

## A REVIEW OF THE INDIAN SPECIES OF *AMBLYCEPHALUS*.

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I have recently had an opportunity of studying all the representative snakes of the genus *Amblycephalus* in the Indian Museum and in the Bombay Natural History Society's collections. I propose to add to this material the information derived from specimens I have collected myself, and to review the genus so far as it concerns Indian species. The Indian Museum contains types of what have been up to date accepted as three distinct species, viz. *modestus* (Theobald), *macularius* (Theobald) and *andersoni* (Boulenger); but which, I hope to show, should be regarded as a single species. It is to be noted that many of the head-shields in individuals of some of the species are subject to frequent variation owing to confluence. Further I notice that in many specimens the details of the periocular lepidosis are difficult to determine in spirit specimens. The praeocular, subocular, and postocular are difficult to differentiate owing to creases which simulate sutures, and it is sometimes impossible to be certain whether merely a crease is present or a genuine suture.

### CHARACTERS OF THE GENUS.

*General.* Short snakes not exceeding about 610 mm. (2 feet) in length. Head bluntly rounded anteriorly, separated from the body by a much constricted neck. Snout short, feebly declivous, with no canthus rostralis. Nostril piercing about the middle of an entire shield. Eye large, with brilliant yellow iris, and a vertical pupil. Body strongly compressed. Tail short, about one-sixth to one-ninth the length of the body.

*Lepidosis.* *Rostral* rather broader than deep; the portion visible above less than the suture between the internasals. *Internasals*: a pair; broader than long; the suture between them less than half the internaso-prae-frontal sutures. *Prae-frontals*: a pair; the suture between them shorter than the internaso-prae-frontal sutures. Touching the eye (except in *carinatus*). *Frontal* longer than the snout, longer than the supraoculars, shorter than the parietals. *Nasal* entire. *Loreal*: one; touching the internasal, touching the eye in some species. *Praeocular* variable, one usually present. Absent in some species. *Postocular* variable; usually one, sometimes none. *Suboculars* variable; one to four. *Temporals* variable; one to three anterior. *Supralabials*: 7 or 8; the 1st and 2nd touching the nasal, usually none touching the eye,

the last longer than the two preceding shields. *Mental* variable ; sometimes touching the anterior sublinguals, sometimes not. *Sublinguals* : three large pairs, roughly symmetrical, with no groove between them. *Injralabials* very small. *Costals* : in 15 rows in the whole body-length ; smooth, or some of the median rows feebly keeled. No apical pits. *Vertebrales* usually enlarged ; arising by a gradual development, not a confluence of rows. *Ventrals* well developed, broad ; the first the largest of the series. *Anal* entire. *Supracaudals* in even rows, *vertebrals* not enlarged. *Subcaudals* in pairs.

#### OSTEOLOGICAL CHARACTERS.

*Praemaxilla* about as broad as high. *Nasals* forming an osseous suture with the frontals. *Frontals* contributing to the rim of the orbit ; not constricted at midorbit. *Praefrontal* suture extending beyond the middle of the frontal. *Postfrontal* not touching the frontal. *Parietal* contributing to the rim of the orbit. *Supratemporal* rudimentary ; not projecting beyond the quadrate anteriorly. *Quadrate* well developed ; oblique from above backwards. *Columella auris* extending from about the middle of the quadrate to the exoccipital. *Maxilla* about half the length of the dentary ; expanded in depth anteriorly ; expanded laterally posteriorly. Teeth 1 to 6 ; anododont, syncranterian, scaphiodont. An edentulous space anteriorly also posteriorly in some species. *Ectopterygoid* well developed ; expanded anteriorly to overlie the posterior expansion of the maxilla. *Palatine* short ; expanded laterally anteriorly. Teeth 1 to 3 ; anododont, kumatodont or scaphiodont. An edentulous space anteriorly, and in some species posteriorly. *Pterygoid* long. Teeth 7 to 20 ; anododont, scaphiodont. *Mandible*. Angular present. Splenial present. Coronoid absent. Dentary about twice its distance to the quadrate. Teeth 15 to 23 ; anododont, scaphiodont. *Occipitals*. The condyle is horseshoe-shaped, and formed by processes from the basioccipital and exoccipitals.

*Vertebrae*. *Neural spines*. Absent on the atlas. Well developed and as long as the body on the axis. Short and obliquely set backwards on the 3rd and 4th vertebrae, nearly as long as the body in the succeeding corporeal, and the caudal vertebrae. *Hypapophyses*. Well developed and vertical on the atlas. Bifid on the axis, the anterior vertical, the posterior obliquely set backwards. Disappearing in the vertebrae in the second-eighth of the body.<sup>1</sup> Absent on the first two caudal vertebrae. Two, laterally placed, on the 3rd and succeeding caudal vertebrae.

*Costae*. First as long as the second, articulated to the 3rd vertebra. Last bifid, the outer ramus about one-third as long as the inner. *Pseudocostal processes*. Bifid on the 1st, 2nd and 3rd caudal vertebrae, single on the succeeding vertebrae.

<sup>1</sup> As I find is the case in over twenty five species of Colubridae where the hypapophyses are not continued to the last vertebra. This site suggests some connection with the shoulder girdle of some ancestral form.

**Amblycephalus monticola** (Cantor).

*A. monticola*, Annandale, *J.A.S. Beng.* 1905, p. 176; *Rec. Ind. Mus.* 1912, pp. 37, 50 and 54; Boulenger, *Cat.* III, 1896, p. 443; Sclater, *List. Sn. Ind. Mus.* 1891, p. 66; Wall, *J. Bomb. N. H. S.* 1908, p. 354; *id.*, *ibid.*, 1909, p. 356; *id.*, *ibid.*, 1910, p. 843.

*Colour.* Uniform brown of various shades dorsally, lighter in the flanks. A series of narrow, blackish, vertical bars laterally, most distinct in the anterior part of the body, and tending to disappear at mid-body or posteriorly. Belly uniform paler brown to sordid yellow, with darker spots or dots. Head brown above. A more or less distinct narrow black bar on the neck, sending forwards a branch to the supercilium, and often another between the parietal shields. A narrow blackish streak from the eye to the gape.

*Length.* My largest specimen a female, measured 750 mm. (2 feet, 5½ inches).

*Disposition.* A live specimen that I acquired in Assam apparently unscathed proved to be a very quiet inoffensive creature, that allowed itself to be handled without betraying any malice. In spite of every provocation I could not induce it to assume an attitude of offence, or bite any object, but it emitted the tongue in a lazy fashion. Its movements were slow, which is not surprising in a snake that has so strongly compressed a body.

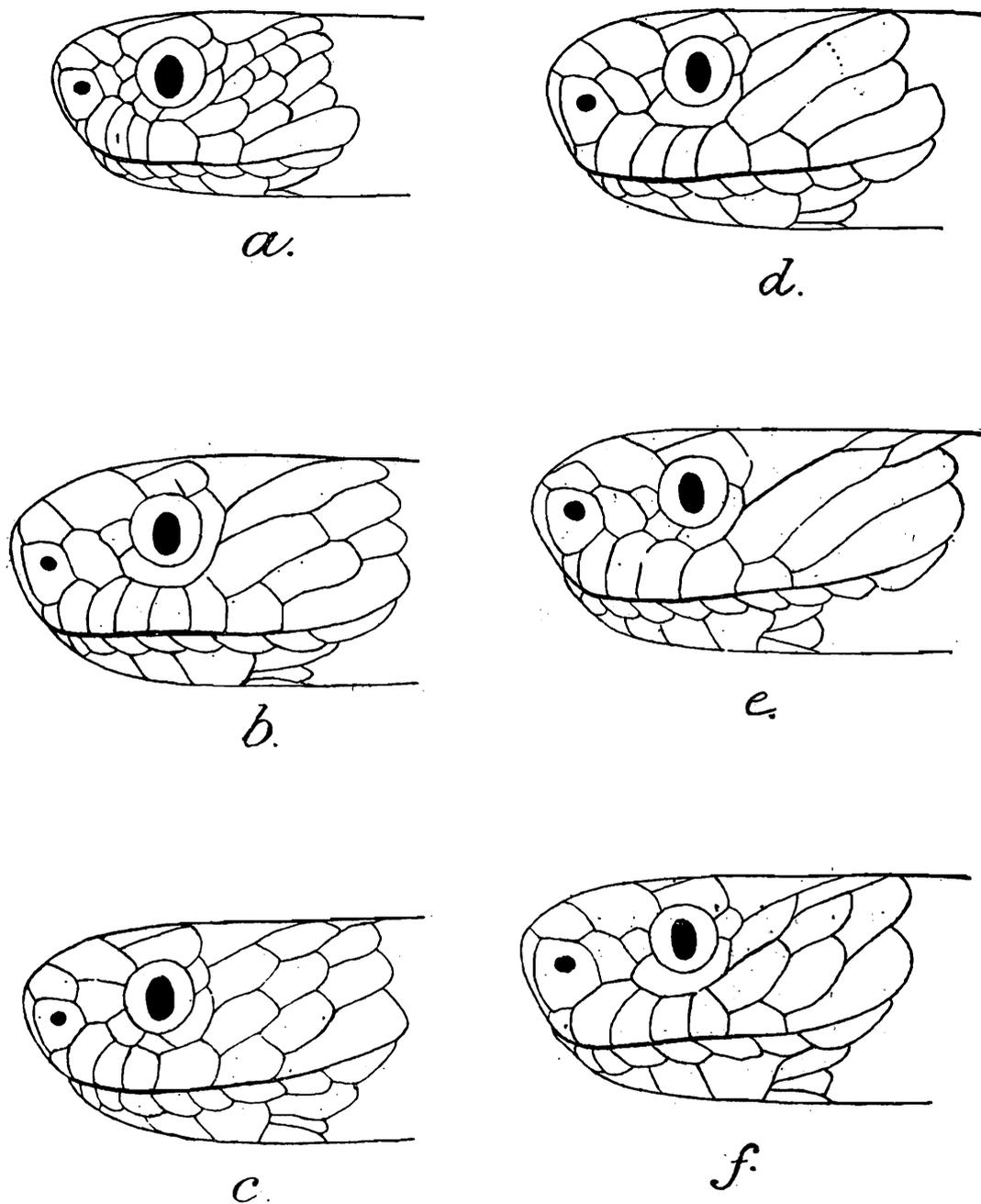
*Food.* The diet appears to consist exclusively of slugs and snails. I have on some occasions in Shillong removed one or two large black slugs from the stomach, which I was informed were a species of *Austenia*. Many other specimens contained small snails, some devoid of shell, others with broken shell attached, and once one with a perfect shell. I have known as many as five of these small snails in one specimen.

*Breeding.* I have examined three gravid females, and found eggs of such a size and character as to make it fairly certain that this species is oviparous. As many as six eggs were found in one example. The smallest specimens I have seen, apparently hatchlings, were 168 and 178 mm. (6½ and 7 inches) in length, but no dates of capture were available. The anal glands in both sexes furnish a custard-like secretion.

The genitalia are different from those of any other snake I have examined. They are slender cylindrical organs, which are bifurcate about half the length of their maximum extrusion. Each limb is cylindrical, and from base to apex there is no sign of any of those cartilaginous processes, which are seen in snakes of the families Colubridae and Viperidae.

*Lepidosis.* *Praefrontal* touching the eye. *Frontal* hexagonal in shape. Length much greater than the snout, greater than its breadth, two-thirds to four-fifths the parietals. *Supraoculars* length subequal to, or rather greater than the praefrontals, half to three-fifths the frontal, two-fifths to half the parietals. *Loreal* touching the eye. *Praeocular* wanting; replaced by the contact of the loreal with the eye. *Postocular* one. I have seen this

confluent with the supraocular on one side in one specimen. *Suboculars* usually two, sometimes three. *Temporals* two anterior, the lower about half the length of the last supralabials. Usually two lying along the parietals. *Supralabials* 7, sometime.



TEXT-FIG. 1.—Lepidosis of the Head in

- a. *Amblycephalus carinatus*, Boie.
- b. *A. moellendorffi* (Boettger).
- c. *A. monticola* (Cantor).
- d. *A. andersoni*, Boulenger. Type.
- e. *A. modestus*, Boulenger. Type.
- f. *A. macularius* (Theobald): Co-type.

8 (rarely 6). In all my fresh specimens I found none touched the eye. In spirit specimens, however, it is not unusual to see the 4th, or the 4th and 5th touching the eye; 7th as long as, or longer than the 6th and 5th taken together. *Mental* usually touching the anterior sublinguals, rarely not. *Costals* in 15 rows in the

whole body length, obscurely keeled in the median rows of the posterior part of the body. Vertebral enlarged. *Ventrals* 181 to 198. *Subcaudals* 69 to 87.

*Eye.* Diameter subequal to the supraocular, three-sevenths to four-thirds its distance to the edge of the lip.

*Dentition.* From three skulls in my collection. *Maxillary*: 5 to 7; syncranterian, anododont, kumatodont. An edentulous space anteriorly that would take two teeth. *Palatine*: 2 or 3; anododont, isodont. An edentulous space anteriorly that would take about two teeth, and another posteriorly that would take about three. *Pterygoid*: 11 to 13, anododont, very evenly scaphiodont. *Mandibular*: 20 to 24, anododont, very evenly scaphiodont.

*Distribution.* Eastern Himalayas. Sikkim. Assam: Abor Hills (*Ind. Mus.*), Naga Hills (Samaguting, *Ind. Mus.*); Khasi Hills (*F. W.*); Sibsagar (*Ind. Mus.*); near Jaipur (*F. W.*); Dibrugarh (*F. W.*).

*Note.*—I discredit the authenticity of the record from the Nicobars on the authority of de Roepstorff. The specimen (No. 8888) in the Indian Museum is indubitably this species. De Roepstorff's name is associated with two other records equally untrustworthy in my opinion, he being the only authority to record the Indian *Polyodontophis sagittarius*, and the Ceylon *Oligodon sublineatus* from the Nicobars.

### *Amblycephalus moellendorffi* (Boettger).

*A. moellendorffi*, Boulenger, *Cat.* III, 1896, p. 443; Selater, *List Sn. Ind. Mus.* 1891, p. 67.

*Colour.* Dirty white or greyish, heavily mottled with very fine purplish-brown specks on the dorsum. Many small round whitish spots outlined with purplish-brown, showing a decided tendency to form crossbars. A more or less conspicuous whitish collar. Belly irregularly spotted with blackish laterally. Beneath the tail densely mottled with fine blackish specks. Head uniform purplish-brown. Young marked exactly like adults.

*Length.* 350 mm. (1 foot,  $1\frac{3}{4}$  inches). The smallest specimen I have seen was 162 mm. ( $6\frac{3}{8}$  inches) in length.

*Habits.* The many specimens I acquired on Hong Kong Island were captured in the low scrub jungle on the slopes of the Peak.

*Lepidosis.* *Praefrontal* touching the eye. *Frontal* hexagonal in shape. Length subequal to or rather greater than the snout, subequal to its breadth, three-fifths to four-fifths the parietals. *Supraocular* shorter than the praefrontal, about half the length of the frontal, one-third to two-fifths the parietals. *Loreal* not touching the eye. *Praeocular* one. *Postocular* usually none (confluent with the subocular). *Subocular* a single crescentic shield from the supraocular to the praeocular (sometimes not united with the postocular). *Temporals* the upper usually as long as the parietals, sometimes divided into two. The lower

subequal to the last labial. *Supralabials* usually 7 (sometimes 8). None touching the eye; 7th as long as the three preceding shields. *Mental* not touching the anterior sublinguals. *Costals* in 15 rows in the whole body length, not keeled. *Vertebrales* not enlarged. *Ventrals* 136 to 159. *Subcaudals* 31 to 50.

*Eye.* Diameter subequal to the supraocular, equal to or rather less than distance to lip.

*Distribution.* Burma, Tenasserim (No. 4870, *Ind. Mus.*). Siam, Cochin China, S. China and coastal Islands.

### *Amblycephalus macularius* (Theobald).

*A. macularius*, Boulenger, *Cat.* III, p. 444; Sclater, *List. Sn. Ind. Mus.* 1891, p. 67; Wall, *Rec. Ind. Mus.* 1909, p. 149.

*A. modestus*, Boulenger, *Cat.* III, p. 444; Sclater, *List. Sn. Ind. Mus.* 1891, p. 66.

*A. andersoni*, Boulenger, *Cat.* III, p. 444; *J. Bomb. N.H.S.* XVI, p. 235; Wall and Evans, *J. Bomb. N.H.S.* XIII, p. 611; Wall, *J. Bomb. N.H.S.* XVIII, p. 783.

*Colour.* Dorsally densely mottled with very fine specks of purplish-brown, with several small round whitish, or parti-coloured whitish and purplish spots interspersed. Ventrally beautifully dappled with purplish-black and white, especially laterally. Head uniform blackish-purple with speckling on the upper lip.

A female specimen sent to me from the Southern Shan States is very dark, and has no small round white or parti-coloured spots. Another from the same locality in the Bombay collection (ventrals 161, subcaudals 42) is uniform in colouration like the type of *A. modestus*.

*Length.* The largest I have seen measured 483 mm. (1 foot, 7 inches) in length.

*Habits.* Captain Venning wrote when sending me a specimen from Kalaw, that it was found at dusk clinging to the tops of some rank grass.

*Food.* As far as I am aware no observations have been made.

*Breeding.* Captain Venning's specimen, just alluded to, was a gravid female. It was killed on the 9th of June, 1913, and contained six large eggs.

*Lepidosis.* *Praefrontal* touching the eye. *Frontal* hexagonal in shape. Length much greater than the snout, three-thirds to four-thirds its breadth, rather shorter than the parietals. *Supraoculars* three-fourths, to equal to, the praefrontals, half to three-fifths the frontal, about two-fifths the parietals. *Loreal* not touching the eye. *Praeocular* usually one. (In specimen No. 8024 in the Indian Museum it is confluent with the praefrontal). *Postocular* usually one. (In the type of *modestus* it is confluent with the supraocular on the left side, normal on the right.) *Suboculars* usually one crescentic shield. (In the type of *modestus*, and in specimens Nos. 8025 and 8026 in the Indian Museum it is divided into two.) *Temporals* very variable. One or two anteriorly. (In the type of *modestus* the upper appears to be con-

fluent with the parietal.) There are usually two subequal shields lying along the parietals, but these may be confluent, as in the type of *andersoni*. (In the types of *andersoni* and *modestus* there is one long inferior temporal, apparently due to a confluence of the two normal shields.) *Supralabials* 7 (8 on one side in one example). None touching the eye. *Mental* sometimes touching the anterior sublinguals, sometimes not. *Costals* in 15 rows in the whole body length. Some of the median rows keeled. *Vertebrales* not enlarged. *Ventrals* 150 to 169. *Subcaudals* 37 to 51.

*Eye*. Diameter subequal to the length of the supraocular, subequal to or rather greater than its distance to edge of the lip.

*Dentition*. From one bad skull in my collection, nearly all the teeth being broken. *Maxillary*: 3 (4? in the type of *modestus*). An edentulous space anteriorly that would take three teeth, and one posteriorly that would take two. *Palatine*: 1? An edentulous space anteriorly that would take three teeth, and one posteriorly that would take two. *Pterygoid*: 7? left, 9? right, no edentulous space anteriorly. *Mandibular*: 23? on the right side, ? left; no edentulous space anteriorly or posteriorly.

*Distribution*. Eastern Himalayas: Sikkim (Gopaldhara, Darjeeling District, No. 18665, *Ind. Mus.*, type of *A. andersoni*). Burma: S. Shan States (Tounggyi, Wall and Evans, and Bombay collection; Kalaw, F. W., Mogok, *Brit. Mus.*); Rangoon (No. 8028, *Ind. Mus.*, type of *A. modestus*); Tenasserim (Martaban, Nos. 8024, 8025 and 8026, *Ind. Mus.*, types of *A. macularius*); Sukli, Dawna Hills (No. 17034, *Ind. Mus.*) Indo-China (Mocquard, *Rept. l'Indo-Chine*, 1907, p. 48).

*Note*.—I have examined most critically four times during the last sixteen years the monotypes of *A. modestus* and *A. andersoni*, and the three types of *A. macularius* in the Indian Museum, and can come to no other conclusion but that all represent a single species. *A. macularius* has page priority over *A. modestus*, and both antedate (1868) Boulenger's *A. andersoni* (1888).

I have now examined sixteen specimens.

### *Amblycephalus carinatus* Boie.

*A. carinatus*, Boulenger, *Cat.* III, 1896, p. 445; Sclater, *List. Sn. Ind. Mus.* 1891, p. 67.

*Colour*. Dorsally brown of various shades, with numerous dark small spots arranged with a tendency to form cross bars. Ventrally yellowish or whitish with darker spots or mottling, which is often heaviest in the median line. An X-shaped dark mark on the nape, and a narrow dark streak behind the eye, sometimes connected with the X. A specimen in the Indian Museum (No. 8022) from Tenasserim is a uniform drab colour.

*Length*. The longest I have examined is 603 mm. (1 foot, 11 $\frac{3}{4}$  inches) long, the tail 120 mm. (4 $\frac{3}{4}$  inches). The smallest, apparently a hatchling, was 184 mm. (7 $\frac{1}{4}$  inches).

*Lepidosis*. *Praefrontal* not touching the eye. *Frontal* pentagonal in shape. Length much greater than the snout, three-sevenths to four-thirds its breadth, subequal to the parietals. *Supraoculars* longer than the snout, subequal to the frontal, subequal to the parietals. *Loreal* not touching the eye. *Praeocular* one. *Postocular* usually one, sometimes absent being confluent with the subocular; rarely two. *Subocular* variable. Sometimes one crescentic shield, sometimes confluent with the postocular, sometimes divided into three or four. *Temporals* usually three anterior, the longest about three-fifths to two-thirds the last supralabial. Three or four lie along the parietals. *Supralabials* usually 7 or 8 (6 on the right side in specimen No. 8022 in the Indian Museum, 9 on the left side in specimen No. 11434 in the Indian Museum). None touching the eye. The last longer than the two preceding taken together. *Costals* in 15 rows in the whole body length; several of the median rows keeled. *Vertebrae* not enlarged. *Mental* not touching the anterior sublinguals. *Ventrals* 161 to 199. *Subcaudals* 53 to 92. Specimen No. 12781 in the Indian Museum from the Burma-Siam Hills has 92 (ventrals 193). Another, No. 11434 from Deli, Sumatra, has 87 (ventrals 187).

*Eye*. Diameter less than the supraocular, subequal to the length of the snout.

*Dentition*. From the figure in Boulenger's Catalogue. Vol. III, p. 438. *Maxillary*: 5; anododont, syncranterian, scaphiodont. An edentulous space anteriorly that would take two teeth. *Palatine*: 3; anododont, coryphodont. An edentulous space anteriorly that would take two teeth. *Pterygoid*: 15; anododont, scaphiodont. No edentulous space anteriorly. *Mandibular*: 18; anododont, strongly scaphiodont.

*Distribution*. Burma: Tenasserim (Mergui; Tavoy; Burma-Siam Hills; *Ind. Mus.*). Siam (*Malcolm Smith*). Cochin China: Lao Mountains (*Brit. Mus.*). Malay Archipelago: Sumatra (*Ind. Mus.*); Java (*Brit. Mus.*).

*Note*. I have examined nine examples in the Indian Museum.

### *Amblycephalus hamptoni* Boulenger.

*A. hamptoni*, Boulenger; *F. Bomb. N.H.S.* 1905, p. 236.

*Colour*. "Pale brown above with numerous blackish bars interrupted on the middle of the back, two black longitudinal streaks on the back of the head and nape, sides of head and lower parts yellow; a few black dots on the belly, and under the tail."

*Length*. 555 mm. (1 foot, 9 $\frac{3}{4}$  inches); tail 150 mm. (5 $\frac{7}{8}$  inches).

*Lepidosis*. *Praefrontal* touching the eye. *Frontal* of hexagonal in shape. Length greater than the snout, equal to its breadth, three-fifths the parietals. *Supraoculars* length equals the praefrontals, three-fifths the frontal; two-fifths the parietals. *Loreal* not touching the eye. One on the right side, two ( $\frac{1}{2}$ ) on the

left. *Praecocular* one. *Postocular* confluent with the subocular. *Temporals* one; about as long as the last supralabial. *Supralabials* 8 on the right side, 7 on the left, none touching the eye. *Mental* touching the anterior sublinguals. *Costals* in 15 rows in the whole body length. Median rows feebly keeled. *Vertebrals* feebly enlarged. *Ventrals* 202 (Boulenger), I count them 197. *Subcaudals*: 96.

*Eye.* Diameter subequal to the supraocular, greater than its distance to the edge of the lip.

*Distribution.* *Burma*: Mogok, S. Shan States (*Brit. Mus.*).

*Note.*—Known from a single specimen in the British Museum.