

ON SNAKES

Observed in the neighbourhood of Sydney, by

GERARD KREFFT.

HAVING paid much attention to the reptiles found near this city, I am now able to give an account of the snakes to be met with in the vicinity, and to point out which of them may be considered dangerous to man or larger animals.

There are four highly venomous snakes observed to inhabit nearly every part of Australia, while a fifth large venomous species exists besides these on the North-west coast; and these are the only dangerous ones known to us as yet.

All the remaining species, as far as my knowledge goes, are too small to inflict a dangerous wound.

In the beginning of spring, when reptiles re-appear, there is generally a great supply of snake stories brought before the public by the daily press, but it is of very rare occurrence that we hear of death being caused by the bite of any of these animals.

If we compare our reptile-fauna with other countries under the same latitude, I think that we have sufficient reason to be thankful for the absence of the deadly Vipers, the Rattlesnakes and Puff-adders of India, America, and Africa—all of which have fangs an inch or more in length; we actually have not yet discovered a single species in which the teeth exceed one-fourth of an inch, and I doubt whether any of our snakes can inflict a wound through ordinary cloth or a common leather boot.

All our venomous snakes belong to the second sub-order of the class Ophidia, viz:—to the Colubrine snakes with permanently erect immoveable fangs in front. Of innocuous, or not venomous Colubrine snakes, we have three species near Sydney, all of which are Tree-snakes. If we except the Diamond snake, which belongs to the Boa family, we find that all not venomous

Colubrine snakes may be easily distinguished from the venomous species by the deep curve which the gape of the mouth forms; whilst, in the venomous snakes, the gape is always a more or less straight line. In the members of the Boa family the line is straight, as in venomous snakes, but these are easily distinguished by the rudimentary limbs, in shape like a small spur situated near the anus.

I have added Dr. Günther's description of the two species of Sea-Snakes which occur on our coast; both of which may be considered harmless, having only very small fangs—and I take this opportunity to thank that eminent naturalist for the kind assistance he has so frequently rendered me. I also beg to assure those contributors to the Museum who have furnished me with the means of adding to the knowledge of our Reptiles, that I shall always consider myself under deep obligations to every one of them.

FIRST SUBORDER.

OPHIDII COLUBRIFORMES INNOCUI.

INNOCUOUS COLUBRINE SNAKES.

Snakes without grooved fang in front, comprising the following families:—

1. *Typhlopidae*, or Blind Snakes.
2. *Dendrophidae*, or Tree-Snakes.
3. *Dipsadidae*, or Nocturnal Tree-Snakes; and
4. *Pythonidae*, or Rock-Snakes.

1.—TYPHLOPIDÆ; OR BLIND SNAKES.

Typhlops. Schneid.

Typhlops rüPELLI. Jan.

The Blind Snake.

Scales in 22 rows. Rostral large and broad above, narrowing below; Preoculars much larger at the base than at the tip, third upper labial in contact with the ocular and preocular. Anterior scales smaller than the posterior ones. Tail short, cylindrical,

very obtuse, three times the length of its diameter, and ending in a small spine.

The color of this harmless little reptile is brownish grey above, and yellowish below; each scale of the back being bordered with yellowish white, the markings becoming obsolete towards the tail; the form is cylindrical, enlarging towards the tail.

Of all our harmless snakes, the present species is the least offensive; it lives under ground, and is frequently found in Ants' nests, upon the larvæ of which it principally exists; its total length does not exceed 18 inches. I believe that the present species has a very wide range, and that it will be found to inhabit the greater part of the Australian Continent; specimens from the Murray River, from South Australia, and from Queensland are in the collection of the Australian Museum.

2.—DENDROPHIDÆ; OR TREE-SNAKES.

Dendrophis. Boie.

Dendrophis punctulata. Gray.

The Green Tree-Snake.

Scales in 12 or 13 rows.

Anal bifid.

Ventrals 207.

Subcaudals 106/106.

Of slender form, above green or pale olive brown, beneath bright yellow, sides and under parts of head the same colour; eyes large, pupil rounded. Outer edge of scales white, as may be seen on stretching the skin.

1 anterior 2 posterior oculars, scales smooth, those of the vertebral row much larger, polygonal; scales of outer rows elongated, narrow, quadrilateral, and very imbricated.

Maxillary teeth smooth and of equal length.

This snake, one of the few not venomous Australian species, is a gentle harmless creature, which at any time may be handled with impunity; it never attempts to bite, and of many hundred

individuals which I had an opportunity to observe alive, not a single one could be induced to inflict a wound.

If we except Tasmania and the southern part of Victoria, we find the Green Tree Snake from north to south, and from east to west; it frequents trees, feeds upon insects, frogs, lizards, small birds and birds' eggs, and grows to a considerable length, but seldom if ever exceeding 6 feet.

I have reason to believe that the female is oviparous, laying about 20 or more eggs in November or December; young individuals differ considerably from the adult in colouring, being not of so bright a green; and having a grey instead of a light yellow belly. The winter is generally passed under hollow logs or beneath flat stones in sunny but often damp localities.

3. DIPSADIDÆ, OR NOCTURNAL TREE-SNAKES.

DIPSAS. *Auct.*

DIPSAS FUSCA *Gray*;

The Brown Tree-Snake.

Scales in 19 rows.

Anal entire.

Ventrals 236.

Subcaudals 87/87.

Form slender, body and tail compressed, elongate head much depressed, triangular, broad behind, very distinct from neck; scales on the vertebral line much larger, regularly six-sided, vertical shield broad, occipitals obtuse behind, one loreal; eight upper labials, the third and fourth and sometimes the fifth touching the orbit; one anterior two posterior oculars; eye large, pupil elliptical; nostril moderate, between two shields; posterior maxillary teeth longest and grooved.

Above, light brown or reddish brown, with numerous black rather oblique, sometimes obsolete cross bands; belly uniform salmon coloured.

The present species has not been so much noticed in the neighbourhood of Sydney as the Green Tree-snake, but this may

be owing to its nocturnal habits ; it is found along the East Coast, and ranges as far as Port Essington ; individuals observed in captivity appeared very gentle in disposition, and could be freely handled without showing any inclination to bite, they passed the day coiled up amongst the branches of trees, but became very active at night, noiselessly gliding through the foliage in search of their prey, which, as in the Green Tree snake, consists of birds, birds' eggs, insects, frogs, lizards, and the smaller mammalia.

I am unable to state whether the female is oviparous or not ; the number of young produced annually does probably not exceed 20. Total length of adult about 6 feet.

4. PYTHONIDÆ, OR ROCK-SNAKES.

MORELIA. Grey.

MORELIA SPILOTES. THE DIAMOND SNAKE.

Scales in 47 rows.

Ventrals 276.

Anal bifid.

Subcaudals 80/80.

Head shields small, scale-like ; three pairs of distinct frontal plates, vertical plate indistinct, rostral shield with a pit on each side, first and second upper labials pitted ; of the lower labials the first seven are smooth, then follow seven deeply pitted scales, and 3 or 4 smooth ones, nostrils lateral, in a single plate with a groove beneath ; eyes lateral ; pupil elliptical, erect ; scales smooth ; subcaudal plates in two rows, two spur-like appendages near the vent.

Coloration :—

Bluish black above, almost every scale with a yellowish (white in spirits) elongate spot in the centre ; there is a series of dark-edged irregular blotches upon the back, each bearing in the middle a few very bright yellow-colored scales ; these spots or blotches vary considerably in different individuals, specimens from Port Macquarie having almost the markings of the Carpet Snake, but still retaining the yellow spot in each scale, which in

M. variegata is wanting. Some specimens occur with a pale yellow streak from the side of the head to the vent: in fact we very rarely find two of these snakes which do not differ considerably in their markings.

The range of the Diamond Snake (*M. spilotes*) is restricted to a very limited area of country, being found in no other part of Australia than from Port Macquarie to Jervis Bay, or perhaps Cape Howe; and from the coast to the western slopes of the Blue Mountains and the Liverpool Range. In the plains watered by the Lachlan, the Murray and the Murrumbidgee, the present species is not found, the Carpet Snake (*Morelia variegata*) taking its place there.

The Diamond Snake is a common species in the county of Cumberland, in the Blue Mountains and the Illawarra district; it is a harmless creature, which may be picked up by any body without ever offering to bite; though it is a strictly nocturnal snake, individuals are nevertheless met with during the day-time, either basking in the sun and digesting their food, or, having been disturbed, in search of a place of shelter. Like the other species of the family Pythonidæ, they prey upon birds, and the smaller species of Mammals; young individuals feeding upon insects, frogs, or birds' eggs; the female deposits 30 or more eggs in December or January, which in a month or two the sun brings to maturity. I am not aware that the mother cares any longer about her progeny, after laying the eggs; and I have never seen or heard of a single instance where she coiled herself upon the eggs so deposited.

Diamond Snakes are found in almost every kind of country as long as it offers sufficient shelter; they prefer open stony ridges studded with low trees and well supplied with water, the edges of swamps and lagoons are frequented by them, as they find there a considerable supply of Water-rats (*Hydromys*), young Ducks, and other water-fowl; they also often visit the hen roosts of the farmer, or surprise "Opossums" (*Phalangista*) or "Flying Squirrels" (*Petaurus*), upon the branches of high *Eucalypti*.

The largest specimen, to my knowledge, that has been captured near Sydney, and properly measured, without being stretched, was 10 feet 3 inches long; that individuals of 11

feet or more in length occur, I doubt not, though they are very rare indeed, and have never come under my notice.

The way in which Diamond Snakes capture their prey is as follows :—

The snake suspends itself from the branch of some low bush or tree and watches for the victim, which often plays about near its unseen enemy. The reptile, with its neck and head bent into the form of an S, deliberately measures its distance, uncoiling more of its body if necessary, and often almost touching the animal it is in wait for ; as soon as the snake is sure to reach its victim, it darts forward, generally catching the prey by one of the hind legs, and instantly takes a turn around its body, soon extinguishing life through its powerful pressure. As soon as the animal is quite dead, the process of swallowing begins, the snake always commencing with the head ; this done, the reptile will often for days together bask in the sun, until the food is so far digested as to impede its movements no longer.

If a snake is disturbed during this state, it will almost always throw up the half digested carcass.

In a state of nature they never touch any food except living animals. I once, however, observed a Diamond Snake, which was kept in a cage, swallow a rat which had been killed by a Brown-banded snake (*Hoplocephalus curtus*.)

The present species is greatly infested by various kinds of Intestinal worms, including a Tape worm, clusters of which I have frequently taken from the stomach of this reptile.

Before concluding, a few remarks will be necessary with regard to the Carpet Snake (*Morelia variegata*).

There is very little, if any difference in the distribution and number of scales between the Diamond and Carpet Snakes, the only character in which both snakes vary, is the coloration ; the first having a yellow spot in the centre of each scale, whilst the latter has the back ornamented with numerous irregular black edged brown blotches ; the belly, as in the Diamond Snake, being yellowish. I have mentioned before the remarkable fact, that the Carpet Snake is found in every part of Australia, except the Coast District, say from Cape Howe to the Hastings, and about 100 miles

inland ; at Port Macquarie both species occur, but at the Clarence River, according to Mr. James F. Wilcox, the Carpet Snake alone is found. Dr. J. E. Gray has indeed tried to distinguish the one from the other by the vertical plate, which he considers distinct in *Morelia variegata*, and indistinct in *M. spilotes*. But after examination of large numbers of both species, I do not think that the above is a character much to be relied upon, and I am led to believe that both Snakes are but varieties of the same species.

There is, according to Duméril and Bibron, the famous French Herpetologists, a second species of Snake of the Boa family to be found near Sydney, namely,

The Bolyeria, *D. & B.*

BOLYERIA MULTICARINATA. *D. & B.*

This, however, is not the case. I have hunted the country near Sydney for years, and have never come across a single snake of this description ; high rewards have been offered for it, with no better success, and no specimen ever existed in the Australian Museum. I have, however, lately purchased a snake which answers to the description given, and which was obtained at some of the islands near New Guinea.

SECOND SUBORDER.

OPHIDII COLUBRIFORMES VENENOSI.

VENOMOUS COLUBRINE SNAKES.

Snakes with an erect immoveable grooved or perforated fang in front of the maxillary.

Gape of mouth forming a straight line.

This suborder, if we include the genus *Acanthophis* with the first family, comprises the

1. *Elapidæ* or Elapides ; and the
2. *Hydrophidæ*, or Sea-Snakes.

1. ELAPIDÆ ; OR ELAPIDES.

Diemenia. Gray.

Diemenia psammophis. Schleg.

The Grey Snake.

Scales in 15 rows.

Anal bifid.

Ventrals 177.

Subcaudals 85/85.

The present species has been described by Dr. Günther as *D. reticulata*, under which name I have frequently alluded to it. It appears, however, that the snake to which Günther refers in his *Cat. of Colubrine Snakes*, when quoting Schlegel's figure (*Abbildungen* Tab. 46, No. 14), is that author's *D. psammophis*, which name has the priority, and ought to be adopted instead of, *D. reticulata*. The coloration is a uniform grey above, and greenish below, the central part of the ventrals being conspicuously marked with green; tips of scales and skin between them, black; and of tail, salmon colour; a yellowish dark edged streak crossing the rostral shield. The eye is encircled first by a black and then by a yellowish line, both ending in a point below the orbit.

The present species is found in nearly every part of Australia, the extreme North and South excepted. I have taken it eight years ago on the Murray and Darling, and since then specimens have come to hand from Brisbane, Port Curtis, and Rockhampton. All these snakes differ no more from those of Sydney than these do amongst themselves. Much dependence can never be placed upon coloration as a distinguishing character in snakes, as in this no two reptiles vary so much as a snake about to shed its skin differs from itself after this operation has been successfully performed. I believe the present species to be the most common in our neighbourhood.

It frequents sandy localities, feeds on insects, small frogs, lizards, &c., and its bite does not cause any more irritation than the sting of a bee; from 15 to 20 eggs are deposited by the

female under stones exposed to the sun, generally in the beginning of December, and perhaps earlier, as I have on more than one occasion taken the young snakes at the end of that month and in the beginning of January. This reptile is generally found from two to three feet in length, very rarely exceeding four feet. During the cold season the grey snake retires under flat stones exposed to the sun; it very seldom, if ever, goes into the ground; it is very sensitive to cold, and the least frost suffices to destroy it. I have found sometimes five and more of these reptiles under the same stone.

Diemenia Superciliosa. *Fischer.*

Ringed *Diemenia.*

Scales in 17 rows near neck.

Scales in 15 rows near tail.

Subcaudals 73/73.

Anal bifid.

Ventrals 228.

Superciliaries larger than vertical; occipitals widely forked, rounded, broad; rostral high, reaching to the surface of crown; one nasal, one anterior, two posterior oculars; superciliaries prominent above the eye; anterior ocular grooved near the top; posterior frontals much larger than the anterior ones, bent down on the sides and with nasal, anterior ocular, and second and third upper labial replacing the loreal; belly flat. Dark brown above, a lighter band just crossing behind the occipitals; side of face and chin much lighter than the other parts of the body; belly yellowish, sides of ventrals and lower edge clouded with purple grey, forming a series of irregular blotches, each ventral with a distinct darkish streak on its lower edge. Half-grown and sometimes adult individuals show traces of from seventy to seventy-five black rings, which in the young snakes are very distinct. The following description is applicable to young specimens up to three years old:—

Muzzle light brown; a black triangular spot covering the region between the eyes and the occiput as far as the hinder margin

of the occipitals—this streak is bent down on the sides of the face, and behind this dark spot is a white narrow streak and another broad dark band reaching down to the edge of the labial shields; then follows again a white streak and a second black band, but much smaller than the previous one, and so alternately a broader brownish and a narrow black band to within an inch of the apical half of the tail; the black bands are occasionally interrupted, leaving a blank on the other side of the body; including these interrupted streaks, from seventy to eighty may be counted upon body and tail, seventy-five is the usual number. The belly in young and half-grown individuals is covered with yellowish spots, which at a more mature age form into the black blotches mentioned in the description of the adult.

The great difference in the coloration of young half-grown and adult individuals has given rise to a variety of names: for some time I tried in vain to reduce them, but at last succeeded by bringing together a complete series of this snake in various stages of growth, from the egg upwards. Dr. Albert Günther to whom drawings as well as specimens in good preservation were submitted, states in a paper read before the Zoological Society of London,

“The young specimens, then, found by Mr. Krefft, do not belong to *Furina textilis*, Duméril and Bibron, which has three posterior oculars, but to *Diemansia annulata*, described by myself in ‘*Colubr. Snakes*,’ p. 213. And the old individual sent by Mr. Krefft is identical with *Pseudaelaps superciliosus*, Fisch. Mr. Jan, of Milan, (who says that he has examined the Snakes of the Hamburg Museum) describes the adult Snake under two names, *Pseudaelaps sordellii* and *Ps. kubinyi*, the latter being founded upon an accidental variety, in which some of the head shields are confluent. The synonymy of this species therefore would be:—

Diemansia superciliosa.

an Adult.

1856. *Pseudaelaps superciliosus*. Fisher in Abhandl. Geb. Naturwiss. III., part 107., taf. 2 fig. 3. (head not quite correct).

1859. *Pseudaelaps sordellii*. Jan in Rev. and Magaz. Zool. pl. C. (head).
 1859. *Pseudaelaps kubinyi*, Jan, l. c. (founded on an accidental variety) C. (young).
 1858. *Diemansia annulata*, Günth. Colubr. Snak., p. 2 B.
 1862. *Furina textilis*, Krefft, Proc. Zool. Soc. p. 149."

The geographical range of this species extends over almost every part of Australia, as I have seen specimens from Cape York, Adelaide, the Murray, and other localities. When full grown, this Snake may be dangerous to man; in its habits it is diurnal, and found generally in rocky localities; young Snakes are frequently found under stones during the cold season, while those of a more mature age retire into the ground.

BRACHYSOMA. *Günther*.

Brachysoma diadema. *Günther*.

The Red-Capped Snake.

Scales in 15 rows.

Anal bifid.

Ventrals 175.

Subcaudals ?

Body elongate and rounded; head flat, distinct from neck; muzzle broad and obtuse; rostral high, slightly grooved, reaching to surface of crown; one nasal pierced by the large nostril; anterior oculars triangular, posterior one much larger, five-sided and bent down on the sides; occipitals moderate, rounded, scarcely forked behind; 6 upper labials, the third and fourth forming the orbit; eye small, pupil sub-elliptical, erect. Two temporal shields, the upper in contact with both post oculars, the lower much larger, wedged in between the last two labials.

Above, purplish brown, each scale with yellow centre very distinct in the first 4 or 5 rows on each side; head and neck black above, except a lunated spot just behind the occiput, which is brick-red, and turns white in spirits.

Beneath yellowish, front of lower jaw with a black spot.

“Upper jaw with grooved fang in front, separated from the other teeth by an interval; an elongate series of six or seven teeth behind; palatine teeth equal in length; anterior teeth of lower jaw longest.” (*Günther*.)

This very handsome little Snake is not uncommon near Sydney, though few people have ever seen it; during the cold season I have met with specimens under thin flat stones at Manly, Lane Cove, and other rocky localities; before I had an opportunity of proving its existence near Sydney, it had been known from Western Australia and the North East coast only. This Snake is venomous, but never offers to bite, and may be handled with impunity; it is oviparous, laying from 8 to 10 eggs. Its food consists, like that of other small species, in minute *Blattæ*, young frogs of the genus *Pseudopkryne*, ants, ants' eggs, &c.

PSEUDECHIS. *Wagl.*

Pseudechis porphyriacus. Shaw.

The Black Snake.

Scales in 17 rows.

Anal bifid.

Ventrals 180 to 200.

Subcaudals 14, 41/41. Sometimes all subcaudals entire.

This snake is so well known that but a short description of it will be necessary. Body elongate and rounded; tail moderate, not distinct from trunk: head rather small, quadrangular with rounded muzzle; shields of crown regular; 2 nasals, no loreal; one anterior and 2 posterior oculars; scales smooth, imbricate, in 17 rows; anal bifid; first subcaudals entire, hinder ones two-rowed; in some individuals all the subcaudals are entire. Black above, each scale of the outer series, red at the base and black at the tip; ventral shields with black posterior margins; muzzle light brown; ventral plates from 180 to 200.

The Black Snake is, I believe, the most common of all our venomous snakes; it frequents low marshy places, is fond of water, dives and swims well, and subsists principally upon frogs,

lizards, insects, and the smaller mammalia, in particular the young of *Hydromys leucogaster*. On one occasion 16 young of this rat were taken out of a single Black Snake, so that the reptile must have plundered four rats' nests.

When irritated the Black Snake raises about two feet of its body off the ground, flattens out the neck like a Cobra, and then darts at its prey or enemy. The bite of this snake is highly venomous, killing good sized dogs or goats within an hour.

The number of young brought forth in March generally amounts to 15 or 20. During the winter the Black Snake retires into the ground.

I believe that the Black Snake is found in almost every part of Australia. On the Murray and farther north a Snake occurs which has generally been considered a variety of the Black Snake; it is identical with it in almost every particular except colour, being brown instead of black, and orange beneath. Whether this is really a distinct species or merely a variety is not quite certain. Dr. Günther has distinguished the brown variety, however, as *P. australis*, and I mention this as it is a belief with some people that the Brown Snake and the Black Snake are identical, and the coloration sexual. It is to be remembered that the Brown Snake of Sydney, (*Diemenia superciliosa*) is generically distinct from the Black Snake,

HOPLOCEPHALUS. *Cuv.*

Hoplocephalus nigrescens. *Gthr.*

Black-backed Hoplocephalus.

Scales in 15 rows.

Ventrals 173 to 176.

Anal entire.

Subcaudals 37.

Scales in 15 rows, 6 upper labials, the second of which is pointed above, the third truncated. Uniform bluish grey or purple black above; ventral shields whitish, blackish on the

sides. Description :—Body rather elongate, rounded ; tail somewhat short, not distinct from trunk ; head oblong, depressed, not distinct from neck ; eye small, pupil sub-elliptical. Rostral shield, very broad and low, and very obtuse superiorly ; anterior frontals moderate, broader than long, rounded in front ; posterior frontals rather large, five-sided, each with two hinder edges forming together a right angle ; vertical, six-sided, about as broad as long, with parallel outer edges, an obtuse angle in front, and a pointed one behind ; occipitals oblong, obtusely rounded behind ; superciliary moderate ; two posterior oculars, one anterior just reaching to the upper surface of the head ; the post frontal, nasal, anteorbital and second upper labial meet at a point and replace the loreals ; six upper labials : the first is very low, situated below the nasal, the third and fourth enter the orbit ; front series of temporals formed by two shields, one of which is in contact with the post orbitals. Chin-shields of nearly equal size, several scales between the hinder chin-shields and the first ventral ; the median line of the upper part of the tail is occupied by a series of hexagonal scales ; a series of small teeth behind the grooved front tooth.

The present species is subject to considerable variation of colours during the course of the year ; sometimes before changing its skin the back and head are of a leaden hue, and the ventral scales uniform whitish ; after the old skin has been cast off, the upper coat assumes a shining deep purple or bluish black ; the ventral scales are at this time rose-coloured, which hue is invariably lost in spirits. The ventral scales of many subjects examined I found clouded on the sides ; sometimes the greater part of the scales, in particular those near the vent, were blackish, and the subcaudals entirely so. I believe that this is the only snake of the genus *Hoplocephalus* in which the tongue is white.

The rocky neighbourhood of Middle Harbour (Port Jackson) is the locality where I first found this new species, but since then specimens have been obtained from Port Macquarie and the Clarence River, which do not differ in colour from those inhabiting the neighbourhood of Sydney ; it is highly probable that the geographical distribution of this species extends still farther to

the northward ; but, owing to its nocturnal habits, collectors will experience great difficulty in capturing it.

During the cold season, from May to September, I have frequently found this Snake hybernating (if I may so express their dormant state) under loose flat stones, singly or in pairs, but never in company with other Ophidians ; and more than once a dozen specimens were the result of a day's hunting.

It is very singular that no Snakes of this kind were ever met with between Sydney and Long-Bay, or towards the South-head, and I believe that they never frequented that district, otherwise the species would have been known long before this, as even White, in his Voyage to New South Wales, figures such rare Snakes as *Vermicella annulata*, and *Hoplocephalus variegatus*.

With regard to its habits, I may mention that it is strictly nocturnal, feeding on the smaller Batrachians, as *Pseudophryne australis*, and *Uperoleia marmorata*, specimens of which I have found in its stomach. It is rather sluggish in its disposition, and, though venomous, not dangerous to man or the larger animals.

The female produces about 20 young annually.

HOPLOCEPHALUS SIGNATUS. Jan.

Black-bellied Hoplocephalus.

Scales in 17 rows.

Ventrals 157.

Anal bifid.

Subcaudals 51.

Body short and rounded ; tail short, distinct from trunk ; head triangular, distinct from neck : above brownish olive, head much lighter coloured, with a white-edged dark streak from behind the eye to the back of the neck.

Description—head shields regular ; vertical, six sided, with obtuse angle in front, and a sharp one behind ; superciliaries rather large, nearly as long as the vertical occipitals ; much forked behind, sometimes angular, but more generally rounded ; nasal large, pierced by the nostril ; one anterior, two posterior oculars ; rostral high, with a groove along its lower edge ; six

upper labials, third and fourth coming into the orbit; a white or yellowish-edged dark streak from behind the eye to the back of the head, no collar; eye moderate, pupil rather sub-elliptical; in young individuals the pupil appears always quite rounded; scales six-sided, much larger on the sides than upon the back; skin between the scales black.

Young specimens have the whitish streak behind the eye very distinct and often extended on the other side as far as the nostril; the apical half of the tail is either whitish or salmon-coloured below; in other respects they do not differ from the adult in colour, except that the whitish hue on the sides of the neck is less distinct. In the adult subject the head is often much paler than the other part of the body, which is either olive brown or brownish black above, and bluish black or bluish grey below; the fourth part of each ventral scale is clouded with grey on the sides, leaving a much darker band in the middle, which, approaching the neck, diminishes in size; the sides of the neck below and the chin shields being of a yellowish hue. Individuals occur occasionally, which are almost black above; others, particularly those about to shed their skin, appear pale brown above, and bluish grey below; in removing any of the ventral plates, the skin below is always jet black.

Habitat.—

The present species abounds in sandy or swampy localities near Sydney; the country between the City and Botany is much frequented by these snakes; they appear to be nocturnal, and are seldom observed during the day-time; they often prey upon each other, but generally upon the smaller Batrachians (*Cystignathus* and *Pseudophryne*) which I have frequently taken from their stomachs; various kinds of insects, small lizards, &c., are also devoured by them. The venom of this snake does not effect the larger vertebrated animals. I have at various times experimented upon cats and goats with it, but without a single fatal result; in fact the animals bitten did not appear to be affected at all.

Mrs. Edw. Forde of Ash Island, to whom I am greatly indebted for much valuable information respecting the reptilian fauna of the Hunter River, informs me that *Hoplocephalus*

signatus is the most common of the Snakes on Ash Island, and that it is frequently captured and carried about by domestic cats, generally at night, proving at once its nocturnal habits and the slight effect its venom has upon these animals.

At Port Macquarie, this Snake occurs in large numbers, also at the Richmond and Clarence Rivers, but from beyond Brisbane I have never seen any specimens. I believe that it is also found in the neighbourhood of Melbourne. It is probably identical with *Hoplocephalus flagellum* (M'Coy).

The female produces from 15 to 25 young ones annually, total length 20 inches, tail 4 inches, cleft of mouth $\frac{5}{8}$ of inch.

HOPLOCEPHALUS VARIEGATUS. *D. and B.*

Broad-Headed Snake.

Scales in 21 rows.

Anal entire.

Ventrals 210.

Subcaudals 45 to 50.

Body and tail moderate ; head flat, broad behind, very distinct from neck, obtuse in front ; eye moderate, pupil sub-elliptical ; vertical shield rather small, six sided, frontals of nearly equal size, large posterior ones rounded behind ; occipitals regular, rather broad, forked ; large lower temporal shield wedged between fifth and sixth lower labial ; 6 lower labials, the last of which is the largest ; one large pre-ocular in conjunction with nasal ; anterior, frontal and second upper labial replacing the loreal.

Above black, irregularly spotted with yellow (white in spirits), forming a series of broad black blotches upon the back.

Beneath shining greyish black, each ventral plate with a large yellow spot on each side ; first and second row of scales yellow, with here and there a black one intermixed ; all the light scales more or less shaded towards the point.

We know little or nothing as regards the geographical distribution of this reptile ; the few specimens in European collections were obtained by Mons. Verreaux, near Sydney, and so rare has this snake always been that up to 1858 no specimen of

it was to be found in the British Museum. Since then I have been able to collect several hundreds of these snakes, which are strictly nocturnal in their habits, and seldom if ever observed during the day time. They may be procured from under stones in sunny localities during the cold season, and all the stony ridges around Sydney have harboured them in large numbers. At the present time they begin to become scarce, many of their favourite haunts being invaded by the gardener or the builder.

The bite of this snake is not sufficiently strong to endanger the life of man. I have been wounded by it several times, and experienced no bad symptoms beyond a slight headache; the spot where the fang entered turning blue to about the size of a shilling, for a few days.

Cats, dogs, and goats have been frequently experimented upon without any fatal result.

In January or February the female produces from 15 to 20 young ones, which, though only a few inches long, will show fight if one attempts to lift them; the adults always look formidable if attacked.

The snake which Schlegel describes as *Naja bungaroides* Abbildungen, Tab. 48, fig. 17 and 18, is nothing but a variety of the present species. The Australian Museum is in possession of a specimen from the Hastings, which is banded instead of having the irregular blotches of *H. variegatus*.

HOPLOCEPHALUS CURTUS. *Schleg.*

The Brown-banded Snake.

Scales in 18 rows anteriorly, and in 19 posteriorly.

Ventrals 169.

Subcaudals 44.

Body rounded, rather depressed, tail moderate, not distinct from trunk; head large, broad, very distinct from neck, crown flat, muzzle rounded; superciliaries slightly prominent, and sometimes two grooves before the eye. All the shields of the head very broad, the vertical almost square, with an obtuse angle behind; occipitals deeply forked, sides sometimes jagged, with a

broad scale fitting the notch. Scales never in less than 18 rows; above olive brown with from 60 to 70 darker cross-bands, in some specimens the scales between the dark bands are anteriorly edged with yellow, the two outer rows of scales yellowish, more or less clouded, but without any distinct spot in the centre of each scale as in *H. superbus*. Belly yellow, ventral plates frequently clouded or spotted with dark grey anteriorly, growing darker towards the tail; the subcaudals, which are entire, being almost uniform blackish.

The coloration of this snake varies considerably; on the East Coast light-brown specimens are much more frequent than dark ones, whilst Western Australian snakes of this species are very dark-brown, and the cross-bands remarkably distinct. This reptile has been frequently alluded to by some authors as *H. superbus*, but I have always maintained that no continental species has ever been found with 15 rows of scales, and the vertical shield more than twice as long as broad; the main characters by which the two snakes can easily be distinguished. I am certain that more than 300 specimens have passed through my hands, and in not one instance did they answer to Dr. Günther's description of *H. superbus*.

I will give here the main points in which both Snakes differ:

H. superbus.

Scales in 15 rows.

Tail short, distinct from trunk.

Head remarkably small, scarcely distinct from trunk.

Neck rather rounded.

Scales of Head more or less elongate; vertical, more than twice as long as broad.

Coloration uniform brown, 2 outer rows of scales with reddish or yellow centre spot.

Habitat Tasmania.

Synonym Diamond Snake of the Tasmanians.

H. curtus.

Scales in 18 to 19 rows.

Tail not distinct from trunk.

Head very broad, as large again as *H. Superbus*, and distinct from neck.

Neck very flat.

Scales of Head very broad, in particular the vertical, which without the anterior angle would form a square.

Coloration brown banded, 2 outer rows of scales paler, or clouded with yellow and greyish.

Habitat Australian continent.

Synonyms Brown Banded Snake, N. S. Wales; Tiger Snake, Victoria.

I have had some correspondence with Dr. Albert Günther regarding the habitat of the two Snakes, and I am glad to see the learned Doctor's statement in the *Annals of Natural History* for November, 1863, that "*Hoplocephalus superbis* proves to be a Tasmanian species."

It would be interesting to know whether the Tasmanian Snake is able to inflate the skin of the neck when irritated, but judging from its small size this is not likely to be the case, and we must leave to Tasmanian Naturalists the solution of this question. In the continental Snake the power to raise itself off the ground for half the length of the body, and to flatten out the neck like a Cobra, is well known, the Black Snake being the only other reptile which has been provided with the same power. A few words more and I have done with this, the most dangerous of all our Snakes.

Its habitat is, I believe, the temperate part of Australia from East to West. I have taken it on the Murray, in South Australia and Victoria, and received specimens from almost every part of New South Wales and from King George's Sound. The present species is not far removed from the Indian Cobra (*Naja tripudians*), and its bite is as deadly. A good sized dog bitten became paralyzed within three minutes, and was dead in fifty minutes afterwards; a goat died in thirty-five minutes; another goat which escaped whilst experimented upon, was found dead in the street after a few hours; a Dingo met the same fate in forty-eight minutes; an Echidna (*Echidna hystrix*) lived six hours, and a Common Tortoise, an animal which will live a day with its head cut off, was dead in five hours after being bitten.

Antidote vendors seeing the effect of the poison, never dared to peril their reputation in the attempt to save the animals so bitten; I must mention, however, that in making these experiments, chance bites, where the snake makes a dart, bites, and retires, were out of the question, and I grant that under such conditions man or animal may recover; but if the snake's head is applied to the lip or ear of some animal and the fangs well pressed into the wound, there is little hope of recovery. Let me also give a few words of advice to such men as go about exhibiting these reptiles, and showing their prowess by allowing themselves to be

bitten, professing that they possess an antidote against the poison; generally speaking, these persons are more or less impostors; they break off the fangs of the snake, but do not know how soon they are reproduced, and thus frequently fall victims to their ignorance. The Indian jugglers have more sense, and entirely remove the teeth, as most of the specimens of *Naja tripudians* prove which are received from India.

The young of this snake, from 15 to 20 in number, are generally observed about the end of February; they are then from 7 to 8 inches long, and subsist on small frogs, lizards, or insects. During the cold season this snake retires into the ground, as I have never met with half-grown or adult specimens under stones.

PETRODYMON. *Kreffl.*

PETRODYMON CUCULLATUS.

Red-bellied Snake.

Scales in 15 rows.

Anal 1/1.

Ventrals 187.

Subcaudals 41/41.

Purplish brown above, with a series of darker longitudinal lines along the upper part of the body, leaving a light elongate mark in the middle of each scale. Beneath yellow, bright red in adult specimens, each ventral plate clouded on the upper edge with purplish brown, much interrupted on the posterior part of the body. Divisional line of subcaudal plates marked in a similar manner, leaving the outer edges of the plates yellowish. Upper part of head purplish brown as far as the middle of posterior frontals, covering the vertical part of superciliaries, and reaching beyond the occipitals; this elliptical spot is joined to the back by a narrow band of the same colour running along the median line of the neck. A light-greyish band encircles the dark-brown mark, divided by the narrow line by which this mark is joined to the back. Upper and lower labials dotted with brown spots. Body rounded, head rather flat, depressed; tail

short, distinct from trunk, and ending in a conical spine or nail about a quarter of an inch long.

Scales in 15 rows (not in 13, as mentioned by Dr. Günther, whose description as *Diemenia cucullata* was taken from a very bad specimen); 6 upper labials, the third and fourth forming the lower edge of the orbit, the second labial *not* in contact with the posterior frontal; rostral broad, low, very obtuse superiorly; shields of the head regular, all more or less rounded posteriorly, and slightly imbricate, vertical twice as long as broad; one anterior and two posterior oculars, one temporal in contact with both oculars, four or five scale-like temporals behind; eye very small, pupil elliptical and erect.

About 3 years ago—in 1860—I captured a single individual of this species; since then, owing to the exertions of friends in the country, specimens from Ash Island, Hunter River, Port Macquarie, the Clarence River, and other localities have been received, so that its geographical range has been ascertained for many hundred miles along the east coast. This snake is strictly nocturnal in its habits, sluggish and of gentle disposition, never offering to bite when handled, and though venomous, it is so in a very slight degree only, as has been proved by experiments; its length seldom, if ever, exceeds 20 inches. Rocky and desolate places are frequented by it, and in such localities it is occasionally found under flat stones during the cold season.

VERMICELLA. *Gray.*

VERMICELLA ANNULATA

The Ringed Vermicella.

Scales in 15 rows.

Ventrals 225.

Anal bifid.

Subcaudals 18/18.

The following is Dr. Günther's description:—"Body elongate, rounded, slightly compressed behind; tail very short; head

moderate, not distinct from neck, similar to *Elaps*; rostral shield very large, rounded, raised above the surface of snout; occipitals rather narrow; two posterior oculars; anterior large, replacing the loreal together with the nasal; nasal shield single, pierced in the centre by the small nostril; six upper labials, third and fourth coming into the orbit; one large temporal shield in contact with the upper posterior ocular, two smaller ones behind. Scales smooth, large, rather rounded behind, in fifteen rows. Anal and subcaudals bifid. Tail ending in an obtuse conical scale. Two small fangs in front of upper jaw, no other teeth behind; palatine and mandibular teeth equal in length. Crown of head and muzzle black; a yellowish, in fresh specimens white, band across the posterior frontals, a second on the neck; body and tail encircled by alternate black and white (in spirits) rings. Length of cleft of mouth $\frac{1}{2}$ "; length of tail $1\frac{1}{2}$ "; total length 28".

The ringed *Vermicella*, like all other nocturnal snakes, is very seldom met with, and apparently little known to the colonists. I often capture it during the cold season without taking any precaution whatever, as I know from experience that this gentle creature will never bite; but even if it should do so, the wound would be small and of no danger whatever. I have never succeeded to make it bite of its own accord, but had to open its mouth forcibly if I wished to try an experiment. White, in his Voyage to New South Wales, gives a figure of this interesting snake, but little was known until a few years ago with respect to its geographical range. We find it as far south as Eden, Twofold Bay; it occurs again in Western Australia, is tolerably common near Brisbane, and may probably be found much further north. Mr. William Taylor has lately presented a young specimen of this snake to the Museum, which was captured at the Culgoa River; it is not unlikely that this species is found all over the continent from east to west.

In its habits it is nocturnal, and closely allied to the genus *Elaps*, inhabiting South America; in fact it bears, like our Batrachians, according to Günther, a closer resemblance to the South American than to the Indian fauna.

ACANTHOPHIS. *Daud.*ACANTHOPHIS ANTARTICA. *Wagl.*

The Death Adder.

Scales in 21 rows.

Ventrals 127.

Anal entire.

Subcaudals 42.

Head large, depressed, broad behind, regularly shielded, no loreal, 2 nasals, nostrils between; 8 rows of dorsal scales, keeled to the root of the tail; grey, sometimes salmon coloured above, minutely punctulated; back and tail with about 4 or 5 white spots speckled with pink, lower lip flesh coloured (white or yellowish white in spirits), with a pale black dot in the centre of each scale; beneath salmon coloured (yellow in spirits); tail distinct from trunk, short, thin, and ending in a recurved soft spine.

The colour of the Death Adder is subject to a good deal of variation, northern specimens from Rockhampton and Port Denison have the dark cross-bands of the back considerably smaller than those from the neighbourhood of Sydney, and the markings in the centre of the upper and lower labials and chin shields are of a pale greyish hue in the former. Specimens of a copper-red colour, as occasionally occur near Richmond, Randwick, and Long Bay, have seldom come under my notice from other parts of the continent.

Its habits and economy are tolerably well known. It is fond of warmth and sunshine, frequents sandy localities, is sluggish in its movements, and does not jump backwards if going to bite. When irritated this snake flattens itself out generally in the form of an S, turning round to one side or the other with astonishing rapidity, but never *jumping* at its enemy. As regards the supposed venomous sting in the tail, I can assure everybody interested in this matter that the caudal appendage is a mere ornament, quite soft, which nobody could run into his finger if he tried, and I am astonished that the fables which ignorance has circulated in a former and darker age, have not been exposed long before this.

In April or May they go into winter quarters, having during the summer months accumulated a sufficient quantity of fat, to

be under no further necessity of catching frogs, grasshoppers, or field-mice during the next season. The burrow of some small rodent, or the hole furnished by a decayed root, is selected and taken possession of until the warm sunshine of spring recalls the sluggish reptile to fresh activity.

I believe that the Death-adder is found in almost every part of Australia north of 36°. The Australian Museum is in possession of specimens from many parts of New South Wales and from various localities in Queensland. The British Museum received this snake from Port Essington and the north-west coast, and I have taken it myself on the Murray and Darling. Its length seldom exceeds 30 inches. A very large specimen measured 2 feet 2½ inches to the vent, and 4¼ inches to the tail; total, 2 feet 7 inches; around the body, 6 inches.

2. HYDROPHIDÆ, OR SEA SNAKES.

PLATURUS. *Latr.*

PLATURUS SCUTATUS. *Laur.*

The Ringed Sea Snake.

Scales (front part) 21 to 23 series.

Ventrals from 213 to 241.

Body subcylindrical, of moderate length, shields of the head subnormal in number and arrangement, nostrils lateral, in a single nasal shield, both nasals being separated from each other by a pair of anterior frontals. Scales imbricate, smooth, ventral shields well developed, tail with 2 series of subcaudals (Gthr.)

Body covered with a series of black rings, 20 to 50; crown of the head black, the first and second black mark of the head and neck are joined below by a longitudinal band commencing from the chin; snout and side of the head yellow, with a black band running through the eye (Gthr.).

This Snake is frequently thrown ashore after stormy weather near Manly Beach, Coogee Bay, Botany, and other localities. Its range is very extensive, and it is common in the Bay of Bengal, the China Seas, and on the Australian and New Zealand coast; it lives on fishes, and is not much dreaded by the natives of the South Sea Islands who, I am told, handle this snake with impunity.

PELAMIS. *Daud.*

Pelamis bicolor. *Daud.*

The Black and Yellow Sea Snake.

“Head long, with very long spatulate snout; neck, rather stout; body of moderate length; nasal shields contiguous, longer than broad, pierced by the nostrils posteriorly; only one pair of frontals; scales not imbricate, not polished, tubercular or concave; ventral shields none or very narrow; lower jaw without notch in front; 2 or 3 postorbitals; neck surrounded by from 45 to 51 longitudinate series of scales: from 378 to 440 scales in a lateral longitudinal series between the angle of the mouth and the vent.” (Günther.) The coloration of this snake varies considerably; the most prevailing colour is, the upper part of the head and the back uniform black, the sides and belly uniform brownish olive or yellow, the latter colour predominating just after the snake has shed its skin. Both the black and yellow colours are sharply defined. Tail with a series of black spots. This snake, which occasionally occurs on our shores, has a wide range, and appears to be as common on the Indian Ocean as it is here. The coast of New Zealand may be taken as its most southern limit. Dr. Gray, speaking about the Hydridæ in the *Brit. Mus. Cat. of Snakes*, remarks “that they are true Sea-Snakes; that they coil themselves up on the shore, living on sea-weeds, and lay their eggs on the shore.” This observation is not correct if applied to the present species, as I have more than once taken gravid females with from four to six well-developed young of such a size as are sometimes met with swimming about, and apparently a few days old only. That they live on sea-weed is doubtful also, for though I have dissected almost every specimen which has come into my hands, I have found nothing but fishes or the remnants of such in the stomach.

These are all the specimens of Snakes observed near Sydney; and as the country has been well searched for more than five years, it will be difficult to discover new species.



Krefft, Johan Ludwig Gerhard. 1863. "On snakes observed in the neighbourhood of Sydney." *Transactions of the Philosophical Society of New South Wales* 34–60. <https://doi.org/10.5962/p.345621>.

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