

NOTES ON SNAKES COLLECTED IN BURMA IN 1924

BY

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In response to an appeal to various residents in Burma I obtained 323 snakes during 1924, representing 57 species. These include four new to Science, viz., *Natrix biteniata*, *Natrix gilhodesi*, *Natrix nigriventer*, and *Natrix clerki*; a new colour variety of *Calliophis macclellandi*, viz.—*concolor*; further the collection adds to the list of the Burmese anguifauna four more species, viz.—*Natrix nuchalis*, previously known from China, *Rhabdops bicolor*, *Nerodia modesta* and *Ptyas nigromarginatus* previously known from Assam.

I take this opportunity of thanking those who have assisted me in advancing our knowledge of the fauna of this province. The Rev. Father Gilhodes rendered signal service in procuring 104 specimens from the Kachin Hills, an area little exploited, and his material has been specially interesting as the fauna so closely approximates to that of the Western Chinese hills. He has been responsible for adding two species new to Science. Mr. Clerk also worked for me in the Kachin Hills, and obtained one new species and many specimens that had previously been considered very rare. Mr. P. M. R. Leonard procured many very valuable specimens from the Northern Shan States, including one new species. Major Rodrigues acquired many interesting specimens in the Southern Shan States. Working as he did in a locality that had been previously exploited by the late Colonel Bingham, it was hardly to be expected that he would find a new species. His material however was valuable in confirming and amplifying the work of his notable predecessor. Captain Treston, I.M.S., succeeded in throwing much light on the local species at Myitkyina. Captain Wilkinson and Assistant Surgeon O'Reilly contributed to our knowledge of the snakes in and about Mandalay.

Names of localities are spelt in accordance with the latest maps of the Geological Survey of India.

Family—TYPHLOPIDÆ

Typhlops diardi Schlegel

Fourteen examples of this common snake were acquired, all of which were quite typical except one large adult twelve inches long, which was a uniform pale grey in colour. As far as I could judge this was not due to impending desquamation. I referred to a similar variety from Assam in my paper on this snake in this Journal (vol. xxv, p. 381) and proposed the name *cinereus* for it.

Dr. Malcolm-Smith (Jour. Nat. Hist. Soc. Siam., vol. 6, p. 53) suggests that *T. tephrosoma*, a similarly coloured snake described by me from the Khasi Hills, Assam, should be regarded as *T. diardi* as he has found typical *diardi* in Siam with 28 scale rows. This view is probably correct.

FOES. Two specimens measuring 96 and 288 mm. ($3\frac{7}{8}$ and $11\frac{1}{2}$ inches) were recovered from the stomach of a Macclelland's coral snake (*Calliophis macclellandi*).

BREEDING. (a) *Genitalia*. One male specimen had the claspers extruded. These organs are duplicated as in other snakes. Each clasper is cylindrical, with a 'raphé' running from behind outwards to the tip, which is swollen and thrown into folds like a rosette. There are no recurved processes such as one sees in Colubrine and Viperine species.

(b) *Season*. Three females measuring 275, 305 and 342 mm. (11, 12 and $13\frac{1}{2}$ inches) were egg-bound. The first killed on the 10th of June contained 7 eggs, the second killed on the 30th of June showed 3 follicles obviously impregnated, and the third killed in July contained 8 eggs.

GROWTH. One female was exceptionally large measuring 417 mm. (1 foot, $4\frac{1}{2}$ inches).

DISTRIBUTION. This species which is so common in the plains of Burma as far north as Fort Hertz, Putao District, occurs up to over 5,000 feet. Eight specimens were sent to me from Huton in the Kachin Hills (4500 feet). Venning obtained it in the Chin Hills at Minkin (5,600 feet). Also taken at Taunggyi, Southern Shan States (5,000 feet).

Family—BOIDÆ

Sub-family—PYTHONINÆ

Python molurus (Linné)

One small female (?) specimen came in from Myitkyina, measuring 915 mm. (3 feet), the tail 112 mm. ($4\frac{1}{2}$ inches). This was killed between the 1st and 24th of June. The ventrals numbered 259 and subcaudals 68 of which the last 8 were entire.

DISTRIBUTION. Probably occurs throughout Burma. Localities actually known to me are Arakan (near Akyab); Pegu District (Pyinbongyi); Magwe District (Minhla); Myitkyina; Tennasserim District (Tavoy); North Shan States (Maymyo).

Family—ILYSIIDÆ

Cylindrophis rufus (Laurenti)

Two specimens were sent in from Bhamo, and Mandalay. A freshly-killed specimen was black with an ultramarine fluorescence in reflected light. The dorsal bars were faint orange anteriorly and deep orange posteriorly. The anal region was bright canary, and the tail brilliant orange beneath. One of these was killed in a house at night.

The eye in life is completely black so that the shape of the pupil is not visible.

DISTRIBUTION. An uncommon species occurring in the basin of the Irrawaddy from Bhamo to Ava and its tributary the Tsamon river (Pyawbwe); the Pegu river (Pegu); the Sinthe river (Pyinmana) and in the Tenasserim District. It occurs also in the hills up to about 5,000 feet. North Shan Hills (Maymyo); South Shan Hills (Taunggyi).

Family—XENOPELTIDÆ

Xenopeltis unicolor Reinwardt

All the thirteen specimens received came from Myitkyina, all collected between the 1st of June and 15th of November.

FOOD. Two had recently fed. One of these contained two full grown munias (*Uroloncha punctulata*) and the other the remains of what appeared to be a callow young shrew.

BREEDING. None showed any evidences of impregnation.

GROWTH. Two young killed between the 24th of August and the 15th of November measured 317 and 342 mm. ($12\frac{3}{8}$ and $13\frac{3}{8}$ inches). The largest specimen was a female which taped 818 mm. (2 feet $8\frac{1}{4}$ inches).

LEPIDOSIS. The ventrals ranged from 182 to 189 and the subcaudals from 24 to 25.

DISTRIBUTION. It appears to be restricted to the basin of the Irrawaddy from Myitkyina southwards, and to river basins further east. Has been recorded from Myitkyina, Ava, Tharawaddy, Prome, Pegu, Rangoon, Bassein, Tenasserim District (Tavoy, Mergui).

Family—COLUBRIDÆ

Polyodontophis collaris (Gray)

Five specimens from the Kachin Hills (Huton 4,500 feet). Three of these contained skinks (*Lygosomata*?) in the stomach.

Natrix bitæniata sp. nov.

A small snake sent to me by Mr. P. M. R. Leonard from Kutkai, North Shan States (4,500 feet) which I at first took to be a specimen of *Rhabdophis parallelus* Boulenger, proves to be a very distinct species. I prepared the skull of a similar specimen from Sinlum Kaba, Kachin Hills (6,000 feet), and find that the

maxillary dentition is syncranterian, whereas in *parallelus* from the Khasi Hills, Assam the dentition is diacranterian. An examination of all the specimens, identified as *parallelus* in the Bombay collection and the Indian Museum, shows that those collected in the Eastern Himalayas and the Assam Hills agree with *parallelus* in dentition, whereas the specimens from Burma (Kachin Hills and North Shan Hills) and all those collected by Anderson in the Yunnan Expedition of 1868, conform to the type of *biteniata*. Reference to Boulenger's Catalogue (vol. i, page 223), shows the author based his description of *parallelus* on six specimens from Sikkim, the Khasi Hills, Sanda on the upper Irrawady (1,500 feet; Lat. 24° 30', Long. 95°), and the Hotha Valley, Yunnan, the two latter specimens being collected by Anderson during the Yunnan Expedition. It seems probable that the two last will be found to conform with *biteniata*, and that the remaining four only should be retained as types of *parallelus*. For many years I have been puzzled to know why Boulenger placed *parallelus* in the subgenus *Tropidonotus* (= *Natrix*), as my skulls from Khasi Hill and Sikkim specimens show the maxillary dentition to be diacranterian and conforming to the dentition of the genus *Rhabdophis*. The explanation seems to be that when examining the dentition he had before him one of Anderson's specimens.

I have now seen ten specimens of *biteniata*, seven of which are Anderson's Yunnan examples in the Indian Museum. I have notes on eighteen specimens of *parallelus* from the Eastern Himalayas, and Assam Hills.

I have critically examined, side by side, Anderson's seven examples with several specimens of *parallelus* from the Eastern Himalayas, and the Assam Hills. They are surprisingly alike. I can find no constant character in the lepidosis to distinguish one from the other, and the few differences in markings are trivial. Were it not for the marked difference in the maxillary dentition, nobody would suppose them different.

The differences noted by me are :—(1) In *parallelus* there is a dark præocular streak sometimes extending to the rostral. There is no such streak in *biteniata*. (2) The postocular streak in *parallelus* is not so broad, or so well defined as in *biteniata*, and is interrupted at the gape, i.e., not connected with the lateral black body stripe. In *biteniata* the postocular stripe is continuous with the lateral body stripe. (3) In *parallelus* the blackish lateral body stripe on the 3rd and 4th rows above the ventrals, is not so well defined or conspicuous as in *biteniata*. As regards lepidosis, in *parallelus* the anterior temporal shields are usually single, in *biteniata* usually two.

LEPIDOSIS. *Rostral*, just visible above, depth about three-fifths the breadth. *Internasals*, a pair, truncate anteriorly; the suture between them subequal to that between the prefrontals. *Praefrontals*, a pair; the suture between them about two-fifths the length of the frontal. *Frontal*, greater than its distance to the end of the snout; breadth, a shade more than twice that of the supraocular at mid orbit. *Loreal*, one. *Praeocular*, one. *Postoculars*, three. *Temporals* 2+1. *Supralabials*, 8; the 1st and 2nd touching the nasals, 3rd, 4th and 5th the eye; 6th and 7th the lower temporals. *Posterior Sublinguals*, rather longer than the anterior; divergent posteriorly; touching the 5th, 6th and 7th infralabials; partially separated by two small azygos scales and one pair, after which is a narrow 1st ventral. *Costals*, two heads-lengths behind the head 19, midbody 19, two heads-lengths before the vent 17. Keeled to the penultimate row in mid body. Emarginate apically. No (?) apical facets. *Ventrals*, 164. *Anal*, divided. *Subcaudals*, 86 pairs.

In a ♂ from Sinlum Kaba the anterior temporals are single, ventrals 172, and subcaudals 92. In another from Sinlum Kaba the anterior temporal is single, the 4th and 5th infralabials only touch the eye, the ventrals are 160 and subcaudals 83.

DENTITION.¹ *Maxilla*, 23 teeth; syncranterian, anododont, coryphodont. *Palatine*, 17; feebly kumatodont. *Pterygoid*, 30 to 34; feebly scaphiodont. *Mandibular*, 28 to 29; anododont, feebly kumatodont.

¹ The teeth in three skulls of *Rhabdophis parallelus* in my collection from Sikkim are as follows :—*Maxilla*, 18 to 21; diacranterian. The cranterian teeth not twice the length of the preceding. *Palatine*, 14 to 16. *Pterygoid*, 20 to 26. *Mandibular*, 24 to 27.

DISTRIBUTION. *Burma* North Shan Hills (Kutkai); Kachin Hills (Sinlum Kaba); Upper Chindwin (Sanda). *China*. Yunnan.

*Natrix gihodesi*¹ Wall

Nineteen specimens of this snake, recently described by me in this Journal (vol. xxx, p. 587) were sent to me by the Revd. Father Gilhodes from Huton, Kachin Hills.

LENGTH. The largest specimen proved to be a female 486 mm. (1 foot 10 $\frac{3}{4}$ inches), tail 182 mm. (7 $\frac{1}{4}$ inches).

LEPIDOSIS. *Praeoculars*, five specimens had two on each side. *Postoculars*. There were two only on the left side in one specimen and two on both sides in another. *Supralabials*, the 4th and 5th were confluent in one specimen making a total of 8, the 4th and 5th only touching the eye. *Ventrals*, 146 to 157. *Subcaudals*, 92 to 108. The 2nd entire in one specimen.

FOOD. One contained a frog in the stomach.

BREEDING. Three examples proved to be egg-bound, the eggs being of such a size as to make it fairly certain that the species is oviparous. One killed in June contained one elongate egg, 31 mm. (1 $\frac{1}{4}$ inch) in length. One killed between July and October contained two eggs, and one killed between October and December two eggs, 26 to 28 mm. long (1 to 1 $\frac{1}{8}$ inch). The smallest dam taped 434 mm. (1 foot 4 $\frac{3}{4}$ inches). It would appear from the growth of specimens given below that the species is sexually mature when two years old.

GROWTH. In the months October to December one specimen 218 mm. (8 $\frac{3}{4}$ inches) long was killed which is obviously this year's production. Four others ranging between 380 and 442 mm. (15 and 17 $\frac{1}{2}$ inches) represent young of 1923, showing that the species about doubles its length in the first year of life. Another specimen 575 mm. (1 foot 10 $\frac{3}{4}$ inches) in length, probably represents one hatched in the year 1922.

DENTITION. From one skull in my collection. *Maxilla*, 26 teeth; syncranterian, anododont, coryphodont; the last 3 teeth enlarged but not twice the length of the preceding. *Palatine*, 14 to 16; anododont, isodont. *Pterygoid*, 25 to 27; anododont, feebly scaphiodont; the teeth except posteriorly about the same size as the palatine, *Mandibular*, 28 to 30; anododont feebly kumatodont.

Natrix nuchalis (Boulenger)

I described, as a new species in this Journal, a snake under the name of *N. leonardi* (Journ. B. N. H. S., vol. xxix, p. 466). Mr. Parker writes to me from the British Museum that he has compared this with the type of *N. nuchalis*, and several other specimens of the latter from the Tonkin Hills in China, and thinks that my *leonardi* cannot be separated from Boulenger's *nuchalis*.

LEPIDOSIS. I received one specimen from Sinlum Kaba, Kachin Hills, which differed from my type of *N. leonardi* in having the scale rows 19 two heads-lengths behind the head, 17 in midbody, and 15 two heads-lengths before the vent, as compared with the type where the rows numbered 17, 17 and 15. Miss Procter who preceded Mr. Parker examined my type of *N. leonardi* and while remarking on its affinities to *nuchalis* noted that the scales in my *leonardi* are strongly keeled, whereas in *nuchalis* they are feebly keeled. Mr. Parker found in some of the Tonkin specimens alluded to, the scale rows numbered 19, 17, 15. There appears therefore to be no doubt that my *leonardi* cannot be retained as a species distinct from *nuchalis*. The ventrals in my specimen number 149, and the subcaudals 48. It has two postoculars and two anterior temporals on the left side. The supralabials are 6. The 5th is a very long shield which appears to be a confluence of two. However this is a constant feature, not an aberrant one, as surmised in my original description, where I

¹ Mr. Parker writing to me from the British Museum doubts whether this species is entitled to rank as such, distinct from *N. khasiensis*. However there can be no doubt in my mind. I have one skull of *khasiensis* from Shillong, Khasi Hills. The maxilla holds 22 to 23 teeth, the palatine 16, the pterygoid 25 to 26, and the mandibular 31 to 32.

recorded these shields as 7. It is a female measuring 580 mm. (1 foot 11 inches) the tail 112 mm. ($4\frac{1}{2}$ inches).

DISTRIBUTION. A local hill snake which appears to be confined to an altitude above about 5,000 feet since no specimen was included among the 104 snakes received from Huton (4,500 feet) in the same Hills.

Natrix clerki sp. nov.

A single specimen of a snake which I consider deserves specific rank as a new *Natrix*, was sent to me by Mr. Clerk from Sinlum Kaba, Kachin Hills.

This is a ♂ measuring 565 mm. (1 foot $10\frac{3}{8}$ inches), the tail 170 mm. ($6\frac{3}{4}$ inches.)

LEPIDOSIS. *Rostral*, just visible above. *Internasals*, a pair; the suture between them equal to that between the praefrontal fellows; truncate anteriorly. *Praefrontals*, a pair. *Frontal*, length greater than its distance to the end of the snout. *Loreal*, one. *Praeocular*, one. *Postoculars*, three. *Temporals*, 1 + 2. *Supralabials*, 8; the 1st and 2nd touching the nasals, 3rd, 4th and 5th the eye, and the 6th and 7th the anterior temporal. *Posterior Sublinguals*, rather longer than the anterior; divergent posteriorly; touching the 4th and 5th infralabials. Separated posteriorly by one azygos and a pair of scales and succeeded by a narrow first ventral. *Costals*, two heads-lengths behind the head 19, midbody 19, two heads-lengths before the vent 17. Keeled to the last row in midbody. Emarginate apically, No. (?) apical facets. *Ventrals*, 175. *Anal*, divided. *Subcaudals*, 106; divided.

COLOURATION. Blackish-olivaceous dorsally to the edges of the ventrals. A series of ill-defined light roundish spots on the 5th row above the ventrals and the adjacent halves of the 4th and 6th rows, continued to the base of the tail. Belly yellowish anteriorly, merging to pale salmon posteriorly, suffused more deeply laterally; with an occasional small dark round spot on the edges of the ventrals. Head blackish-olivaceous. A short mesial light streak just behind the parietals. A light well-defined V on the nape beginning behind the gape. First 5 supralabials with black posterior borders. A black postocular stripe to the sides of the neck. Chin immaculate.

Nerodia piscator. (Schneider)

Thirty-three specimens from Myitkyina, Mandalay, Maymyo and Huton. The usual variety is one with large black spots. Olive specimens with a light chequering were received from Maymyo and Huton.

Nerodia modesta ? (Günther)

I received one specimen of a snake I refer with some doubt to this species.

LEPIDOSIS. *Internasals*, narrowed anteriorly. *Loreal*, present. *Praeoculars*, two. *Postoculars*, three. *Temporal*, one anterior. *Supralabials*, 9; the 1st and 2nd touching the nasals, 4th, 5th and 6th the eye, and the 7th and 8th the anterior temporal. *Costals*, 19 two heads-lengths behind the head, 19 in midbody, 17 two heads-lengths before the vent. Keeled to the penultimate row in midbody. *Ventrals*, 147. *Anal*, divided. *Subcaudals*, 84 (tail broken), divided.

COLOURATION. Darkish brown. A dorsal yellowish ill-defined lateral stripe on the 5th and 6th rows above the ventrals, with lighter spots incorporated. A series of blackish ill-defined spots below the light stripe and a less distinct series of blackish spots above the light stripe. Belly yellow with a squarish black spot near the edge of each ventral, forming a stripe from throat to tail tip. Head dark brown with pale vermiculations, and a pair of pale spots, one on each side of the interparietal suture. Supra and infralabials with blackish sutures. An ill-defined short yellowish temporal streak to the side of the neck.

LENGTH. 310 mm. (1 foot and $\frac{1}{8}$ of an inch), tail, broken; 87 mm. ($3\frac{1}{2}$ inches.)

HABITAT. Huton, Kachin Hills. This adds another species to the Burmese anguifauna.

DENTITION. *Maxilla*, supports dubiously 28 teeth, anododont, syncranterian, coryphodont. (In my only skull of *modesta* from Cherrapunji, Khasi Hills, Assam, the maxillary teeth number 22.)

Rhabdophis stolatus (Linné)

Twenty-two specimens from Myitkyina, Bhamo, Mandalay, Rangoon, Maymyo, Kutkai and Huton.

All the specimens from Maymyo were of the vermilion variety, and several of those from Mandalay, and Bhamo.

HABITS. One was killed at Bhamo in a bungalow at night.

FOOD. A frog found in the stomach of one.

BREEDING. One egg-bound ♀ from Mandalay killed in August or September contained 5 eggs about 25 mm. (one inch) long. Mrs. Swithinbank found eggs in her garden in Rangoon which hatched out about three weeks later. On September 27 one broke its shell at 10-15 a.m. another at 1-15 p.m. a third at 2-10 p.m. and a fourth at 2-20 p.m. The first left its egg at 4 p.m. but the rest remained within their eggs, being found outside them on the following morning.

Rhabdophis subminiatus (Schlegel)

Twenty specimens from Huton, Kachin Hills; Kutkai, Tawongnga, and Maymyo in the North Shan States, Taunggyi in the South Shan States, and Maungdaw near Akyab.

HABITS. Two of these were captured alive. They erected themselves and flattened the fore body making a great demonstration of anger, but refused to bite on provocation.

DISTRIBUTION. This common species is universally distributed in Burma. It is a somewhat uncommon snake in the plains, but a common one in the Hills up to 6,500 feet. Blyth records it from Arakan. I have records from Maungdaw on the coast above Akyab and Myitkyina; Tharawaddy District (Rangoon). Pegu District (Pegu, Tadungu); Thaton District (Thaton, Shwegun); Amherst District (Kawkareik); Kachin Hills (Huton); Chin Hills (Haka); Pegu Yomas (Hinyachaung); North Shan Hills (Maymyo, Kutkai, Tawongnga), South Shan Hills (Taunggyi).

Rhabdops bicolor (Blyth)

A single adult specimen was sent to me from Huton, Kachin Hills. This adds another snake to the Burmese anguifauna. It was previously only known from the Khasi Hills in Assam, and from Yunnan.

COLOURATION. The specimen, a recently killed one, is olivaceous-green dorsally, to the edges of the ventrals. The scales are narrowly edged with black, forming interrupted linear stripes except on the two lowest rows where the black, is modified to a mottling. The belly is uniform canary yellow. The head is olivaceous, this hue extending beneath the chin, and becoming a mottling on the posterior sublingual shields.

LEPIDOSIS. The ventrals number 188, and the subcaudals 57 (the tip of the tail slightly deficient). The lateral scales in the anal region are not tuberculate.

DISTRIBUTION. This is a hill snake living at an altitude above about 4,000 feet. Only recorded in Burma from the Kachin Hills.

Plagiopholis blakewayi Boulenger

Nine specimens 6♂ and 3♀ were received from Sinlum Kaba, Kachin Hills.

COLOURATION. The dorsal colour varies considerably. Some specimens are a blackish brown, others a rich lustrous terracotta. Many of the scales are edged with black, others in the flanks have their lower borders, where overlapped, white, or salmon-pink, in the ruddy specimens. A black zig zag line borders the ventrals. The belly is dirty yellowish in the dark specimens, and dull salmon in the ruddy examples. A sparse and irregular mottling of fine black spots, very variable in extent, is seen on the belly. A more or less conspicuous black arrow head on the nape. Ruddy spirit specimens when skinned are found to have tinged the tissues a salmon-pink.

LEPIDOSIS. There are several notable features in the scaling of this species. *Supralabials*, number 5 only, of which the 1st and 2nd touch the nasals, the 3rd the eye, and the 4th or 4th and 5th the anterior temporal. *Loreal*, absent except in one specimen. *Posterior temporal*, a single shield. *Infralabials*, the 1st do not touch, so that the mental forms a considerable

suture with the anterior sublinguals. *Costals*, in 15 rows in the whole length of the snake. The lateral scales in the anal region of males are strongly keeled, in their anterior halves, as one sees in males of the genus *Aspidura*.

Ventrals, ♂ from 126 to 130, ♀ from 126 to 132. *Anal*, entire. *Subcaudals*, ♂ 23 to 27, ♀ 21.

LENGTH. The longest ♂ measured 398 mm. (1 foot, $3\frac{3}{4}$ inches); the longest ♀ 362 mm. (1 foot, $2\frac{1}{4}$ inches.)

FOOD. One that had recently fed contained an earth worm in the stomach, and this explains the semi-liquid mud found in the intestines of other specimens.

GROWTH. One juvenile specimen taped 127 mm. (6 inches.)

DENTITION. From two skulls in my collection. *Maxilla*, 18 to 20 teeth; anododont, syncranterian, feebly kumatadont. *Palatine*, 15 to 20; anododont, isodont. *Pterygoid*, 21 to 23; anododont, isodont. *Mandibular*, 25 to 26; anodont, scaphiodont.

DISTRIBUTION. The fact that so many specimens were obtained at Sinlum Kaba at an altitude of 6,500 feet, while none came in from Huton (4,500 feet) in the same hills out of one hundred and four specimens seems to indicate that it is confined to what one may call an Alpine elevation. The type and another examined by me were obtained at Taunggyi in the South Shan Hills (5,000 feet).

Trirhinopholis nuchalis Boulenger

Thirteen specimens were sent in, eleven from Huton, Kachin Hills; and two from Kutkai, North Shan Hills.

COLOURATION. These specimens vary in their prevailing colour very much as does the last species. Some are blackish brown dorsally, others of a ruddy brown tinge. Many of the scales are edged with black, and many have white or pinkish yellow edges which overlapped, producing a variegation. The belly is yellowish-salmon finely peppered with black spots. There is also a lateral series of irregularly distributed squarish or oblong black spots. The head is olivaceous-black to the edge of the lip. A conspicuous black arrow head on the nape, its apex reaching the tip of the parietal shields. Some of the infralabial sutures black.

LÉPIDOSIS. *Loreal*, present, *Supralabials*, 6; the 1st and 2nd touching the nasals, 3rd and 4th the eye, and the 5th the anterior temporal. The 5th is an unusually large shield. *Posterior temporals*, 2. *Infralabials*, the 1st do not meet, so that the mental forms a considerable suture with the anterior sublinguals. *Costals*, in 15 rows in the whole body length. The lateral scales in the anal region of males are keeled as in the last species. *Ventrals*, ♂ 127 to 131, ♀ 138 to 141. *Anal*, entire. *Subcaudals*, ♂ 23 to 29, ♀ 22 to 27. 2nd and 3rd entire in two examples, 2nd, 3rd, and 4th in one.

LENGTH. The largest ♂ measured 474 mm. (1 foot $6\frac{2}{3}$ inches), and the largest ♀ 293 mm. ($11\frac{1}{2}$ inches).

FOOD. Many specimens had recently fed and all contained earthworms in the stomach, and much semi-liquid mud in the intestines.

DENTITION. From three skulls in my collection. *Maxilla*, 19 to 23 (24?) teeth; anododont, syncranterian, feebly kumatodont, *Palatine*, 15 to 19; anododont, feebly scaphiodont. *Pterygoid*, 21 to 29; anododont, scaphiodont. *Mandibular*, 24 to 27; anodont, feebly kumatodont.

DISTRIBUTION. It has usually been recorded from hills about 4,000 feet and over East of the Chindwin in the North, and East of the Tsamon and Sittang rivers further South. Foot hills in Katha District (Mansi); Kachin Hills (Huton, Sima, Sinlum Kaba); Ruby Mines District (Mogok); North Shan Hills (Kutkai); South Shan Hills (Taunggyi); Hills in Toungoo District (Thaundaung 3,500 feet); Karen Hills, exact locality not recorded, but probably from a range between the Salween river and its tributary the Prawn which averages 4,000 feet. It will almost certainly be discovered in the Tenasserim Hills as Malcolm-Smith records it from Ratchaburi, two miles east of the Tenasserim border.

Lycodon aulicus (Linné)

Twenty specimens from Mandalay, Myitkyina and Rangoon.

BREEDING. Two females 412 and 480 mm. (1 foot, $4\frac{1}{4}$ and 1 foot, 7 inches) killed in Mandalay between August and October were egg-bound and contained 3 eggs each.

Lycodon fasciatus (Anderson).

Ten specimens from Maymyo, Kutkai, Taunggyi, and Huton.

LEPIDOSIS. *Ventrals*, these range between 203 and 215. *Subcaudals*, 78 to 85.

FOOD. One had swallowed a skink, and another contained the tail of a lizard (skink?) in the stomach.

DENTITION. From four skulls in my collection. *Maxilla*, carries 9 to 11 teeth; oinododont, diacranterian, anisodont. The first 4 teeth progressively increase, the 5th is equal to the 4th, and is followed by a short edentulous space. The praecranterian series number 2 to 3, and are isodont. Cranterian 2, subequal and larger than the praecranterian. *Palatine*, 13 to 15; anododont, isodont. *Pterygoid*, 19 to 29; anododont, scaphiodont. *Mandibular*, 15 to 17; oinododont, anisodont. The first 4 or 5 progressively increase in size, the 5th (4th) is as long as the 4th (3rd) and succeeded by a short edentulous space. The postnodal number 10 to 12, and are scaphiodont. This species connects the genus *Lycodon* with *Dinodon*. It agrees with other *Lycodons* in having 2 instead of 3 cranterian teeth but it resembles *Dinodon* in having 6 to 7 praenodal teeth instead of 4 to 5. The praecranterian series resemble those of *Dinodon* in numbering 2 or 3 instead of from 4 to 12 as in other species of *Lycodon*.

DISTRIBUTION. It is a hill snake occurring at an altitude above 3,000 feet. Katha District (Mansi); Kachin Hills (Sima, Huton); Chin Hills (Haka); Ruby Mines District (Mogok); North Shan Hills (Maymyo, Kutkai); South Shan Hills (Taunggyi).

Ptyas nigromarginatus (Blyth)

One specimen was obtained at Huton, Kachin Hills. This species adds another to the Burmese anguifauna. It was previously known from the Eastern Himalayas, Assam Hills and Yunnan.

The specimen was a small one measuring 348 mm. (1 foot, 1 $\frac{3}{4}$ inches).

Ptyas mucosus (Linné)

Only four specimens were sent in from Mandalay and Maymyo. This is due to the fact that I asked various collectors to send in nothing more than a yard long.

Zamenis korros (Schlegel)

One juvenile female specimen was sent in from Huton, Kachin Hills, measuring 368 mm. (1 foot, 2 $\frac{1}{2}$ inches).

LEPIDOSIS. *Ventrals*, 191, *Subcaudals*, 139.

Coluber prasinus Blyth.

Five examples were received from Huton, Kachin Hills.

LEPIDOSIS. *Ventrals*, 197 to 209. *Subcaudals*, 105 to 111.

GROWTH. One, apparently a hatchling with patent umbilicus, killed between July and October measured 315 mm. (1 foot, $\frac{3}{8}$ of an inch). Another killed between October and December measured 334 mm. (1 foot, 1 $\frac{1}{8}$ inch).

ECTOZOA. The hatchling was infested with scarlet mites (*Microtrombidia*?) attached between the costals and ventrals.

DISTRIBUTION. This is a hill species occurring above about 4,000 feet. Recorded from Putao District (Gauri, Lat. 27°·31, Long. 97°·46); Katha District (Mansi); Kachin Hills (Huton); Ruby Mines District (Mogok); South Shan Hills (Taunggyi); Chin Hills (Haka).

Coluber porphyraceus Cantor

Five examples came in from Sinlum Kaba, Kutkai, Maymyo and Taunggyi.

DISTRIBUTION. A hill snake occurring usually above about 3,000 feet. Recorded from Chin Hills (Haka, Tiddin, Falam); Manipur; Katha District (Junction of the Mu and Kodan tributaries of the Chindwin); Kachin Hills (Sinlum Kaba); Ruby Mines District (Mogok); North Shan Hills (Kutkai, Maymyo); South Shan Hills (Taunggyi, Pwehla, Loilem); East of Salween river.

Coluber radiatus Schlegel

Five specimens from Huton, Mandalay, and Taunggyi.

GROWTH. A young specimen 368 mm. (1 foot, $2\frac{1}{2}$ inches) was killed in Mandalay between September and November, and another 398 (1 foot, $3\frac{3}{4}$ inches) at Huton between October and December.

DISTRIBUTION. This is a common species throughout Burma in the plains, and ascends the hills up to about 5,000 feet.

Coluber leonardi Wall.

Two fine specimens were sent in from Sinlum Kaba.

LENGTH. One specimen measured 780 mm. (2 feet, $6\frac{3}{4}$ inches), the tail 118 mm. ($4\frac{3}{4}$ inches).

LEPIDOSIS. *Praefrontal*. Confluent with the praecocular on the right side in one example. *Loreal*, wanting as in the type. *Ventrals*, 208 and 225. *Subcaudals*, 53 and 51.

DENTITION. From one skull in my collection. *Maxilla*, carries 16 to 17 teeth; anododont, syncranterian, feebly kumatodont. *Palatine*, 10; anododont, feebly kumatodont. *Pterygoid*, 12 to 13; anododont, scaphiodont. The low number of teeth is unusual in Indian species of this genus. *Oxycephalus*, has 12, *cantoris*, *hodgsoni*, *helena*, *melanurus*, *porphyraceus*, *prasinus*, *radiatus*, and *tæniurus* have from 15 to 30 teeth. *Mandibular*, 21; anododont, scaphiodont.

VERTEBRÆ. As in other Indian species of the genus, the hypapophyses disappear in the second eighth of the body.

DISTRIBUTION. Has only been found in Burma in the Kachin Hills (Sinlum Kaba, whence I have seen four examples). There is a specimen in the Bombay collection from Assam exact locality not on record.

Dendrophis pictus (Gmelin)

Four specimens from Huton, Kachin Hills and Hsen-wi, North Shan States.

This is a fairly common snake in Burma, occurring throughout the plains, and up to an elevation of about 4,500 feet.

Dendrelaphis subocularis (Boulenger)

One ♂ specimen from Huton.

LENGTH. 805 mm. (2 feet, $7\frac{3}{4}$ inches), the tail 232 mm. ($9\frac{1}{4}$ inches).

LEPIDOSIS. *Ventrals*, 168. *Anal*, divided. *Subcaudals*, 103.

DENTITION. From two skulls in my collection. *Maxilla*, carries 16 to 18 teeth; anododont, syncranterian, kumatodont. *Palatine*, 11 to 13; anododont, feebly scaphiodont. *Pterygoid*, 18 to 22; anododont, scaphiodont. *Mandibular*, 17; anododont, kumatodont.

DISTRIBUTION. Has only once before been recorded from Burma, viz., from Bhamo. This record probably means Bhamo District, and the specimen is probably from the Kachin Hills.

Oligodon herberti Boulenger

Two fine examples from Huton, both females.

LENGTH. 490 mm. (1 foot, $11\frac{3}{8}$ inches). The tail 65 mm. ($2\frac{5}{8}$ inches).

LEPIDOSIS. *Internasals*, absent. *Nasal*, entire. *Loreal*, absent.

Postocular, One. *Costals*, 13 in the whole body length. *Ventrals*, 212. *Subcaudals*, 35 and 38. Not angulate.

FOOD. A material in the stomach of one suggests yolk of eggs, but no egg cases were found.

BREEDING. One killed between July and October contained five eggs, in the oviducts, about 18 mm. ($\frac{3}{4}$ of an inch) long.

DENTITION. From one skull, in my collection, *Maxilla*, supports 7 teeth; anododont, syncranterian, strongly coryphodont. An edentulous space anteriorly that would take about two teeth. *Palatine*, 2 to 3; an edentulous space anteriorly. Teeth small. *Pterygoid*, completely edentulous. *Mandibular*, 9; anododont, feebly kumatodont. No edentulous space anteriorly.

DISTRIBUTION. Evidently a hill snake occurring above about 4,000 feet. Recorded from Ruby Mines District (Mogok); Kachin Hills (Huton, Sinlum Kaba),

Oligodon hamptoni Boulenger

A female example from Sinlum Kaba.

LENGTH. 486 mm. (1 foot, 7 $\frac{1}{4}$ inches).

LEPIDOSIS. *Internasals*, absent. *Nasal*, entire. *Loreal*, absent. *Postoculars*, 2. *Supralabials*, 5, the 1st only touches the nasal, the 2nd and 3rd the eye, and the 4th the temporal. *Costals*, 15 in the whole body length. *Ventrals*, 175, not angulate. *Subcaudals*, 30.

FOOD. Two flaccid soft-shelled eggs (of lizard ?), were found in the stomach, and four empty egg cases in the upper intestine.

DENTITION. From one skull in my collection. *Maxilla*, carries 8 teeth; anododont, syncranterian, strongly coryphodont. An edentulous space anteriorly that would support 3 or 4 teeth. *Palatine*, 5; an edentulous space anteriorly and posteriorly. *Pterygoid*, 6; a long edentulous space anteriorly and posteriorly. *Mandibular*, 12 to 13; anododont feebly kumatodont. No edentulous space anteriorly.

DISTRIBUTION. Evidently a hill species occurring above about 5,000 feet. Has been recorded from the Ruby Mines District (Mogok); Kachin Hills (Sinlum Kaba).

Oligodon torquatus (Boulenger)

Thirteen specimens 6 ♂ and 7 ♀ all from Myitkyina.

LENGTH. All of these which were collected between the 1st of June, and the 15th of November ranged between 229 and 275 mm. (9 $\frac{1}{8}$ and 11 inches). The largest ♂ measured 265 mm. (10 $\frac{5}{8}$ inches), and the largest ♀ 275 mm. (11 inches).

LEPIDOSIS. *Nasal*, entire. *Ventrals*, subangulate; ♂ 149 to 157, ♀ 156 to 161. *Subcaudals*, ♂ 30 to 32, ♀ 25 to 28.

FOOD. One example contained a soft-shelled egg (of lizard ?) in the gullet. One contained a large brown hairy spider in the stomach which in life with legs outspread would have been probably one and a half inches across. Three contained brown crickets 'in gastro', one of these having swallowed three. Two contained a Scolopendrum in the stomach, which Mr. Baini Pershad, Acting Director of the Indian Museum, has had identified as an *Otostigmus*, probably *rugulosus*.

DISTRIBUTION. Appears to be a very local snake confined to the Valley of the Irrawaddy between Myitkyina and Bhamo. It is evidently common at Myitkyina as thirteen specimens out of fifty-five proved to be this species.

* *Oligodon violaceus* * (Cantor)

Two specimens a ♂ from Taunggyi, and a ♀ from Thandaung. The former conforms to variety *multifasciatus* (Jan.). The latter to *cinereus* (Günther).

* I received two specimens of *Oligodon* from Thandaung, both so much alike in colouration and lepidosis (except the costal rows) as to justify some doubt as to whether the two species *violaceus* and *cyclurus*, could any longer be regarded as distinct. I presented both to the British Museum, and Mr. Parker wrote in reply 'I must confess I am somewhat uncertain as to their true nature. A comparison with the descriptions in Boulenger's Catalogue certainly leads one to believe that the specimen with 19 scale rows is *cyclurus* whilst that with 17 is *violaceus*. I have also compared the two specimens with numerous examples of both species from the collection, and find that the specimen A (19 rows) resembles *cyclurus* in all respects excepting a trifling difference in the caudals (35 instead of 37); specimen B (17 rows), however agrees more nearly with *violaceus*, differing from *cyclurus* in the number of scale rows, the shape of the loreal and parietals and the number of subcaudals. The two species appear to one to be very closely related, if they are really specifically distinct, the one apparently constant character which separates them is the number of scale rows.' I have one skull of *violaceus* from Samaguting, Assam (C 17. V 131. S 34) and four *cyclurus*, three from Burma and one from Sikkim. All have 19 scale rows. The only differences I can find in these skulls are (1) in *cyclurus* there is a short edentulous space at the back of the palatine which is not present in *violaceus*. (2) There is a short

LEPIDOSIS. *Nasal*, divided in the ♀, semi-divided in the ♂. *Ventrals*, angulate; 165 in the ♂, 181 in the ♀. *Subcaudals*, 30 in the ♂, 35 in the ♀.

FOOD. In the Taunggyi specimen I found an unbroken snail shell about 10 mm. ($\frac{3}{8}$ of an inch) in diameter, the occupant in a much digested state.

DISTRIBUTION. Occurs throughout Burma in the plains, ascending to about 5,000 feet into the hills. Recorded from Arakan Hills; Rangoon; Insein; Mingladon; Tenasserim; Toungoo Hills (Thandaung circa 3,500 feet); North Shan States (Kunchoung); South Shan Hills (Taunggyi. 5,000 feet); Katha District (Katha. Mansi).

Oligodon theobaldi (Günther)

Twelve specimens, including 6 ♂ and 6 ♀, all from Mandalay.

LEPIDOSIS. *Ventrals*, angulate; ♂ 163 to 173, ♀ 169 to 177. *Subcaudals*, ♂ 39 to 41, ♀ 27 to 37.

HABITS. A cat was found confronting one in a verandah at night.

FOOD. A much digested gecko was found in the stomach of one, and a brown cricket in the stomach of another.

GROWTH. One measuring 112 mm. ($4\frac{1}{2}$ inches) was killed between the 25th of August and the 15th of November. The largest ♂ measured 395 mm. (1 foot, $3\frac{5}{8}$ inches). The largest ♀ was 380 mm. (1 foot, 3 inches).

GENITALIA. The claspers of one were found to be cylindrical organs beset with minute recurved processes.

BREEDING. Three proved to be egg-bound, one containing two, one three, and one five eggs. These were killed between August and October.

DISTRIBUTION. A snake of the plains. It is an uncommon snake except at Mandalay where twelve examples were taken out of forty-eight snakes received. It seems to be restricted to the valley of the Irrawaddy, and further East from Shwebo in the North to Tenasserim in the South. Has been recorded from Shwebo; Yeu; Mandalay; Myingyan. Meikila; Minhia; Thayetmyo; Toungoo; Pegu; Rangoon; Tenasserim.

Oligodon albocinctus (Cantor)

Four specimens three ♀ and one not sexed from Huton.

LEPIDOSIS. *Ventrals*, not angulate; 187 to 204. *Subcaudals*, 49 to 58.

FOOD. One contained a mouse in the stomach, one a large brown cricket and a third a flacid soft-shelled lizard's (?) egg.

DISTRIBUTION. This is an uncommon snake in Burma occurring only in hills between about 2,000 and 6,000 feet. Has been recorded from Kachin Hills (Sima, Sadon, Huton); Chin Hills (Haka) and Arakan Hills. I have had a specimen this year (1925) from North Shan Hills (nr. Maymyo).

Oligodon purpurascens (Schlegel)

Two specimens from Maymyo, and Lashio.

COLOURATION. The Maymyo specimen conforms to variety (B) of Boulenger's Catalogue (vol. ii, p. 220), and is intermediate between varieties A (b) and A (c) of my paper on the genus *Oligodon*, in this Journal (vol. xxv, p. 329). The Lashio specimen accords with variety (F) of Boulenger's Catalogue and variety *O. p. maculatus* of my paper. It has twelve large, dark, bisected, dorsal spots on the body, and three on the tail. Belly immaculate.

LEPIDOSIS. *Costals*. In the Maymyo specimen 19; in the Lashio 21. *Ventrals*. In the Maymyo specimen 177; in the Lashio 191. *Subcaudals*. In the Maymyo specimen 42; in the Lashio 43.

edentulous space in the front of the pterygoid in *violaceus* which is not seen in *cyclurus*. In my paper on the genus *Oligodon* in this Journal (vol. xxv, p. 305 *et seq*) I also reported another difference (pp. 333 and 334) viz., that in *cyclurus* the parietal bone does not contribute to the orbital ring whereas in *violaceus* it does. This is a mistake, the parietal does not contribute to the orbital ring in either species.

At present the only external character which separates the two is the number of scale rows.

DISTRIBUTION. This is a common species throughout the plains of Burma, and occurs in hills up to an altitude of 5,000 feet. Has been recorded from Diamond Island ; Rangoon ; Mingledon ; Pegu ; Watiya ; Shwegun ; Tenasserim Province (Moulmein, Tavoy, Mergui) Chin Hills (Haka) ; South Shan States (Kalaw, Taunggyi) ; North Shan Hills (Lashio, Maymyo), Karen Hills.

Oligodon splendidus (Günther)

One female specimen from Mandalay.

LEPIDOSIS. *Ventrals*, 187. *Subcaudals*, 39.

BREEDING. This specimen proved to be egg-bound, but the date of its capture is not on record. The eggs numbered two, and were large, measuring 35×12 mm. ($1\frac{3}{8} \times \frac{1}{2}$ an inch).

DENTITION. From two skulls in my collection. *Maxilla*, supports 10 to 11 teeth ; anododont, syncranterian, strongly coryphodont. No edentulous space anteriorly. *Palatine*, 7 to 9 ; anododont, feebly kumatodont. No edentulous space anteriorly or posteriorly. *Pterygoid*, 8 to 15 ; anododont, feebly scaphiodont. An edentulous space anteriorly, and posteriorly. *Mandibular*, 13 to 14 ; anododont, kumatodont. No edentulous space anteriorly or posteriorly.

DISTRIBUTION.¹ A snake of the plains, occupying a restricted area in the valley of the Irrawaddy between Shwebo and Pakokku, and the lower parts of its tributaries, the Chindwin, and Tsamon rivers where it is not uncommon. Recorded from Rybu Mines District (1,000 feet) ; Shwebo ; Monywa ; Sagaing ; Mandalay ; Kyaukse ; Pakokku ; Pyawbwe ; Yamethin.

Liopeltis doriae (Boulenger)

One specimen from Huton, 295 mm. ($11\frac{3}{4}$ inches) long, the tail 57 mm. ($2\frac{1}{4}$ inches).

LEPIDOSIS. *Costals*, in 15 rows in the whole body length. *Ventrals*, 184. *Anal*, entire. *Subcaudals*, 74. *Supralabials*, 8 ; the 3rd divided into an upper and lower part ; the upper part of the 3rd, the 4th and the 5th touching the eye.

DENTITION.² From one rather poor skull in my collection. *Maxilla*, carries 29 to 30 teeth ; anododont, feebly kumatodont. *Palatine*, 25 to 26 ; anododont, feebly kumatodont. *Pterygoid*, 33 ? ; anododont, feebly kumatodont. *Mandibular*, 30 to 31 ; anododont, feebly kumatodont.

DISTRIBUTION. Apparently a rare snake confined to hills above about 4,000 feet. Once before taken in the Kachin Hills. Recorded also from Manipur, Assam, and Yangtse Valley, China.

Liopeltis frenatus (Günther)

Two adult specimens from Huton, one ♀ and one unsexed.

LEPIDOSIS. *Ventrals*, 152 and 158, *Subcaudals*, 96 and 98.

DENTITION. From three skulls in my collection. *Maxilla*, supports 19 to 21 teeth ; anododont, isodont. *Palatine*, 12 to 14 ; anododont, isodont. *Pterygoid*, 13 to 17 ; anododont, coryphodont. *Mandibular*, 21 to 27 ; anododont, scaphiodont.

DISTRIBUTION. A rare hill snake occurring usually above about 4,000 feet. Only once previously taken in Burma. Has been recorded from the foot of the Hills in the Katha District (Mansi) ; Kachin Hills (Huton, Sinlum Kaba).

¹ This amends the distribution in my paper on *Oligodon* in this Journal (vol. xxv, p. 331), and my Hand List (vol. xxix, p. 631) in which some of the Districts cited are incorrect.

² The dentition is very different from four other species placed in this genus by Boulenger, of which I have skulls, viz., *calamaria*, *rappi*, *frenatus*, and *major*. The maxillary teeth in these four range between 19 and 26, the palatine 11 to 20, the pterygoid 13 to 24 and the mandibular 18 to 27. I have not seen a skull of Cope's *tricolor* so am unable to compare it with the type of the genus.

Series—OPISTHOGLYPHA.

Sub-family--HOMALOPSINÆ.

Hypsirhina plumbea (Boie).

One juvenile specimen from Mandalay.

LENGTH. 212 mm. ($8\frac{1}{2}$ inches).

LEPIDOSIS. *Ventrals*, 137. *Subcaudals*, 29.

DISTRIBUTION. An uncommon water snake occurring in lakes and rivers. The specimen now recorded came from the moat around Fort Dufferin. Has been recorded from Meiktila where there is a lake, Pyawbwe on the Tsamon river and Rangoon.

Hypsirhina enhydria (Schneider)

Eleven specimens from Mandalay. 7 ♂, 5 ♀, and one uncertain.

LEPIDOSIS. *Costals*, two heads-lengths behind the head 23, midbody 21, two heads-lengths before the vent 21 in all the specimens. The scales reduce from 23 to 21, one or two heads-lengths before midbody by a fusion of the 3rd and 4th rows above the *ventrals*. *Ventrals*, ♂ 161 to 171, ♀ 159 to 163. *Subcaudals*, ♂ 74 to 78, ♀ 59 to 64.

BREEDING. A male and a female, both adults, were found in company on 10th May. A female measuring 642 mm. (2 feet $1\frac{1}{2}$ inches) came into Sergeant Murray's quarters about 9 p.m. one night in Mandalay in August 1923. The Sergeant struck it, and after the blow, the snake proceeded to give birth. Seven young were born before she died, and two unborn young were found in sacs within her subsequently. The brood comprised five males and three females, one with a damaged tail being unsexed. The males measured from 201 to 206 mm. (8 to $8\frac{1}{4}$ inches). The females measured from 185 to 193 mm. ($7\frac{3}{8}$ to $7\frac{3}{4}$ inches). The genitalia of the unborn male were not extruded.

DENTITION. From three skulls in my collection. *Maxilla*, supports from 17 to 20 teeth; diacranterian. The praecranterian set anododont, feebly coryphodont. Cranterian. A pair of subequal, grooved, obliquely-set teeth rather longer than the last praecranterian. *Palatine*, 10 to 11; anododont, isodont. *Pterygoid*, 20 to 24; anododont, strongly scaphiodont. *Mandibular*, 23 to 25; anododont, feebly kumatodont. I could discover no foetal tooth in the born and unborn young.

DISTRIBUTION. A common water snake in Burma living in rivers, inland waters and marshes. Has been recorded from Bassein Rivers (Ngathaingyaung); the Irrawaddy River (Mandalay, Sagaing, Prome, Thayetmyo); Rangoon River (Rangoon, Hmawbi); Pegu River (Pegu); Bassein River (Bassein); Sittang River (Toungoo); West of the mouth of the Salween River (Thaton); Tavoy River (Tavoy).

Homalopsis buccata (Linné)

One specimen from Victoria Lake, Rangoon.

LEPIDOSIS. *Costals*, two heads-lengths behind the head 41, midbody 41, two heads-lengths before the vent 33. *Ventrals*, 161. *Subcaudals*, 69.

BREEDING. This specimen measuring 798 mm. (2 feet, $7\frac{1}{2}$ inches) proved to be egg-bound, and my donor says it was killed about two months before he sent it. This would be early March. It contained seven elliptical eggs about 28×15 mm. ($1\frac{1}{8} \times \frac{5}{8}$ of an inch), which appeared to be sterile.

DENTITION. From four skulls in my collection. *Maxilla*, carries 11 to 12 teeth; diacranterian. The praecranterian series anododont, kumatodont, fluted on their outer and inner faces basally. The cranterian number two, obliquely-set, and deeply grooved on their anterior faces; little longer than the last praecranterian. *Palatine*, 9; anododont, isodont. *Pterygoid*, 17 to 21; anododont, scaphiodont. *Mandibular*, 14 to 17; anododont, kumatodont, fluted basally on their outer and inner faces.

DISTRIBUTION. Lower reaches of the Bassein, Rangoon and Salween Rivers and adjacent lakes.

Hurria rhynchops (Schnieder)

One specimen from Rangoon.

Sub-famliy—DIPSADOMORPHINÆ.

Dipsadomorphus multimaculatus (Boie)

One female specimen from Rangoon.

LEPIDOSIS. *Ventrals*, 240. *Subcaudals*, 97.

FOOD. Enormously distended with a large lizard (*Calotes versicolor*?).

BREEDING. Contained seven small eggs in the oviduct. Date of capture not on record.

DENTITION. From three skulls in my collection. *Maxilla*, diacranterian. The praecranterian series 10 to 11; anododont, feebly kumatodont. Cranterian 2; subequal; deeply grooved on their anterior faces; obliquely placed; not twice as long as the posterior praecranterian. *Palatine*, 6; anododont, scaphiodont. *Pterygoid*, 8 to 12; anododont, scaphiodont. *Mandibular*, 14 to 18; anododont, strongly kumatodont.

DISTRIBUTION. A common snake in the plains of Lower Burma, and the Southern part of Upper Burma, ascending to an altitude of about 5,000 feet. Seems to be restricted to the valleys of the Irrawady river, South of Mandalay, the Salween river and intermediate streams. Has been recorded from Mandalay; Thayetmyo; Maungmya; Pegu; Rangoon; South Shan States Taunggyi (5,000 feet); Fort Stedman (3,000 feet); Moulmein.

Dipsadomorphus hexagonotus (Stoliczka)

Two specimens from Mandalay and Maymyo.

LEPIDOSIS. *Costals*, in 19 rows two heads-lengths behind the head 19 in midbody, 15 two heads-lengths before the vent. *Ventrals*, 239 and 233. *Subcaudals*, 101 and 102? (damaged).

FOOD. A large lizard of the genus *Calotes* in the stomach of one.

DENTITION. From two skulls in my collection. *Maxilla*, diacranterian. The praecranterian series 9 to 11; anododont, kumatodont. Cranterian 2, subequal; deeply grooved on their anterior faces; obliquely set. *Palatine*, 6; anododont, feebly kumatodont.

Pterygoid, 8 to 10; anododont, scaphiodont. *Mandibular*, 14 to 15; anododont, kumatodont.

DISTRIBUTION. An uncommon snake in the plains of Burma ascending to about 6,500 feet elevation. Haka (Chin Hills); occurs in the valleys of the Chindwin, Irrawady, Sittang and Salween rivers from Bhamo and their surrounding hills. Has been recorded from Bhamo; Katha; Kunchoung; Mandalay; Meiktila; Thayetmyo; Pegu; Rangoon; Nathaing-gyaung; Bassein; Hakai; North Shan Hills (Maymyo); South Shan Hills (Taunggyi); Kawkareik in Tenasserim; at the Western foot of the Dawna Hills.

Boiga cynodon (Boie).

One specimen from Myitkyina.

LEPIDOSIS. *Costals*, two heads-lengths behind the head 23, midbody 23, two heads-lengths before the vent 15. *Ventrals*, 251. *Subcaudals*, 118.

DENTITION. From three skulls in my collection. *Maxilla*, Diacranterian. Praecranterian teeth 10 to 11; anododont, kumatodont. Cranterian 3; scaphiodont; deeply grooved on their anterior faces; obliquely set. *Palatine*, 5 to 6; anododont, kumatodont. *Pterygoid*, 8 to 10; anododont, scaphiodont. *Mandibular*, 19 to 20; anododont, kumatodont.

DISTRIBUTION. An uncommon species occurring in the plains. Has been recorded from Myitkyina; Thayetmyo; Toungoo; Rangoon; Burma—Siam Hills; Mergui.

Psammodynastes pulverulentus (Günther)

Five specimens from Kutkai and Huton.

BREEDING. A female 515 mm. (1 foot, 8 $\frac{3}{8}$ inches) long, killed at Kutkai on the 8th of October contained five eggs in the oviducts.

DENTITION. From three skulls in my collection. *Maxilla*, diacranterian. Praecranterian teeth 10 to 11; anododont, anisodont; first three progressively increasing, 4th and 5th subequal and about twice as long as the 3rd, succeeded by 5 to 6 isodont teeth. Cranterian, 2; obliquely set; deeply grooved on their anterior faces; twice or more than twice the preceding. *Palatine*, 8 to

11; anododont, kumatodont. *Pterygoid*, 21 to 23; anododont, scaphiodont. *Mandibular*, oinodont, anisodont. Praenodal. The first 2 or 3 progressively increase in length, the next 2 are subequal, large, and about twice the preceding. Postnodal, 13 to 15; feebly kumatodont.

DISTRIBUTION. Rather an uncommon snake occurring in the plains throughout Burma, and ascending the hills to about 6,500 feet. Haka (Chin Hills). Has been recorded from Kindat; Chin Hills; Katha; Mogok; Ruby Mines District; Wumbeza; Toungoo District; Pegu; Rangoon; Huton; Kachin Hills; Kutkai; North Shan Hills; Moulmein; Tavoy; Mergui Archipelago.

Dryophis prasinus Boie

One specimen from Huton.

DISTRIBUTION. A fairly common denizen of the plains throughout Burma, ascending hills to about 5,000 feet elevation. Has been recorded from Mansi at the foot of the hills in the Katha District; Shewbo District (Yeu); Toungoo; Pegu District (Pegu, Tadangu); Rangoon; Bassein; Maungmya; Kachin Hills (Huton); South Shan Hills (Taunggyi); Burma—Siam hills.

Dryophis mycterizans (Linné)

Six specimens from Mandalay and Maymyo.

DISTRIBUTION. A common snake throughout Burma, ascending hills to an altitude of 5,000 feet (Taunggyi). Has been recorded from Bhamo District; Shwebo District (Shwebo, Yeu); Mandalay; Myingyan District (Pagan); Toungoo; Pegu District (Tadangu, East of the Yomas); Tharrawaddy District (Shwegyin); Rangoon; North Shan Hills (Maymyo); South Shan Hills (Taunggyi).

Chrysopelea ornata (Shaw)

Fifteen specimens from Mandalay, Lashio, and Rangoon.

HABITS. Lieut. Kurup gave me a specimen he killed in Rangoon which he says leapt from a tree and alighted close to him. He estimated the height of the leap as between twenty and twenty-five feet. He says the snake was extended in its volplane until it reached the ground. Some coolies were in a tree opposite trimming the branches and the snake was probably disturbed by them. Lieut.-Colonel Bell told me of a specimen that jumped from a tree in his compound, and alighted near him but he did not see the whole leap. This was apparently disturbed by a little owl that was in the branches above.

LENGTH. A small specimen, evidently a hatchling from Mandalay measured 225 mm. (9 inches).

DISTRIBUTION. A common snake in the plains of Burma, ascending hills to at least 5,000 feet (Taunggyi). Has been recorded from Sandoway; Mandalay; Thayetmyo; Prome District (Shwedaung); Tharawaddy District (Shwegyin); Toungoo; Pegu District (Pegu, Tadangu); Rangoon; Moulmein; Tavoy; Mergui; North Shan Hills (Lashio); South Shan Hills (Taunggyi).

Series—PROTEROGLYPHA

Bungarus fasciatus (Schneider)

Two specimens from Myitkyina and Taunggyi.

DISTRIBUTION. A common species in the plains, ascending the hills to about 5,300 feet. Has been recorded from Myitkyina; Sagaing; Ruby Mines District; Meiktila District (Meiktila, Pyawbwe); Toungoo; Tharawaddy; Pegu; Rangoon; Moulmein; Tavoy; South Shan States (Taunggyi).

Bungarus multicinctus Blyth

One specimen from Namkham.

LENGTH. A fine female specimen measuring 790 mm. (2 feet, 7½ inches), the tail 130 mm. (5¼ inches).

LEPIDOSIS. *Ventrals*, 219. *Subcaudals*, 55.

BREEDING. This contained four large eggs in the oviducts measuring 31 × 7 mm. (1¼ × ⅝ of an inch). This was encountered on the night of the 3rd of April.

DISTRIBUTION. A distinctly uncommon snake in Burma, confined to the plains. Has been recorded from Lower Chindwin (Monywa); North Shan States (Namkham); South Shan States; Meiktila; Toungoo; Rangoon.

Bungarus magnimaculatus Wall and Evans

One female specimen from Mandalay.

LEPIDOSIS. *Ventrals*, 216? *Subcaudals*, 47.

DISTRIBUTION. An uncommon snake occurring in the Irrawaddy Valley from Shwebo to Minbu, and the lower reaches of its tributaries the Chindwin and Tasmon rivers. This corresponds to the dry zone where the annual rain fall is less than fifty inches. Has been recorded from Shwebo; Mandalay; Monywa; Minbu; Meiktila and Pyawbwe.

Naia hannah (Cantor)

One from Taunggyi, and the heads of three others from Taunggyi, Maymyo and Mandalay (killed in the neighbouring jungle).

LEPIDOSIS. *Costals*. Two heads-lengths behind head 15, midbody 15, two heads-lengths before vent 15. *Ventrals*, 243. *Subcaudals*, 87.

BREEDING. I owe special thanks to Mr. Plunkett, I. F. S., for a very valuable note on the breeding of this snake. When beating jungle for game in April, a great clamour among the beaters announced something unusual had been encountered. On proceeding to the spot he found two large snakes wreathed together. He shot first one and then the other, and when examined after death they were found 'in copula,' and still united. They were dragged apart, and he amputated the male organ and preserved it in spirit. It appears to be the diramic organ of one side. This he presented to me and I have transferred it to the British Museum. The organ is so markedly different from specimens of these organs in the Cobra (*Naia naia*) in my cabinet collection, as to justify *N. hannah* being placed in a distinct genus. Each limb of the organ is about 152 mm. (6 inches) long, from the point of bifurcation to the extremity. A *raphé* passes up the posterior part. The basal four-fifths is surrounded by prominent transverse, somewhat imbricate, folds resembling the gills of a mushroom. Most of the folds extend uninterruptedly right round the organ, others are discontinuous. In the distal fifth the folds are broken up to form a sort of honeycomb. The male measured 3,685 mm. (12 ft. 1 inch) and the female 3,125 mm. (10 ft. 3 inches).

DISTRIBUTION. This is a fairly common snake in the plains and hills throughout Burma, and ascends to an altitude of 6,500 feet (Sinlum Kaba). Has been recorded from around Mandalay; Meiktila District (Mount Popa); Thazi Hills (east of Yamethin); Magwe District (Sun Choung river, Minhla); Toungoo District (in the hills); Tharawaddy District (Shwegyin); Pegu; Rangoon; Moulmein; Kawkareik on the western foot of the Dawna Hills; Kachin Hills (Sinlum Kaba); Chin Hills (Haka); Ruby Mines District (Mogok); North Shan Hills (Lashio, Maymyo); South Shan Hills (Taunggyi, Kalaw).

Naia naia (Linné)

Seven specimens from Myitkyina, Mandalay, Taunggyi.

VARIETY. All conform to variety *fasciata*. One (with 19 scale rows) from Mandalay appeared at first sight an anocellate specimen but when pegged out six small blackish spots on the left side and three on the right are so distributed as to suggest the usual elliptical mark of *fasciata*.

LEPIDOSIS. *Costals*. One had 19 scale rows, and the rest 21.

DISTRIBUTION. A very common snake in the plains throughout Burma, ascending the hills to an altitude of at least 5,000 feet (Taunggyi).

Calliophis maccllellandi (Reinhardt)

Six specimens from Maymyo and Huton.

COLOURATION. The four specimens from Maymyo conform to variety *C. m. maccllellandi*; the two from Huton constitute a new variety for which I propose the name *concolor*. It is a uniform rich brown dorsally, with no trace of the black transverse bars, typical of *C. m. maccllellandi*, or of the vertebral

stripe of *C. m. univirgatus*. Ventrally it has the large black irregularly-shaped spots, typical of *C. m. maclellandi*. The head is adorned with the usual ivory-white band bordered anteriorly and posteriorly with black.

HABITS. One was encountered one evening in Maymyo. It escaped quickly into a bamboo clump. Captain Donnelly seized it by the tail, and pulled it out, but narrowly escaped being bitten by a determined snap of its jaws.

FOOD. This specimen had just swallowed a Diard's blind snake (*Typhlops diardi*), 288 mm. (11½ inches) long, which lay fully extended in the gullet and stomach. Another smaller specimen of the same snake 85 mm. (3⅞ inches) long, lay similarly extended in the stomach.

DISTRIBUTION. A fairly common hill species occurring above about 3,000 feet. Has been recorded as follows. *C. m. maclellandi* :—Chin Hills (Haka), Ruby Mines District (Mogok); North Shan Hills (Maymyo); Pegu Yomas, South Shan Hills. *C. m. gorei*, Kachin Hills (Sinlum Kaba). *C. m. concolor* :—Kachin Hills (Huton).

Family—VIPERIDÆ

Vipera russelli (Shaw)

One specimen from Mandalay.

DISTRIBUTION. A very common snake in the plains of Burma and universally distributed.

Trimeresurus monticola (Günther)

Two specimens from Taunggyi.

LENGTH. One of these is the largest on record. It taped 977 mm. (3 feet 2½ inches); the tail 118 mm. (4¾ inches).

DISTRIBUTION. A rather uncommon species confined to the hills above about 3,000 feet. Has been recorded from Myitkyina District (Hpimaw); Chin Hills (Haka); Ruby Mines District (Mogok); Toungoo District (Thandaung); South Shan Hills (Taunggyi); Dawna Hills (Mount Mulehyit).

Trimeresurus gramineus (Shaw)

Five specimens from Huton, Maymyo, and Taunggyi.

DISTRIBUTION. A fairly common snake in the plains of Burma, ascending the hills to about 5,000 feet (Taunggyi). Has been recorded from Bhamo; Shwegyin; Rangoon; Maungmya; Moulmein; Tavoy District (Egaya); Mergui and the Archipelago; Kachin Hills (Huton); Chin Hills (Haka. Falam); North Shan Hills (Maymyo); South Shan Hills (Taunggyi).



Wall, Frank. 1925. "Notes on Snakes Collected in Burma in 1924." *The journal of the Bombay Natural History Society* 30, 805–821.

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