

AUSTRALIAN SNAKES.

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AUSTRALIAN SNAKES.

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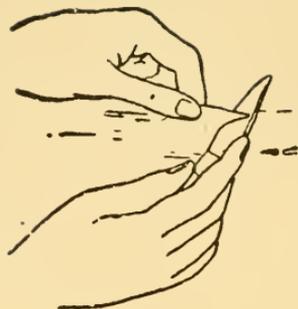


FIG. 1.—Diagram showing method of cutting out bitten part.

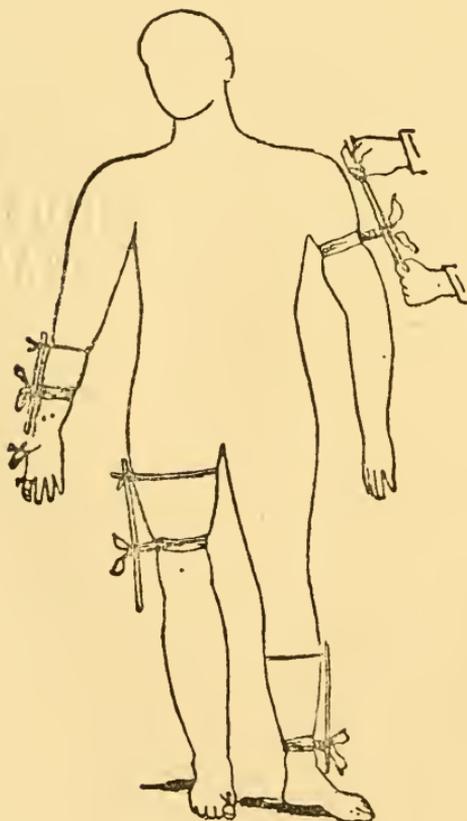


FIG. 2.—Diagram showing method of applying ligatures.

Treatment of Snake-Bite.

Recommended by the Board of Health.

A ligature, that is, a strong string, tape, narrow strip of clothing or handkerchief, should be tied at once round the limb above the bitten part. When it has been tied, pass a piece of stick under it, and twist it round and round, so as to screw up the ligature as tightly as you can. Leave the stick in the twisted ligature, and secure the end by another string, as shown in the figure (2). Great pain and swelling are caused by this, but cannot be avoided.

At the end of half-an-hour, undo the ligature for five minutes ; then tie and screw up again. At the end of another half-hour, the ligature may be removed altogether.

In places where a ligature cannot be tied, as on the neck or face, pinch up the bitten part between the finger and thumb, and cut it out (Figure 1).

In any case the bitten part should be cut into by numerous little cuts over and around the bites for about half an inch around, and sucked by the mouth freely and perseveringly ; and this can be done without danger by any person.

Stimulants, such as brandy, whisky, gin, rum, in small quantities at a time (a few teaspoonfuls), or strong tea or coffee, or wine, may be given if the patient be faint.

Do no more to the patient than is advised above, but obtain the services of a medical man.

“Adder’s fork, and blind-worm’s sting.”

—MACBETH, *Act IV., Scene I.*

A
POPULAR ACCOUNT
OF
AUSTRALIAN SNAKES

WITH A COMPLETE LIST OF THE SPECIES AND
AN INTRODUCTION TO THEIR HABITS
AND ORGANISATION.

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*ILLUSTRATED WITH SIXTEEN COLORED PLATES AND
NUMEROUS FIGURES IN THE TEXT,
BY THE AUTHOR.*

SYDNEY
THOMAS SHINE, 84 ELIZABETH STREET.
1898.

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PREFACE.

THE only work which, to the time of its publication, 30 years ago, deals exclusively and exhaustively with the subject, is Krefft's admirable "Snakes of Australia." This book is out of print, and, in consequence of additions to the known fauna, also out of date.

The present publication is not intended to be exhaustive, nor does it aim at replacing its more pretentious and expensive predecessor. It deals in a popular manner with the better known snakes, both venomous and harmless, and colored illustrations and figures in the text of such are furnished. The names, distribution, and dimensions only of the lesser known species are given, as a more detailed account would swell the pages beyond the scope of the book. Some account of the habits and organisation of snakes in general will be found in part I.

As indicating the progress made in our knowledge during the past 30 years, it may be mentioned that whereas Krefft recorded 21 innocuous and 42 venomous land snakes, the figures of to-day, as shown in the following pages, are 31 and 62 respectively, the proportion being exactly maintained; the number of sea snakes has been reduced from 15 to 12.

SYDNEY, *October*, 1898.

E.R.W.

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PART I.

SNAKES IN GENERAL.

THE Australian Slow Worms, or Scale-footed Lizards (family *Pygopodidae*), are nearly always mistaken for snakes, and so treated. The limbs, of which only a single pair is developed, are so small and pressed so closely to the body, as to be unnoticed unless specially sought for. These limbs are not used in progression, and when moving through grass, over soil or on low bushes, the slow worm looks remarkably like a snake.

A typical lizard, with its four well-developed legs, each provided with five toes, and its distinct head, body and tail, cannot possibly be confounded with a typical snake wherein limbs are entirely absent and the head passes into the neck, thence imperceptibly into body and tail. As, however, there are lizards without legs and snakes with at least rudiments of them, it is clear that other features will have to be looked for in order to distinguish the two kinds of reptiles.

Snakes and lizards agree in many particulars. The scales which cover the body may be outwardly indistinguishable and may approximate in color.

Snakes have one lung developed, largely at the expense of the other. While in the great majority of lizards they are of equal size; rarely one of the lungs is aborted. Most snakes swallow their prey whole, and the jaws are specially distensible to permit of this; some, which consume only small fry, have this peculiarity in slight degree, and in such respect resemble lizards. It has been mentioned that certain snakes possess rudiments of limbs; they are visible outside the body in the form of small spurs, and internally there may be not only a leg bone but traces of the pelvis also. Such snakes, therefore, have something in common with those lizards wherein the limbs are reduced to a single pair, and those very rudimentary. Lizards, however, approach much more nearly the typical legless snakes, for some are without the slightest external trace of limbs, and are thus very snake-like indeed. In such, the head and neck are indistinguishable, and from above, no indication of the division into body and tail exists. Taking all these factors into consideration, it would appear to be difficult to give absolute distinguishing characters.

Snakes cannot wink; they have no eyelids, members with which (and again we must qualify the sentence) the great majority of lizards are amply provided, nor can they cast off their tails like geckos and some other lizards. One cannot find the ear-opening of a snake; it is concealed beneath a scale,

most lizards have the ear fully exposed. Snakes can withdraw their long forked tongues wholly within a sheath situated in the floor of the mouth, and here we have such a feature as we seek, for there is no such sheath in lizards, the tongue being attached in the more usual manner. In all lizards the two bones forming the lower jaw are firmly united in front, whereas in snakes the union is an elastic substance which allows the bones to be widely separated; the bones of the upper jaw are in certain snakes also distensible, and the junction of the lower jaw with the skull is not so direct, the quadrate bone being specially developed and having much more play than in lizards. The object of these cranial peculiarities is to enable a snake to swallow a larger animal than would otherwise enter the mouth, for mastication, properly so-called, is not performed. Speaking of bony characters, it may be mentioned that there are an enormous number of vertebræ, or separate bones, in the spinal column, and that each is provided with a ball at one end and a cup at the other, into which the ball of the preceding vertebra exactly fits; the snake is thus enabled to twist and turn itself about without fear of dislocating its spine.

The scales which cover the body are not true scales, that is, they are not separate structures like, say, the scales of a fish, and cannot be plucked out. The outer skin is thrown into regular folds or pleats, and the exposed portions are provided with horny plates.

It is the pleated condition of the scales which enables the snake to cast its outer skin, a process known as sloughing. If each scale was a separate structure this would not be possible, and in a slough the scales do not overlap, due to the straightening out of the skin ; the length of a slough is therefore greater than that of the snake from which it was cast, and presents the appearance of a thin membrane studded with regular, but slightly separated, scales. On the head the scaling usually takes the form of large symmetrical plates, which are, however, not imbricate, but arranged side by side so that in a cast skin they present exactly the appearance they did when on the snake. It is, therefore, in many cases, possible to determine the species from the slough alone. In a healthy snake the skin is usually cast whole ; the head is first freed and the slough is drawn inside out as the snake disrobes ; the tail is, however, frequently slipped out, in which case the slough of that member retains its original aspect.

The slough includes a thin, transparent covering from the eye, this retains its position in the cast skin and the only openings in the slough are those naturally of the body. It has been stated that as the new skin forms beneath the old one, the eye becomes dull and opaque, and the snake is blind for a few days at this time. Having several times watched this process of sloughing, it did not seem to me that the subject was

much affected in sight ; the actual operation, as far as the head is concerned, when once commenced, was always speedy.

Locomotion.

Locomotion is usually associated with certain external organs specially adapted for such purpose, as arms, legs, wings, fins, etc. Snakes, however, have none of these, and to those unacquainted with their anatomy, the rapid movements are difficult of explanation. Pliny, "the wisest of men," admitted that the actions of serpents were beyond his comprehension. Snakes have an enormous number of vertebræ, or bones in the back, most of which (the exceptions being portion of the tail bones) carry each a pair of ribs. Each pair is attached below to one of the broad, transverse ventral, or belly plates, and it is mainly by means of such plates that the snake moves. The free edges of these plates are directed backwards, and catch the slightest projection of the ground : while a portion of the body is thus held, a part in front is thrust out and similarly attached, the hinder portion is next drawn forward. If this was all, the effect would be identical with the progression of a worm, and would need a telescopic power which the plates do not possess. It is well-known that the track of a snake is sinuous, and the motion has been thus described by Dr. Günther :—" Although their motions are in general very quick, and may be

adapted to every variation of ground over which they move, yet all the varieties of their locomotion are founded on the following simple process. When a part of their body has found some projection of the ground which affords it a point of support, the ribs, alternately of one and the other side, are drawn more closely together, thereby producing alternate bends of the body on the corresponding side. The hinder portion of the body being drawn after, some part of it finds another support on the rough ground or a projection; and the anterior bends being stretched in a straight line, the front part of the body is propelled in consequence. During this peculiar kind of locomotion the numerous broad shields of the belly are of great advantage, as, by means of the free edges of those shields, they are enabled to catch the smallest projections on the ground which may be used as points of support. A pair of ribs correspond to each of these ventral shields. The snakes are not able to move over a perfectly smooth surface." The smooth surface does not mean a boarded floor, or even one covered with oilcloth, for I have found that snakes progress tolerably well, but not so rapidly, on this substance as on the bare ground. On a glass sheet, however, which is without projections, a snake is helpless, as far as progression is concerned—its movements then consist of what has been termed "rapid wriggles," and may be likened to the peculiar motions of the mosquito larva, or rather the Bloodworm (*Chironomus*), in water. When

passing through thick grass it is probable that the belly shields play but a small part in progression: the snake moves in quick, sinuous curves, and locomotion is effected as in swimming, the grass affording the resistance which in aquatic progression is supplied by the water. The movements of snakes are so rapid that no one unaccustomed to these reptiles can form any idea of their agility. You may be holding one in your hand, when, almost before you are conscious of it, it has thrown two or three coils round your arm without you being able to realise how the trick was done; or it may as suddenly uncoil, and, as the writer once experienced, have passed its tail up your coat sleeve, and be half-way down your back with equal speed and facility. "Except flying," wrote the late Professor Huxley, "there is no limit to their locomotion."

The progression of a snake on land will now be understood; but let us consider the case of a tree snake traversing a slender branch. If rounded, the smallest possible portion of the belly of the snake would be in contact with the branch, a condition that would no doubt render rapid movement impossible. The conformation of the tree snakes is therefore specially adapted for an arboreal life, and may be more fully considered. The green tree snake of Australia will form an excellent example for study: on examining this common species it will be seen that the belly does not form an even curve, as in most snakes, but presents two

ridges, one on each side, running the length of the body. These ridges are formed by each of the belly plates having a suture-like keel, there being also a corresponding notch. When the belly is applied to a branch, the central portion hollows slightly and adapts itself to the curvature of the branch, while the keels of the plates are applied as footholds, and enable the snake to control its movements with exactitude.

Another feature of the tree snakes is their great length and slender proportions; this enables them to pass from branch to branch, often far apart, and also to dart through small spaces, interlaced twigs, etc., in search of birds' eggs and young.

In addition to being slender they are extremely active, and the branches scarcely bend beneath their weight as they glide along. Many of them also have long, prehensile tails, and as they can suspend themselves by the terminal inch, the whole length of the body is free to swing in the air or investigate a neighbouring object.

The blind snakes, of which there are a large number in Australia, live wholly underground; and their method of locomotion being specially adapted to their surroundings, may also be studied. The scales of these snakes are highly polished, so as to offer but little resistance to their passage through the soil. But, having no large belly plates with projecting edges, it will be evident that without further aid, progression

would be difficult ; such aid is furnished by the tail. This member is very short, often no longer than the body is thick, and is provided with a horny, thorn-like point directed downwards. On being pressed against the ground, this thorn provides the necessary point of resistance.

Another modification of the same condition is to be found in earth snakes from the Philippine Islands, in which the tail terminates in a disc or shield, its truncated appearance suggesting that the snake had been chopped in halves.

Land snakes, as above-mentioned, have their lower surfaces covered with large transverse plates instead of scales, and it is the edges of these plates catching against the inequalities of the ground which offer the necessary resistance during progression. As sea snakes move by means of the tail alone, abdominal plates are not necessary, and are consequently absent, excepting in one genus. These plates are replaced by scales, similar to those found on other parts of the body, but different from the scales of the land snakes. Instead of being imbricate, or overlapping like slates on a roof, they are usually laid side by side, and are smooth and highly polished, thus offering the slightest possible resistance to the progression of the snake. They are generally six-sided and vary much in size ; sometimes they are slightly keeled and, in certain genera, the imbrication has not been entirely lost, for we must look upon the

sea snakes as descendents from land snakes ; the fresh-water species forming a natural and intermediate link in the chain. Instead of presenting the familiar rounded form, the body of a sea snake is compressed or flattened at the sides ; like such rapidly moving fish as herrings, and more especially ribbon fish. The resemblance is further heightened by the belly being ridged like the keel of a boat.

Another peculiarity, and that most modified for aquatic progression is to be found in the tail : instead of being rounded, as in other snakes, it is compressed or vertically flattened, like that of an eel ; a feature which enables the snake to move through the water with rapidity. It has, in fact, become transformed into a fin, and has precisely the property possessed by the tail of a fish, and of an eel in particular.

Venom.

Watching a living snake under glass, at say the Zoological Gardens, its most noticeable feature is a delicate forked object frequently thrust, with a quivering motion, out of the mouth, and rapidly withdrawn. This is its tongue, and is used as an investigating member, testing the nature and quality of everything with which it comes into contact. To the popular mind, however, it is a "sting," a death-dealing weapon, so regarded in spite of all that has been written on the subject. The

explanation, doubtless, is that snakes being generally regarded as creatures to be sedulously avoided, much of this sentiment has attached itself to the literature of the subject, and, in consequence, it is unread, or, if scanned, soon forgotten. A little observation and reflection would elicit the fact that the so regarded "sting" is possessed by both the venomous and harmless snakes, and is used in identical manner by both kinds. It is the fangs or modified teeth which make the wound and convey the venom thereinto; they lie hidden away in the mouth, and are never seen by visitors to the "Zoo."

The tail also of some species has been accorded a share of evil import. Old writers have assigned the most marvellous properties to the tail of some snakes. "The Horn Snake," we are told, "carries a sharp horn in its tail, with which it assaults anything that offends it with such force that it will strike its tail into the butt end of a musket, whence it is not able to disengage itself." We further read—that the tail not only mortally wounds men and other animals, "but, if by chance stuck into a tree, the tree instantly withers and turns black and dies." Few people now-a-days seriously believe that such things could be, yet we are not infrequently asked if the Death Adder "stings with its tail or its tongue." This question is put with some show of reason, for the snake has a thorn-like spine at the end of its tail, whose function is probably to aid in progression.

Venomous and Harmless Snakes.

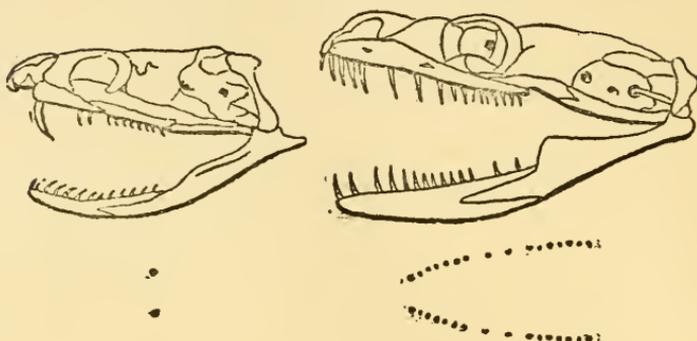


FIG. 1.

FIG. 2.

Fig. 1.—Skull of venomous snake, showing poison fang and two bite-marks.

Fig. 2.—Skull of harmless snake, showing even row of teeth and many bite-marks.

Speaking with an expert on Snakes, the question invariably asked is, "How can you distinguish a venomous snake from a harmless one?" This being so, and, as the subject is one of no small importance in such a snake-infested country as Australia, some notice of the matter may be acceptable here.

Certain wise persons have their own special methods by which they profess to distinguish the venomous and innocuous snakes at a glance. Some will judge by the relative width of the head, maintaining that those species which have wide heads are venomous; while those in which the head scarcely exceeds the width of the body, are harmless. Others will have it that if the line of the mouth is curved, the snake is dangerous;

if straight, no harm will follow its bite. Again, and with more reason, it is affirmed that a venomous snake has only one scale (the loreal) between the nostril and the eye; while a non-venomous snake has two or more such scales. Another, perhaps, somewhat of a wag, remarks that if a person bitten by a snake dies (that is, within a reasonable period), the snake is a venomous one. This, however, is by no means infallible, for several instances are on record of persons having died from fright, induced by the bite of a harmless reptile. Our venomous snakes have six upper labial plates; while the harmless ones have seven or more.

Let me say, at once, that there is no ready method of distinguishing the two kinds. An intimate knowledge of the appearance of the venomous species is the only reliable way of determining them at a glance. Such will scarcely serve to show, in a rapidly moving snake, whether the head is, or is not, wider than the body; what the line of the mouth may be, or whether it possesses one or more loreal scales. When it may be too late, an examination of a snake-inflicted wound will reveal its nature.

If only two punctures appear, a certain distance apart (thus ) , the snake is, in all probability, a venomous one. The wounds inflicted by a non-venomous snake, consist of two rows of parallel punctures—six, eight, or more, in number, as shown in the foregoing illustration. This does not apply to the

Sea Snakes, all of which are venomous, and produce many punctures, as with the harmless land snakes.

It does not follow that because we know a snake when adult, that we necessarily recognise the same species when young. The Australian Brown Snake furnishes us with an admirable illustration of this. The adult snake is usually uniform brown above ; but, when young, it is alternately banded with brown and white (see Plate 8), and at various stages of growth presents such a different appearance that it has received many names ; the identity with previously described specimens being unsuspected.

Another source of misunderstanding is furnished by the altered aspect of a snake immediately after casting its skin. A person unfamiliar with, say, the Brown Snake, in all its phases, seeing it just before the change took place, might fail to recognise it after the operation was concluded.

In order to render the recognition of these snakes the more certain and easy, specimens of the venomous species, accurately identified, should be prominently exhibited in every town and settlement in Australia, supplemented by the life-size colored illustrations, prepared by the publisher of this little book, posted at the railway stations, and hung in schools and elsewhere.

Medical men, in particular, should make themselves acquainted with the properties of our snakes, and in this connection let me say a word. I have, myself,

known two cases where doctors have treated patients for bites of harmless species, with the dead reptile before them—one a Diamond and the other a Tree Snake.

Under such circumstances, the remedies applied may be, in themselves, a source of danger. Medical men, chemists, and other persons, of whom assistance might be solicited, should, therefore, make a special point of knowing the hurtful snakes. If the offending reptile is not exhibited, the operator would be guided by an examination of the wound, the characteristics of which have been indicated. The behaviour of the person bitten, although usually indicative, should not be wholly relied upon, as people bitten by harmless snakes have been known to exhibit many of the symptoms of snake poisoning, induced by fear.

For immediate reference, instructions for the treatment of snake-bite have been printed at the commencement of the book.

The chopping off of a finger, a by no means uncommon bush "remedy," may be productive of greater harm than the disease sought to be cured; and I know of one man who can exhibit a bottle containing one of his fingers, and the snake which bit it, a perfectly harmless reptile.

The notoriously evil character of snakes renders any advice as to dealing with these reptiles superfluous. As with most others things, however, familiarity breeds contempt. During the season I have many snakes

passing through my hands daily, and, although always exercising due care, I once unwittingly nearly came to grief. A box was forwarded to me bearing the label "Green Tree Snake," taking a peep inside I saw that the occupant was one of these harmless reptiles, and at once threw open the lid, and was taking out the snake, when from below darted a Black Snake, one of our deadly species. It was but a moment's work to seize and secure it; but since that time I have opened packages with even more care.

A distinction must be made between the venomous, and what I call the deadly snakes. Of the latter, there are only five common species, they are:—

1. Brown Snake (*Diemenia textilis*). Plate 8.
 2. Black Snake (*Pseudechis porphyriacus*).
Plate 9.
 3. Superb Snake (*Denisonia superba*). Plate 10.
 4. Tiger Snake (*Notechis scutatus*). Plate 13.
 5. Death Adder (*Acanthophis antarctica*).
Plate 14.
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Food and Reproduction.

Many different kinds of living animals fall a prey to snakes; insects are eaten by Blind Snakes and some of the smaller venomous kinds. Frogs form food for most snakes; the Hylas are particularly unfortunate,

being pursued among the trees by the Tree Snakes, and in the water by Water Snakes, and the Black Snake. These latter also seek out the aquatic lizards of the genera *Physignathus* and *Egernia*. Land lizards are favorites, and are often to be obtained from the stomachs of the Tiger, Brown, and such other snakes as frequent dry and sunny places. Birds and their eggs are devoured by Tree Snakes and Pythons, the former are also partial to geckos; while quadrupeds, such as small Wallabies, Rat Kangaroos, Bandicoots, and Opossums especially, fall victims to Pythons and Rock Snakes. Flying Foxes, as they hang in clusters from the trees, are not infrequently caught by these large reptiles. Fishes and marine animals of various kinds supply the wants of the Sea Snakes.

As befits their peculiar, lengthened body, nearly all the internal organs are elongated; this applies also to the eggs, those produced by some species being three times as long as broad. Eggs are produced by most of our harmless snakes, namely: the Blind Snakes, the Fresh Water Snake, Tree Snakes, both Green and Brown, and the Pythons, which latter are specially interesting from the fact that they incubate their eggs, 30 or so in number, and are the only snakes known to do so. The members of the genus *Diemenia*, including the deadly Brown Snake, and the Whip Snake, also produce eggs, a habit common to some, probably all, species of the genera *Rhynchelaps* and *Pseudelaps*.

With these known exceptions, the venomous snakes (the Water Snakes and Sea Snakes included), produce their young alive, sometimes in great numbers. Thus the Tiger and Superb Snakes produce each 30 or more ; half this number appears to be the complement of the Death Adder ; while I have not known more than ten to the Black-backed Snake. The Black Snake and the Black-bellied Snake each bring forth 20 young ones. Much, however, is still to be learned on this and other matters affecting our snakes.

Uses of Snakes.

Of what use are snakes ? is an oft-asked question. Such a question implies the dictum that all things were specially "created" for the use of man, and without going into the ethics of the question, it may be stated, as an axiom, that if a snake can live, move, and replenish the earth with its species, it will do so without in any way considering its utility ; and snakes are by no means the only creatures who live for themselves alone. However, to speak in a more practical way, snakes do play a part in the economy of nature : they unwittingly assist in keeping in check many other forms which if permitted to increase beyond certain bounds, might become a plague, as for example, mice, frogs, lizards, etc. ; had we more Blind Snakes we might have less white ants. On the other hand, snakes serve as food for many animals and birds, which may be more conveniently treated as enemies.

Enemies of Snakes.

The Mongoose, of India, is a born enemy of snakes, and although experiments have proved that this animal is by no means "snake proof," it seldom gets the worst of the encounter; quick as is a snake, it is no match for a mongoose, which avoids every stroke of its adversary by extreme agility, and generally succeeds in killing its victim. In Africa also, another notorious snake-pestered country, there is a natural enemy in the person of the Secretary Vulture. This bird, well out of harms way, on its stilt-like legs, and armed with stout beak and powerful stroke-dealing wings, seldom fails to despatch even the largest snake. Feral pigs, or in other words, domestic pigs, which have escaped supervision and become wild, are credited with destroying snakes, and as such pigs are plentiful in some parts of the Australian continent, they may be of service in this respect. In the valley of the Oregon, snakes have been exterminated by the domestic pig, and in parts of India these animals have frequently been observed searching for and eating cobras.

In Australia, the indigenous enemy of snakes is the Laughing Jackass (*Dacelo giganteus*). This familiar bird, wisely protected by our legislature, as is the Secretary Vulture by the Cape Government, is an expert snake killer, and possesses a powerful weapon in its formidable beak; with this it quickly breaks the back of its victim, and so renders it incapable of active move-

ment. Watching the Jackasses in my own avaries, I have noticed a feature which I have not seen remarked upon. When food is thrown to one of these birds it swoops from its perch and does not check the impetus gained until it has secured its prey, in other words the frog or lizard is seized before the feet touch the ground. Such a habit must be of great advantage to the bird when attacking a snake, and leaves the reptile, quick though it may be, less chance than if its enemy alighted beside it before making its stroke. The Goana, or Lace Lizard (*Varanus*), is another snake destroyer ; one, I disturbed, had been munching a Whip Snake.

Popular and Scientific Names.

When speaking of snakes by their common names, it is often of the highest importance to know what species is referred to, for some snakes are known by different names in the various colonies, and even in different parts of the same colony. For example, the Diamond Snake of Tasmania (*Denisonia superba*) is in Victoria called the Copper-headed Snake ; and in New South Wales, the Superb or Large-scaled Snake. This snake, it must be remembered, is eminently venomous, and as dangerous as any Australian species. The Diamond Snake of the continent (*Python spilotes*) is, on the other hand, a totally different reptile, and perfectly harmless ; this confusion of names is, therefore, most misleading.

Again, the reptile known in some parts of Tasmania as the Carpet Snake, and in others as the Black Snake, is neither our harmless Carpet Snake nor our venomous Black Snake, but the equally or more deadly Tiger Snake of the continent, also known as the Brown-banded Snake. Those persons who, through ignorance, pooh-poo the use of scientific names, may here receive a conclusive answer to the question: "Why do you naturalists put Latin or Greek names to your specimens? Why not write them in plain English alone?"

How could we expect a foreign naturalist to understand of what snake we wrote, when, even among ourselves, we have four names for the same reptile, some of which are also applied to totally different species?

Scientifically, the Tiger Snake is known as *Notechis scutatus*, and, under this name, could be found and identified by naturalists all over the world. There is a Black Snake in America, another in Africa, and others in other parts of the world; but there is only one *Pseudechis porphyriacus*, and that is the Black Snake of Australia.

Speaking of technical names, I must admit that snakes, in common with other animals, have frequently had two, three, or even more scientific names applied to them: this arises from unavoidable causes, and as soon as the anomaly is discovered the duplicate names are discarded.

Whenever common names are in use, such have been adopted in the following pages. As, however, there are some snakes which have not received popular designation, suitable names have been supplied for the general reader. Such can, however, never take the place of technical or exact terms, and are liable to abuse.

It is the practice of some writers to reject popular names in universal use and substitute new ones of their own invention. To supply an appropriate name for a species not previously recognised is legitimate and laudable; but to ignore an existing name and substitute a new one without the slightest justification is not only misleading, but is a practice to be strongly condemned.

Here is a case in point: one author states that there are three Death Adders in Australia, namely:—The purplish, the short, and the spine-tailed Death Adders. The author of the article has given us the scientific terms of the snakes for which he has (for some unexplained reason, or for no reason at all) invented these names. The Australian bushman would be incredulous if he were informed that his Black Snake was to be called the purplish Death Adder, that his Tiger Snake (or Brown-banded Snake) was henceforth to be known as the short Death Adder, and that his common Death Adder was to be distinguished as the spine-tailed Death Adder, in order that it might not be confounded with the other two.

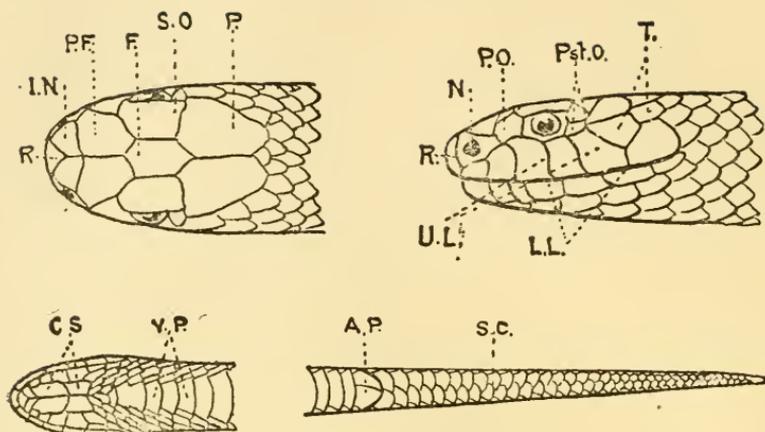
If the author was ignorant of the Australian names of these snakes, he might be excused, but he was not. Of his purplish Death Adder he writes: "Generally known to the settlers by the name of Black Snake." Further comment is unnecessary, for if he or anyone else gave a thousand new names, this snake would still remain the Black Snake of Australia.

Technical Terms.

Apart from their osteological or bony features, the characters usually used in the classification and determination of snakes are: the relative size and disposition of the head shield, the number and peculiarities of the ventral or belly plates, and of the sub-caudal or lower tail scales, and the entire or divided condition of the anal plate. Although full technical details would be out of keeping and beyond the scope of the present popular publication, it has been thought advisable to give, under each species, a formula* denoting (S.) rows of scales around the middle of the body; (V.) number of ventrals; (A.1 single, or A.2 divided) character of the anal; and (S.C.) number of sub-caudal plates.

As my readers may at times find it useful to be able to refer to terms used in technical descriptions, the following diagrams and explanation have been prepared:

* Compiled from the Catalogue of Snakes in the British Museum.



R.	ROSTRAL.
N.	NASALS.
I.N.	INTERNASALS.
P.F.	PREFRONTALS.
F.	FRONTAL.
S.O.	SUPRAOCULARS.
P.O.	PREOCULARS.
Pst. O.	POSTOCULARS.
P.	PARIETALS.
T.	TEMPORALS.
U.L.	UPPER LABIALS.
L.L.	LOWER LABIALS.
C.S.	CHIN SHIELDS.
V.P.	VENTRAL PLATES.
A.P.	ANAL PLATE.
S.C.	SUB-CAUDALS.

The anal plate and the sub-caudals are sometimes entire and sometimes divided, the latter character being shown in the cut.

PART II.

AUSTRALIAN SNAKES.

BLIND SNAKES.

Family *TYPHLOPIDÆ*.

Not infrequently disturbed in the ground by spade, hoe, or plough ; these harmless little snakes are often mistaken for worms, and are sometimes called blind worms. They are round bodied reptiles, with a short, indistinct head, and short tail, which latter terminates in a thorn-like point, used mainly in progression. The hinder is generally thicker than the front portion of the body, the whole of which is covered with highly-polished scales, so as to offer slight resistance to their progress in the earth. The head is usually covered with large plates ; and the eyes are almost, or quite hidden, each by a large scale ; hence, as both their scientific and common names indicate, they are, perhaps, incapable of distinguishing much more than light from dark. The eye has probably degenerated, owing to disuse, such an organ being of little avail in subterranean existence. These snakes cannot stretch their mouths ; they have no teeth in the lower jaw ; and there are vestiges of hind limbs hidden beneath the skin ; there are no enlarged scales on the lower surface of the body,

as usual with most snakes ; consequently, progression is performed in a modified manner, and is largely aided by the thorn-like scale in which the tail terminates, a feature more fully mentioned in part I. (page 17).

Blind snakes feed chiefly, if not exclusively, upon insects, and, as they destroy numbers of "white ants" (*Termites*), and their eggs, they are to be encouraged, more especially as they are perfectly harmless and absolutely inoffensive. Nineteen Australian species are known ; they are all of similar color, being grey above and flesh tint below ; and while some are proportionately longer than others, they are generally so very similar that their determination is a matter of great difficulty. As the several species can be identified only by a specialist on the group, it follows that popular names would be of no value whatever, and although Krefft used such for the few species with which he dealt, I have, in this family, given the scientific names only. *Typhlops polygrammicus* appears to be the commonest species in New South Wales, *T. australis*, in South Australia, and *T. bituberculatus*, in Queensland. The Victorian *Typhlops* have not yet been technically examined.

The following is a list of all the species described, together with their maximum size and habitat in Australia, as far as known :—

T. guentheri, Peters. Northern Australia ; length,
5 $\frac{3}{4}$ inches.



BLIND SNAKE, (*Typhlops proximus*, Waite).

T. leucoproctus, Boulenger. Queensland ; length,
8 $\frac{3}{4}$ inches.

T. ligatus, Peters. Queensland and New South
Wales ; length, 10 inches.

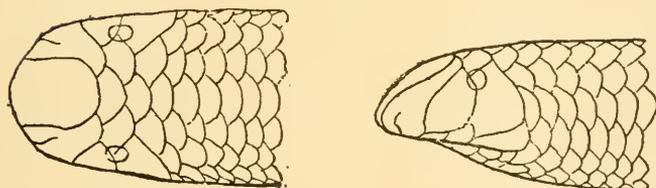
T. torresianus, Boulenger. Queensland ; length,
1 foot 4 inches.

T. polygrammicus, Schlegel. Queensland and New
South Wales ; length, 2 feet 4 inches.

Blind Snake.

Typhlops proximus, Waite.

Plate 1.



Queensland, New South Wales, and Victoria :
length, 1 foot 4 inches.

T. reginae, Boulenger. Queensland ; length, 1 foot
4 inches.

T. australis, Gray. South, West, and Central
Australia ; length, 10 $\frac{1}{2}$ inches.

T. wiedii, Peters. Queensland and New South
Wales ; length, 11 $\frac{1}{2}$ inches.

T. batillus, Waite. New South Wales ; length,
9 inches.

T. curvirostris, Peters. North-western Australia
and Queensland ; length, 8 $\frac{1}{4}$ inches.

- T. bituberculatus*, Peters. Queensland, New South Wales, South and Central Australia ; length, $12\frac{1}{2}$ inches.
- T. unguirostris*, Peters. North-western Australia, Queensland, New South Wales, West, South, and Central Australia ; length, 1 foot 3 inches.
- T. waitii*, Boulenger. Queensland ; length, 1 foot 8 inches.
- T. affinis*, Boulenger. Queensland ; length, $6\frac{3}{4}$ inches.
- T. pinguis*, Waite. South Australia ; length, 1 foot 2 inches.
- T. olivaceus*, Gray. North-west Australia ; length, 1 foot 4 inches.
- T. diversus*, Waite. Queensland ; length, $8\frac{1}{2}$ inches.
- T. nigricauda*, Boulenger. Northern and Western Australia ; length, $12\frac{1}{2}$ inches.
-

PYTHONS and ROCK SNAKES.

Family BOIDÆ.

Among the largest of snakes, the Pythons are fortunately harmless. They are night-loving, and when found in daylight are usually at rest. The eggs of snakes are generally hatched by the heat of the sun, or by that produced by decaying matter among which they may be deposited. The eggs of Pythons require more warmth, and this is supplied by the parent snake,



DIAMOND SNAKE, (*Python spilotes* Lacépède).

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who incubates them by coiling her body around them, her own temperature being raised during the period ; this condition is sometimes maintained for nearly two months. These reptiles are further interesting from the fact that they have vestiges of hind limbs, which show through the skin as two small spurs, one on each side of the vent. These spurs are the external terminations of certain rudimentary bones, which represent all that remains of the pelvic members, as developed in the lizards, for example. The Pythons feed upon animals, first crushing them to death between their powerful coils, and swallowing them by an extremely slow process, generally head first. If the prey is of large size, probably not more than three or four meals are made in a year ; while food is not taken and animation is suspended during hibernation in the colder months.

The following are the Australian representatives of the family :—

Common Rock Snake.

Liasis childreni, Gray.

S. 41-45, V. 257-287, A.1, S.C. 38-53.

Northern, and North-eastern Australia ; length, 14 feet.

Brown Rock Snake.

Liasis fuscus, Peters.

S. 47-49, V. 275-291, A.1, S.C. 65-72.

Northern Australia ; length, 14 feet 6 inches.

Green Rock Snake.*Liasis olivaceus*, Gray.

S. 69-75, V. 349-361, A.1, S.C. 100-102.

North Australia ; length, 16 feet 3 inches.

Diamond Snake.*Python spilotes*, Lacépède.

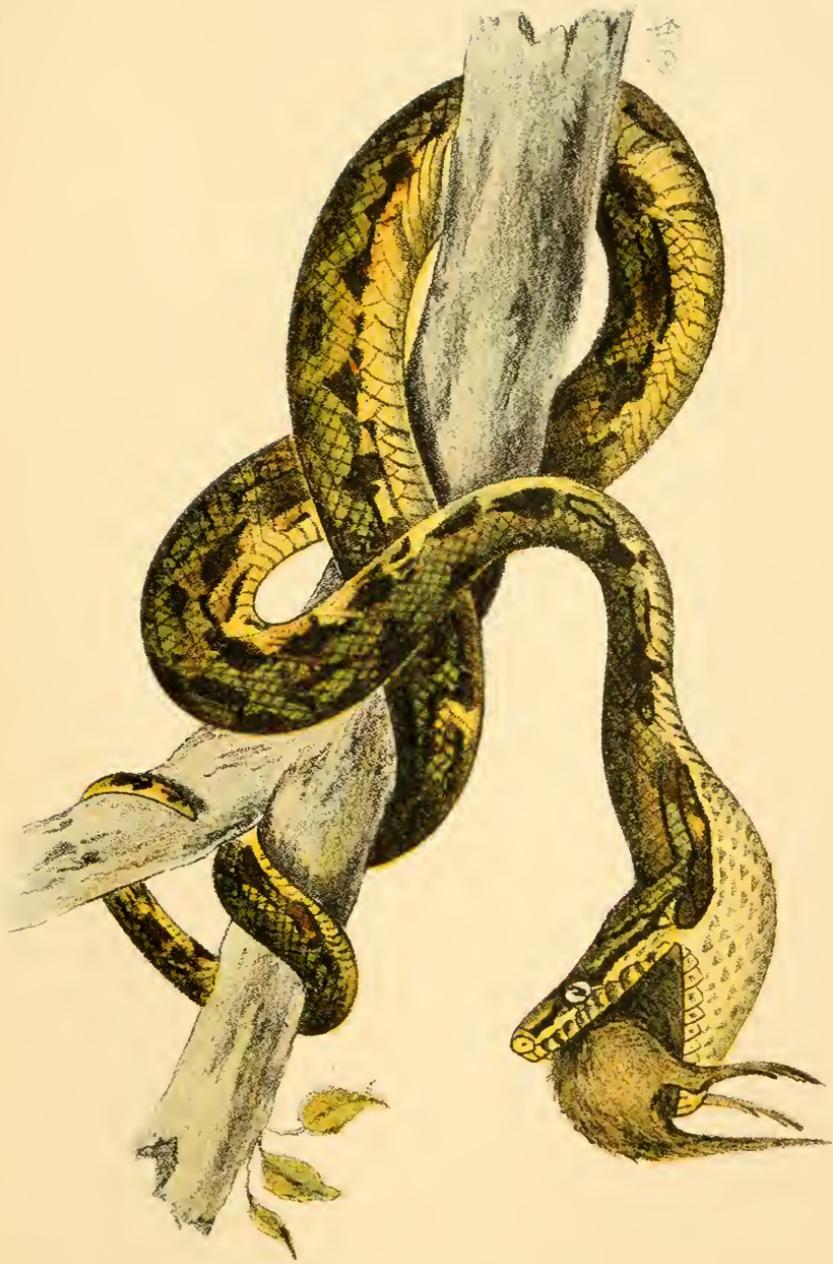
Plate 2.

**Carpet Snake.***Python spilotes*, variety *variegata*, Gray.

Plate 3.

S. 45-51, V. 251-304., A.1 or 2, S.C. 63-92

Krefft considered that these two snakes were merely varieties one of the other, and further researches have proved the accuracy of his surmise. Except in color and distribution they do not differ, and occasionally individuals are obtained which cannot be assigned to either form, being colored partly like one and partly like the other. Normally the Diamond Snake is black with a yellow spot in the centre of each scale, and with diamond-shaped clusters at fairly regular intervals. It attains a length of 8 feet. The Carpet Snake, which



CARPET SNAKE, (*Python spilotes*, var. *variegata*, Gray).

may be 10 feet in length, is of an olive tint, variegated with irregular markings, which are responsible for the common name of the snake. In both, the under parts are yellow, barred and spotted with black. The Diamond Snake is restricted to a limited area on the East Coast; but the Carpet Snake is found almost throughout Australia.

On a footpath, a grass plot, or in a museum case, a Carpet Snake is so striking an object, by reason of its bulk, its sweeping curves and mottled pattern, that a casual observer would regard it as a conspicuous animal, which would everywhere obtrude itself on his attention. Yet, in the recesses of its native forest, that casual observer, and even a sharp-eyed naturalist, might brush against it, or walk over it without noticing it. An experienced collector once related to me how startled he was when searching in the bush, by the sudden apparition, as it seemed, of a huge Carpet Snake a yard away. Not till then had he realised how the mottled marking of the reptile perfectly imitated the litter of grey and brown dead leaves, and how the curves of the body answered to a fallen limb.

Black-headed Rock Snake.

Aspidites melanocephalus, Krefft.

S. 49-55, V. 321-350, A.1, S.C. 60-64.

North Australia; length, 8 feet.

Ramsay's Rock Snake.*Aspidites ramsayi*, Macleay.

S. 53-63, V. 293-299, A.1 or 2, S.C. 53.

Known only from Bourke and surrounding district ;
length, 6 feet.

COLUBRINE SNAKES.

Formerly, snakes were usually separated into two main sections, harmless, and venomous. Although this may be a convenient arrangement, recent researches show that it is not a proper one, and must, therefore, give place to one based on natural characters. The family *Colubridæ*, to which all the remaining Australian Snakes belong, is split into three sections. The first (*Aglypha*) may be known by their solid teeth ; all its members are therefore harmless. In the next section (*Opisthoglypha*) some of the hinder fangs are grooved ; and while many of its representatives are venomous, others are quite harmless. All the members of the third section (*Proteroglypha*) are venomous, and may be known by the presence of grooves in the front teeth of the upper jaw. These grooves serve to conduct the poison from the venom bag into the wound.

HARMLESS COLUBRINE SNAKES.Section *AGLYPHA*.

But five Australian Snakes enter this section : the first is a Water Snake, which belongs to the same-

genus as the familiar Ringed Snake of Britain, and has much the same habits ; it is known as the

Fresh-Water Snake.

Tropidonotus picturatus, Schlegel.

S. 15-17, V. 128-165, A.2, S.C. 52-82.

This snake inhabits Eastern Australia, north of the Clarence River. It is somewhat variable in color, due both to individual peculiarity, and to seasonal changes : while some examples are quite grey, others are of a rich brown : all have, however, the belly scales, salmon color, generally with red spots on the sides. Three feet is its maximum size.

Unlike the Sea Snakes, the members of this genus are not specially adapted for living in water, nor are they nearly so aquatic in habit as the venomous Water Snakes of the next section : although splendid swimmers, they are more often found on land, always however in the neighbourhood of water. Their terrestrial habits might be inferred from the position of their nostrils, which are placed at the sides of the head, and not on the top, as in the typical aquatic forms.

Hooded Snake.

Stegonotus cucullatus, Duméril and Bibron.

S. 17, V. 196-207, A.1, S.C. 73-90 pairs.

Cape York ; length, 3 feet 7 inches.

Lead-colored Snake.

Stegonotus plumbeus, Macleay.

S. 17, V. 219, A.1, S.C. 74 pairs.

Herbert River, Queensland ; length, 4 feet.

These are two little-known forms of this harmless solid-toothed series. Thence we may notice the Green Tree Snakes, of which we have two representatives—

Northern Green Tree Snake.

Dendrophis calligaster, Günther.

S. 13, V. 176-211, A.2, S.C. 125-151.

Known only from Cape York ; it seldom exceeds 4 feet in length.

Common Green Tree Snake.

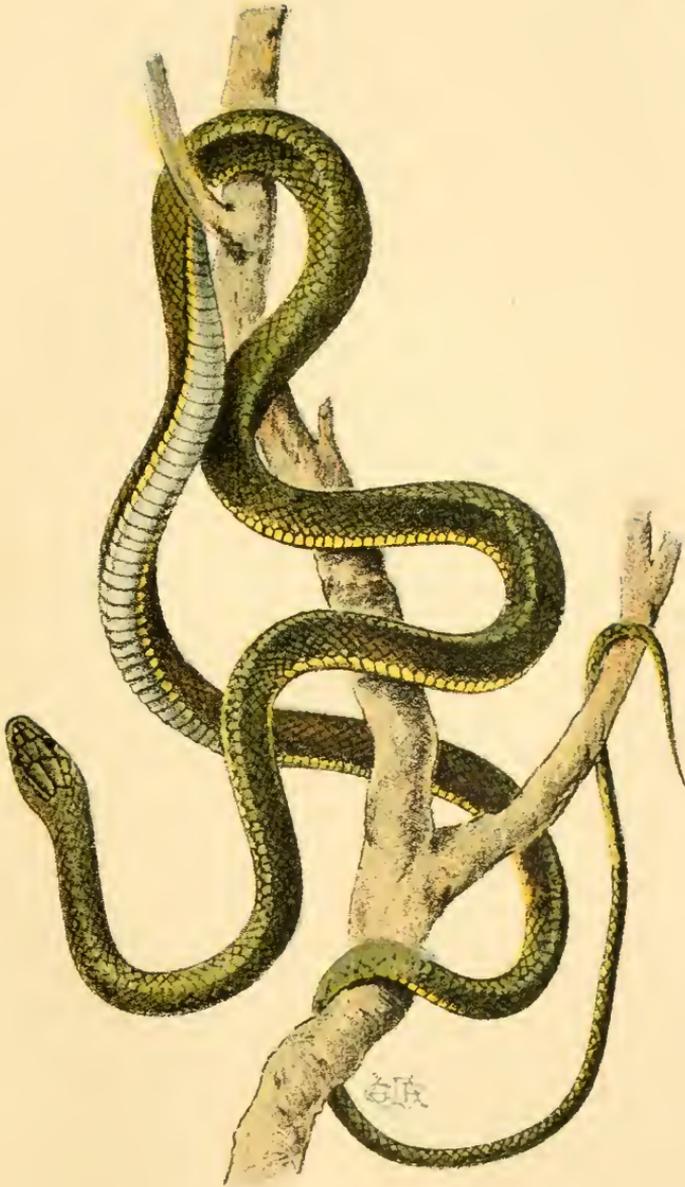
Dendrophis punctulatus, Gray.

Plate 4.



S. 13, V. 191-220, A.2, S.C. 120-144.

It inhabits nearly the whole of Australia, and is very common and notable for its bright green color, a feature which enables it, in full daylight, to glide among the foliage of trees, in search of its prey, unobserved, and also to escape detection by its enemies. It attains a length of 7 feet ; feeds largely on frogs, young birds, and lizards, and is seldom seen upon the ground. The



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GREEN TREE SNAKE, (*Dendrophis punctulatus*, Gray)

upper surface is green, and the lower parts are yellow. The belly scales are noticeable for having a notch on each side, corresponding to a ridge, by means of which the snake is able to traverse the branch of a tree; this feature has been more fully explained in part I. (page 15).

AQUATIC and NOCTURNAL COLUBRINE SNAKES.

Section *OPISTHOGLYPHA*.

This section is represented in Australia, also by five snakes, four aquatic and one arboreal.

The Water Snakes are venomous, and may be distinguished from the harmless Water Snake previously mentioned, by the circumstance of the nostrils being on the upper surface of the head. As this would indicate, all these snakes are thoroughly aquatic, and their young are produced in the water, in a living state. Some of the Water Snakes have prehensile, or clasping tails, by means of which they attach themselves to weeds or other objects, watching meanwhile the fish upon which they mainly feed. The four Australian venomous Water Snakes are :—

Macleay's Water Snake.

Hypsirhina macleayi, Ogilby.

S. 21-23, V. 147-152, A.2, S.C. 38-47.

Herbert River district, Queensland; length, 2 feet
3 inches.

Australian Boekadam.*Cerberus australis*, Gray.

S. 25, V. 148-149, S.C. in pairs.

North Australia ; length, 2 feet.

Richardson's Water Snake*Myron richardsoni*, Gray.

S. 21, G. 138-140, A.2, S.C. 30.

North Australia ; length, 1 foot 6 inches.

White-bellied Water Snake.*Fordonia leucobalia*, Schlegel.

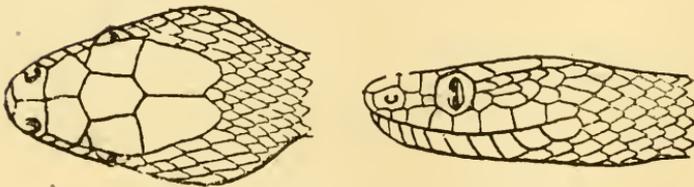
S. 25-29, V. 133-156, A.2, S.C. 26-43.

North Australia ; length, 3 feet.

The fifth member of the section is the

Brown Tree Snake.*Dipsadomorphus fuscus*, Gray.

Plate 5.



S. 19-21, V. 236-257, A.1, S.C. 87-103.

Although possessing grooved teeth, this snake is harmless to man. It may easily be distinguished by



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BROWN TREE SNAKE (*Dipsadomorphus fuscus*, Gray).

its elongate body, reaching to a length of seven feet, and its very wide head. The Brown Tree Snake lives generally among the branches of trees, and is nocturnal in habit, a circumstance which enables it to secure sleeping birds, which, together with their eggs and young, form a fair proportion of its food. It also eats small mammals, frogs and lizards, but its allies are said to be more partial to the warm-blooded animals.

Owing to the fact of it being abroad only at night, this snake is seldom seen, and is, therefore, not nearly so well known as the Green Tree Snake. In color it is reddish brown above, with many oblique, black, or dark-brown cross-bands. The under parts are yellowish, or salmon-colored.

This snake was originally described from a specimen taken at Port Essington, its distribution, as far as known, is Northern and Eastern Australia.

VENOMOUS COLUBRINE SNAKES.

Section *PROTEROGLYPHA*.

As before indicated, all the snakes of this section are venomous, some are so small as to be almost harmless to man, while others are deadly. These venomous Colubrines are divided into two sub-families, as affecting Australian species, namely—the *Elapinae*, which includes all the snakes not hitherto considered, with the exception of the Sea Snakes, which form the second sub-family, known as the *Hydrophiinae*.

VENOMOUS LAND SNAKES.Sub-family *ELAPINÆ*.

While the names and distribution of all the snakes are given, some of the species are so rare, known, perhaps, from single specimens, that only the better-known ones will be dealt with at length. The Australian snakes of this sub-family are as follows:—

MacGillivray's Snake.*Glyphodon tristis*, Günther.

S. 17, V. 165-179, A. 2, S.C. 38-52.

North-eastern Australia; length, 3 feet.

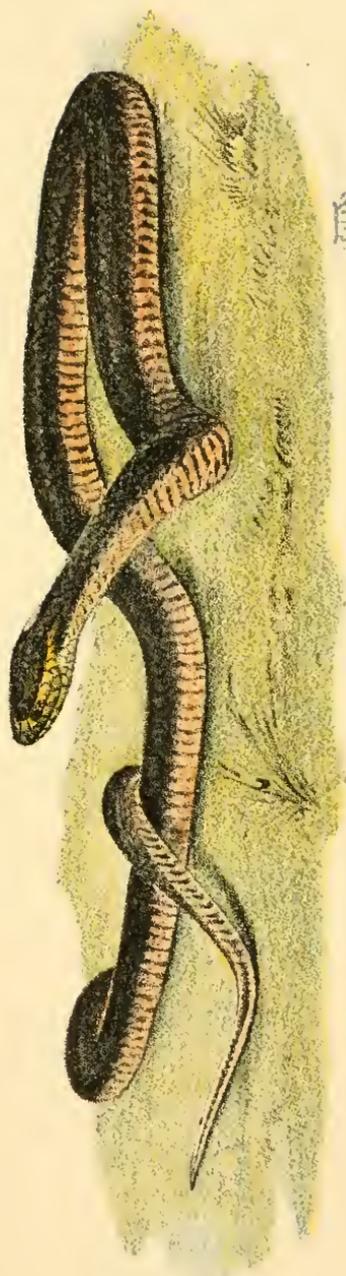
Red-bellied Snake.*Pseudelaps squamulosus*, Duméril and Bibron.

Plate 6.



S. 15, V. 170-183, A. 2, S.C. 34-52.

This is one of our handsomest snakes, and is found in Queensland and New South Wales; it is nowhere common. The upper parts are purplish-brown, and the lower portions red, clouded with black; a dark line runs down the centre of the under side of the tail. The head, which presents the most striking feature, has a purplish-brown cap, bordered by bright orange bands; these bands fail to meet behind, and are produced



RED-BELLIED SNAKE, (*Pseudelaps squamulosus*, Duméril and Bibron).

somewhat down the nape. It inhabits rocky districts, and is usually obtained beneath stones, when hibernating, It is a small species, not exceeding twenty inches in length.

The five following snakes are but little known ; they are small species, and very few examples have been discovered :—

Krefft's Dwarf Snake.

Pseudelaps krefftii, Günther.

S. 15, V. 146-156, A. 2, S.C. 26-38.

Northern New South Wales and Queensland ; length,
10 inches.

Forde's Dwarf Snake.

Pseudelaps fordiei, Krefft.

S. 15, V. 167-172, A. 2, S.C. 26-38.

Queensland ; length, 13 inches.

De Vis' Dwarf Snake.

Pseudelaps warro, De Vis.

S. 15, V. 143, A. 2, S.C. 15 ?

Queensland ; length, 10 inches.

Harriett's Dwarf Snake.

Pseudelaps harriettae, Krefft.

S. 15, V. 176-193, A. 2, S.C. 29-35.

Queensland ; length, 1 foot 4 inches.

Sutherland's Dwarf Snake.*Pseudelaps sutherlandi*, De Vis.

S. 17, V. 160, A. 2, S.C. 40.

Queensland ; length, 12 inches.

Red-naped Snake.*Pseudelaps diadema*, Schlegel.

S. 15, V. 164-203, A. 2, S.C. 40-62.

This beautiful little species is not only of wide range, but is also very common ; one of the commonest snakes in New South Wales. It ranges throughout Eastern, Northern, and Western Australia, and is also known as the Scarlet-spotted and Diadem Snake. Brown above, the head and neck are black, with a brilliant scarlet spot on the nape ; the under parts are cream-colored. The Red-naped Snake is a small species not more than 2 feet in length, and quite inoffensive, allowing itself to be freely handled.

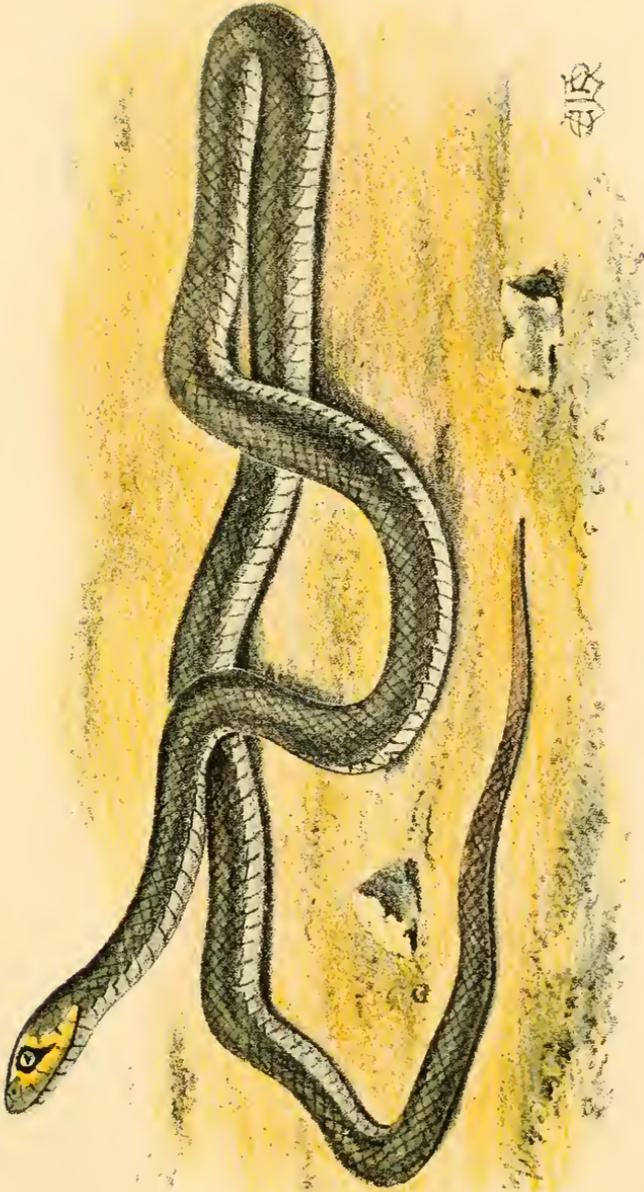
Whip Snake.*Diemenia psammophis*, Schlegel.

Plate 7.



S. 15, V. 170-255, A. 2, S.C. 69-105.

Around Sydney, this is one of the best-known snakes, and, although in scientific company with some



WHIP SNAKE, (*Diemenia psammophis*, Schlegel).

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notorious species, and attaining a length of 4 feet 6 inches, it is very inoffensive. Of its bite, Krefft remarks that the result causes no more irritation than the sting of a bee. In color it is variable, generally some shade of olive, or reddish-brown above, and grey, or greenish below: the terminal portion of the tail is orange beneath, and the eye is surrounded with yellow, which color is continued backwards, into a point above the mouth. It is distributed from British New Guinea throughout almost the whole of Australia, and is sometimes known as the Grey Snake.

We notice shortly the four following scarce species of the genus, namely—

Percy Island Snake.

Diemenia torquata, Günther.

S. 15, V. 191-203, A. 2, S.C. 75-81.

Queensland, and Percy Island, which lies off the North-east Coast; length, 2 feet.

Spotted-headed Snake.

Diemenia olivacea, Gray.

S. 15, V. 162-215, A. 2, S.C., 79-99.

Northern Australia and New Guinea; length, 3 feet.

Macleay's Whip Snake.

Diemenia ornaticeps, Macleay.

S. 15, V. 187, A. 2, S.C. 90.

Port Darwin; length, 10 inches.

Plain Whip Snake.*Diemenia modesta*, Günther

S. 17, V. 154-165, A. 2, S.C. 38-51 pairs.

Western Australia ; length, 1 foot 6 inches.

† Brown Snake.**Diemenia textilis*, Duméril and Bibron.

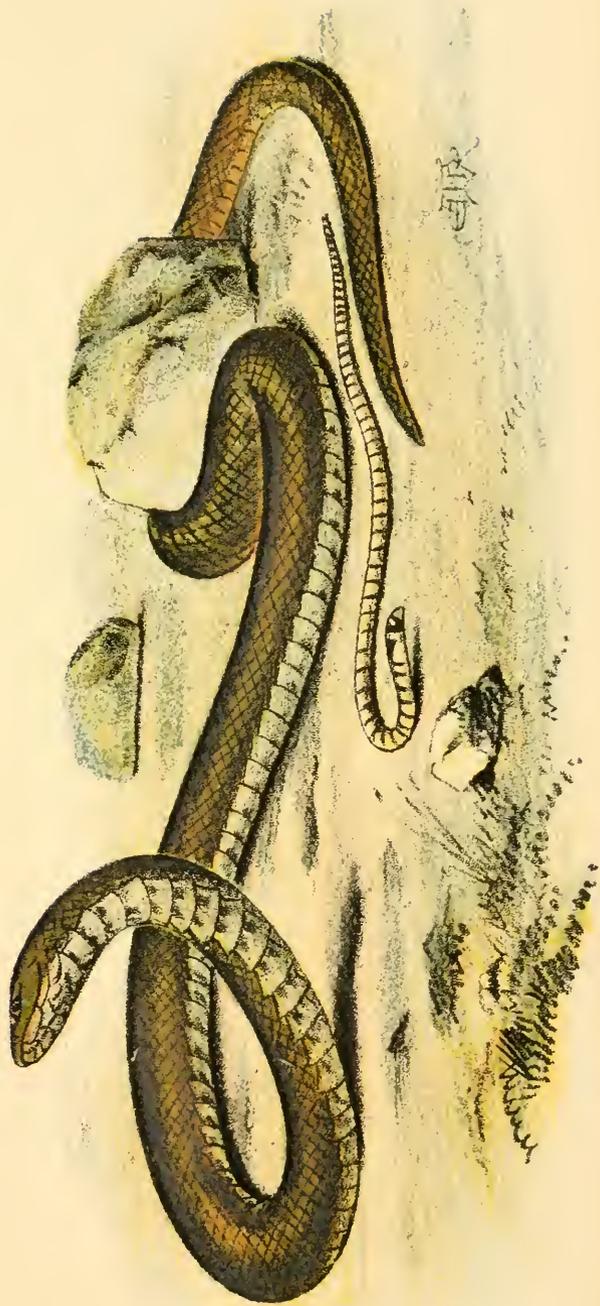
Plate 8.



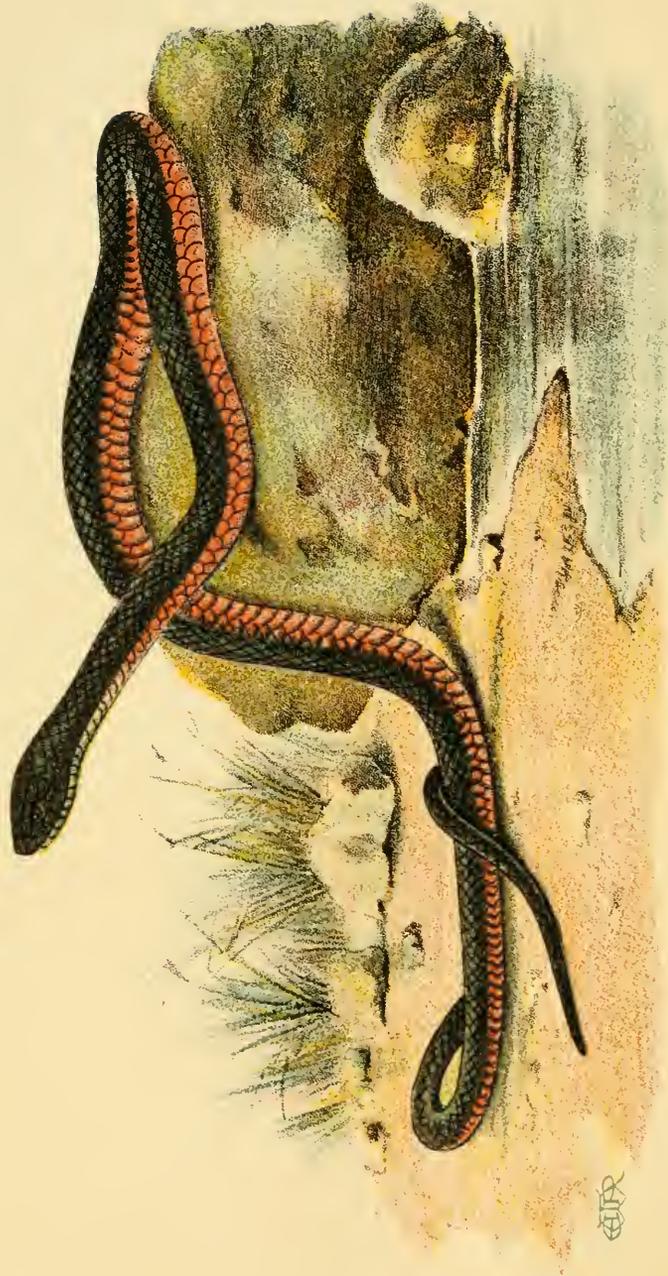
S. 17, V. 190-232, A. 2, S.C. 46-73 pairs.

This deadly snake has a very extensive distribution in Australia. In color it is pale brown above, and dirty white beneath, the belly scales clouded with grey. The young, produced from eggs (as in all members of this genus), are very pale in color, with many black rings, which extend from head to tail ; sometimes these rings never wholly disappear, the most persistent forming a collar ; on the other hand, some specimens, even when young, have no rings ; and I know of both plain and ringed examples having been hatched from the same batch of eggs. The blotches on the belly are more constant, but are rather indistinct in young individuals. The Brown Snake reaches a length

* Deadly species are denoted by a †.



+ BROWN SNAKE, (*Diemenia textilis*, Duméril and Bibron)



† BLACK SNAKE, (*Pseudechis porphyriacus*, Shaw).

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of 6 feet, and is generally met with among rocks and fallen timber; it deposits its eggs to the number of twenty, or thereabouts, among dead leaves or other débris.

† Collared Brown Snake.

Diemenia nuchalis, Günther.

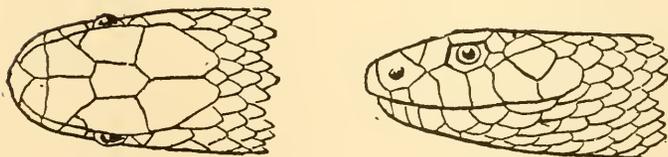
S. 17-19, V. 184-224, A. 2, S.C. 55-65 pairs.

This snake cannot be distinguished from the above without critical examination, and it is possible that the Brown Snakes recorded from West Australia are referable to this species; it also occurs in the North-west. In dimensions it reaches 5 feet 6 inches.

† Black Snake.

Pseudechis porphyriacus, Shaw.

Plate 9.



S. 17, V. 180-200, A. 2, S.C. 50-60 pairs.

This is our commonest venomous species, and is generally found throughout Eastern, Western, and Southern Australia. When adult, its bite often proves fatal. It is usually found in the vicinity of water, and

frequents marshy spots ; it swims and dives well, and when lying motionless in the water has often been mistaken for a stick.

Its food consists largely of frogs, but lizards and small animals are also eaten. Krefft remarked that it is particularly partial to the young of the Water Rat (*Hydromys*), and, on one occasion, sixteen young of this animal were taken out of a single Black Snake—so that the reptile must have plundered four rats' nests.

The coloration of this snake is simple, but effective, above it is black from head to tail, beneath it is a beautiful red, each plate edged with black ; the large lateral scales bordering the ventrals are red, tipped with black, and the under-tail scales are wholly black. Examples are occasionally obtained without a trace of the red color ; such, although essentially "black," are merely varieties of the typical form. Large examples have been secured 6 feet 6 inches in length, but the majority seen are very much smaller.

Fifteen to twenty young are produced, about March, the period at which most of our snakes reproduce their species.

The following Australian members of this genus have also been described :—

† Copper Snake.

Pseudechis cupreus, Boulenger.

S. 17, V. 199-210, A. 2, S.C. 57-72.

Murray River ; length, 6 feet.

† **Orange-bellied Brown Snake.***Pseudechis australis*, Gray.

S. 17, V. 199-220, A. 2, S.C. 57-70.

Eastern and Northern Australia ; length, 3 feet 6 inches.

† **Port Darwin Snake.***Pseudechis darwiniensis*, Macleay.

S. 17, V. 212, S.C. 54-64.

Port Darwin ; length, 3 feet.

† **Yellow-bellied Snake.***Pseudechis scutellatus*, Peters.

S. 23, V. 230-233, A. 1, S.C. 61-78 pairs.

Queensland and New Guinea ; length, 3 feet 6 inches.

† **Small-scaled Snake.***Pseudechis microlepidotus*, McCoy.

S. 23, V. 232-237, A. 2, S.C. 61-66 pairs.

Northern Victoria ; length, 6 feet 3 inches.

† **Fierce Snake.***Pseudechis ferox*, Macleay,

S. 23, V. 235, A. 2, S.C. 60 pairs.

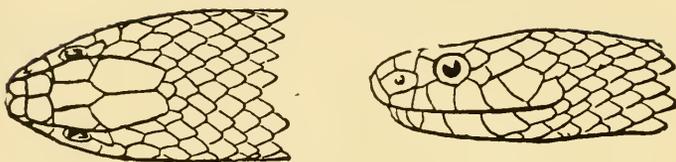
Bourke, New South Wales ; length, 6 feet 9 inches.

These snakes are dangerous, but, as the majority are known only from single examples, this need cause small alarm.

† Superb Snake.

Denisonia superba, Günther.

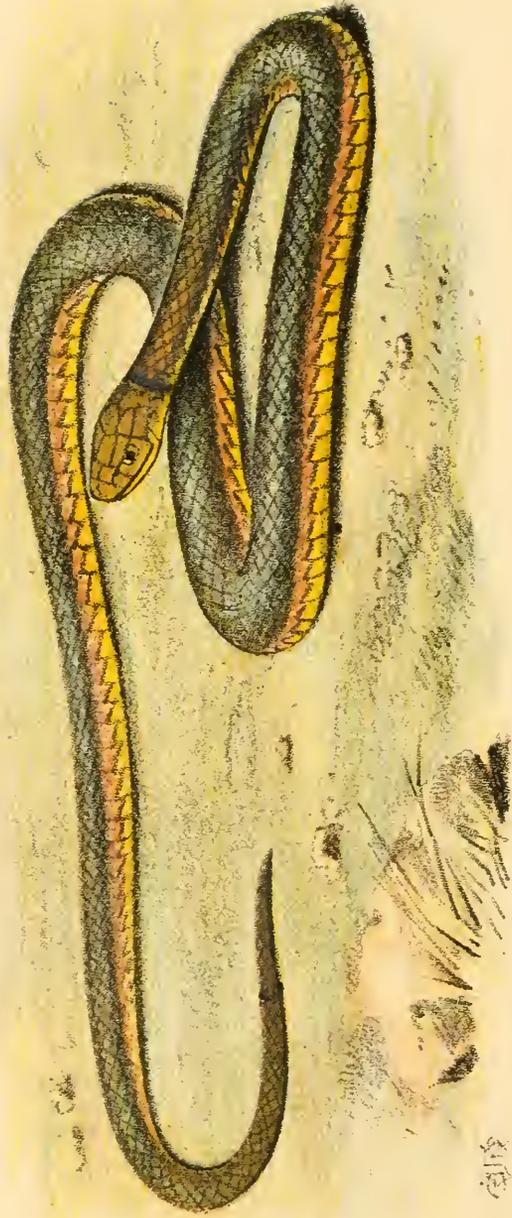
Plate 10.



S. 15-17, V. 145-160, A. 1, S.C. 41-50.

In Victoria this is known as the Copper-headed Snake, and in Tasmania as the Carpet Snake; while Krefft applies the name Large-scaled Snake. Fairly common in Tasmania, it is scarcer on the Continent, and rare as we travel northward; then found only on the high lands, a feature in keeping with its cooler habitat. On the mainland, its range extends from Victoria to New South Wales and South Australia. The adult is brown, or olive above, and yellowish, or olive beneath, the scales bordering the ventrals yellow, or red. The young (shown in the plate) has a black patch on the nape, often bordered with red, and the head is lighter, or more coppery than in the adult. This snake, which in New South Wales is not usually distinguished from the Black Snake, is equally vicious and deadly with the Tiger Snake. In Tasmania this species attains a length of from 5 to 6 feet, but in New South Wales it is not known larger than about 4 feet.

The remaining members of the genus are, for the most part small species, and need be here little more than mentioned.



† SUPERB SNAKE, (*Denisonia superba*, Günther).

Crowned Snake.*Denisonia coronata*, Schlegel.

S. 15, V. 138-151, A. 1, S.C. 38-51.

Western Australia and New South Wales; length,
1 foot 7 inches.

White-lipped Snake.*Denisonia coronoides*, Günther.

S. 15, V. 136-151, A. 1, S.C. 39-57.

New South Wales, Victoria, West and South Australia,
and Tasmania; length, 1 foot 6 inches.

Müller's Snake.*Denisonia muelleri*, Fischer.

S. 17, V. 118, A. 1, S.C. 38.

Queensland; length, 1 foot.

Bridled Snake.*Denisonia frenata*, Peters.

S. 19, V. 167, A. 1, S.C. 35.

Queensland; length, 1 foot 4 inches.

Ramsay's Snake.*Denisonia ramsayi*, Krefft.

S. 15, V. 164, A. 2, S.C. 51.

New South Wales; length, 10½ inches.

Black-bellied Snake.*Denisonia signata*, Jan.

S. 17, V. 153-170, A. 2, S.C. 41-56.

Although of somewhat larger size, attaining a length of 2 feet 6 inches, this snake is not dangerous. It is rather common in New South Wales, and also occurs in Queensland. In color it is dark olive, or brown above, and deep leaden color underneath. It is also called Whip Snake, a name more commonly applied to *Diemenia psammophis* (see page 48).

Dæmel's Snake.*Denisonia dæmeli*, Günther.

S. 17, V. 147-168, A. 2, S.C. 33-45.

Queensland ; length, 1 foot 3 inches.

Peters' Snake.*Denisonia suta*, Peters.

S. 19, V. 157-164, A. 1, S.C. 25-30.

South Australia ; length, 8 inches.

Ogilby's Snake.*Denisonia frontalis*, Ogilby.

S. 19, V. 154, A. 1, S.C. 30.

New South Wales ; length, 1 foot 4 inches.

Little Whip Snake.

Denisonia flagellum, McCoy.

S. 17, V. 132-138, A. 1, S.C. 25-27.

Victoria ; length, 1 foot 3 inches.

Ornamented Snake.

Denisonia maculata, Steindachner.

S. 17, V. 121-136, A. 1, S.C. 20-30.

Queensland ; length, 1 foot 4 inches.

Mottled-headed Snake.

Denisonia punctata, Boulenger.

S. 15, V. 160, A. 1, S.C. 25.

North-western Australia ; length, 1 foot 2 inches.

Black-naped Snake.

Denisonia gouldii, Gray.

S. 15, V. 140-170, A. 1, S.C. 22-23.

Western and Southern Australia ; length, 1 foot 5½ inches.

Black-backed Snake.

Denisonia nigrescens, Günther.

S. 15, V. 170-200, A. 1, S.C. 30-47.

Queensland and New South Wales ; length, 2 feet 8 inches.

Black-striped Snake.*Denisonia nigro-striata*, Krefft.

S. 15, V. 180-184, A. 1, S.C. 50-64.

Queensland ; length, 1 foot 3 inches.

Gulf Snake.*Denisonia carpentariae*, Macleay.

S. 15, V. 166-183, A. 1, S.C. 31-43.

Northern Queensland ; length, 11 inches.

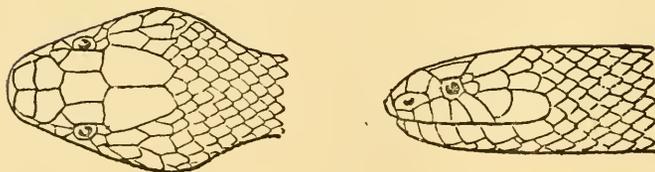
Northern Pale-headed Snake.*Denisonia pallidiceps*, Günther.

S. 15, V. 170-178, A. 1, S.C. 37-38.

Northern Australia ; length, 2 feet.

Broad-headed Snake.*Hoplocephalus bungaroides*, Boie.

Plate 11.



S. 21, V. 204-221, A. 1, S.C. 40-56.

At one time common around Sydney, and not known beyond New South Wales, this snake is becoming very scarce ; but, as Krefft remarks, being of



BROAD-HEADED SNAKE, (*Hoplocephalus bungaroides*, Boie).

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BANDED SNAKE, (*Hoplocephalus stephensi*, Krefft).

nocturnal habit, it may be overlooked. He writes:—
 “If a person be bitten by one of them, the simple act of sucking the wound is sufficient to avert any unpleasant sensation; but, should nothing be done, a violent headache, a certain stiffness in the spine, and some local swelling is generally the consequence. It takes from thirty minutes to an hour before these symptoms set in.”
 Above, the color is black, with yellow spots, forming irregular cross-bands on the body; the ventral plates are blackish, yellow on the side. It reaches 4 feet in length.

Pale-headed Snake.

Hoplocephalus bitorquatus, Jan.

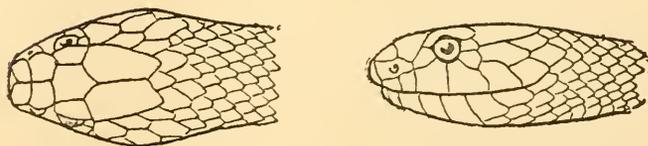
S. 21, V. 191-227, A. 1, S.C. 44-59.

New South Wales and Queensland; length, 1 feet 8 inches.

Banded Snake.

Hoplocephalus stephensii, Krefft.

Plate 12.



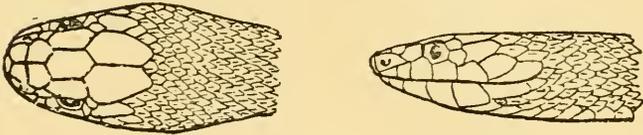
S. 21, V. 239, A. 1, S.C. 60.

The genus to which this and the two preceding snakes belong, may be known by the belly plates being angular and notched, similar to, but less marked than

those of the Green Tree Snake. The Banded Snake is of striking coloration, being banded alternately with black and yellow. It attains a length of 2 feet 6 inches, and is an uncommon species; not known beyond the borders of New South Wales.

Clarence River Snake.

Tropidechis carinatus, Krefft.



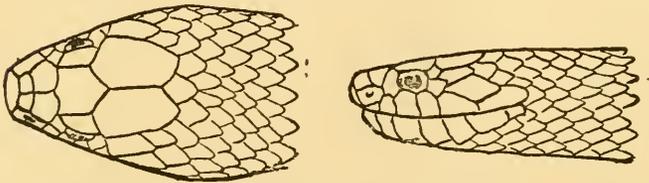
S. 23, V. 165-171, A. 1, S.C. 52-54.

Originally obtained from the Clarence River district, this snake, the only known member of the genus, has since been taken in other parts of New South Wales and also in Queensland. It differs from its allies, mainly by having the scales strongly keeled; length, 2 feet 6 inches.

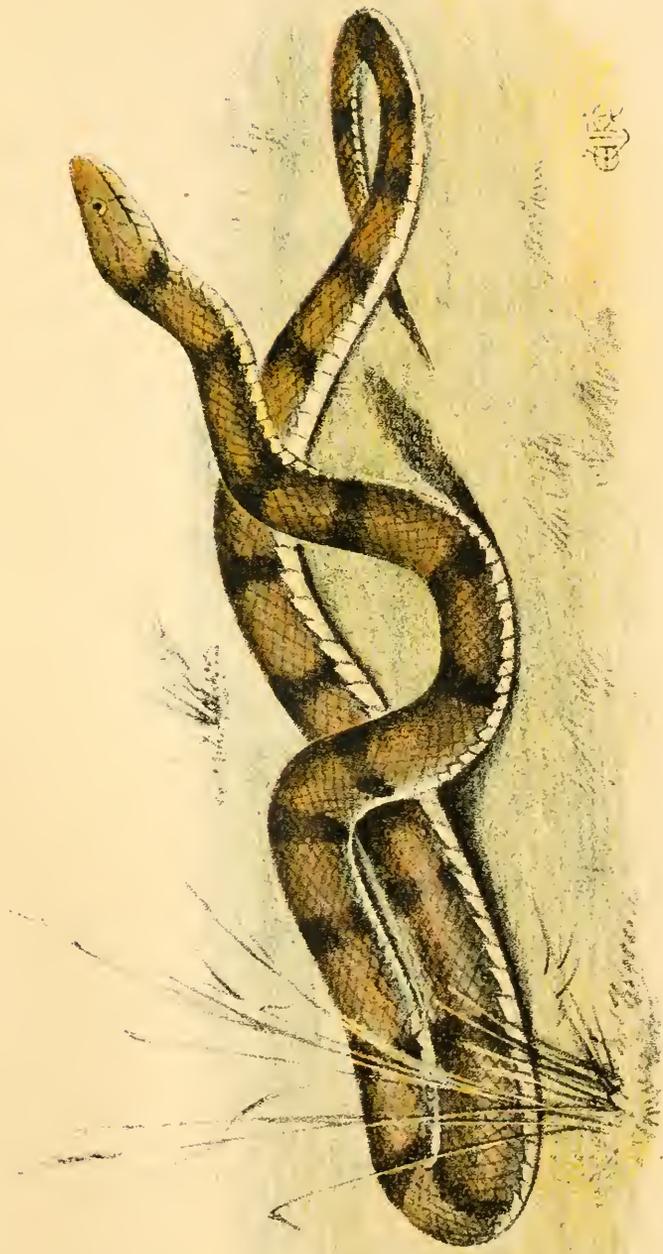
† Tiger Snake.

Notechis scutatus, Peters.

Plate 13.



S. 15-19, V. 146-185, A. 1, S.C. 39-61.



† TIGER SNAKE, (*Notechis scutatus*, Peters).

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This species, the only member of its genus, is also commonly known as the Brown-banded Snake: it has the reputation of being the most vicious, and also one of the most deadly of the Australian Snakes. It is found throughout nearly the whole of Australia and Tasmania, and in the island colony is generally known as Carpet Snake or Black Snake, dependent on the individual being of the light or dark variety. In general, the ground color varies from a light to a dark brown, crossed by about fifty bands of a darker hue; these bands are sometimes scarcely discernable, and in the dark variety, are almost lost in the depth of color, which approximates to black; beneath, the color is yellow, becoming darker towards the tail. The Tiger Snake produces about thirty living young, which assume the characteristically aggressive attitude as soon as born. I have generally found this snake on drier ground, among fallen timber, and when discovered it usually makes for the shelter of a log, whence it may be difficult to dislodge; an attempt always exciting, and not without an element of danger. Specimens opened have generally revealed the presence of lizards, and, no doubt, these reptiles form a large proportion of the food of this most agile snake.

A Tiger Snake, five feet in length, is a reptile to be avoided; example of six feet have been taken, but such are very rare.

The following are two little-known species :—

Desert Snake.

Brachyaspis curta, Schlegel.

S. 19, V. 128-136, A. 1, S.C. 30-35.

Western Australia; length, 1 foot 8 inches.

White-tongued Snake.

Rhinophocephalus bicolor, Müller.

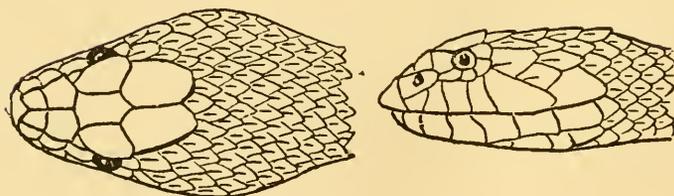
S. 15, V. 159, A. 1, S.C. 34.

Length, 1 foot 4 inches.

† Death Adder.

Acanthophis antarctica, Shaw.

Plate 14.



S. 21-23, V. 113-130, A. 1, S.C. 41-51.

Of all Australian Snakes, the Death Adder is most to be feared. It is of sluggish habit and its color harmonises so well with the ground on which it may be lying that it is frequently passed over, or even trodden upon, before its proximity is suspected.

The indifference which this venomous reptile displays to man is exemplified by an anecdote which appeared in an Australian newspaper some years ago

An expedition was engaged in exploring the mountainous interior of New Guinea. The nature of the country only allowed the party, which was thirty or forty strong, to march one behind the other in Indian file along a native footpath. Seeing a sudden disturbance in the rear, a halt was called, and the cause was found to be a Death Adder. A bare-footed native carrier had seen it lying in the path just in time to avoid stepping on it. Every man before him had stepped over it, missing his death by a handsbreadth. The boot-print of the officer who led the file was stamped in the clay but two inches from the adder's head.

The reptile is also frequently termed Deaf Adder, in allusion, some suppose, to its apathy and apparent deafness. It is, however, more probable that the name is borrowed from the Bible (Psalms lviii., 4.)

The Death Adder is a short, thick, and clumsy reptile, seldom seen longer than about two feet, but occasionally obtained of a greater size. The largest I have seen measures two feet five and a-half inches, but it is the only specimen I know at all approaching such dimensions. In color it is usually of a dirty grey, but may be met with of brownish, or even reddish tints, due, apparently, to the color of its immediate surroundings. In all cases the body is crossed with from forty to fifty darker rings, which may almost disappear in aged specimens. The ventral scales vary in color, and are usually clouded with black.

The scales are keeled, and the tail, which is short and narrow, terminates in a spine. Many persons imagine that the venomous properties are contained in this spine, an idea which may be at once dispelled. Although the function of the spine is not clear, it probably assists in progression. Another popular notion is, that the Death Adder is not a snake, but some creature without affinities. Both these fallacies may owe their origin to the Bible, wherein we read: (Proverbs xxiii., 32) "It biteth like a serpent and *stingeth* like an adder."

The Death Adder occurs almost throughout Australia, frequents sandy districts, and is often observed on roads. It produces from a dozen to fifteen young, and is usually met with only during the warmer period of the year.

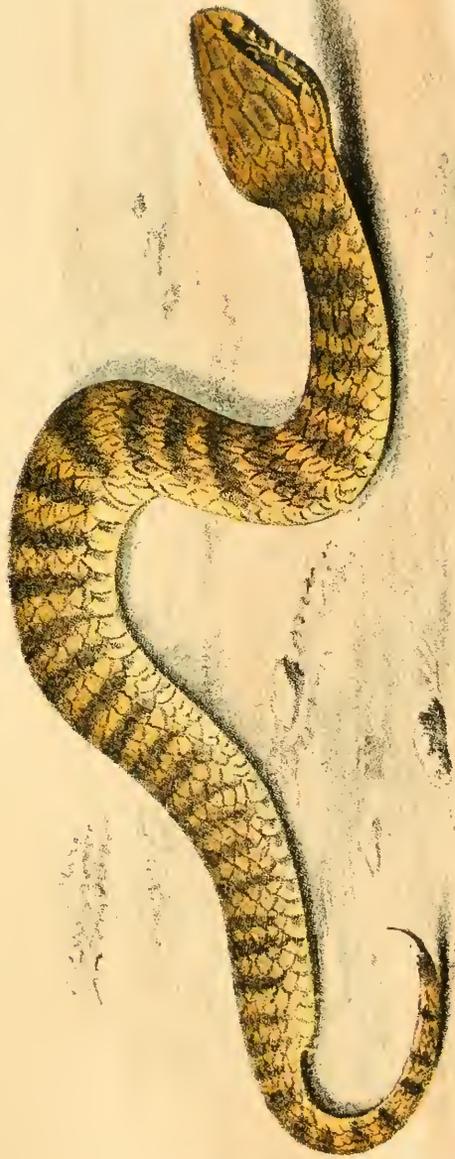
† Central Australian Death Adder.

Acanthophis pyrrhus, Boulenger.

S. 21, V. 146, A.1, S.C. 50.

Recently described from a single specimen, it is improbable that this species will ultimately prove to be distinct. It is very like the red variety of the common Death Adder, with which we are familiar from the more arid regions. Length, 1 foot 9 inches.

This sub-family may be closed by the enumeration of the following snakes, assigned to four genera :—



† DEATH ADDER, (*Acanthophis antarcticus*, Shaw).

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Little Desert Snake.

Elapognathus minor, Günther.

S. 15, V. 120-128, A.1, S.C. 52-60.

South-west Australia ; length, 1 foot 6 inches.

Berthold's Ringed Snake.

Rhynchelaps bertholdi, Jan.

S. 15, V. 112-126, A.2, S.C. 15-25.

Southern and Western Australia ; length, 10½ inches.

Short-tailed Snake.

Rynchelaps australis, Krefft.

S. 17, V. 152-163, A.2, S.C. 18-20.

This snake produces its young from eggs, which are of exceedingly large size. It is known from New South Wales and Queensland, and is but 12 inches in length.

Half-girdled Snake.

Rhynchelaps semifasciatus, Günther.

S. 17, V. 143-170, A.2, S.C. 17-25.

West Australia ; length, 12 inches.

Girdled Snake.

Rhynchelaps fasciolatus, Günther.

S. 17, V. 143-170, A.2, S.C. 17-25.

West Australia ; length, 1 foot 1½ inches.

Horn's Snake.*Hornea pulchella*, Lucas and Frost.

S. 17, V. 172, A.2, S.C. 20 pairs.

Central Australia ; length, 1 foot 2 inches.

Verreaux's Snake.*Furina bimaculata*, Duméril and Bibron.

S. 15, V. 181-200, A.2, S.C. 21-25.

West Australia ; length, 1 foot 1 inch.

Spotted Snake.*Furina calonota*, Duméril and Bibron.

S. 15, V. 126-131, A.2, S.C. 29-30.

West Australia ; length, 8½ inches.

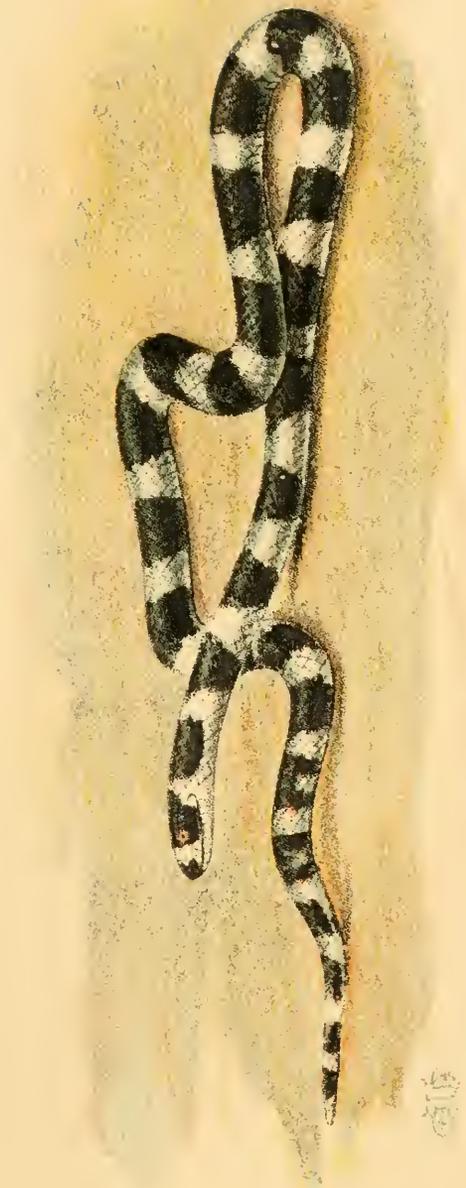
Ringed Snake.*Furina occipitalis*, Duméril and Bibron.

Plate 15.



S. 15, V. 180-234, A.2, S.C. 14-25.

This is one of our commonest snakes, and is an unmistakable species ; it is colored simply black and white in alternate bands ; and, although belonging to a venomous section, is very inoffensive and incapable of inflicting harm to man. It seldom, if ever, exceeds



RINGED SNAKE, (*Furina occipitalis*, Duméril and Bibron)

thirty inches in length, and occurs generally throughout Australia. On the Macleay River, it is known as Bunda Bunda, a native name.

SEA SNAKES.

Sub-family *HYDROPHIINÆ*.

No less than twelve Sea Snakes are recorded from Australian seas, nearly all, however, confined to tropical areas. All are highly venomous, and yet deaths resulting from their bite are rare, owing to the small gape, and consequent difficulty of grasping large objects. Excluding the members of one genus, they are entirely aquatic. With the exception of one species of *Distira*, confined to Lake Taal (a fresh-water lake in Luzon, in the Philippine Islands) all Sea Snakes are, as their name implies, marine. They enter streams and are frequently found some distance from the estuary, but do not extend beyond tidal influence.

They are viviparous, that is, they produce their offspring in a living and active condition. They are confined to the Indian and Pacific Oceans, the habitat of the greater number extending from the Persian Gulf to New Guinea and North Australia.

Sea Snakes reach a great size, but 12 feet is the largest definitely recorded, a figure very far short of the Mariner's Sea Serpent. They feed upon fish and other marine animals, and have as enemies, Sharks and Sea Eagles.

Some account of the organisation of these reptiles has been given in part I. (p. 17) it therefore only remains to enumerate the several Australian species which are assigned to six genera.

Ringed Sea Snake.

Platurus colubrinus, Schneider.

S. 21-25, V. 195-240, S.C. 30-45.

Length, 4 feet 3 inches.

Wandering Sea Snake.

Platurus laticaudatus, Linnaeus.

S. 19, V. 210-245, S.C. 25-45.

Length, 3 feet 3 inches.

The two snakes are similar in habit, appearance, and distribution, ranging from the Bay of Bengal to the Chinese Sea and the Western South Pacific. They are sometimes observed on the beaches around Port Jackson, and occasionally escape by wriggling into the water, a manœuvre of which the commoner Yellow-bellied Sea Snake is incapable. The members of this genus exhibit a less departure from ordinary snakes than do any of the others, they agree with land snakes in having imbricate scales and large ventral plates, and by having the nostrils placed at the side of the head and not on the top of the snout; they are also less aquatic than other sea snakes, and have frequently been observed traversing the land, sometimes at considerable distances from water.

Brown Sea Snake.*Aipysurus laevis*, Lacépède.

S. 21-25, V. 137-162.

Length, 5 feet 9 inches.

Southern Sea Snake.*Aipysurus australis*, Sauvage.

S. 19, V. 146-166.

Length, 3 feet 3 inches.

Although still possessing large ventral plates, the members of this genus have the nostrils placed on the upper surface of the snout, indicating their more aquatic habit. As they are never known voluntarily to leave the water, the use of large ventral plates is not apparent, and can only be explained by surmising that sea snakes are descended from land snakes, and that the members of this genus have taken to the water later than those which follow. In the next genera the ventrals are very small, but still distinct.

Distira stokesii, Gray.

S. 48-57, V. 230-267.

Length, 5 feet

Distira major, Shaw.

S. 36-41, V. 200-236.

Length, 3 feet 6 inches.

Distira ornata, Gray.

S. 40-50, V. 210-300.

Length, 4 feet.

Distira grandis, Boulenger.

S. 41-45, V. 372-400.

Length, 7 feet 8 inches.

Long-necked Sea Snakes.

Hydrophis kingii, Boulenger.

S. 37, V. 314.

Length, 4 feet.

Hydrophis elegans, Gray.

S. 41-43, V. 350-385.

Length, 4 feet 2 inches.

In the genus *Hydrophis*, the front portion of the body is often remarkably slender.

Port Darwin Sea Snake.

Hydrelaps darwiniensis, Boulenger.

S. 27-29, V. 170-172.

Length, 1 foot 6 inches.

This is the only known species of the genus, and but two examples have so far been obtained, both from Port Darwin.

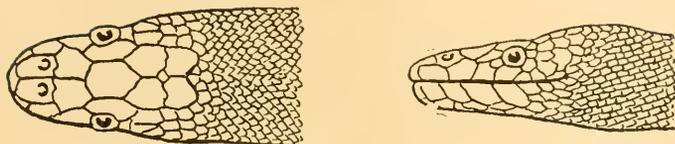


YELLOW-BELLIED SEA SNAKE, (*Hydrus platurus*, Linnæus).

T. SHINE, PUBLISHER.

Yellow-bellied Sea Snake.*Hydrus platurus*, Linnæus.

Plate 16.



S. 45-47, V. none.

This is our commonest species, and is not infrequently cast upon the beaches around Port Jackson, after gales : it has also been taken with the hook, and landed under the impression that it was an eel ; it seldom exceeds 3 feet in length. It is a typical Sea Snake, as exemplified by the nostrils being situated on the top of the snout, by the absence of distinct ventral plates, and by the scales on the body being laid edge to edge. The coloration of this snake is very variable, the majority of examples are simply black above and yellow beneath, the two colors sharply defined, the tail is generally yellow with black spots.

THE END.

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With the assistance of the structural sketches attached, there should be no difficulty in teaching the ordinary observer how to distinguish between the two kinds of snakes. The truthful delineation of the objects and their artistic merit speak for themselves.

— R. ETHERIDGE, CURATOR.

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THE UNIVERSITY OF MELBOURNE,
April 25th, 1897.

DEAR SIR,

I thank you for the copies of your illustration of the more common and dangerous snakes of Australasia. I think they are very excellent productions.

I had a letter from the Under-Secretary for Education, N.S.W., concerning the advisability of hanging them in State Schools throughout the Colony. I think the proposal a good one, as the greatest superstitions exist among the people as to what are, and what are not, poisonous snakes.

Yours faithfully,

CHARLES J. MARTIN, M.D., D.Sc.

Mr. THOMAS SHINE.

[COPY.]

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I had the pleasure of seeing some of the colored plates of Australian Snakes, published by Mr. Shine, for the use of schools.

The execution of the work is excellent. The snakes represented are life-size. I am convinced that Mr. Shine's excellent work will meet a long-felt want in the Educational Department, and will assist to make the teachers—as well as the children—more familiar with our Australian Snakes.

The illustration gives a better representation of the species than specimens preserved in spirits, which always lose their color more or less. And, for this reason, as well as being much less expensive than a collection of snakes preserved in spirits, they are highly recommendable for school purposes.

A. ZIETZ, F.L.S.,

ASSISTANT DIRECTOR.



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