species being uniformly black below, the variety from the Gaboon having upon the anterior part of the abdomen a greater or less number of black bands of unequal breadth, the interspaces being yellow, the throat and chin also yellow, (white probably during life). Duméril and Bibron state that the Museum of Paris possesses three large specimens of the black variety described by Dr. Smith, one from Senegal, one from Morocco, the third from the White Nile. They admit but two species of *Naja*, the tripudians and *haje*; in the first the sixth superior labial is quite small, in the latter very large; which also wants the spectacle figure upon the neck, and the neck is less dilatable.

This difference between the labial plates, however, is presumed to be not an invariable character. In the plate of *Naja haje* in the great work on Egypt, there are several black bands passing across the abdomen, *near its middle*, one of them very broad, more so than in any of the Gaboon specimens, which in that variety are also situated much more anteriorly. Duméril and Bibron state that in the greater part of the specimens they possess from Java, Sumatra, China and different regions of the East there are several *gastrostega* of a beautiful black, forming a transverse band more or less broad, followed by other scutes of a white color. Comparing the large Gaboon specimen with *A. tripudians*, from Bengal, I find a single dark colored band nine lines in breadth, running across the anterior part of the abdomen, quite near to the throat, and as stated by Prof. Schlegel the sixth supra-labial much smaller than the corresponding one in the African species. In the tripudians this plate is separated from the post-oculars by a large plate, in *N. haje* it is in contact with them. There is a difference in the proportional size of the inter-nasals and pre-frontals, but this may be merely the effect of age; for, although the former are comparatively much smaller than the latter in the *adult* W. African specimens, they more nearly correspond in the younger individual as they do in that from Bengal. The frontal plate is pentagonal in both, but in the Asiatic specimen it is quite narrow.* In the E. India serpent there are 23 rows of scales near the middle of the body, in the Gaboon but 19. We have not the materials for a thorough study of the two admitted species, but consider those from Gaboon as belonging to a variety of the *haje*, for which the name melano-

* In the plate of the head of the tripudians in Prof. Traill's translation of Schlegel it is represented as quite broad, perhaps the adult.
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leuca might be given, with the following characters: Length over seven or eight feet; color black above and beneath, in much the greater part of its length; chin white, neck and anterior part of abdomen white, with black transverse bands varying in breadth, with white interspaces of unequal extent; sides of head white or yellow, the margins of the labial plates bordered with black; 19 rows of scales. Ab. sc. 213, sub-caud. 66.

Dimensions. Length of head $2\frac{1}{2}$ inches; greatest breadth 2; length of tail 1 ft. $1\frac{1}{2}$ inch. Total length 6 ft. $9\frac{1}{2}$ inch.; circumference $4\frac{3}{4}$ inch. Three specimens in Mus. Acad. N. S., presented by Dr. Henry A. Ford.

Gen. Remarks. This is one of the largest and most savage looking of the venomous serpents. Dr. Smith gives from 5 to 6 feet as the length of the South African species. According to him they feed on small quadrupeds, birds and eggs, and climb trees readily to rob nests. The genus *Naja* belongs to the 4th section or sub-order of Ophidians in Duméril and Bibron's arrangement, viz: The Proteroglyph or Apistophid serpents (serpents Proteroglyphes dits Apistophides,) of which the essential characters given are,—

"Serpents in which the anterior teeth are channelled and not perforated at their base," and to the first group into which this section is subdivided, viz: the Conocercal Proteroglyphs, (*P. conocerques*) having a conical or rounded tail; the second group, the platycercals, and which live in the water having this organ flat. The family of Conocercals includes nine genera, viz: *Elaps*, *Pseudoeleps*, *Furina*, *Trimersurus*, *Alecto*, *Sepedon*, *Causus*, *Bungarus*, *Naja*, two-thirds of which exist in our collection. In the largest of the three specimens there are two large and strong anterior channelled teeth, of about equal length on the left side; on the right side one, having behind it one or two smaller teeth. In the other specimen but a single one is seen on each side; palatine and pterygoid teeth in two longitudinal rows.

Ab. Scut.....	213	1	Sing. Preanal, sub-caud.....	66
"	221	1	"	65
"	219	1	"	64

the tail terminating in a sharp pointed cone.

Another of the formidable serpents with which W. Africa abounds is the *Echidna nasicornis*, *Cerastes nasicornis*, Wagler, of which Dr. Ford's collection contains one fine specimen.

ECHIDNA NASICORNIS, Merrem.

Syn. *Col. nasicornis*, Shaw, Misc. 94, Gen. Zool. v. iii. p. 297, pl. 204.

Vipera nasicornis, Daudin, Rep., vol. iii. p. 322.

Vipera nasicornis, T. Reinhardt, Beskrivelse af Nogle nye Slangenarter, 1843. T. iii. fig. 8, 9, 10.

Cerastes nasicornis, Wagler, Amph. p. 150.

Echidna nasicornis, Merrem, Tent. p. 178.

Clotho nasicornis, Gray, Zool. Mis. 60. Cat. Br. Mus. Rept. p. 25.

Vipera hexacera, Dum. et Bib., T. vii. p. 1416, Atlas pl. 78, bis. fig. 2.

We have now three specimens of this deadly but magnificently robed serpent in our collection, two adult and one very young, all from the Gaboon; the serpent formerly figured in the Proceedings (1847, vol. iii. p. 320) having been lost. We are ourselves now somewhat in doubt in regard to the animal described and figured in the Proceed. Acad. N. S., vol. iii. p. 320, (1846—7.) The description of the *Echidna Gabonica*, D. & B., given in the *Erpétologie générale*, corresponds with it perfectly, and no mention is made, nor does the drawing display the narrow headed black mark bordered with yellow, so characteristic of *E. nasicornis*, and the longitudinal bars upon the middle line of the back are not cut in triangle at their extremities, which is the case even in the very young *nasicornis*. Both specimens referred to have unfortunately been destroyed, the skull of the adult alone remaining, which, however, I am inclined to believe belongs to *E. nasicornis*.

As no detailed account of this remarkable animal appears to have been published, we propose to give a full account of it.

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Sp. Char. Three horny projections on each side of the muzzle, the anterior small, the posterior which is immediately over the nostril quite long.

Description. The head is more or less triangular above, covered with scales, very strongly carinated, the carinations so developed as to assume the form of triangular leaf-like projections, giving a sensation of roughness to the latero-superior upper part of the head; there are three or four scales immediately within the circular row above surrounding the eye, which are larger than the others; the carinae of these scales are less foliated than the rest, and resemble spines; the eye is of moderate size, ovoid in shape, and somewhat projecting; the nostrils are large, on a line with the eye, three lines from it and are not lateral, but look upward and outward; there are three foliated scales upon each side of the muzzle, the posterior 6 lines in length; the rostral plate is broad and narrow with a convex margin above, concave below, very different in shape from that of *Vipera ammodytes*; there are sixteen supra-labial plates on each side, most of which resemble each other in shape, presenting a serrated margin inferiorly; there are sixteen superior labials which differ from each other, and the anterior are more extended transversely; the anterior geneials are very large; the posterior quite narrow; the pterygo-palatine teeth do not pursue a strictly longitudinal course but diverge posteriorly; the fangs are enormous and lie entirely concealed in their sheath; the neck is more narrow than the posterior part of the head, the body quite thick at the middle; the tail rather short, terminating in a horn-like pointed projection; the scales are short and broad, strongly carinated, the inferior row much the largest; 44 may be counted in a row near the middle of the body; 18 on each side of the neck, 16 rows at the base of the tail. Ab. scuta 128; sub-caud. 31; 1 long preanal.

Coloration. A dark jet black arrowheaded blotch upon the top of the head commencing between the posterior horns, its hinder extremities reaching as far as the posterior margin of the head, the middle portion being lost upon the neck; this blotch has a narrow border of yellow; upper and lateral part of the head brownish, or brownish mingled with yellow; a narrow stripe of yellow commencing near the middle of the range of scales which margin the orbit below, and terminating at the inferior margin of the twelfth supra-labial, less distinct in older specimens; posterior to this a large dark-colored triangular blotch reaching from the eye to the angle of the jaw; a small triangular yellow one upon the side of the head close to its anterior margin, its apex reaching to within a line of the eye; the intervening space between it and the narrow yellow stripe, dark colored, as well as that part of the side of the head in front of the eye reaching to the anterior extremity of the muzzle, on a line with the inferior border of the nostril; upon the middle line of the back and tail a series of oblong yellow blotches, with triangular emarginations anteriorly and posteriorly, imbedded in a black ground; sides dark brown, in younger individuals mingled with reddish and yellow, black spotted; the lateral extension of the dark colored blotches in which the yellow bars are imbedded triangular in shape; a series of yellow spots on each side at the point of juncture with the abdominal scutes; chin and throat orange mottled with black; abdomen and under part of tail yellow, thickly mottled with black.

In a very young specimen measuring $10\frac{3}{4}$ inches in length, the coloration of the head is nearly the same, the middle line of the back presenting a longitudinal series of black rhomboids alternating with the lighter colored bars with triangular emarginations; these bars are much shorter upon the anterior part of the body and upon the neck; the posterior prolongations of the arrowheaded blotch upon the head extend half an inch upon the neck, and present a triangular cut posteriorly; there is a series of large dark colored spots upon the sides alternating with yellow; chin and throat dark colored; abdomen thickly maculated with dark subquadrate spots.

Dimensions. Length 2 inches 3 lines; breadth 1 inch 11; length of body 2 feet 8 inches (Fr.); of tail 6 inches 7 lines. Total length 3 feet 4 inches 10 lines; circumference 6 inches.

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Habitat. Gaboon and Liberia. Three specimens in Mus. Acad. presented by Dr. Henry A. Ford.

Gen. Remarks. Duméril and Bibron are evidently in error in placing this animal in the genus *Vipera*. In *Vipera* the nostrils are lateral, in *Echidna latero-superior*. In *Vipera ammodytes* the rostral plate is very high; the posterior genials differ much; *ammodytes* has a large supra-ocular; there is but one row of plates between the supra-labials and the rows of scales which surround the eye; the scales in *ammodytes* are long, short in *nasicornis*. The same may be said of *Vipera aspis*. Compared with *Echidna arietans* of the Cape, we find absence of the supra-ocular, two rows between the scales beneath the eye and the supra-labials, and the scales short, like those of *nasicornis*. The difference in the number of rows of scales between the eyes and the supra-labials constitutes a good *specific* character in serpents belonging to the same genus, but the position of the nostrils and the form of the scales are constant and of generic importance.* *Echidna nasicornis* belongs to the 5th section or suborder of Ophidi-ans in Duméril and Bibron's arrangement, viz., the Solenoglyphs, (serpents Solenoglyphes dits Thanatophides,) of which the following are the essential characters:

"Serpents having teeth in both jaws, of which the anterior supra-maxillaries are alone channelled and perforated by a canal in the length of their base."

Ord. BATRACHIANS.

In the synoptical table of the genera of Raniforms, in the 8th volume of Duméril and Bibron's work, (1841,) but two genera of the 16 there determined are mentioned as having no palatine teeth, viz., *Oxyglossus* and *Leiuperus*; the first with a rhomboidal, the second with an oval tongue, in both entire. In *Arthroleptis*, Smith, (Illustrations of South African Zoology, 1849,) the toes are without webs. In the Batrachian now under consideration, the most remarkable structure is shown in the tongue, which presents a central pedicel, but is bound down in its anterior half along the middle by cellular tissue, as in the genus *Heredia*, among the Urodeles recently discovered in California. We propose for this remarkable Batrachian, and which, should this conformation be found to exist in other individuals, would, from the connecting link between the Anurous Batrachia, and the Caducibranchiate Urodeles, the name of

HETEROGLOSSA.

Head nearly as long as the body, and about as long as broad, depressed above, narrow in front; teeth in the upper jaw small, smaller in front, posteriorly recurved, sharp-pointed; nine in the lower jaw; *no palatine teeth*; posterior nares suboval, eustachian foramina small; tongue suboval, deeply notched posteriorly, attached by a cylindrical pedicel at the centre, entirely free in its posterior half; bound down anteriorly along the middle line by cellular tissue, reaching from the tip to the pedicel, free laterally except at the apex; body short; toes free anteriorly, webbed at their base posteriorly; tympanum distinct.

HETEROGLOSSA AFRICANA, nob.

Sp. Char. Chocolate brown above, abdomen ash colored; posterior nares small.

Description. The head is about as broad as long, triangular in shape, rounded in front, depressed above; the eyes are of moderate size, not prominent; the tympanum also of moderate size, quite distinct, is situated immediately over the angle of the jaw; posterior nares suboval, small; the fingers are quite free, the first and second of about equal length, the fourth longer than these, the third the longest; sub-articular tubercles distinct; extremities of first and second toes nearly on a line with each other; third toe longer than second, the fourth much

* Since the above was written we have received the December number of *Guerin* (Revue et Magazin de Zoologie, 1856,) in which I find that Prof. A. Duméril has himself corrected this error.

the longest, the fifth longer than either the first or second; the toes are webbed at their base, the web extending to about the middle of the antepenultimate phalanx; abdomen perfectly smooth; skin smooth above; no rows of pores visible.

Coloration. General color dark brown, or chocolate above, mingled to a slight extent with ash; upper jaw presenting several chocolate colored spots upon a lighter ground; posterior extremities barred with dark brown approaching to black; abdomen ash colored; chin and throat chocolate spotted; under surface of extremities blackish mingled with ash; when examined with a magnifier the body appears to be blotched all over with dark brown on a much lighter ground.

Dimensions. Length of head and body 1 inch; length of head $5\frac{1}{2}$ lines; breadth 5; from tip of snout to anterior extremity 5; distance between anterior and posterior extremities 5 lines; length of arm 3 lines; of forearm $2\frac{1}{2}$; of hand to extremity of longest finger 3 lines; of thigh $5\frac{1}{2}$ lines; of leg 6 lines; of foot to extremity of longest toe $5\frac{1}{2}$ lines.

Habitat. Gaboon. One specimen in Mus. Acad. N. S. presented by Dr. Henry A. Ford.

HYLA PUNCTATA, nob.

A young specimen of *Hyla punctata*, nob., Proceed. Acad. N. S. vol. vii. p. 193.

It measures 1 inch 4 lines in length from the extremity of the snout to the posterior extremity of the body; head large; body very slender posteriorly; the color is of a darker brown than in the adult, and a number of darker blotches may be observed over different parts of the animal; a characteristic mark, and one which does not appear to have been mentioned in the previous description, consists in the presence of an orange-colored undulating line a short distance above the anus, commencing on the posterior part of the thigh about two lines from the latter; beneath this line the ground color is more obscure. This line exists also in the adult specimen, but is of a yellow color.

PIPADÆ.

DACTYLETHRA, Cuvier.

There is one specimen of *Dactylethra*, but this differs from the *Dactylethra* of the Cape, and more especially in the presence of a sharp pointed spur projecting from the cuneiform bone, which is not observed in *Dactylethra capensis*.

DACTYLETHRA MÜLLERI, Peters.

Sp. Char. Black above, dark brown or chocolate below; a cutaneous appendage beneath each eye; numerous crypts upon the muzzle, chin, and under part of the muzzle; a series of larger longitudinal glands upon chin; a sharp pointed spur at base of first toe.

Description. The head is small, depressed; the snout rounded; the eyes prominent; the nostrils near the extremity of the snout a line apart, and three-fourths of a line from the anterior border of the eye; the snout is quite smooth above, but covered as far as midway between the eyes, (the posterior border of which is but three lines from its anterior extremity,) with numerous small elevated granules or crypts, the under part also, as well as the chin; a semicircular row of longitudinal glands, nine or ten in number, with open mouths, four or five in each longitudinal row upon the chin; no tongue or palatine teeth; numerous small teeth in the upper jaw; eustachian foramen large, broader than long; body large, subquadrate, about a line broader posteriorly, where, as Dumeril and Bibron observe, it has the appearance of being truncate; perfectly smooth both above and below; with a magnifier, however, presenting a minutely granular appearance; no lateral line of pores visible; anterior extremities small, posterior very large; fingers free; fourth finger stoutest, second longest, third not as long as second, first and fourth of nearly equal length; thighs and legs

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greatly developed; toes webbed as far as distal extremity of first phalanx, the three first provided with a nail, sharp pointed, slightly incurvated; these nails are convex above, but present a ridge along their middle below; a sharp pointed short spur at the base of the first toe; second toe longer than first, third longer than second, fourth and fifth of nearly equal length; no subarticular tubercles visible; posterior extremities smooth both above and below, no pores upon the thighs.

Coloration, as given in the specific characters.

Dimensions. Length from tip of snout to anterior extremity 6 lines; between anterior and posterior extremities 10 lines; of arm $1\frac{1}{2}$ lines; of forearm 3; of hand to extremity of longest finger $3\frac{1}{2}$ lines; of thigh 6 lines; of leg 7; of foot to extremity of longest toe (the third) 8 lines.

Habitat. Gaboon. One specimen presented by Dr. Henry A. Ford.

Gen. Remarks. *Dactylethra* belongs in Duméril and Bibron's arrangement, to the second group of the Anouroids, or Phrynoglossal Batrachians, (Phrynoglosses) and family of the Pipæformes, being entirely destitute of a tongue, whereas the 1st group, or the Phaneroglossal, have this organ "developed in a greater or less degree." The Phrynoglossal Batrachians, including but two genera at present known, viz., *Dactylethra* and *Pipa*, have also this very remarkable peculiarity, that instead of two eustachian foramina, there is but one, and that situated at the middle of the posterior part of the palate. In *Dactylethra Mülleri* this is very large. We had proposed for this singular Pipæform the name *spinosa*, from the spur at the base of the first toe, but having received the 12th number of the *Revue de Zoologie* for 1856, we find it mentioned and referred to in the interesting and important paper of Prof. Aug. Duméril, with the well known and honored name *Mülleri* given to it in 1844 by Prof. Peters of Berlin, (*Monats Bericht ber Kon. preuss. Acad. zu Berlin*, 1844, p. 37) who has found it also in Mozambique.

Having now finished the notice of Dr. Ford's collection, which contains so many animals new to science and of great importance in the study of the geographical distribution of Reptiles, I propose to correct some errors in former papers of mine upon the Reptiles of Western Africa—which either had escaped my attention, or which a better knowledge of the subject, and the aid of my vade mecum in that branch of science, Duméril and Bibron, have enabled me to point out. *Pachydactylus tristis* appears to be identical with *Platydictylus theconyx*, a common West India animal, the label indicating the locality having been erroneous. *Tropidolepis Africanus* and *Calotes versicolor* are identical with *Agama Colanorum*. *Python Liberiensis* is identical with *Python bivittatus*, (*Python Sebæ*, D. & B.) admirably described by Prof. Schlegel and long known.

BOA LIBERIENSIS. *Proceed. Acad. N. S.*, vol. vii. (1854) p. 100.

The animal indicated is not identical with *Python Liberiensis*, (*Python bivittatus*, Schlegel,) the latter specimen having at the time been mislaid, but is the young of *Epicrates cenchris* from S. America.

Fam. *SYNCRATERIANS*, (innocui.)

DENDROPHIS FLAVIGULARIS, *Proceed. A. N. S.* vol. vi. p. 205.

The Aboricate serpent described in the Proceedings of the Academy with the above name is not a *Dendrophis*, but presents characters quite sufficient to constitute it a new genus. It differs from *Dendrophis* in the following particulars: 1st. *Dendrophis* is an Isodontian, the teeth having equal proportions, the *Synchraterians* having the posterior longer. 2d. It wants the larger row of scales along the median line of the back, characteristic of *Dendrophis*. 3rd. The eye in *Dendrophis* rests on the fifth and sixth supra-labials. 4th. The rostral appears more upon the top of the head, and the internasals are proportionably larger. 5th. In *Dendrophis* the frontal is more acute posteriorly, and the parietals are longer than broad. 6th. In *Dendrophis* the frenal is long and narrow and not quadrate; there are two post-oculars instead of three, and the temporal plates are more numerous. 7th. The neck is more narrow in *Dendrophis*, the abdomen is angular and the scales are smooth. In *Herpetodryas* (Isodontian) the

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rostral opens in a *single* plate, there is but one post-ocular, the parietals are long, the eye rests on the third and fourth supra-labials, and the shape of the scales is very different, being lanceolate and not long and quadrangular; the internasals are smaller in proportion, the rostral does not extend so far backward on the top of the head, and the frontal differs in shape; it approaches more nearly *Leptophis* (*Syncraterian*), a genus also existing on the West Coast of Africa, but in *Leptophis*, the internasals are proportionately *larger*, the frontal more acute posteriorly, the rostral quite different in shape, the frenal long and narrow, but two post-oculars, the eye resting on the fifth and sixth supra-labials, the latter plate being much prolonged at its posterior and superior angle, and the posterior genecials, or intermediate sub-maxillary plates, are longer than the anterior and more narrow. In *Bucephalus* the scutes beneath the tail are bifid for one-fourth of its length, simple in the remainder, and the posterior teeth are channelled (*Opistoglyph*); we propose therefore for this remarkable *Arboricole* Ophidian the generic name

THRASOPS.*

Gen. Char. Head long, flat above, somewhat truncate anteriorly; shelving in front; rostral extending upon the top of the head; internasals of about same length as pre-frontals; frontal three and a half lines in length, and about as broad anteriorly, rounded posteriorly; parietals short and broad, nostril between two plates; a quadrangular frenal; one antocular, three post-oculars; eye resting on the fourth and fifth supra-labials; pupil circular; posterior genecials broader than the anterior; teeth of the upper maxillaries *Syncraterian*, the posterior twice as long as the anterior, not channelled, but trenchant, the preceding ones sharp pointed, a wide space in front destitute of teeth; pterygo-palatine teeth small, in two nearly parallel rows; mandibular teeth presenting no larger or longer ones anteriorly, the posterior ones a little shorter; neck nearly as broad as posterior part of head, body long, rather stout in the middle, covered with long and quadrangular imbricated and carinated scales of about equal breadth except those of inferior row which are broader and shorter than the others; scales and scutes presenting a silken appearance; abdomen angular but not distinctly so, the gastrostega ascending obliquely upon the flanks; tail long, sub-caudal scutes bifid.

THRASOPS FLAVIGULARIS, nob.

Sp. Char. 13 rows of scales; jet black above with a silken lustre, mingled with brown upon the head; lips dove color; chin and throat white, or light yellow; neck white or light yellow, black spotted; abdomen and under part of tail black or yellowish; length 5 ft. 10 $\frac{3}{4}$ inch. (Fr.)

Habitat. Gaboon; two specimens in Mus. Acad. N. S. one presented by Dr. Henry A. Ford, the other by Mr. DuChaillu.

Gen. Remarks. The description in the 4th vol. of the Proceedings is quite accurate, and characterizes this serpent well, except its dentition. Its jet black and silken lustre, and large and somewhat impudent eyes, make, we should think, this reptile one of the most remarkable among the *Arboricole* Ophidians so numerous in Western Africa.

Coronella triangularis, nob. Proceed. Acad. N. S. vol. vii. p. 140.

Coluber lævis, Proceed. A. N. S. Vol. ii. p. 118. This serpent described under the above names, is not a *Coronella*, but belongs to a new genus of *Syncraterians*, for which we propose the name

HETERONOTUS.

Gen. Char. Dentition of *Coronella*. Head long, temples somewhat swollen, eyes of moderate size, nostrils latero-superior between two plates; a short frenal; one pre-ocular; two post-oculars; eight superior labials, the eye resting on the fourth only; a broad rostral; two internasals rather long; two broad pre-fron-

* *Θρασος*, audax, and *ὤφ*, oculus.

tals; a long hexagonal frontal; two supra-orbital, and two parietal plates, the latter of moderate length; a small occipital; neck more narrow than posterior part of head, body cylindrical, covered with broad quadrangular scales at the sides, hexagonal above; tail rather long and tapering, sub-caudal scutes bifid.

HETERONOTUS TRIANGULARIS, nob.

Sp. Char. Color light olive above, with about fifteen narrow transverse yellow fasciæ from six to eight lines apart, commencing on the neck and terminating near the middle of the body; a series of triangles, olive and yellow upon the sides, the one inosculating with the other, the yellow lines upon the back conjoining the apices; 17 rows of scales near the middle; ab. sc. 148, 1 bifid pre-anal; sub-caud. 100.

Description. The head is long, narrow and rounded in front, somewhat protuberant at the temples, covered above with nine plates exclusive of a very small one looking like an occipital; the rostral measures about two lines in breadth by one in height; presenting more or less distinctly three facets above, the two exterior in contact each with the naso-rostral, the middle with the internasals, the external margin convex, the inferior concave; the naso-rostral is quadrangular, the naso-frenal rhomboidal in shape; the frenal is also quadrangular with its supero-posterior angle rounded; the two nasals are in contact above with the internasals, the frenal with the pre-frontal; the pre-ocular is large, its superior portion much more so than the inferior; rectangular below triangular above, presenting an anterior and posterior angle and one superior, in contact inferiorly with the third and fourth supra-labial, above with the pre-frontal and supra-ocular; there are two post-oculars, the inferior prolonged forward, its anterior portion between the fifth supra-labial, and the eye, which reclines upon it; the internasals are longer than broad, the pre-frontals on the contrary remarkable for their breadth; they pass down on the side of the head between the naso-frenal and pre-ocular, to reach the frenal as above described; the frontal is remarkable for its length, and in this respect differs greatly from *Coronella*, in which it is short, and broader than long; it is hexagonal and more narrow posteriorly; the supra-oculars are much longer than broad, more narrow in front; the parietals are of moderate size, in contact anteriorly with the supra-ocular and the superior post-ocular; there are eight superior labials on the left side, the seventh and eighth on the right being fused together and presenting one large plate; the inferior margin of the eye rests on the fourth, which is more distinctly quadrangular, than any of the other superior labials; there are five plates between the supra-labials and the parietals, two in front and three posteriorly; the anterior genials are somewhat broader than the posterior and not quite so long; the supra-maxillary teeth are long, smooth, unequally spaced, the posterior teeth the longest, the two anterior more recurved than the others; pterygo-palatine teeth much smaller, straight, their points thrown far backward, in two long rows; these rows are not parallel, but approach each other near the middle, and diverge anteriorly, the two presenting a long urceolate outline; the teeth in the lower jaw are much smaller than those in the upper, shorter anteriorly; the *neck* is more narrow than the head posteriorly, the body more or less cylindrical and much thicker in the middle, decreasing toward the tail, which is of considerable length, and tapers to a point; there are 17 rows of smooth scales near the middle of the body, the same number upon the neck, 13 upon the tail near its root; the inferior row of scales is the largest; those upon the sides about as broad as long ($1\frac{1}{2}$ line,) quadrangular; those upon the back distinctly hexagonal, and somewhat narrower; this difference in the form of the scales is indistinct upon the neck and posterior part of the body; gastrostega rather broad but not ascending upon the flanks which present no marked angularity.

Coloration. Head yellowish above mingled with olive; the three or four posterior of the superior labials bordered inferiorly with black, as well as the posterior margin of the fourth; several of the inferior labials margined with black; chin and throat yellow, black spotted; ground color olive above, with about

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15 narrow yellow transverse fasciæ, extending a short distance beyond the anterior half of the trunk; a series of lateral olive colored triangular markings, 28 in number, on each side of the neck and body continuous with the ground color above, and the apex inferior, the same number of yellow ones inosculating with the latter, and continuous at their bases with the yellow ground color beneath; the transverse fasciæ terminating laterally at the apices of these yellow triangular interspaces; throat, abdomen, and under part of tail yellow, with numerous bluish or olive colored spots.

Dimensions. Length of head one inch; greatest breadth 7 lines; length of body 1 ft. 4 inch. 3 lines; of tail 8 inch. (Fr.)

Habitat. Liberia; one specimen in Mus. Acad. presented by Dr. William Blanding.

Gen. Remarks. The previous description in vol. ii. of the Proceedings contains a number of absurd typographical errors,—and is in many respects incorrect. This genus is closely allied to *Coronella*, but differs from it in the shape of the frontal plate which is short and broad in the latter genus, in the form of the internasals which are longer in *Heteronotus*, in the pre-frontals which are not so long, the position of the eye and the shape of the scales; the tail is much shorter in *Coronella*, and the teeth not so strongly developed. *Heteronotus* is another of the many remarkable forms recently discovered in Western Africa, which promises to present the most valuable materials to the Zoologist in the determination of the higher problems of science.

Sub-Ord. *Opistoglyphs*, (venenosi.)

PSAMMOPHIS PHILLIPSII, nob. Proceed. Acad. N. S. vol. vii. p. 100.

Coluber Phillipsii, id. Proceed. vol. ii. p. 169. The head of this species presents numerous singularly shaped black markings above; the lips, chin and throat, thickly spotted with black; ground color of chin and throat yellow; the black points are much more distinct upon the flanks, scarcely visible upon the back; gastrostega marked near their external extremities with a longitudinal black mark or spot; preanal scale single; dorsal row of scales differently shaped from the others; two or three inferior rows of scales, larger than the rest, which, except the dorsal row, are long, slender and quadrangular as in *Dendrophis*; 17 rows; tail mutilated. This species of *Psammophis* differs from all those described by Duméril and Bibron.

Among the serpents not in the collection of Dr. Ford, but from Liberia, and presented several years ago by Dr. Goheen, is a small *Psammophis*, probably young, with 17 rows of scales, and 102 sub-caudal scutes. The coloration of the head is different from that of the specimen just described.

Char. Head marked with dark colored irregular lines, simulating Arabic characters, more especially upon the parietals; a more regular figure, long and quadrangular in shape upon the frontal; color greenish with a double row of black spots at the posterior margin of the abdominal scutes near their external margin; lips black spotted; chin and throat white; ab. scut. 164, 1 single preanal, sub-caud. 102, 17 rows of scales.

Gen. Remarks. The shape and arrangement of scales are the same as in *Phillipsii*, the dorsal row differing from the others, being more narrow anteriorly; (probably the young of the preceding species.)

DIPSAS CARINATUS. Proceed. Acad. N. S., vol. ii. p. 119.

This description contains numerous typographical errors; thus, the vertical plate is put for the rostral, the nostril for the eye, &c. The name is pre-occupied, having been given to a species of *Pareas* (Wagier) by Prof. Reinhardt, (*Dipsas carinata*), from Java. The teeth in this specimen are all lost, so that it is impossible to say to what genus it really belongs.

— *CARINATUS*.

Sp. Char. Color light or yellowish above with about 75 transverse narrow
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irregular lighter colored yellow fasciæ, terminating at the external margin of the abdominal scutes; chin and throat yellowish; abdomen greenish, mingled with yellow; tail olive above, white below. Length 2 ft. 1 inch $2\frac{1}{3}$; ab. scut. 247; sub-caud. 73; 1 single preanal.

Description. The body is much compressed; the scales all distinctly carinated; seventy-five oblique narrow yellow bands may be counted upon the body; head yellowish above, marked with dark colored irregular lines; the most conspicuous of these are two irregular ones over the eyes and two large ones meeting upon the middle of the frontal, and diverging in a V-shaped form, and extending as far as the posterior margin of the parietals, the right branch in the specimen examined continuous with another extending a short distance upon the neck; these dark colored lines present longitudinal patches of yellow within; scales of moderate length, rather narrow, presenting an angle posteriorly, the carinæ in the middle, and running the whole length of the scale, the inferior row the broadest; 22 rows near the middle of the body; on either side three rows of narrower scales in the specimen examined, immediately above the second inferior row; flanks angular, abdomen fiat, but the gastrostega not ascending upon the sides of the body; tail of moderate length, tapering to a point. *Plates of head.* A rostral broader than high, not extending upon the snout, two inter-nasals and two pre-frontals, the former smaller than the latter; a frontal longer than broad, quite broad anteriorly, ($2\frac{1}{2}$ lines nearly by 2 in breadth,) more narrow posteriorly, distinctly hexagonal; parietals well developed, rather long, broad in front; supra-orbital long and narrow, presenting two facets displaying an angle anteriorly, the superior in contact with the pre-frontal, the inferior with the ant-ocular and two posterior, the inferior in contact with the superior post-ocular, the superior, which is greatly extended, with the parietal; nostril between two plates, the posterior much the larger, there being apparently no frenal; a single and large pre-ocular broader below; two post-oculars, the inferior the larger of the two; temporal plates but two in number (one above the other,) between the supra-labials and parietals; eyes of moderate size, round, resting on the third and fourth supra-labials; seven superior labials, the fifth quadrangular, the sixth and seventh the largest; anterior genials broad, the posterior singular in shape, broad, their external margin three or four times longer than the internal; ab. scut. 247; sub-caud. 73; length of head 8 lines; breadth $4\frac{1}{2}$; length of body 2 ft.; of tail 4 inch. 4 lines. Total length 2 ft. 1 inch 4 lines; circumference $1\frac{1}{2}$ inches.

Habitat. Liberia. One specimen in Mus. Acad. N. S., presented by Dr. William Blanding.

Sub. Ord. *Solenoglyphs* (Viperidæ.)

ATRACTASPIS CORPULENTUS, nob.

Syn. *Brachycranion corpulentum*, Hallowell. Proceed. Acad. N. S., vol. vii. p. 99.

This is no doubt a distinct species from the *Atractaspis Bibronii*, Smith, of the Cape of Good Hope.

ATRACTASPIS CORPULENTUS.

Sp. Char. But seven plates upon the top of the head, two pairs only between the rostral and frontal; * eye resting on the fourth supra labial, the third prolonged at its postero-superior angle, touching the eye anteriorly and inferiorly; body much stouter than in *A. Bibronii*; 25 rows of scales, twenty-three upon neck, 20 at posterior extremity of body, commencing at the preanal scale, where the body is only $4\frac{1}{2}$ lines in breadth, 8 lines at the middle; color shining black above, brownish beneath; ab. scut. 182; sub-caud. 25; preanal single. Total length 1 ft. $8\frac{1}{2}$ inches.

Habitat. Gaboon. One specimen in Mus. Acad., presented by Dr. Henry A. Ford.

* Future observation must determine whether this be a constant character.

In *A. Bibronii*, the ab. and sub-caud. scuta are given by Dr. Smith as 255, 20, and 225, 21. The drawing in the *S. African Illustrations* is magnified and therefore the fangs in both animals are probably of equal length. The gastrostega are quite broad, and extend very slightly if at all upon the flanks, which are rounded; the neck is of about the same thickness as the head posteriorly, not so thick as the body at its middle; the geneials are broad and short, there are no posterior ones, properly so called, but a single row of larger scales on each side within the supra-labials, the anterior the longest. The fangs in this serpent are remarkable; they are probably more capable of erection than Dr. Smith supposes, but their shape is peculiar; they are convex anteriorly, concave posteriorly, with a superior and inferior ridge, compressed laterally, with an elevation in the middle, resembling somewhat a squalus tooth, but of course much more narrow; they are not channelled anteriorly, but a canal can be distinctly seen running along their middle, the tooth being perforated at its base. It therefore takes its place among the Solenoglyphs and not the Proteroglyphs, as Duméril and Bibron conjectured it should from its general resemblance to *Elaps*, (a specimen of the animal not having at that time reached the Museum of Paris,) and the family *Viperidæ*, characterized by the absence of fossettes between the eyes and the nostrils, which on the contrary exist in the *Crotalidæ*.

Gen. Remarks. We have endeavored in the preceding paper to give as correct an account as our means will permit of the West African Reptiles that have come under our notice. All the specimens described or referred to in previous numbers of the *Proceedings* as presented by Dr. Ford, come from the Gaboon and not Liberia. This is an important correction, for the two countries are widely separate, Monrovia, the capitol of Liberia being in North or Upper Guinea, and the Gaboon in South or Lower Guinea; the difference in latitude between the above mentioned town and the mouth of the Gaboon where Dr. Ford is stationed as Physician to an American Missionary establishment being 450 miles, and in longitude 1400; the difference in space measured along the line of the coast 1450 miles. This rectification is of much consequence in the study of the geographical distribution of the Reptiles of Africa. When we consider the very great distance of the Cape of Good Hope from the Gaboon, it is not surprising that the reptiles of the latter region should differ so much from those of the former. Indeed, it is doubtful if among all the reptiles figured and described by Dr. Smith, there be two *absolutely* identical and common to both countries.

Dr. Smith mentions the following species known to exist in W. Africa, as found also at the Cape, viz.: *Kinixis erosa*, *Varanus niloticus*, *Chamæleo dilepis*, *Agama colonorum*, *Dinophis angusticeps* (Naia S.) and *Causus rhombeatus*. He enumerates nevertheless and describes 144 species belonging to 84 genera.

According to Prof. Peters, of Berlin, the following species existing in W. Africa are found also in Madagascar, viz., *Chamæleo dilepis*, *Oxybelis Kirtlandii*, (*Lecomptei*, D. & B.) *Echidna nasicornis*, *Dactylethra Mülleri*, (*Archiv. fur Naturgeschichte*, 1855, p. 43,) and (*Monatsberichte zu Berliner Academie*, 1854, p. 614.)

Few countries probably present a more interesting field to the Herpetologist than Africa, whether we regard the variety or the remarkable character of the forms, and we hope, through the efforts of M. DuChaillu, who is travelling in the Gaboon, with a view to discover if possible the source of the Congo or river Zaire, and of Dr. Ford, who is stationed at the mouth of the Gaboon, that we shall be enabled to develop more fully the Herpetology of that region.

We have prepared the following list of the species inhabiting Liberia and the Gaboon *so far as known*, and refer to the splendid work of Dr. Smith for those found at the Cape. Those common to the two regions are printed in italics:—

Liberia.

Cinixis denticulata, (*erosa* B.)
Trionyx Mortoni, H.
Agama colonorum D.
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Oxybelis Kirtlandii, H.
Dinophis Hammondii, H.
 (*Dendraspis Jamesoni*, A. D.)

<i>Euprepes Harlani</i> , H.	<i>Toxicodryas Blandingii</i> , H.
<i>Euprepes Blandingii</i> , H.	<i>Causus rhombeatus</i> , W.
<i>Python bivittatus</i> , S. (P. Sebæ, D. & B.)	<i>Echidna Gabonica</i> , D. & B.
<i>Onychocephalus Liberiensis</i> , H.	<i>Rana Bibronii</i> , H.
<i>Onychocephalus nigro-lineatus</i> , H.	<i>Ixalus concolor</i> , H.
<i>Leptophis smaragdinus</i> , D. & B.	<i>Bufo maculatus</i> , H.

Gaboon.

<i>Cryptopodus Aubryi</i> , A. D.	<i>Boædon quadrivirgatum</i> , H.
<i>Trionyx Ægyptiacus</i> , G.	<i>Hormonotus audax</i> , H.
<i>Cinixis denticulata</i> , H.	<i>Lycophidion laterale</i> , H.
<i>Cinixis Homeana</i> , B.	<i>Oxybelis Kirtlandii</i> , H.
<i>Hemidactylus angulatus</i> , H.	<i>Toxicodryas Blandingii</i> , H.
<i>Chamæleo gracilis</i> , H.	<i>Dinophis angusticeps</i> , A. D.
<i>Chamæleo dilepis</i> , L.	<i>Echis squamigera</i> , H.
<i>Varanus niloticus</i> , D. & B.	<i>Naia Haje</i> , (var. <i>melanoleuca</i> , H.)
<i>Tachydromus Fordii</i> , H.	<i>Echidna nasicornis</i> , M.
<i>Euprepes albilabris</i> , H.	<i>Echidna Gabonica</i> , D. & B.
<i>Euprepes striata</i> , H.	<i>Atractaspis corpulentus</i> , H.
<i>Euprepes Blandingii</i> , H.	<i>Triglophodon fuscum</i> , D. & B.
<i>Sphenorhina elegans</i> , H.	<i>Cæcilia rostrata</i> , C.
<i>Gerrhosaurus nigro-lineatus</i> , H.	<i>Rana subsigillata</i> , A. D.
<i>Phractogonus galeatus</i> , H.	<i>Lymnodytes albilabris</i> , A. D.
<i>Leptophis smaragdinus</i> , D. & B.	<i>Hyla Aubryi</i> , A. D.
<i>Chlorophis heterodermis</i> , H.	<i>Heteroglossa Africana</i> , H.
<i>Boædon quadrivittatum</i> , H.	<i>Dactylethra Mülleri</i> , P.

Nothing is more striking in the study of the various reptilian forms above described than the simplicity of the elements out of which so great a variety of essential characters are deduced, constituting generic types, permanent in their nature, and linked from the beginning with circumstances of physical geography not yet fully made out, but which a more thorough and accurate analysis may enable us to discover. It is probable that a careful and precise investigation of the genera now determined, even by the most eminent Herpetologists, taking into consideration not one or several sets of characters but the entire animal viewed in regard, not only to its anatomy, which is of equal importance, but also its geographical position, and so to speak, its physiology, will of necessity cause many of them to be separated, constituting either distinct generic forms, or sub-generic types, associated naturally with the physical characters of the soil and climate in which they live; and hence it is of the utmost importance that those animals not liable to changes of domicile as is the case with birds, and even the mammals, should be collected from all known regions of the globe, their habitat being ascertained with the greatest precision, and their anatomy studied with care, so that we may be enabled to deduce the laws which govern their existence, and determine their characters, which cannot be done for a long time to come, and until the facilities for the prosecution of such pursuits are much greater than exist at the present time, but which we have no doubt will ultimately be accomplished. Natural History, physical geography and physiology are so intimately connected, that no real progress can be made without their combined study; and in this manner instead of the artificial and disjointed aspect which the first of these has often been made to present, we shall have a system based upon nature itself, the only true and real foundation of all progress whether in science or morals, or in the solution of those perplexed problems which at present so much and so fruitlessly disturb the public mind. Inquiries of this kind, so far from promoting a spirit of irreverence, induce the contrary, leading man not only in the letter, but better in the spirit, and in the real constitution of things, to search out the laws which determine his well being, and give rise in him to the most profound sentiments of humility and worship of the great Creator, whose intelligence and power at every step excite his wonder and admiration.

[Feb.



Hallowell, Edward. 1857. "Notes of a collection of reptiles from the Gaboon country, West Africa, recently presented to the Academy of Natural Sciences of Philadelphia, by Dr. Herny A. Ford." *Proceedings of the Academy of Natural Sciences of Philadelphia* 9, 48–72.

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