

When transportation takes place every individual specimen must be wrapped in butter muslin, otherwise the fins and tails will be frayed and often broken.

Every specimen should be labelled by a leather tag, numbered, and noted up in the collector's catalogue.

As regards the preservation of the colours of the sea fish, I have not been very successful if the specimens are left over two months in the formalin soda solution. The best results seem to be obtained by leaving the specimens in the formalin for about two weeks and then transferring to alcohol for about half an hour, and then place them permanently in glycerine and water, equal parts of each.

Like many other good things this 'Jores' method is very expensive, and properly to handle and preserve a large collection of, say, 250 fish ranging in size up to ten pound specimens, the cost for solution alone may come to £25.

Warning.—It should be remembered by those who work with 'Jores' solution, when using it in bulk, that the continual daily submersion of the hands and arms in the tanks, sometimes for over an hour at a time, renders the collector very liable to toxæmia. The skin absorbs a large quantity of the salt contained in the solution, and after some weeks of work a severe rash breaks out not only on the hands and arms but on many parts of the body and legs. This form of drug poisoning is most disagreeable, and I strongly advise all who employ 'Jores' solution in large quantities to provide themselves with long india-rubber gloves reaching well above the elbow.

THE SNAKES OF BRITISH EAST AFRICA

By C. W. HOBLEY

If one thinks of the matter it will be generally admitted that a knowledge of the snakes of this country is a matter of importance to all who are resident in it. From an economic point of view snakes have a value, for they kill and eat large numbers of rodents which damage gardens and crops, some

even feed on termites or white ants. Unfortunately some snakes are poisonous and occasionally bite man or domestic animals, and it is desirable that all should be able to distinguish the poisonous from the non-poisonous.

Most people wage war on all snakes on the principle that there is no good snake but a dead one ; but it is admittedly stupid to kill non-poisonous snakes and much better policy to allow them to live and prey on rats, mice, moles, &c., which damage our economic products or our gardens.

The object of this article is to assist members to differentiate between poisonous and non-poisonous snakes and to induce a proportion to study this order and to assist in making a complete reference collection for the Society's Museum.

Quite a number have already come in, and it is hoped will shortly be classified and named.

The list of snakes now given is a précis of the description of the snakes recorded as having been collected in East Africa, and is taken from the 'Catalogue of Snakes,' by Mr. G. A. Boulenger, which was kindly presented to the Library of the Society by the Trustees of the British Museum. For a further and more technical description the volumes should be consulted.

The figures in this article will give an idea of a few typical classes of well-known snakes, and one is what may be termed an index diagram, as it gives the technical names of the various scales in a snake's body, the accurate description of which is the main means of scientific identification. Some of these illustrations are reproduced from the 'British Museum Catalogue' and others from Vol. iii. of the 'Report of the Wellcome Laboratory,' Khartoum, who have kindly given permission to reprint them.

Some forty-one species of snakes have been described from British East Africa and only ten of these are dangerous to man. This percentage gives, however, no index of the numerical proportions of the poisonous and non-poisonous species, and certain powerful members of the cobra group are, moreover, said to be of an aggressive nature.

The snakes of East Africa have never been systematically collected all over the country, and it is highly probable that if this is done a number of new species may be brought to light.

OPHIDIA OR SNAKES RECORDED FROM BRITISH EAST
AFRICA AND UGANDA

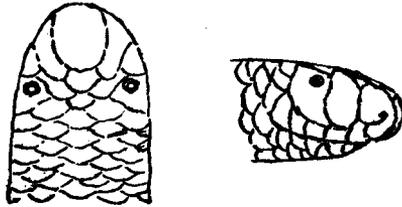
PROVISIONAL LIST

FAMILY I.—*TYPHLOPIDAE*.

Genus Typhlops.—

Mucruso.—Total length 1 foot 7 inches. Yellow, or pale olive above. Snout very prominent, scales with dark borders, tail as broad as long ending in spine.

Unitaeniatus.—Total length 1 foot 2½ inches. Snout very prominent, hooked, tail very short. Black, with yellow verte-



TYPHLOPS COMORENSIS × 5.

From *B. M. Cat. of Snakes*.

bral stripe three scales wide, a stripe on the rostral, lower surface of snout and lips brownish-yellow. Found at Mombasa and Kibwezi.

Punctatus.—Total length 2 feet. Specimen from Mknombi. Dark brown above, each scale with a small yellowish spot; each ventral scale yellowish in the centre and brown on the borders.

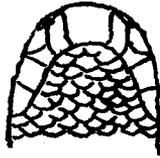
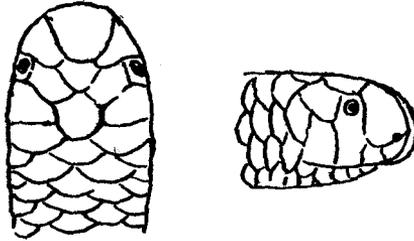
Specimen from Laikipia—dark brown above, each scale with a small yellowish spot; ventral scales uniform yellowish.

Schlegelii.—Total length 1 foot 3 inches, reaches a length of 2 feet 3¼ inches. Uniform olive brown above, or parti-coloured yellow and olive brown, the latter colour forming irregular blotches; lower parts uniform yellow. Found at Laikipia.

FAMILY II.—*GLAUCONIDAE*.

Genus *Glauconia*—

Conjuncta.—Total length 6 inches blackish above, whitish



GLAUCONIA EMINI × 8.

From *B. M. Cat. of Snakes*.

below. Snout rounded. Five small teeth lower jaw. Fourteen scales round body. Found at Kilimanjaro.

FAMILY III.—*BOIDAE*.

Genus *Python*—

Sebae.—Said to attain 23 feet. Pale brown above with dark-brown, black-edged, more or less sinuous cross-bars, continuous or interrupted sinuous dark stripe running along each side of the back, side with large spots, and finely dotted with black; a large triangular dark-brown blotch occupies the top of the head, bordered on each side by a light stripe beginning at the end of the snout, above the nostril, and passing above the eye, a dark stripe on each side of the head and a dark sub-triangular blotch below the eye; upon surface of tail with a light stripe between two black ones; belly spotted and dotted with dark brown.

Genus Eryx—

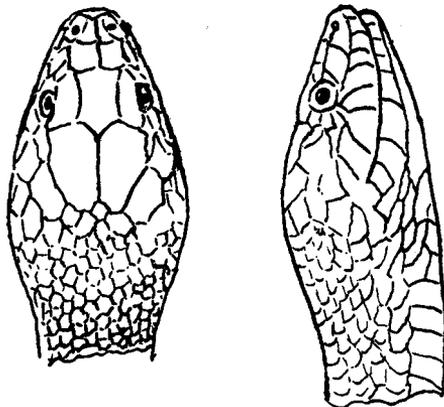
Thebaicus.—Total length 2 feet 2½ inches. Tail 2 inches, pointed. Yellowish or greyish above, with large, irregular, dark-brown or blackish spots separated by narrow interspaces; lower parts uniform white. Found at Taita, East Africa.

FAMILY VII.—COLUBRIDAE.

Series A.—Aglypha. Sub-Family II.—Colubrinae.

Genus Tropidonotus—

Olivaceus.—Total length 1 foot 11 inches. Tail 5¾ inches. Olive or brown above, with a more or less distinct darker vertebral band, four or five scales wide, bordered on each side by



TROPIDONOTUS ASPERRIMUS

From *B. M. Cat. of Snakes*.

a series of whitish dots; flanks and ends of ventrals olive; upper lips yellowish, the sutures between the shields black; ventrals yellowish, sometimes edged with olive. Found at Ngatana.

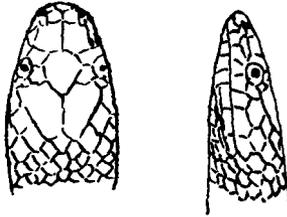
Genus Boodon—

Lineatus.—Total length 2 feet 10½ inches. Tail 4¼ inches. Brown above, uniform or variegated with yellow, with or without a yellow lateral streak; side of head light, the brown of the upper surface ending in a point on the snout, with a dark brown lateral streak passing through the eye, and brown

spots on the labials, or head dark brown with two more or less distinct light lines on each side ; lower parts yellowish. Found at Kilimanjaro, Mombasa and Ngatana.

Genus Lycophidium—

Jacksoni.—Total length 1 foot $9\frac{3}{4}$ inches. Tail $2\frac{1}{2}$ inches. Olive grey above and beneath, the scales with or without whitish dots. Found at Kilimanjaro, Lamu.



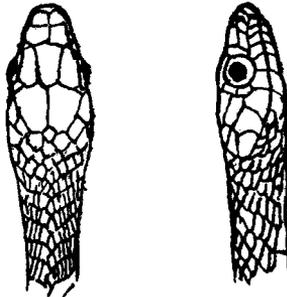
LYCOPHIDIUM ABYSSINICUM.

From *B. M. Cat. of Snakes*.

Capense.—Total length 1 foot $5\frac{3}{4}$ inches. Tail $1\frac{3}{4}$ inches. Brown, purplish, or olive above ; sides of head speckled or vermiculate with whitish. Found at Mkonumbi and North Giriama.

Genus Chlorophis—

Neglectus.—Total length 2 feet $7\frac{1}{2}$ inches. Tail 9 inches.



CHLOROPHIS EMINI.

From *B. M. Cat. of Snakes*.

Green above, yellowish-green beneath ; some purplish-brown blotches may be present on the anterior part of the body.

Irregularis.—Total length 2 feet 8½ inches. Tail 9½ inches. Green or olive above, scales often with a white spot at the base, with or without a black upper border; interstitial skin black; sometimes with black spots or irregular cross bands on the anterior part of the body; greenish-yellow inferiorly. Found at Taita, Lamu, Witu, Nairobi, and Meru.

Genus Philothamnus—

Semivariiegatus.—Total length 3 feet 11½ inches. Tail 1 foot 5¾ inches. Green or olive above, with or without black spots or cross-bars; greenish-yellow inferiorly. Found at Kilimanjaro, Milindi.

Genus Rhamnophis—

Jacksonii.—Total length 5 feet 6 inches. Tail 1 foot 8 inches. Uniform black above and underneath. Found at Kavirondo.

Genus Coronella—

Semiornata.—Total length 2 feet. Tail 6 inches. Olive-brown above, with black transverse lines on the anterior portion of the body; these lines indistinct or broken up in the adult; upper lip prae- and postoculars yellowish; ventrals yellowish, uniform or edged with black. Found at Mombasa.

Genus Zamensis—

Florulentus.—General colour is greyish-yellow, sand colour, with transverse markings on the back, two alternating series of roundish spots on either side, and a third series of less defined spots at the lateral ends of the ventrals. All these markings are pale reddish-brown, but across the hind neck is a transverse semilunar spot of quite dark-brown or blackish, and a band of similar colour extends across the head over the middle of the parietals from one corner of the mouth to the other. The greater part of the tail is unspotted. Lower parts yellowish-white. Found north of Guaso-Nyeri.

Genus Thrasops—

Rothschildi.—Described by Mocquard. *Bull. d'hist. nat.* Paris, 1905, p. 287. Found at Meru.

*Sub-Family III.—Rhachiodontinae.**Genus Dasypeltis—*

Scabra.—Total length 2 feet 6 inches. Tail $4\frac{1}{8}$ inches. Generally pale olive or pale brown above, uniform or with dark-brown spots, usually disposed in three longitudinal series; an A-shaped dark marking on the nape preceded by one or two on the head; the latter may be broken up into spots; upper labials with brown vertical bars; belly yellowish uniform or dotted or spotted with brown or blackish.

Specimens found at Kilimanjaro and East Kikuyu.—A dorsal series of large squarish or rhomboidal dark spots, separated by light intervals, alternating with a lateral series of spots or cross-bars; belly spotted or dotted only at the sides. Another specimen found at Kilimanjaro no spots or markings of any kind.

*Sub-Family V.—Dipsadomorphinae.**Genus Tarbophis—*

Semiannulatus.—Total length 2 feet $3\frac{1}{2}$ inches. Tail $4\frac{3}{4}$ inches. Yellowish or pale brown above with twenty-four to thirty-four dark-brown and blackish transverse rhombial spots or cross-bars on the body; head without any spots or markings, yellowish-white underneath. Found at Mombasa.

Guentheri.—Total length 3 feet $5\frac{1}{4}$ inches. Tail $6\frac{1}{4}$ inches. Pale bluff or sandy grey above, uniform or with ill-defined brown variegations or cross-bars; lower parts white. Found at Ngatana, East Africa.

Genus Leptodira—

Hotamboeia.—Total length 2 feet. Tail $3\frac{1}{2}$ inches. Scales smooth or faintly keeled, in nineteen (exceptionally seventeen) rows. Brown, olive or blackish above, uniform or with whitish dots which may form cross-bars, a black band on the temple, usually connected with its fellow across the occiput; belly whitish. Found at Kilimanjaro and Meru.

Genus Hemirhagerrhis—

Kelleri.—Total length $10\frac{5}{8}$ inches. Tail $3\frac{1}{4}$ inches. Greyish or yellowish-brown above, with a dark-grey or olive, black-

edged vertebral band and another on each side, passing through the eye; head lineolated with blackish; upper lip blackish; lower parts with brown longitudinal lines disposed in pairs. Found at Mombasa and East Kikuyu.

Genus Trimerorhinus—

Tritaeniatus.—Total length 2 feet $5\frac{1}{8}$ inches. Tail $5\frac{7}{8}$ inches. Greyish or pale brown above, with two or three dark-brown, black-edged bands originating on the head and extending to the end of the tail, the outer passing through the eye, the vertebral sometimes rather indistinct or absent; a fine yellowish line sometimes divides the vertebral band; the sides below the bands white, with a pale brown or red streak running along the outer row of scales; upper lip and lower parts white. Found in Kibibi basin, East Africa.

Genus Rhamphiophis—

Rubropunctatus.—Total length 3 feet $3\frac{3}{4}$ inches. Tail 1 foot $1\frac{1}{2}$ inches. Brown or reddish-brown above, uniform or dotted with red; head reddish, without dark markings; upper lip and lower parts yellowish. Found at Kilimanjaro.

Genus Psammophis—

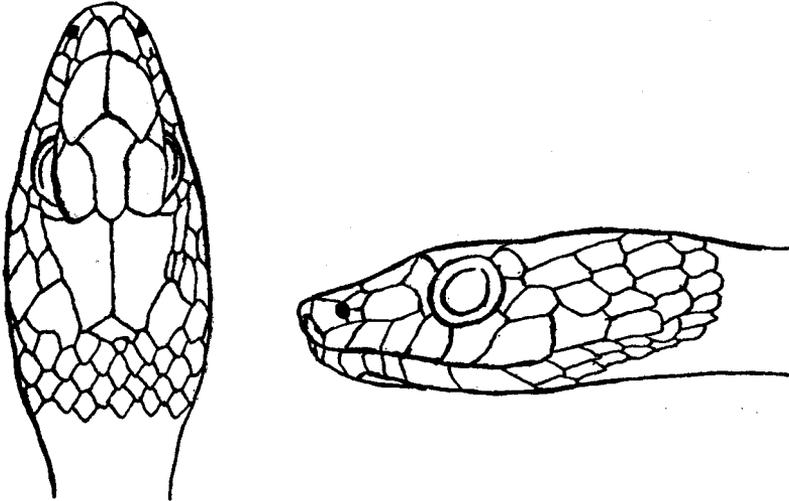
Punctulatus.—Total length 5 feet 5 inches. Tail 1 foot $10\frac{7}{8}$ inches. Yellow or brownish-white above, greenish or greyish on the sides, and beneath head and nape olive grey or reddish speckled with black; then black stripes along the body, the median broadest and bifurcating on the neck, its branches extending, as brown streaks to the end of the snout after passing through the eyes; the stripes on the body may be reduced to vertebral.

Sibilans.—Total length 3 feet $11\frac{1}{4}$ inches. Tail 1 foot 4 inches. Coloration very variable.

Specimen found at Kilimanjaro.—Brown above, with lateral streaks and head markings; vertebral line absent or reduced to a serial of yellow dots, one on each scale; upper lip with brown or black dots; lower parts, including lower half of outer row of scales, white, with a continuous or interrupted black longitudinal line on each side of the belly.

Specimen found at Kilifi.—Uniform brown above, with

more or less distinct traces of the markings on the head ; upper lip yellowish, with brown dots ; lower parts, including lower



PSAMMOPHIS SIBILANS.

From Report of Wellcome Lab., Khartum, Vol. III.

third or lower half of outer row of scales yellowish, with a brownish line on each side of the belly.

Specimen found also at Juja, near Nairobi, and at Njoro and north of Guaso Nyiro.

Biseriatus.—Total length 4 feet $7\frac{1}{2}$ inches. Tail 1 foot $3\frac{3}{4}$ inches. Greyish or pale brown above, with a darker vertebral band and two series of reddish-brown or black spots ; head with dark-brown or reddish-brown black-edged spots, and usually a dark cross-band on the occiput ; a dark streak on each side of the head, passing through the eye ; lips with black or brown spots, belly greyish, speckled with black and spotted with white, sometimes with a rusty median stripe. Found at Kurawa, Njoro, and north of Guaso Nyiro.

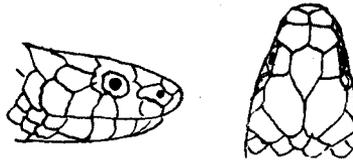
Genus Thelotornis—

Kirtlandii.—Total length 3 feet 10 inches. Tail 1 foot $3\frac{3}{4}$ inches. Greyish or pinkish-brown above, uniform or with

more or less distinct darker and lighter spots and cross-bands ; head green above, with or without some patches of pinkish speckled with black and a pinkish-black dotted streak on each side of the head, passing through the eye. Sometimes head uniform green above and on the sides, and black blotches usually forming cross-bands on the neck. Upper lip cream colour, or pink, uniform or spotted with black ; one or several black blotches on each side of the neck ; greyish or pinkish beneath, speckled or striated with brown.

Genus Aparallactus.

Jacksonii.—Total length 5 feet 10½ inches. Tail 11½ inches. Pale reddish-brown above, with a black vertebral line ; upper surface of head and nape black, the nuchal blotch edged



APARALLACTUS WERNERI.

with yellow and extending to the sides of the neck. A pair of yellow spots behind the parietal shields ; sides of head yellow, the shields bordering the eye black ; lower parts uniform yellowish. One specimen only found at foot of Kilimanjaro.

Concolor.—Total length 1 foot 6½ inches. Tail 4¾ inches. Uniform dark brown or black, somewhat lighter underneath. Found in the Boran country.

Series C.—Proteroglypha. (Poisonous.)

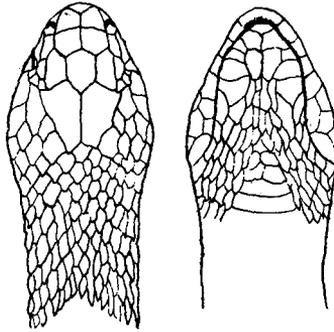
Sub-Family VIII.—Elapinae.

Genus Naia—

Nigricollis.—Total length 6 feet 6 inches. Tail 11½ inches. Coloration very variable. Specimen from Lake Rudolf. Uniform brown above, yellowish beneath ; lower surface of neck brown in the adult ; young with a broad black ring round the neck.

54 THE SNAKES OF BRITISH EAST AFRICA

Melanoleuca.—Total length 7 feet $9\frac{1}{4}$ inches. Tail 1 foot $8\frac{1}{4}$ inches. Coloration very variable. Sides of head yellowish or whitish, some or all of the labials with posterior black edge.



NAIA OR NAJA NIGRICOLLIS.

From Report of Wellcome Lab., Khartum, Vol. III.

Haiae.—Olive grey above with a broad brownish-black patch, not extending to the lower side, behind the neck, and somewhat further back another broad blackish band which extends all round the body; between these there is a lighter space with a few black spots. Found at Thika River.

Genus *Dendraspis*—

Jamesonii.—Total length 6 feet 10 inches. Tail 1 foot 10 inches. Olive green above, uniform on each scale, brown at the end; head-shields finely edged with blackish; lips yellowish, the shields edged with black; belly yellowish, the shields finely edged with brown or black; tail yellow, scales and shields edged with black. Young with chevron-shaped black cross-bars. Found at Kavirondo.

Angusticeps.—Total length 6 feet 6 inches. Tail 1 foot 5 inches. Green, olive or blackish, uniform, or some of the scales edged with black; yellowish or pale green underneath; caudal scales and shields not black-edged. Found at Kilifi, Taveta, south of Kiboko and Mombasa.

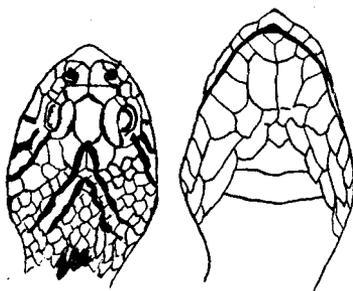
FAMILY IX.—VIPERIDAE. (Poisonous.)

Sub-Family I.—Viperinae.

Genus Causus—

Rhombeatus.—Total length 2 feet $3\frac{1}{2}$ inches. Tail 3 inches. Olive or pale brown above, rarely uniform, usually with a dorsal series of large rhomboidal or V-shaped dark-brown spots which may be edged with whitish; usually a large dark A-shaped marking on the back of the head, the point on the frontal, and an oblique dark-edged streak behind the eye; labials usually dark-edged; lower parts yellowish-white or grey, uniform or the shields edged with black. Found in Kavirondo, also in Limoru Road, near Nairobi.

Resimus. Total length 1 foot $6\frac{1}{2}$ inches. Tail 1 foot $3\frac{3}{4}$ inches. Greyish olive above, uniform or with curved



CAUSUS RESIMUS.

From Report of Wellcome Lab., Khartum, Vol. III.

or chevron-shaped cross-bars pointing backwards; uniform white underneath. Found at Ngetana, Mkonumbi, and Lamu.

Deflippii. Total length 1 foot $3\frac{3}{4}$ inches. Tail $\frac{7}{8}$ inches. Grey or pale-brown above, vertebral region darker, with a series of large rhomboidal or V-shaped dark-brown markings on the occiput, the point on the frontal; an oblique dark streak behind the eye; upper labials black-edged; yellowish-white beneath, uniform or with small greyish-brown spots. Found in Rabai.

Genus Bitis. (*Puff Adder*)—

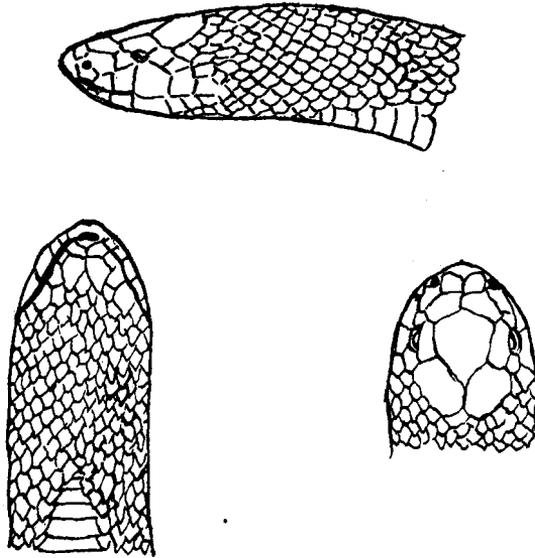
Arietans.—Total length 5 feet 5 inches. Tail $6\frac{1}{4}$ inches.

Yellowish pale brown, or orange above marked with regular chevron-shaped dark-brown or black bars pointing backwards or black with yellow or orange markings; a large dark blotch covering the crown, separated from a smaller interorbital blotch by a transverse yellow line; an oblique dark band below and another behind the eye; yellowish-white beneath, uniform or with small dark spots. Found at Kilimanjaro, Nairobi, and Guaso Nyiro.

Genus *Atractaspis*—

Hildebrandtii.—Total length 1 foot $5\frac{3}{4}$ inches. Tail 2 inches. Uniform dark brown. Found at Mombasa.

Atractaspis Microlepidota.—Total length $21\frac{1}{4}$ inches. Tail $1\frac{3}{4}$ inches. Snout very short, prominent, subcuneiform.



ATRACTASPIS MICROLEPIDOTA.

From *Report of Wellcome Lab., Khartum, Vol. III.*

Portion of rostral visible from above nearly as long as its distance from the frontal; suture between the internasals as long as that between the praefrontals; frontal a little longer than broad, much longer than its distance from the end of the snout, longer than the parietals. Scales in twenty-nine to thirty-seven rows. Uniform dark brown. Found in East Africa.