BULLETINS

OF THE

Zoological Society of San Diego

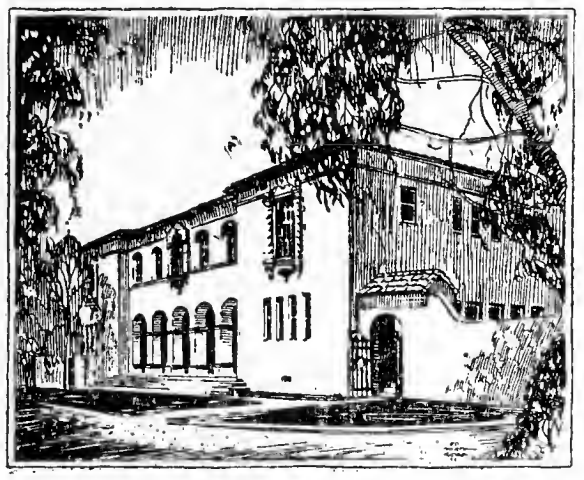
No. 23

The Snakes of San Diego County with Descriptions and Key

Second Edition

By C. B. PERKINS

Herpetologist, Zoological Society of San Diego



SAN DIEGO, CALIFORNIA

March 10, 1949

Zoological Society of San Diego

Founded October 6, 1916

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INTRODUCTION TO THE SECOND EDITION

Since 1938 when the first edition of THE SNAKES OF SAN DIEGO COUNTY was published, changes have been made in the scientific names of several of the snakes. Two generic names have been changed: The Shovel-nosed Ground Snake, known in the 1938 edition as *Sonora occipitalis,* is now *Chionactis occipitalis annulata* and the United States racers have been split into two genera, those in San Diego County, except *Coluber constrictor mormon,* now being placed in the genus *Masticophis.* The Black Whip Snake is now considered merely a color phase of the Red Racer and both are now called *Masticophis flagellum piceus.* Four new snakes have been added, the Desert Long-nosed Snake *(Rhinocheilus lecontei clarus),* the Desert Black-headed Snake *(Tantilla eiseni transmontana),* the Desert Glossy Snake *(Arizona elegans eburnata),* and the Desert Spotted Night Snake *(Hypsiglena torquata deserticola),* there being enough difference in scales, color, design, etc., to separate them from their respective coastal forms.

A few changes have been made in the text, but actually the second edition is little more than a reprint of the first, the 1938 supply having run out and something about the snakes of San Diego County written for the layman being in local demand.

There is some question about the validity of the records in the case of two snakes listed in the 1938 edition. Several years ago both the Desert Diamond Rattlesnake *(Crotalus atrox=Crotalus cinereous* in the 1938 Ed.) and the Striped Ground Snake *(Sonora semiannulata linearis=Sonora episcopa* in the 1938 Ed.) were brought to the zoo with the place of capture labeled "neighborhood of Carrizo Springs, San Diego County." This seemed reasonable enough at the time but no more specimens of either of these species have been captured either at Carrizo or anywhere else in San Diego County. It is now believed that the collector accidentally or deliberately reported an erroneous locality of capture, so it seems advisable to drop both of these snakes from the San Diego County list.

The photographs remain the same, with the exception of those of the four new snakes, which were taken by the zoo photographer, G. E. Kirkpatrick.

The section on First-Aid Treatment of Rattlesnake Bite has been revised somewhat and Dr. R. B. Cowles, of the University of California at Los Angeles, has been kind enough to criticize that part of the text and offer helpful suggestions.

I am thankful to Dr. L. M. Klauber and Mr. Charles E. Shaw for their critical reading of the manuscript. Any errors, however, are mine.

C. B. PERKINS.

INTRODUCTION TO THE FIRST EDITION

A great deal has been written about snakes. Most of the information is highly technical and usually published in small pamphlet form, which the layman would not know how to obtain, nor would he want to spend the time laying the necessary foundation to understand the contents.

Several books have been published which are splendid for any beginner in Herpetology, but so much territory is covered and, of necessity, so much scientific data given that the layman is still unable to obtain usable information on the snakes of his locality.

It is the intention of this paper to give, with as little technical language as possible, such facts as the layman desires. The information is based to a great extent upon the answers to the large number of questions which have been asked at the Reptile House over a period of years.

It is hoped that any snake caught in San Diego County can be identified without question by the use of the Key, the limitations of which are mentioned on page [28]. In most cases, however, identification should be a simple matter by using the illustrations and the text below them.

Mr. Robert S. Hoard took the splendid picture of the Black Whip Snake. Mr. Lewis Wayne Walker was behind the camera in the following cases: The Western Worm Snake and the Striped Ground Snake.

The rest of the photographs are the result of a great deal of work—and fun—on the part of my son, Cyrus S. Perkins.

For the excellent line drawings in the Key, I am indebted to Mr. Norman C. Bilderback.

No list of synonyms is given nor is there any defense of nomenclature, as these subjects are probably beyond the desire of the reader for whom this is written. However, the scientific name of each snake is given, as well as the most appropriate or generally used common one. As common

names differ in different localities even in as small an area as San Diego County, the only way to be sure of the identity of a snake is to know its scientific name.

My thanks are due to Mr. L. M. Klauber for his patience in his critical reading of the manuscript.

That this paper should serve the purpose of making Man and Snakes better acquainted and possibly give the reader a desire for more knowledge on the subject of Herpetology is the wish of

C. B. PERKINS

A LIST OF THE SNAKES OF SAN DIEGO COUNTY, CALIFORNIA

FAMILY Leptotyphlopidae

Western Worm Snake *(Leptotyphlops humilis humilis)*.

Desert Worm Snake *(Leptotyphlops humilis cahuilae)*.

FAMILY Boidae

California Boa *(Lichanura roseofusca roseofusca)*.

FAMILY Colubridae

Los Angeles Ring-necked Snake *(Diadophis amabilis modestus)*.

San Diego Ring-necked Snake *(Diadophis amabilis similis)*.

Western Yellow-bellied Racer *(Coluber constrictor mormon)*.

Red Racer or Black Whip Snake *(Masticophis flagellum piceus)*.

California Striped Racer *(Masticophis lateralis)*.

Desert Patch-nosed Snake *(Salvadora hexalepis hexalepis)*.

Chaparral Patch-nosed Snake *(Salvadora hexalepis virgultea)*.

Desert Leaf-nosed Snake *(Phyllorhynchus decurtatus perkinsi)*.

Desert Glossy Snake *(Arizona elegans eburnata)*.

California Glossy Snake *(Arizona elegans occidentalis)*.

Sonoran Gopher Snake *(Pituophis catenifer affinis)*.

San Diegan Gopher Snake *(Pituophis catenifer annectens)*.

California Banded King Snake or California Striped King Snake *(Lampropeltis getulus californiae)*.

FAMILY Colubridae *(Cont.)*

Mountain King Snake *(Lampropeltis zonata zonata)*.

Western Long-nosed Snake *(Rhinocheilus lecontei lecontei)*.

Desert Long-nosed Snake *(Rhinocheilus lecontei clarus)*.

Shovel-nosed Ground Snake *(Chionactis occipitalis annulata)*.

Southern California Garter Snake *(Thamnophis elegans hammondii)*.

Pacific Garter Snake *(Thamnophis ordinatus infernalis)*.

Coastal Spotted Night Snake *(Hypsiglena torquata klauberi)*.

Desert Spotted Night Snake *(Hypsiglena torquata deserticola)*.

California Lyre Snake *(Trimorphodon vandenburghi)*.

California Black-headed Snake *(Tantilla eiseni eiseni)*.

Desert Black-headed Snake *(Tantilla eiseni transmontana)*.

FAMILY Crotalidae

Colorado Desert Sidewinder *(Crotalus cerastes laterorepens)*.

Southwestern Speckled Rattlesnake *(Crotalus mitchellii pyrrhus)*.

Red Diamond Rattlesnake *(Crotalus ruber ruber)*.

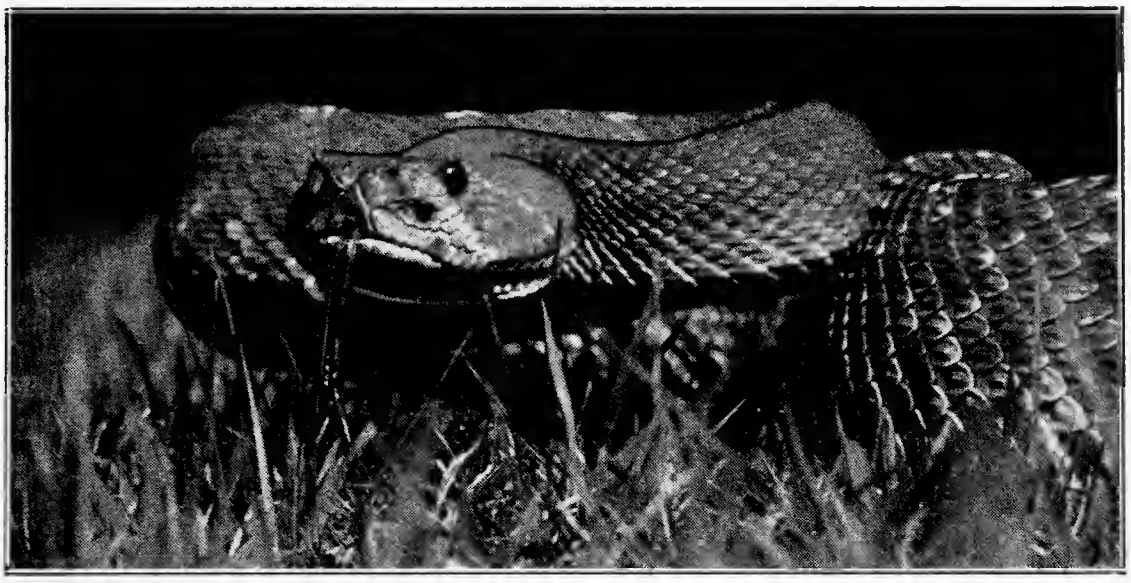
Southern Pacific Rattlesnake *(Crotalus viridis helleri)*.

GENERAL INFORMATION

Before starting the descriptions of the various species of snakes found in San Diego County, it seems advisable to devote a few pages to the subject of snakes in general.

THE RATTLESNAKE

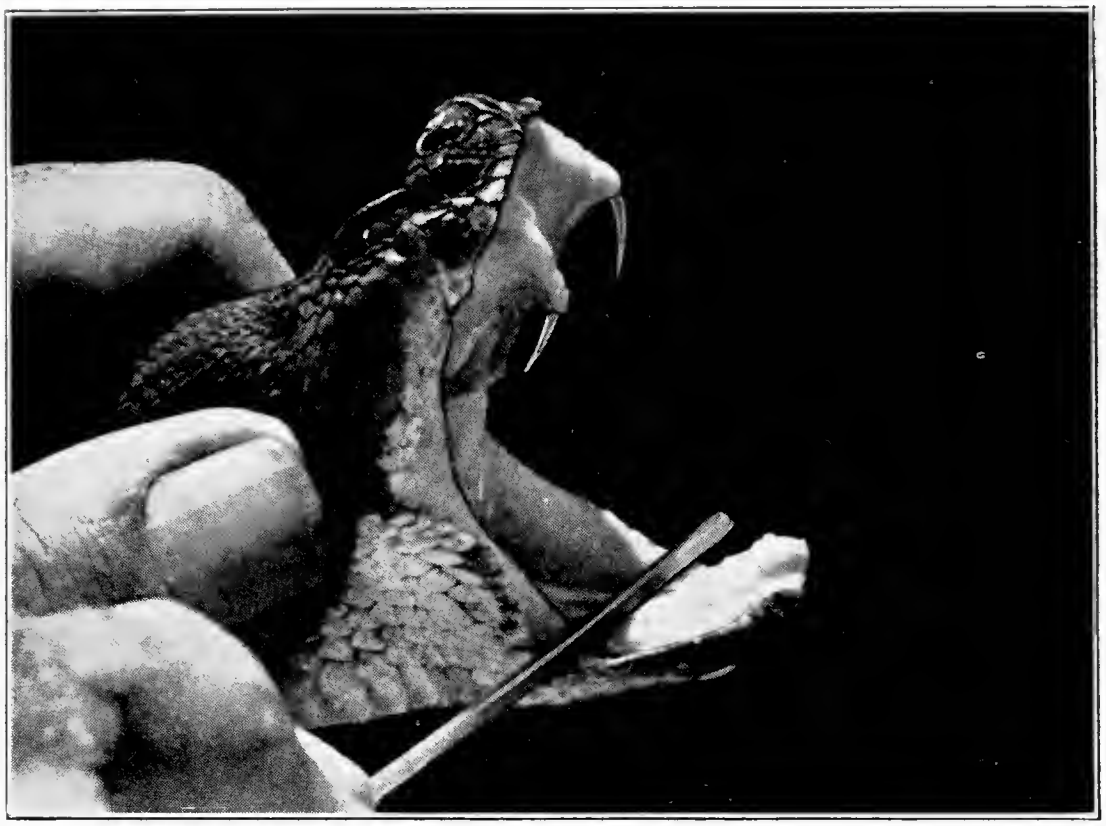
First of all, it should be emphasized that the rattlesnake is the only dangerous snake in California. Under ordinary circumstances the presence of the rattle is proof enough of the identity of the snake, but the tail might not be seen, so we must have other means of safe and quick identification. This is most easily accomplished by a careful examination of the picture of a rattlesnake, or better still by observing the live specimens in the Reptile House.



Rattlesnake

Notice the shape of the head, the position of the eyes, and especially the deep pit situated below a line drawn from the eye to the nostril. These facial pits are highly nerved and are very sensitive to changes in temperature. The close approach of a warm-blooded animal registers on the membrane of the pit and the snake will strike even though blindfolded. No other California snake has a pit.

The apparatus for injecting the venom of the rattlesnake into its prey, (which of course is the main object of its having venom), is highly specialized. There are two long, hollow teeth called fangs in the front of the upper jaw, one on each side, which fold back along the roof of the mouth when not in use.



Rattlesnake with sheaths pushed back, showing the fangs in an erect position

Each fang is covered with a sheath of non-muscular tissue which is pressed away from the points of the fangs by their entrance into the snake's victim. The basal end of each fang is connected by a duct to a poison gland behind the eye, and there is an oval opening in the lower front face just above the needle-like point—a perfect hypodermic syringe.

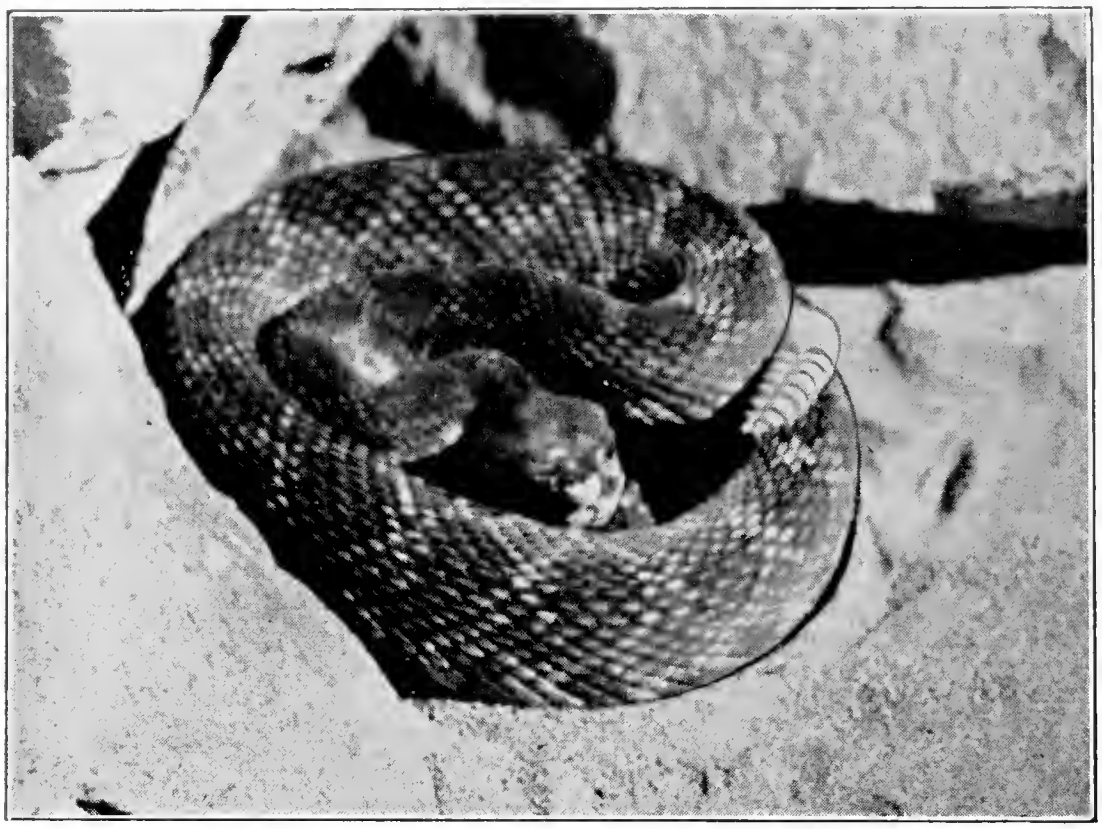
At the end of a strike, the mouth is opened wide, the fangs erected, driven into the object by a forward thrust of the head and a bite, the venom injected, the fangs removed, the mouth closed and the head jerked back in a position of readiness for another strike—all this takes so short a time that the different movements cannot be seen.

The fangs should not be confused with the tongue. The tongue darts in and out of the snake's mouth—the fangs do not.

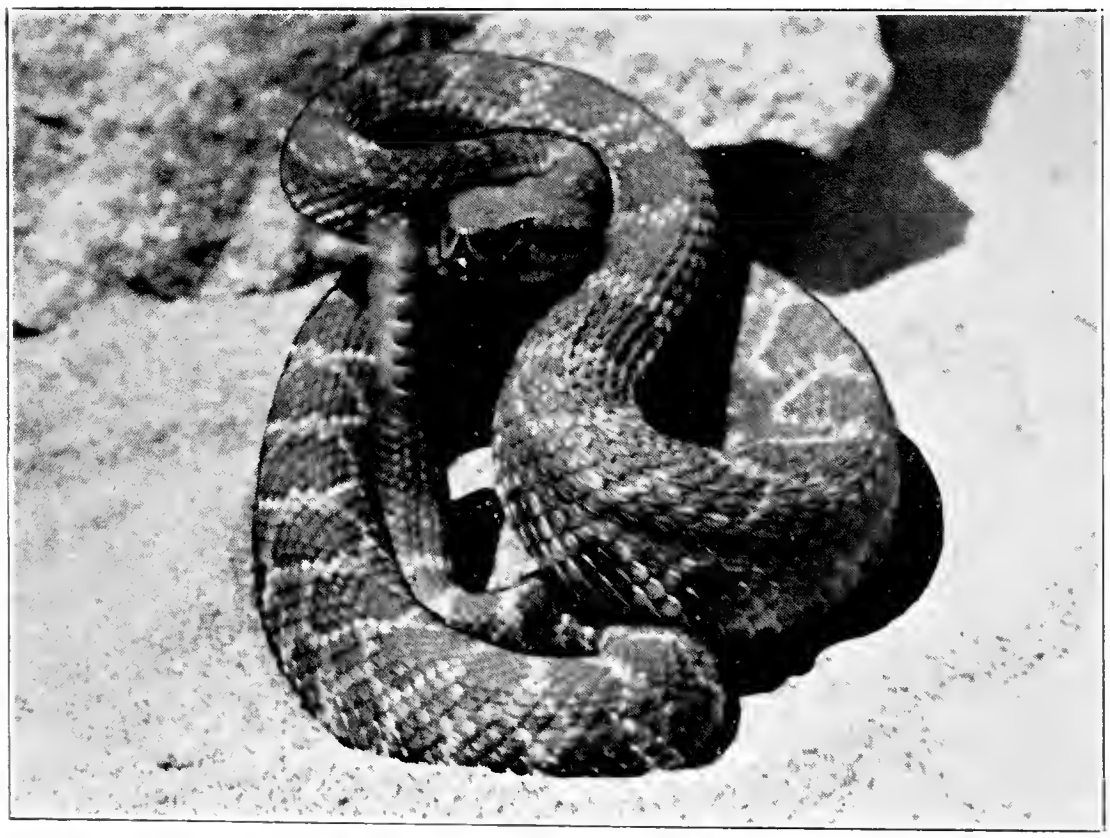
The tongue is solely a sensory organ, combining touch, taste and smell. It is often thought to be the injector of the poison, but this is not so. It has nothing to do with the biting or the poison mechanism. When not in use, it is drawn back out of sight into a tube in the floor of the mouth. It is dark in color and forked like a Y. The snake flicks it in and out of the partly closed mouth through a little notch in the upper lip. When a rattlesnake moves his fully extended tongue slowly up and down in a wide arc, it means he is nervous and on guard and it should be considered as much a warning as a buzzing rattle. Every snake has a tongue, but only the poisonous snakes have fangs. The fangs of the rattlesnake are curved, hollow teeth, white in color. When the snake yawns, the outline of the fangs can be seen through the sheaths; otherwise they are not visible.

The supply of venom is being renewed constantly, and the functional fangs are replaced every few weeks in the process of growth by new ones which lie above and behind them. A loose fang is usually swallowed with a meal and comes through the snake unchanged by the digestive juices, although all that is left of a bird or mammal is claws and feathers or fur. Often a fang is swallowed and evacuated when nothing is eaten. It is not uncommon to find a rattler with double fangs on one or both sides. Each fang may be a venom bearer. This occurs when the new fang has settled in place before the old functional fang has loosened in readiness to fall out.

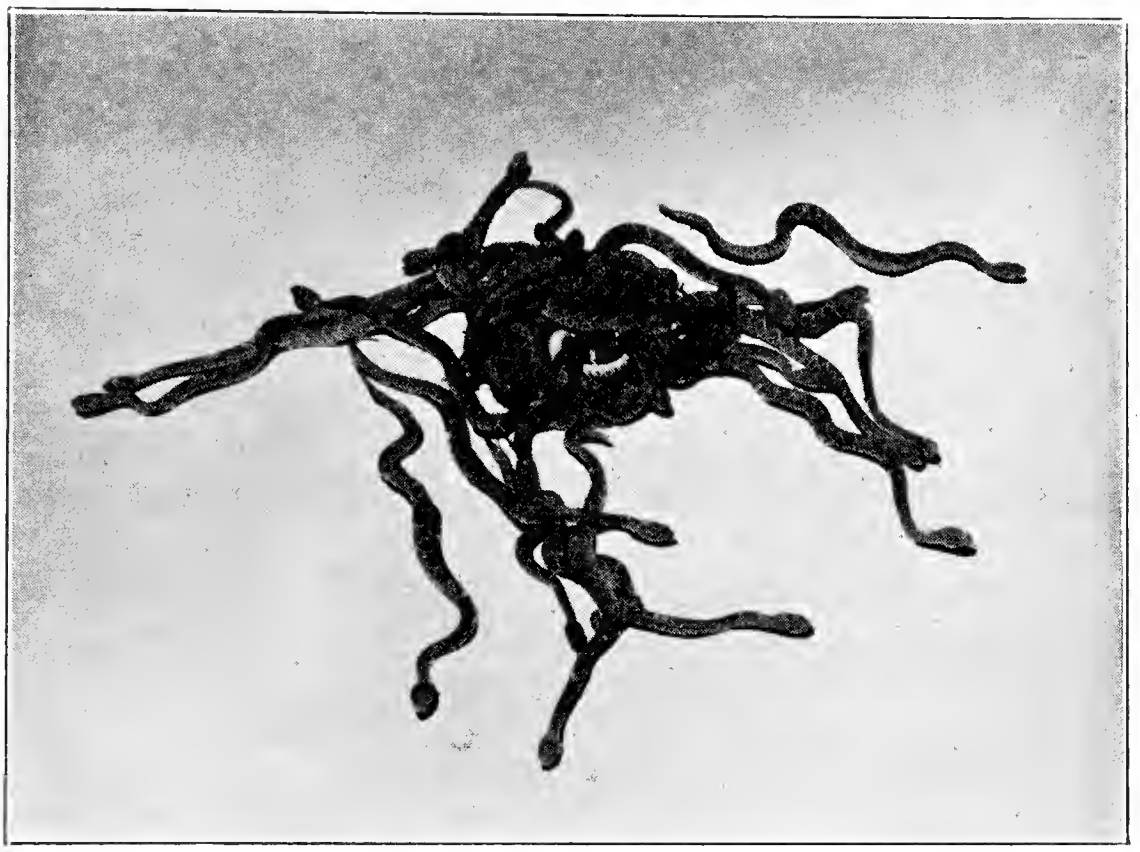
When a snake is coiled in a flat position, it is sleeping or resting. When on the defensive, part of the body is more or less coiled on the ground, but the head and neck are raised, generally in an S-shaped loop. A rattler can strike with accuracy as far as it can straighten out this loop, at most from a third to one-half of its length, depending upon its position.



A Pacific Rattler in a resting coil



On the defensive



Mexican Rattlesnakes *(Crotalus basiliscus basiliscus)* less than two hours old

If a rattlesnake is heard, (the noise is very similar to that made by a cicada or the rattling sound of a dried weed which may have been kicked), the correct thing to do is to stand perfectly still, as a rattler seldom will strike anything but a moving object. This permits the snake to be located. People have been bitten by jumping toward instead of away from the snake.

All rattlesnakes are born (not hatched from eggs) and have poison glands and functional fangs at birth. A few days after being born they shed the skin; the horny end of the tail, called the pre-button, comes off with the old skin, exposing the button. From then on, no segments of the rattle are shed.

After that a new segment is added to the rattle each time the snake sheds its skin, which is at least three times a year in San Diego County, depending upon the length of time the snake hibernates, the amount of food eaten, the age of the snake, etc. Usually a number of segments on an adult

snake have been broken or worn off. It is impossible to tell the age of a rattlesnake by the number of rattles.

There are 58 different species and subspecies of rattlesnakes —all in the Western Hemisphere. Twenty-nine of these are found in the United States, with San Diego County represented by four. One or more of these four rattlers is found everywhere in the county from the ocean shore to the mountain peaks and down into the desert.

The rattlesnake is really an economically valuable and therefore a beneficial snake, as the food of most species consists almost entirely of harmful rodents; but due to the fact that it can cause death, it should be killed when found near dwellings, picnic grounds, etc., where human life might be endangered. The indiscriminate slaughter of any animal over a large area is a questionable procedure. A plague of rodents might well be a worse hazard than the presence of rattlesnakes.

In these days of cheap transportation and the natural desire to camp out or at least picnic in out-of-the-way places, a great many people endanger their lives unnecessarily. More than 90 per cent of snake bites occur between the hand and elbow, or foot and knee. The obvious thing to do is to see where the hands and feet are placed. The legs should be protected by boots or puttees. Great care should be exercised when picking flowers, climbing rocks, turning over stones, etc. But do not let the fear of snakes interfere with having a good time in the country. The chance of seeing a rattler is slight, the chance of being bitten is almost negligible, and with proper care the chance of recovery is very high. Remember:

WATCH WHERE YOU PUT YOUR HANDS AND FEET!

Avoid the rattlesnake but know what to do in case of an accident. Fundamentally there are only two things indicated in the treatment of poisonous snake-bite: (1) removal of as much of the venom as possible and (2) something to counteract the venom that cannot be removed. The order in which the various steps are taken and their relative importance, as well as the details of treatment, are debatable points.

FIRST-AID TREATMENT OF RATTLESNAKE BITE

In case of snake-bite, make sure that the snake was a rattler and not a harmless snake.

Do not get excited. Do not be afraid. Do not run or in any way speed up the circulation. Remain as absolutely quiet as possible. The seriousness depends upon a great many factors—condition, size and species of the snake—whether bitten by one or two fangs—whether the snake has recently used up part of its supply of venom—the part of the body bitten—the rapidity of absorption—the amount of venom compared to the weight of the patient, etc. Few cases of rattlesnake bite are fatal, even without treatment. However, do not minimize the danger of rattlesnake bite. EVERY case should be taken to a doctor.

If the bite is on a part of the body which is instantly accessable (a finger for example), the first thing to do is to bite and suck immediately and strenuously at the fang punctures, with the hope that possibly some unabsorbed venom can be removed before it has had time to be absorbed. This first step takes but a few seconds.

Next, apply a tourniquet between the bite and the heart. If the bite is on a finger, use two tourniquets, one between the bite and the hand and one on the forearm. Do *not* twist the tourniquet with a stick. It should be just tight enough to stop the lymph flow and retard the flow of blood to the heart, but not tight enough to stop the arterial supply of blood. Rubber tubing makes the best tourniquet, but a stocking, necktie, or belt will do, and a shoestring is always available. Put on the tourniquets as quickly as possible.

Now make an incision in the form of an X over each fang mark, long cuts being as nearly parallel to the muscles, ligaments and veins as possible, to the estimated depth of the fang puncture. Connect the two incisions, *if it can be done without cutting across ligaments, large veins or arteries.* Use a sharp knife or razor blade, as a dull one might increase absorption and is more painful. It is very important that both the blade and the surface of the bitten part should be

sterilized. This can be done, for example, with iodine, alcohol or whiskey. If none is available, hold the blade in the flame of a match, and do not wipe off the soot. A factory-wrapped safety razor blade is sterile enough.

The tourniquet should be gently loosened every ten minutes for several seconds.

Now comes the really important part. SUCTION SHOULD BE APPLIED AND CONTINUED FOR AT LEAST HALF AN HOUR, after which time the tourniquet should be removed. Should the swelling or discoloration progress, more cross incisions ¼ x ¼ inch, just through the skin, must be made at the end of the swelling, all around the limb, and suction applied there, after replacing the tourniquet an inch above the swelling. Suction should be applied for half of each hour as long as swelling continues or until the patient is in the hands of a doctor. The injured limb should be kept below the level of the body.

There is no danger from getting the venom in the mouth or stomach. It must get into the blood to be harmful. If venom should get into cracked lips or ulcerated teeth, it is possible that it might destroy the antibodies in the blood that protect against infection, but the danger of being poisoned in that way is so slight that the risk should be taken to save the life of the person bitten. If one happens to be alone and the bite occurs on some part of the body that cannot be reached by the mouth, some mechanical aid is needed. There is a cupping device manufactured by the Flack-Hendrick Co., of San Antonio, Texas, called the "Dudley Kit," that can be used instead of sucking. In my opinion, it is one of the best kits on the market. It has instructions for you and also for your doctor. The Cutter Laboratories of Berkeley, California, puts out one of the neatest suction kits. It is especially valuable because of its small size as it is no bother to take with you. It is called "Compak Snakebite Kit." Everybody going into the back country should carry a kit of some kind.

Always cut and suck—this part of the treatment cannot be overdone. The first reaction of the patient is often a numb

feeling about the lips and a stretched-skin feeling in the face. The fingers and toes feel as though the limbs were asleep. This condition might make it difficult for the patient to continue the sucking by mouth and the use of the suction cup may be necessary. If there is another person present, however, the mouth suction should be continued as it is more efficient than using the cup.

Get a doctor as soon a possible, preferably one who has had other snake-bite cases, but get a doctor! EVERY case of rattlesnake bite should be taken to a doctor. He, by the way, should be on the lookout for a neurotoxic effect which usually occurs (if at all) about 36 hours after the bite.

The following quotation is from a letter from Dr. Dudley Jackson, who probably has treated more rattlesnake cases than any other physician in the world: "One of the most valuable things to do is to insist on a doctor typing the patient and matching his blood to prepare for a blood transfusion, for this is one of the most valuable agents we have in treating severe snake bites. This procedure takes time and should be done in every case, and if the necessity of a blood transfusion arises it can be given before the patient dies. I have seen two cases die before suitable donors could be found. Both cases were apparently mild at first." The above instructions are not for you but for your doctor.

If permanganate of potassium is available, make a wine-colored solution to rinse the mouth between suckings, and USE IT FOR NO OTHER PURPOSE. Do not put it on the wound, as a weak solution will not destroy rattlesnake venom and a strong solution will destroy human tissue.

Wet dressings (a hot saturated solution of Epsom Salts is best) should be placed on the wound to assist in drainage after the cutting and sucking is finished, while awaiting a doctor.

Do not burn the wound with a hot iron, acids, or anything else, as this cauterizes the wound and stops the most important thing—drainage.

Do not use whiskey. Alcohol in any form speeds up the circulation, sending the venom more rapidly through the system (exactly what is NOT wanted) and later, when a stimulant may be needed, alcohol (especially in large doses) is a strong depressant. (Save the whiskey offered you, and use it for a celebration after complete recovery!) Instead, give a cup of strong coffee (cool enough to drink) or a teaspoonful of aromatic spirits of ammonia in a glass of water, if the patient has a weak pulse or feels faint. Keep the patient warm.

Regardless of what stories may have been heard concerning cures for snake-bite, such as dead chickens placed on the bite, tobacco juice, gunpowder, or any other home remedies, follow the above directions, as they represent the best treatment known. Some of these so-called "home remedies" may do no actual harm—the danger is in using up valuable time before the proper procedure is started, thus causing a delay that might mean the difference between life and death to the patient. ALWAYS CUT AND SUCK.

If it is not possible to get to a doctor within a reasonable time, as might be the case if on a pack-horse trip but would seldom occur if an automobile were available, there is one other important thing that should be done. There is a snake-bite serum manufactured by Wyeth Incorporated, at Philadelphia. It is called Antivenin (Nearctic Crotalidae). Do not confuse this serum with any other remedy. It is made from the blood of immunized horses and as some people are sensitive to any horse serum it might be very dangerous to use. It is much better to wait for the doctor to give the serum. Anyone going into snake-infested country should get a sensitivity test beforehand. If Antivenin is used, follow the simple directions in the box. Many doses may be needed. Children need more than adults. This serum can save life if properly used, but a hypodermic needle in the hands of a layman is a dangerous thing at best and the additional danger of sensitivity to horse serum makes it much wiser to have a doctor administer the injection.

ALWAYS CUT AND SUCK WHETHER ANTIVENIN IS USED OR NOT.

The above advice in case of rattlesnake bite is summed up as follows:

DON'T

Don't run or get excited.
Don't take any alcoholic drinks.
Don't use permanganate of potassium on the wound.
Don't cauterize the wound.
Don't try any "home remedies."

DO THIS

Be calm. There is little danger if proper first-aid is given.

Place a tourniquet between the wound and the heart, and loosen it every ten minutes for a few seconds.

Cut with a sterile blade and suck for at least half an hour.

Get a doctor as soon as possible.

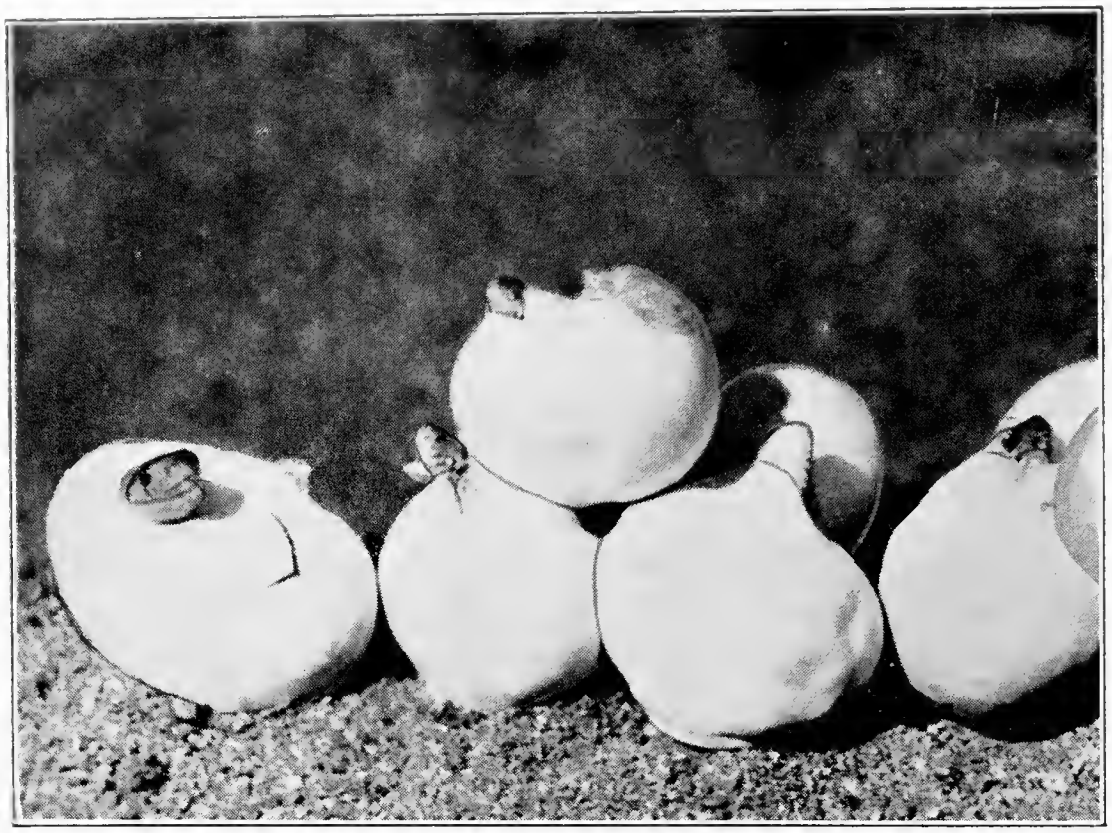
Use Wyeth's Nearctic Crotalidae Antivenin according to directions.

Always cut and suck.

THERE ARE THREE MILDLY POISONOUS SNAKES IN SAN DIEGO COUNTY

Although poisonous, they are not *at all* dangerous. The poison is mild (too weak to kill a mouse), the fangs are situated in the back of the upper jaw, and are so small that they barely can puncture the skin. The poison is used to subdue the prey, such as small lizards. These snakes are rare and seldom seen, except by collectors who are seeking them. They are the California Lyre Snake *(Trimorphodon vandenburghi)*, the Coastal Spotted Night Snake *(Hypsiglena torquata klauberi)* and the Desert Spotted Night Snake *(Hypsiglena torquata deserticola)*.

In the Lyre Snake the fangs in the back of the upper jaw are grooved. The Spotted Night Snakes do not have grooved teeth.



Gopher Snake eggs hatching

Some of the harmless snakes bite. A Red Racer will always bite, even when handled gently, whereas a California Boa will not, even when handled roughly. The bite of course is absolutely harmless. It startles more than it hurts. The wound is comparable to several pin pricks or scratches, and the same precaution should be used as is advisable whenever the skin is broken. A little iodine and it's well tomorrow. I do not believe it is possible to be bitten by a harmless snake unless the snake is handled.

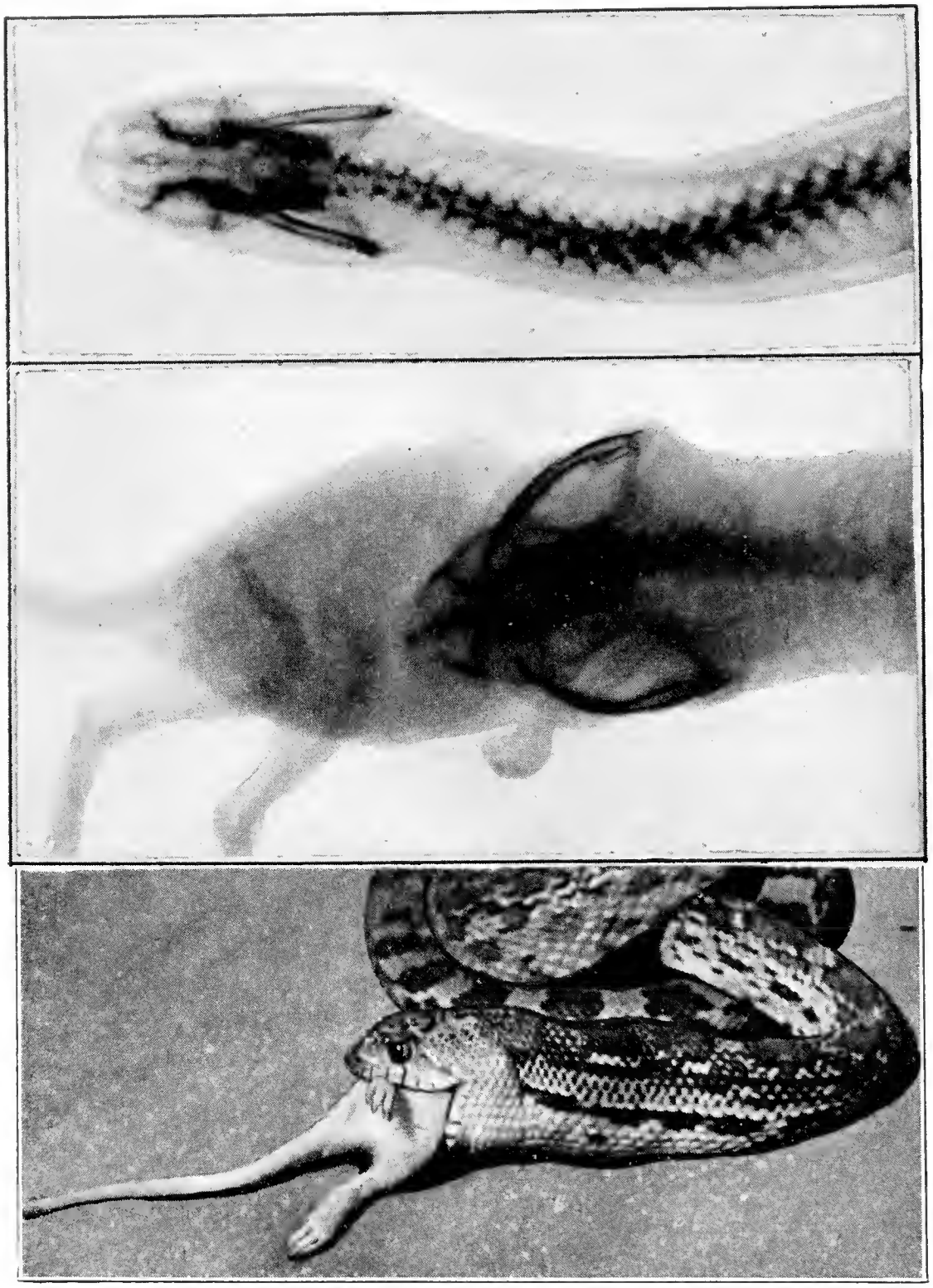
Some snakes are hatched from eggs (oviparous) as is the case with the King Snake and Gopher Snake, and many others, and some are born alive (viviparous), coming in nice little "cellophane wrappers," as the Rattlers and Garter Snakes. In neither case does the mother have anything further to do with the young.

Snakes shed their skins to allow for growth. In shedding, the snake loosens the old skin from the upper and lower lips by rubbing against stones, plants or on the ground, and

This King Snake did not do a very good job of shedding—probably he was camera-shy.

crawls out, turning the old skin wrong side out, like pulling off a stocking from the top. Even the scales covering the eyes are shed. Sometimes before this takes place, the old skin becomes loosened from the new skin, and eyes appear opaque blue. A fluid comes between the two skins and in about ten days or less, the eyes clear up to their natural color and a few days later, the skin is shed as described above. This takes place several times a year.

Food of Snakes. Some lizards and turtles are vegeterians but no snake eats anything but animal food. A few have very specialized diets. There is an African snake that eats nothing but eggs. The King Cobra confines his food to snakes. The Sea Serpents take nothing but fish. Some snakes eat insects only, but most snakes eat several different things. In the Reptile House rats and mice are used more than any other one thing; however, frogs, snakes, lizards, chickens, fish, meat, insects and earthworms must be available as most of them are used each week. In the Descriptions of the Snakes the food habits will be mentioned.

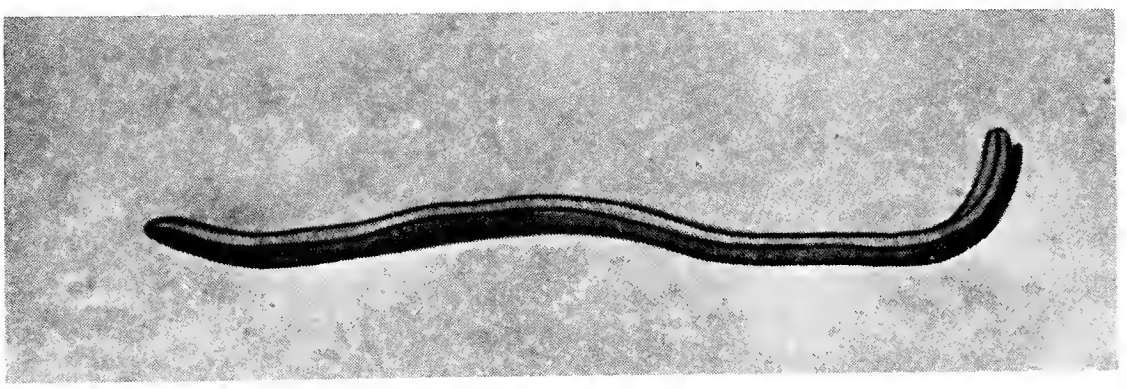


The top picture shows the snake head in normal position taken from above. The middle picture is also from above showing a mouse being swallowed. The bottom picture is the side view of a Gopher Snake swallowing a rat. There is a great deal of freedom of movement in the bones of the head but the jaws are not dislocated while swallowing as is commonly supposed. The X-rays were taken by Dr. L. F. Conti, at the Zoo Hospital.

Snakes kill their prey in five different ways. Some kill by constriction, (that is, by wrapping around and squeezing to death)—a good example is the Gopher Snake. Some kill by holding the prey in the mouth and pressing it down on the ground with a single loop of the body—the method used by the Racer. The Rattler strikes its prey and releasing it, waits until it dies from the effects of the venom. The back-fanged snake bites and holds on, working the food back to the poison fangs with a chewing motion, and holds it there until dead. The Garter Snake grabs its frog from any angle and starts to swallow, depending upon suffocation and its gastric juices to kill it. Usually the food is swallowed head first, but this is not always so. Pet snakes will often take it either end first, depending on how it is offered them, and many snakes will do likewise if the food is much smaller than that usually taken.

Lizards do not come within the scope of this paper, but it seems necessary to mention two of them.

The California Legless Lizard *(Anniella pulchra pulchra)*, having no legs, is sometimes mistaken for a small snake. No snake has moveable eyelids but most lizards do, including this one. Snakes have an elastic ligament connecting the two halves of the lower jaw, whereas in a lizard the two lower jaw bones are joined, forming a chin. This is the principal difference between a snake and a lizard. The California Legless Lizard is subterranean and fairly common in sandy soil. Eight to ten inches is the usual length. Its color above is yellowish-white or silvery, with one distinct narrow brown line down the middle of the back and one or more along the sides.



Anniella pulchra pulchra. A Lizard—Not a Snake

Its belly is yellowish but sometimes grayish or bluish under the head and tail.

No poisonous lizard is found in San Diego County. The Gila Monster *(Heloderma suspectum)* is the only poisonous lizard in the United States. It is *not* found in California. It is named after the Gila River and pronounced Hee-lah. This lizard occurs in Arizona, southern Nevada, southern Utah and also in northwestern Mexico.

Snake stories should be taken with more than a grain of salt. There seems to be no other animal about which there is so much misinformation. No snake in the United States will unprovokedly attack a person; but on the contrary, unless it thinks it is cornered, will try to get away. The size of snakes is usually greatly exaggerated. Snakes do not roll like a hoop—nor milk cows—nor swallow their young for protection—nor whip people—nor chase people—nor has any snake a poisonous breath—the tongue is harmless—no snake has a sting.

There are all kinds of stories about the danger of having anything to do with any kind of snake except to kill it at sight. This is, of course, ridiculous. The fear of snakes is not inherited, but rather handed down through myths and example from generation to generation. Snakes are beautifully colored, extremely graceful, are not slimy, and are probably the cleanest of all animals.

The California Boa, Garter Snake, Mountain King, Glossy Snake and Yellow-bellied Racer are found over a period of years in greater quantity in June than any other month. All of the others are most plentiful in April or May. Occasionally individuals of most species are found in every month of the year. Although they hibernate, several warm days in succession will bring a few out. There is a scarcity of snakes in the middle of summer when the days get hot. All snakes are killed by too much exposure to the direct summer sunlight, about ten minutes being long enough to cause death. It seems to be the heat that kills and not some photo-chemical reaction. When the body temperature of the snake reaches about 115° F., the snake dies.

Let me emphasize the fact that there is only one dangerous snake in California, the rattlesnake. All the rest are harmless and most of them beneficial. Most feed to a great extent upon the harmful rodents that ruin so much of the farmers' crops. No harmless snake should be killed; the Gopher Snake, and probably others, should be protected by law. Several farmers have told me that every Gopher Snake found on the road is taken home and placed in their fields.

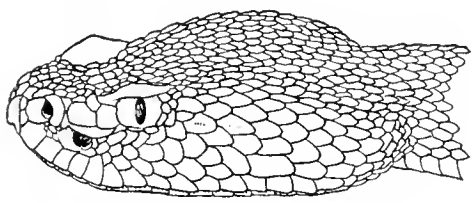
KEY TO THE SNAKES OF SAN DIEGO COUNTY

Start with No. 1, which gives two choices; take the correct "if" of the two alternatives and proceed to the paragraph starting with the number appearing at the right; continue in the same manner until the name of the snake is given.

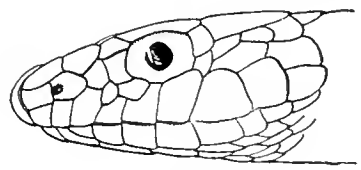
The key must be started at the beginning and not at some other place where a phrase happens to fit the snake in hand, e.g. "if the pupil of the eye is elliptical."

The key is not infallible. It can be used *only* for snakes captured in San Diego County. There is such a great deal of variation in color, markings, etc., among individual snakes of the same species, that an error might occasionally be caused. But it is believed that, should this occur, the snake can be identified by using the key as far as possible, and then turning to the illustrations and descriptions of the snakes.

1. If the snake has rattles and a pit below a line drawn from the nostril to the eye 2
   If not 5

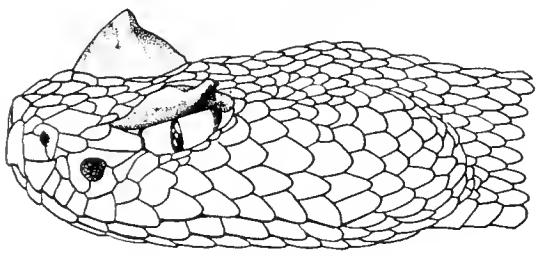


Pit Below Nostril-Eye Line

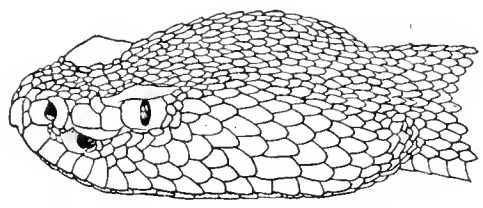


No Pit

2. If there is a very prominent horn over each eye and the snake was found on the desert—Sidewinder *(Crotalus cerastes laterorepens)* ..... Page 67
   If not 3



Prominent Horn



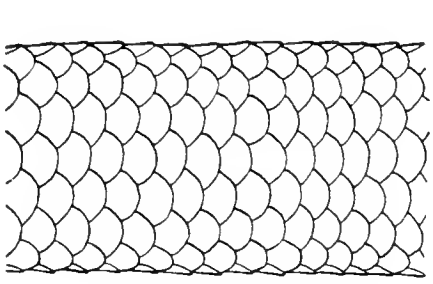
No Horn Over Eye

3. If the blotches on the back have no definite outline (some specimens have band-like blotches), giving the snake a very speckled appearance—Speckled Rattlesnake *(Crotalus mitchellii pyrrhus)* ..... Page 68

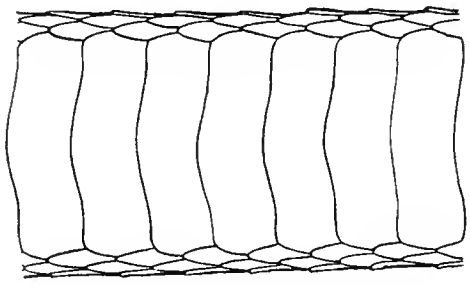
   If not 4

4. If the pattern of the tail consists of black and white bands in strong contrast the entire length of the tail and the general coloration of the body is reddish—Red Diamond Rattlesnake *(Crotalus ruber ruber)* ..... Page 69

   If the tail pattern consists of bands of ground color and a darker shade and the last half of the tail is solid color and the general coloration is not reddish—Pacific Rattlesnake *(Crotalus viridis helleri)* ..... Page 70



Small Belly Scales



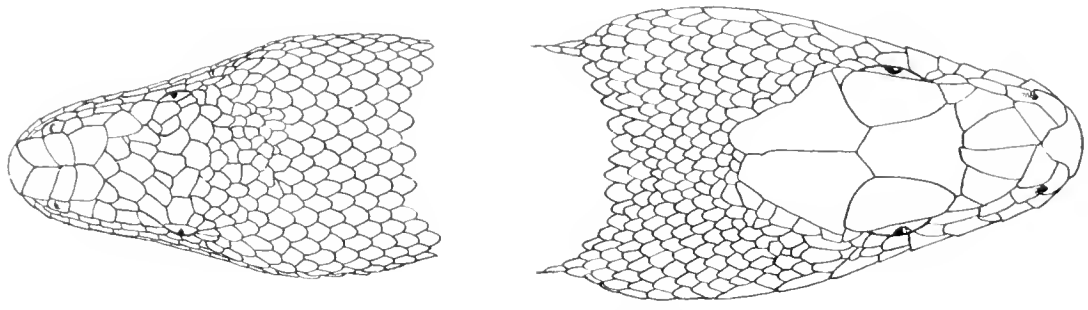
Transverse Belly Plates

5. If the belly scales are the same size as those on the back 6

   If not—but the belly is covered by transverse plates much larger than those on the back 7

6. If found on the desert and has five rows of scales on the back that are darker than the rest—Desert Worm Snake *(Leptotyphlops humilis cahuilae)* ..... Page 39

   If found west of the desert and has seven or more rows of darker scales on the back—Western Worm Snake *(Leptotyphlops humilis humilis)* ..... Page 38



7. If there are small scales on top of the head—California Boa *(Lichanura roseofusca roseofusca)* Page 40
   If not—but large plates instead 8
8. If the only pattern on the back is a collar on the neck just behind the head 9
   If not 11
9. If the belly is spotted with black—San Diego Ring-necked Snake *(Diadophis amabilis similis)** Page 41
   If the belly is not spotted 10
10. If found west of the desert and the back and belly are different color and all scale rows show fine speckles—California Black-headed Snake *(Tantilla eiseni eiseni)* ..... Page 65
    If found on the desert and the back and belly are the same color and at least two side rows are not speckled—Desert Black-headed Snake *(Tantilla eiseni transmontana)* ..... Page 66
11. If the pattern on the back consists of cross bands of the same design from the head to tail† 12
    If not 18

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*ONE SPECIMEN of the Los Angeles Ring-necked Snake *(Diadophis amabilis modestus)* has been taken in San Diego County at San Onofre. More probably will be discovered in the northern part of the county in the future. See under Description of Snakes for difference between the San Diegan Ring-neck and the Los Angeles Ring-neck ..... Pages 41-42

†SOME SPECIMENS of the San Diegan Gopher Snake have a design that looks like very short cross-bands that extend across the middle of the back only and are not continued onto the sides. These are actually blotches or the interspaces between them and are not to be considered as cross-bands.

12. If any of the bands completely encircle the body (possibly not exactly joining underneath) 13
    If not 15

13. If the bands encircle the body from the neck to the tail 14
    If the black bands encircle only the latter part of the body, but the forward part of the belly is unmarked—Shovel-nosed Ground Snake *(Chionactis occipitalis annulata)* ..... Page 59

14. If any of the bands are bright red—Mountain King Snake *(Lampropeltis zonata zonata)* ... Page 56
    If not—California Banded King Snake *(Lampropeltis getulus californiae)* ..... Page 54

15. If any of the cross bands are red 16
    If not 17

16. If the bands are of red, yellow and black and have a very speckled appearance and most of the plates under the tail are in a single row—Western Long-nosed Snake *(Rhinocheilus lecontei lecontei)* ..... Page 57
    If the pattern is red and black cross bands on a light colored snake and most of the plates under the tail are in two rows—Shovel-nosed Ground Snake *(Chionactis occipitalis annulata)* ..... Page 59

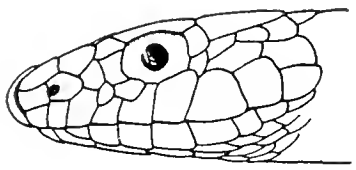
17. If the black bands are much wider than the light spaces between them and most of the plates under the tail are in a single row—Desert Long-nosed Snake *(Rhinocheilus lecontei clarus)* ..... Page 58
    If the black bands are much narrower than the light spaces between them and most of the plates under the tail are in two rows—Shovel-nosed Ground Snake *(Chionactis occipitalis annulata)* ..... Page 59

18. If the back pattern consists of one or more longitudinal stripes 19
    If not 24

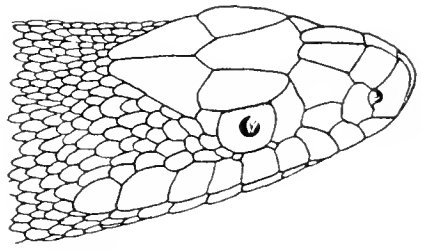
19. If the stripes are on the sides only 20
    If there is a stripe down the middle of the back 21

20. If the back between the stripes is solid color and the under-tail is pink—California Striped Racer *(Masticophis lateralis)* ..... Page 46
    If there is any design, however indistinct, between the stripes, and the under-tail is yellow—Southern California Garter Snake *(Thamnophis elegans hammondii)* ..... Page 60

21. If there is more than one color between the middle stripe and the side stripes (if any)—Pacific Garter Snake *(Thamnophis ordinatus inferualis)* ..... Page 61
    If not 22



Nose Plate Like a Patch



Normal Nose Plate

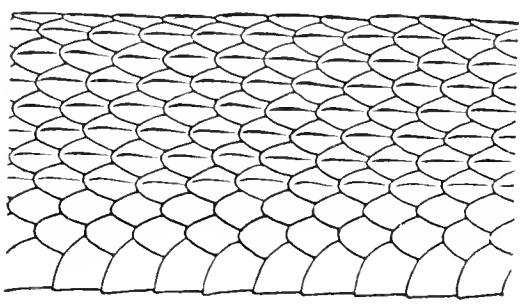
22. If the scale on the nose looks like a patch with free lateral edges 23
    If not—California Striped King Snake *(Lampropeltis getulus californiae)* ..... Page 55

23. If the snake was taken on the floor of the desert and the middle stripe is three scales wide and the top of the head is gray—Desert Patch-nosed Snake *(Salvadora hexalepis hexalepis)* ..... Page 48
    If taken west of the desert and the middle stripe is one scale plus two half scales wide and the top of the head is brown—Chaparral Patch-nosed Snake *(Salvadora hexalepis virgultea)* ..... Page 47

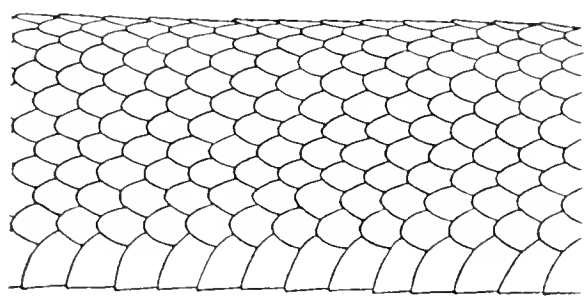
24. If the head and back are the same solid color without design of any kind 25
If not 26

25. If the back is olive or grayish-brown and the entire undersurface bright yellow—Yellow-bellied Racer *(Coluber constrictor mormon)* ..... Page 43
If the back is solid black and the belly cream color with some dark markings—Black Whip Snake *(Masticophis flagellum piceus)* ..... Page 45

26. If the top of the head is black or dark-brown (solid color) 27
If not 32



Keeled Or Rough Scales



Smooth—Not Keeled

27. If the scales are keeled—San Diegan Gopher Snake *(Pituophis catenifer annectens)* ..... Page 52
If not 28

28. If the head and neck are black or dark-brown and the rest of the back is a different color, often reddish—Red Racer *(Masticophis flagellum piceus)* ..... Page 44
If only the head is black but the neck is not 29

29. If the neck is the same solid color as the rest of the back 30
If the neck and forepart of the back is mottled or cross-banded but the latter part of the back is unicolor 31

30. If found west of the desert and the back and belly are different color and all rows show fine speckles —California Black-headed Snake *(Tantilla eiseni eiseni)* ..... Page 65

    If found on the desert and the back and belly are same color and at least two side rows do not have speckles—Desert Black-headed Snake *(Tantilla eiseni transmontana)* ..... Page 66

31. If the under surface of the lower jaw is marked with small dark spots—Juvenile Red Racer *(Masticophis flagellum piceus)* ..... Page 44

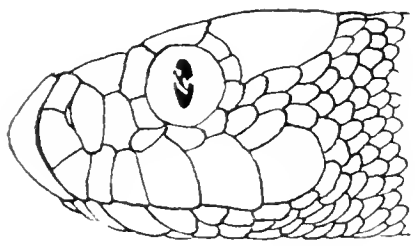
    If unmarked—Juvenile Yellow-bellied Racer *(Coluber constrictor mormon)* ..... Page 43

32. If most of the plates under the tail are in a single row 33

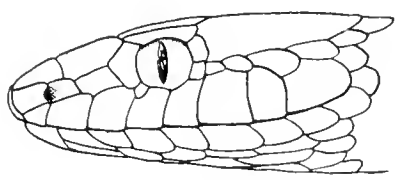
    If not 34

33. If there are band-like blotches of red, black, and yellow with a very speckled appearance—Western Long-nosed Snake *(Rhinocheilus lecontei lecontei)* ..... Page 57

    If the pattern consists of large black blotches on white—Desert Long-nosed Snake *(Rhinocheilus lecontei clarus)* ..... Page 58



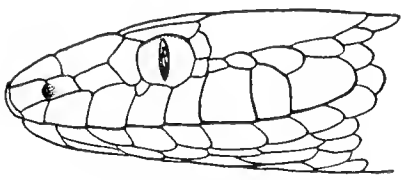
Leaf-Nose



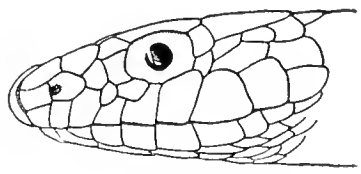
Normal Nose Plate

34. If the scale on the end of the nose is very large and looks pasted on—Leaf-nosed Snake *(Phyllorhynchus decurtatus perkinsi)* ..... Page 49

    If not 35



Elliptical Pupil



Round Pupil

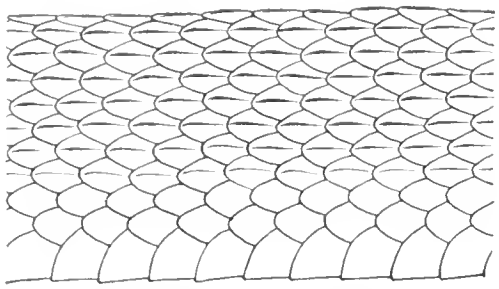
35. If the pupil of the eye is elliptical 36
If not 40

36. If the pupil of the eye is decidedly elliptical like a cat's eye 37
If only slightly elliptical when examined in a strong light but normally looks round 39

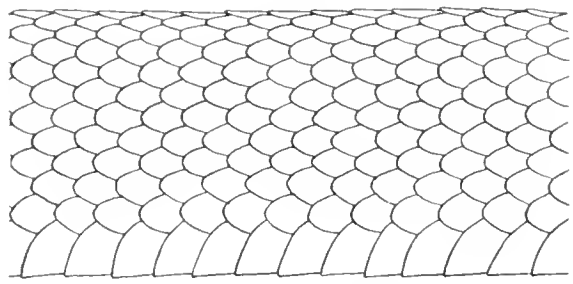
37. If the head is crossed by a more or less distinct gray or brown band which makes a design somewhat like a lyre and the body blotches are split by a light line—California Lyre Snake *(Trimorphodon vandenburghi)* ..... Page 64
If not—but there is a large brown blotch on each side of the neck and the body blotches are not split 38

38. If found on the desert and the middle blotch on the top of the neck touches the large scales on the head—Desert Spotted Night Snake *(Hypsiglena torquata deserticola)* ..... Page 63
If found west of the desert and the middle blotch on the neck does not touch the large scales on the head—Coastal Spotted Night Snake *(Hypsiglena torquata klauberi)* ..... Page 62

39. If found west of the desert and has dark marks on the edges of the belly plates—California Glossy Snake *(Arizona elegans occidentalis)* ..... Page 50
If found on the desert and no dark marks on the edges of the belly plates — Desert Glossy Snake *(Arizona elegans eburnata)* ..... Page 51



Keeled Or Rough Scales



Smooth—Not Keeled

40. If the scales are keeled 41
If not 42

41. If found on the desert and the blotches on the forward part of the body are brown—Sonoran Gopher Snake *(Pituophis catenifer affinis)* ..... Page 53

If found west of the desert and the blotches on the forward part of the body are black—San Diegan Gopher Snake *(Pituophis catenifer annectens)* ..... Page 52

42. If the design is the same from the head to tail 43
If the forward part of the back is blotched or banded but the latter part unicolor 44

43. If found west of the desert and has dark marks on the edges of the belly plates—California Glossy Snake *(Arizona elegans occidentalis)* ..... Page 50

If found on the desert and no dark marks on the edges of the belly plates—Desert Glossy Snake *(Arizona elegans eburnata)* ..... Page 51

44. If the under surface of the lower jaw is marked with small dark spots—Juvenile Red Racer *(Masticophis flagellum piceus)* ..... Page 44

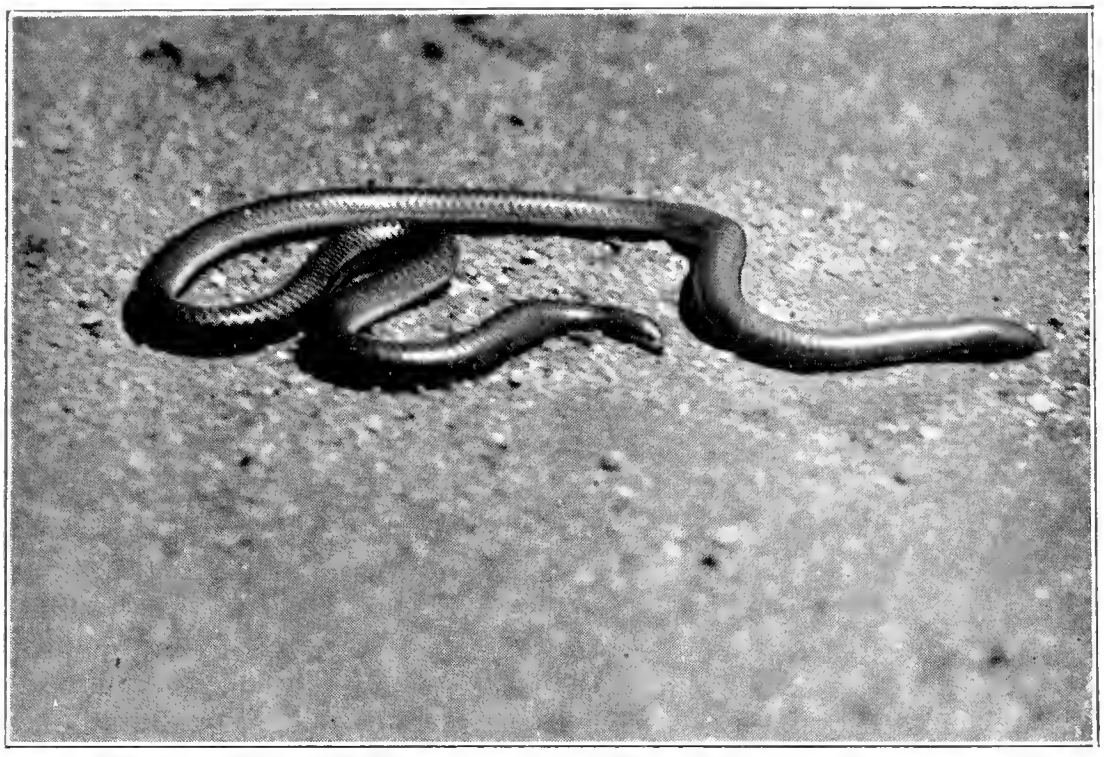
If unmarked—Juvenile Yellow-bellied Racer *(Coluber constrictor mormon)* ..... Page 43

DESCRIPTION OF THE SNAKES OF SAN DIEGO COUNTY

The following facts, when known or deemed necessary, will be given regarding each of the thirty-one snakes found in San Diego County: Food habits—habitat—with what other snakes the one in question might be confused—whether born or hatched from eggs—size—shape of eye pupil.

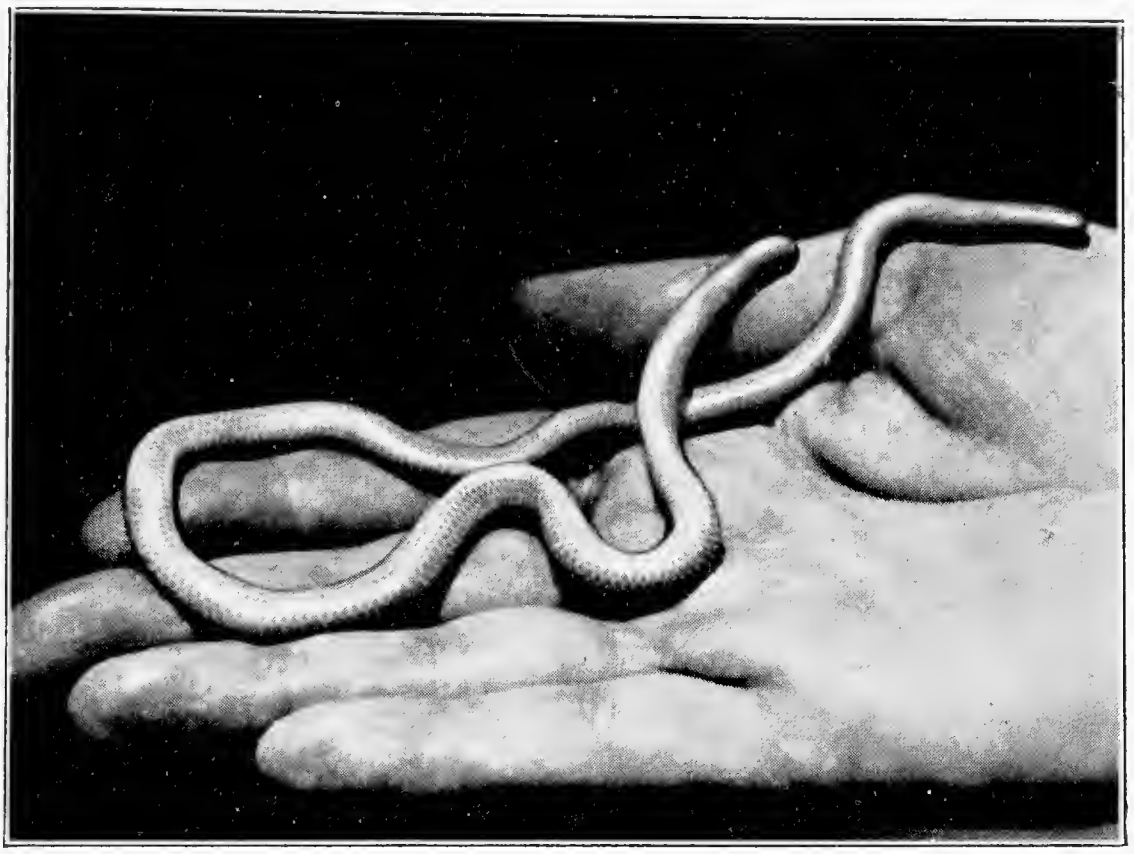
The most common ten snakes are referred to as "common," the next five as "moderately common," the next five as "moderately rare," and the remainder as "rare."

In reading about any snake it is advisable to read what is said about other snakes of the same genus (those having the same scientific first name) as space does not permit giving under each heading facts that are common to all.



WESTERN WORM SNAKE
Leptotyphlops humilis humilis

This little snake looks like a long polished earth-worm. The color of its upper surface consists of seven or more dark scale rows. Underneath it is a very light pink. It has a blunt tail with a small spine at the tip with which it appears to help push itself along. The entire body is covered with scales of the same size, without large transverse belly plates (called scutes) such as are found in the other snakes of San Diego County except its close relative, the Desert Worm Snake. The head is small and the eyes almost invisible. It is subterranean, being found under rocks and among the roots of bushes from the coast to the edge of the desert. A large specimen was brought to the Reptile House a few years ago that had been found ten feet above the ground in the dirt and decayed wood between a sawed-off frond stump and the trunk of a palm tree. A great many are dug out in the process of constructing new roads; and although the teeth, which are found only in the lower jaw, could not possibly break the skin, some strong man with a shovel protects his life by cutting the "Monster" into several pieces. Its food probably consists of soft-bodied grubs, termites, and perhaps young, slender salamanders. An average-sized specimen is about nine inches long, and less than a quarter of an inch in diameter. The record for size seems to be 13¼ inches. The smallest I ever saw was about four inches long and less than a safety match in diameter. It was coming into the old Reptile House under the back door. The Worm Snake is sometimes confused with the Legless Lizard *(Anniella pulchra pulchra)* but, as the lizard is striped and the snake is not, there is no excuse for a mix-up.



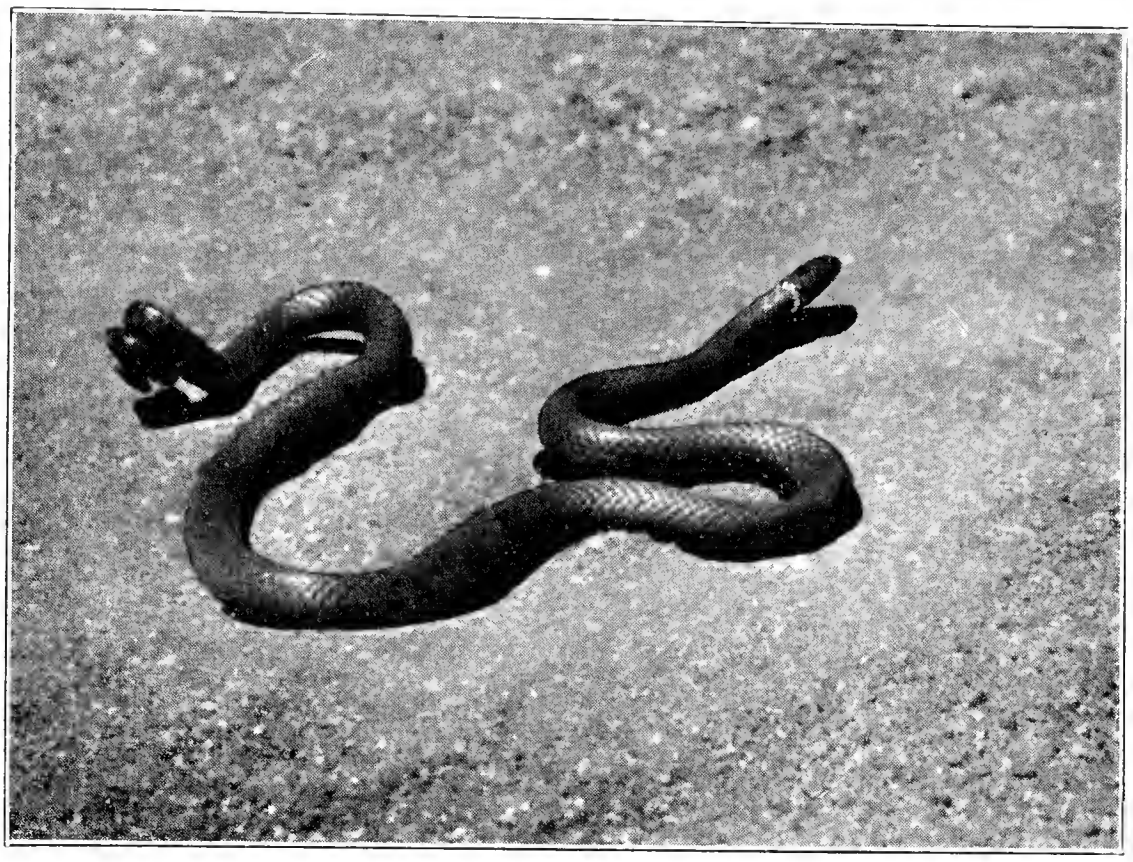
DESERT WORM SNAKE
Leptotyphlops humilis cahuilae

This snake differs from the preceding subspecies in having five rows of light-brown scales instead of seven or more rows of dark-brown scales on the back. It is a much lighter snake in every way, appearing almost transparent. It is found in the desert from the foot of the range eastward. Specimens are occasionally captured in Borrego Desert on the road at night. Its food habits are, presumably, similar to those of the Western Worm Snake. Both of the worm snakes lay eggs. There seems to be little difference in size between the two subspecies—nine or ten inches being average length. For some unknown reason there is a popular belief (which is erroneous) that there are a great many deadly snakes that are extremely small and the tiny defenseless worm snakes are often so considered. There is a little spine at the tip of the tail with which the snake seems to try to push itself along, and should the snake be held in one's hand this spine can be felt as the snake tries to get away. This is sometimes referred to as a sting. No snake has a sting and the few snakes that use this spine-like tail-end to push with are absolutely harmless. In the case of the worm snakes, the little fellows have teeth in the lower jaw only. These teeth are microscopic and could not possibly puncture the most tender skin, and to top it off, the snake never attempts to bite.

The San Diego Zoo is always glad to get reptiles of any kind, especially specimens of the rarer species, and will greatly appreciate any small snakes from the desert.

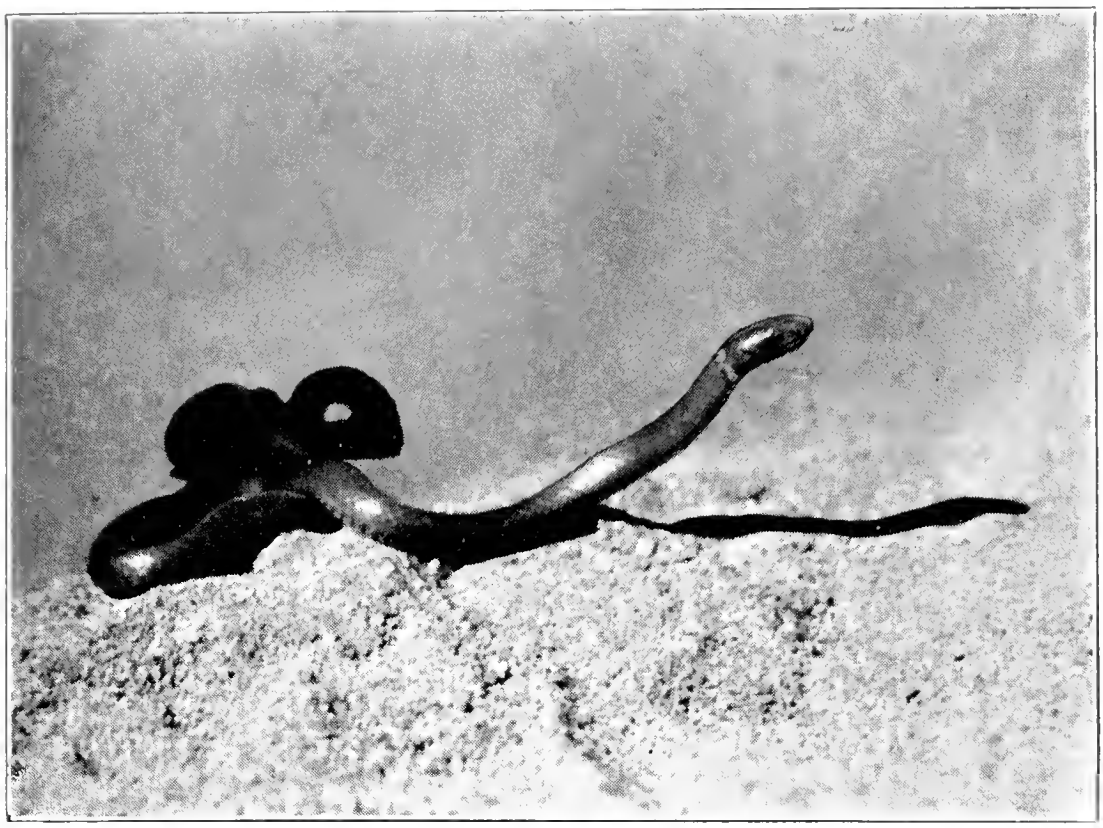
CALIFORNIA BOA
Lichanura roseofusca roseofusca

This small representative of the large boas of the tropics is the mildest tempered snake in San Diego County. It is sometimes called Rosy Boa. It never attempts to bite. It has a small head with small scales on the top instead of the usual large plates of most snakes. Its eye has an elliptical pupil. It may grow to a length of three feet, although most specimens are smaller. It is common and is found in the chaparral and among the boulders from the ocean to the desert. Its food consists of birds and mice, and it seems to prefer smaller animals in proportion to its size than other snakes. The young are born alive. For some undiscovered reason, in many of the larger specimens the tail is swollen and stump-like. There is a small but obvious spur on each side of the anal plate of the male, representing legs of a bygone age. The color above is grayish or brownish, with three more or less indistinct reddish, wavy stripes down the back and sides. The snake has a shiny and metallic appearance. Its under color is lighter than the top, spotted with brown or gray. Some have the peculiar habit of rolling up into a ball when roughly handled. It is a slow-moving snake and easily captured. Although, as a species this boa is not a good feeder in captivity, some individuals do very well, taking mice from the fingers. Although the mice used as food in the Reptile House have been killed before being offered to the snakes, the California Boa wraps around and squeezes its mouse for some time before starting to swallow, taking no chances on a bite from the little rodent's sharp teeth.



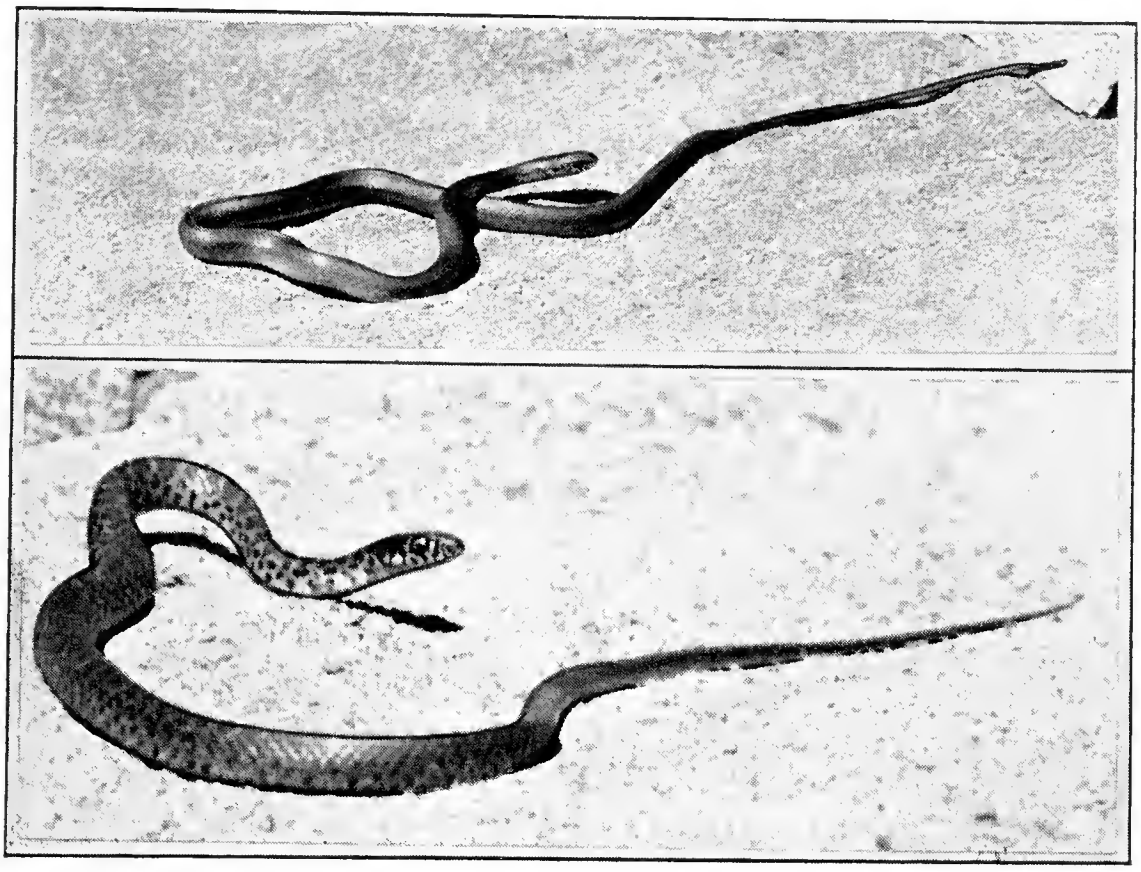
SAN DIEGAN RING-NECKED SNAKE
Diadophis amabilis similis

The body of this small snake is slate or greenish-gray above with a bright orange collar separating it from the darker head. Its under surface is yellow or orange with numerous black dots, and the under-tail is red. It might be confused with the California Black-headed Snake, which is small and has a collar, but the two may be easily distinguished as the Black-headed Snake has a spotless, pinkish belly and under-tail. Most specimens of Ring-necks are brought to the Reptile House from the gardens of San Diego, although it is found throughout the county from the ocean to the mountains, in moist places under rocks, boards, etc. About a foot is the usual length of large specimens, although very rarely one half again as large is found. Several years ago a tourist described a snake about twenty inches long which could not be identified from his description. When he later brought it in, it turned out to be a Ring-neck. Unfortunately, he would not leave this giant with us. While we were looking at the snake it disgorged a large skink which, although full grown, had made no noticeable bulge in the snake's body. The food of the Ring-neck consists of salamanders, lizards, tree frogs and probably grubs. When alarmed, this defenseless snake twists its tail into a spiral and holding it up an inch or so, displays the red under surface of the tail, apparently in an endeavor to frighten away whatever danger exists. The pupil of the eye is round. The baby snakes hatch from eggs. A batch of three eggs laid in the Reptile House July 15, 1946 hatched 48 days later. Because they are usually found by digging, Ring-necks are brought to the Reptile House every month of the year, although March, April and May rank highest.



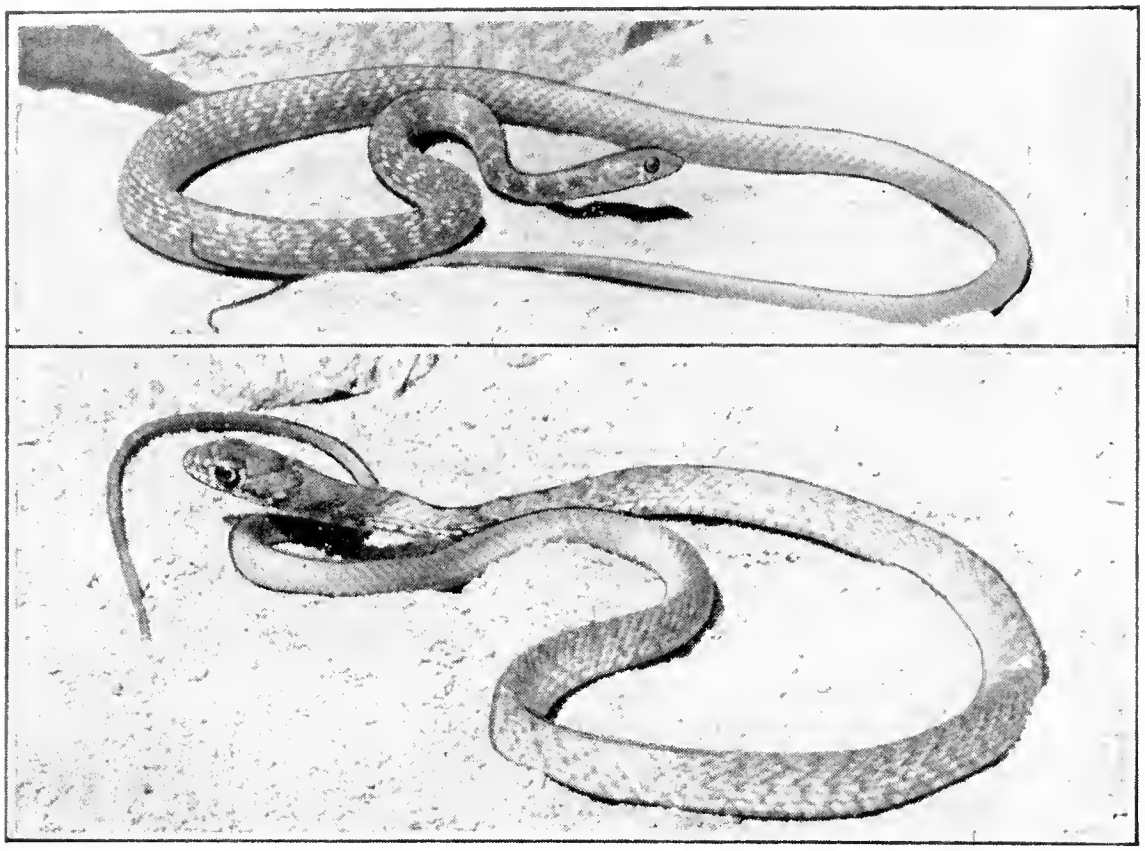
LOS ANGELES RING-NECKED SNAKE
Diadophis amabilis modestus

This snake is so similar to the San Diegan Ring-neck that it would be hard to tell which was which without the use of a scientific key. Except for one specimen taken at San Onofre, the Los Angeles Ring-neck is unknown in this county. However, undoubtedly there will be additional records as more collecting is done at the northern edge of San Diego County. The snake is common enough farther north. It will average a little larger than the San Diegan Ring-neck and the yellow on the sides has a tendency to be more prominent. The number of scales across the back is usually greater than in the local form. There are several different species of Ring-neck throughout the United States and the food of all is similar. Very little is known about the breeding habits of our Ring-necks, but a great deal of work has been done on the eggs and nests of the Eastern Ring-neck. In the case of that snake, the eggs are laid in decaying logs that are exposed to the sun. Although the females lay an average of three or four eggs apiece, there are records of as many as ten from one snake. It is an interesting fact that several females will pick the same hollow and lay their eggs in one large group. As many as forty-eight eggs have been found in one nest. These nests are used year after year. Snake eggs found in their natural nests will often hatch if placed in almost any container surrounded by the material in which they were found, and kept at room temperature. Eggs laid in captivity are much more difficult to care for, and considerable experience is usually needed for satisfactory results.



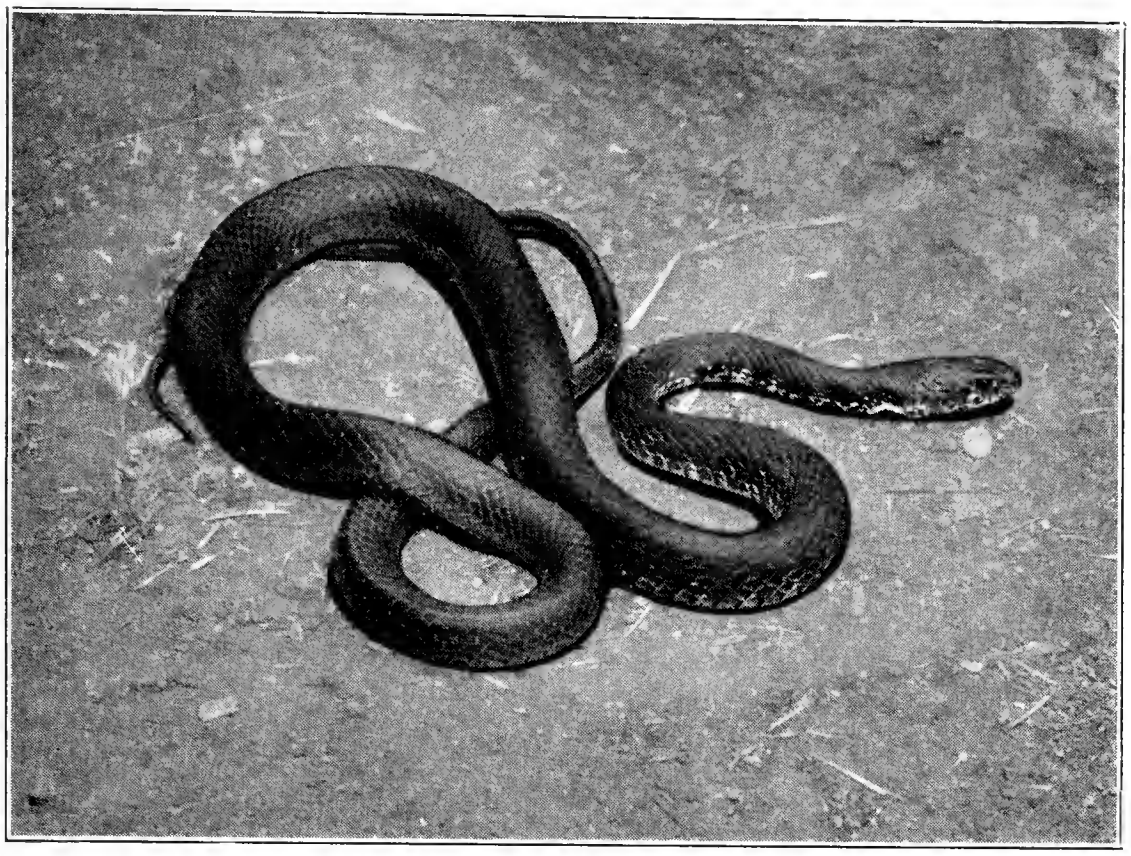
WESTERN YELLOW-BELLIED RACER
Coluber constrictor mormon

This is a close relative of the Blue Racer of the Middle West. In the adults, the back is olive or greenish brown, and the belly yellow with no markings on either surface. The young (lower picture), which are hatched from eggs, are grayish or yellowish with spots and blotches of brown. For this reason the young of this snake appears in a different place from the adult in the Key. This racer is occasionally confused with the Southern California Garter Snake, but can be distinguished without trouble as some pattern is always present on the garter snake, no matter how old or how badly it needs shedding. Also, the scales on the racers are smooth, whereas those on the garters are keeled. The Yellow-bellied Racer is moderately rare from the ocean to the desert foothills, preferring the open, moist meadows or the brush-covered land adjoining them. It often suns itself stretched out on the top of a bush, and if disturbed glides away with what seems to be amazing speed. On three occasions a specimen of this Racer was captured under the same feed box in a pasture near Ramona. All of the racers are nervous snakes, biting at the least provocation, but the Yellow-belly seems to be the best tempered of those found in San Diego County. Its food consists principally of crickets, tree frogs and the young of small rodents. It is one of the few insect-eating snakes. Some specimens take lizards. A three-foot snake is large. This racer does not do well in captivity and, as its looks are not especially striking, is seldom displayed in the Reptile House, but can often be seen crawling about at the foot of the rock-pile in the Snake pit behind the building.

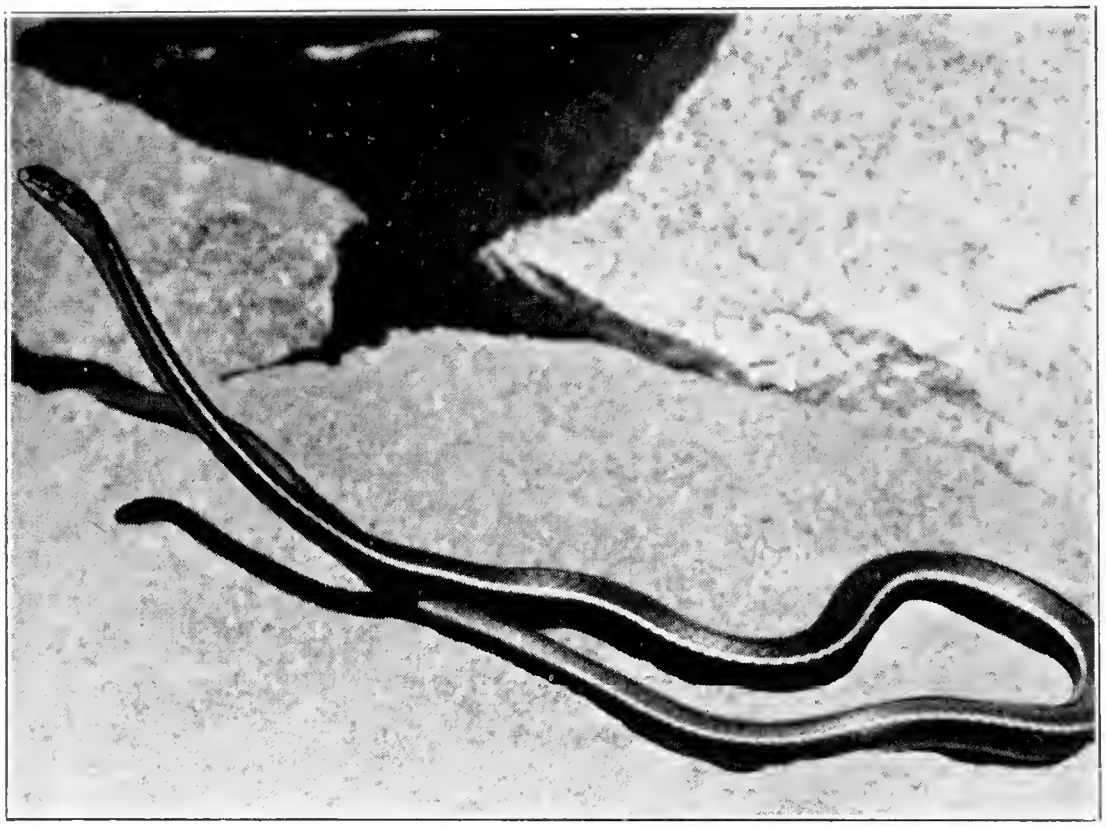


RED RACER
Masticophis flagellum piceus

This snake is not always red. Almost any color will do—grayish, light yellow, dark yellow, brownish, or reddish. Often the scales are light on the edges with dark tips. There are several whitish bands across the neck and forepart of the body. The head and neck are usually dark brown or black. The under-parts are usually pinkish, with numerous spots of yellow, brown or black on the lighter throat. The young (lower picture) which are hatched from eggs, are grayish—blotched or barred across the back with brown. The Red Racer is moderately common from the ocean to the desert in rough fields or brush and is often found in dry creek beds. It climbs well and adds birds' eggs to its bill of fare, which includes birds, small mammals and lizards. There are records of Red Racers six feet long, but four and a half to five feet is to be considered a large snake. The pupil of the eye is round, as is the case with all the racers. I believe it is the fastest snake in San Diego County. With its slim body and long tapering tail it "flows" over the ground or through the brush with what seems to be race-horse speed. However, it actually can travel little faster than a man can walk. When first seen, it is usually on the run, trying to escape, and catching it means a sprint with no hesitation at turns, which are sometimes right-angled ones, with possibly a dive at the finish. It is the most vicious snake in this county. When caught it immediately starts to bite and continues until it is safely in the snake sack. Some specimens will bite even after weeks in captivity. The bite, however, amounts to nothing more than pin-pricks or little scratches.



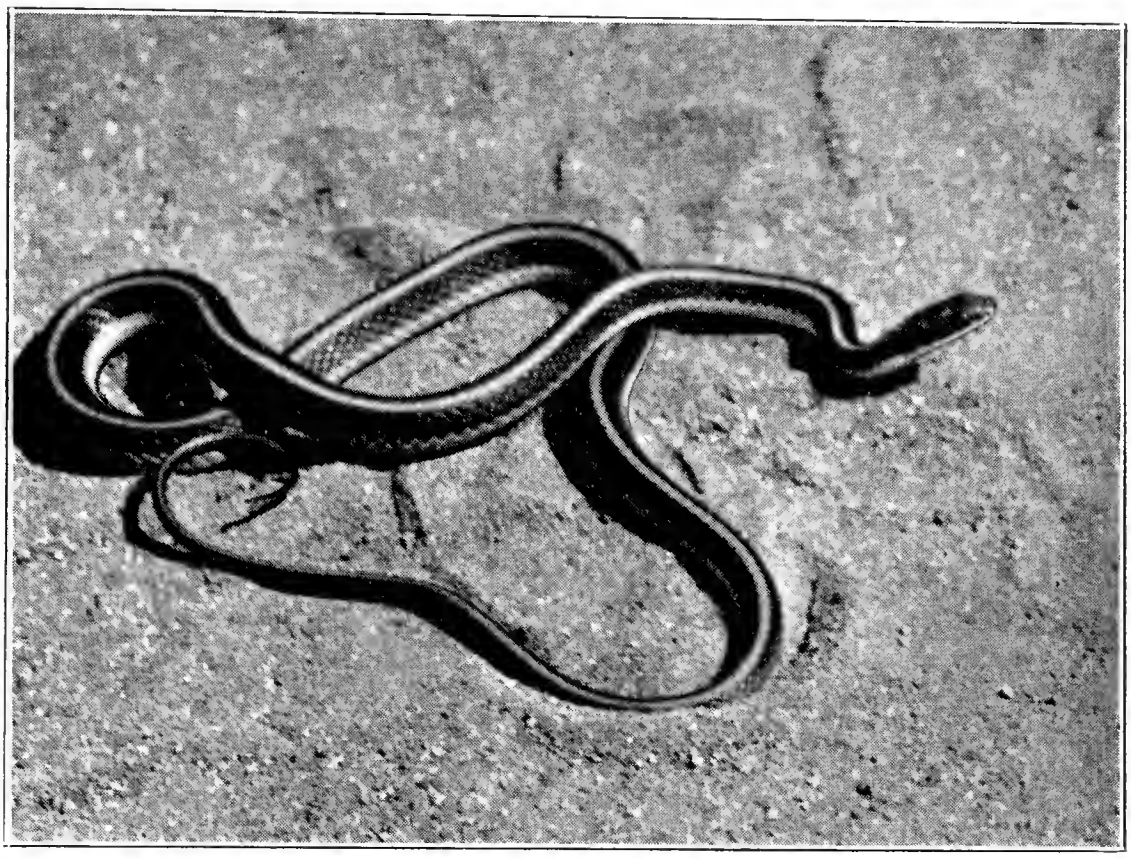
The picture above is that of a black phase of the Red Racer which is called the Black Whip Snake. The color above is solid black and the belly cream color with some dark markings. It is common north of Ensenada in Baja California where many specimens are killed on the road by the cars of tourists, but it is extremely rare in San Diego County and is found only along the southern border. Only a few specimens have been taken in the county, including those found dead on the road. Snakes, so killed, are called DOR and if they are not too badly mutilated, are preserved in alcohol and are just as valuable for study purposes as live snakes. The Black Whip Snake's food habits are like those of the Red Racer, which, grasping its prey, kills it by holding or pushing it down on the ground with a loop of the body. It is surprising how rapidly a large-sized mouse is killed in this fashion; certainly it takes less time than is used by the constrictors. The snake then starts to swallow its prey, usually head first, as is the case with most snakes. Sometimes, however, this is not true, especially when the food is small. Tame snakes of many species will swallow a dead mouse or rat either end first. This is true of many of the snakes now in the Reptile House. All of the racers, being so active, need food more often than most other snakes and are fed every four or five days while living in the Reptile House. Most racers are too nervous to do well in captivity but there is just as much individuality in snakes as in any other animal and some specimens live for years. Racers in general seem to be more alert and have better eyesight than most snakes, as would be expected of snakes that depend on pursuit for their food.



CALIFORNIA STRIPED RACER

Masticophis lateralis

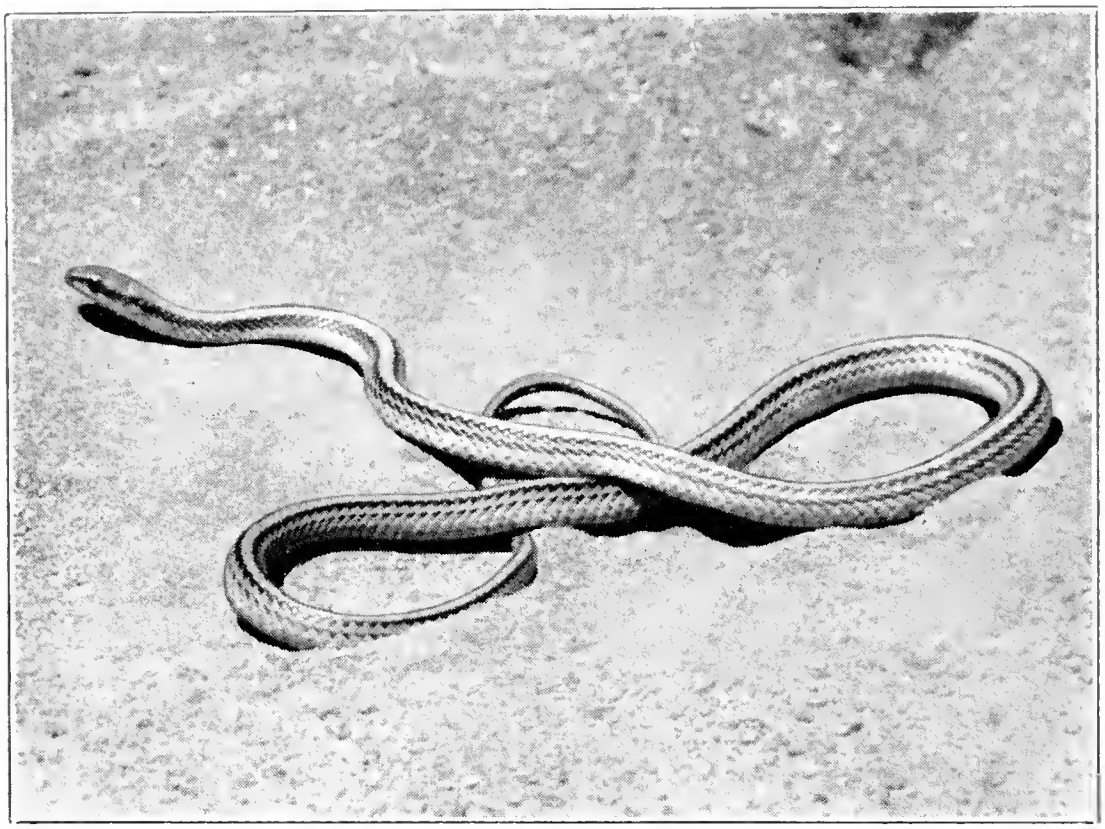
This snake is the most common of the San Diego County racers and in my experience the hardest to catch. I do not believe it is as fast as the Red Racer, but it is usually found in the brush and it's there one moment and gone the next. As someone has cleverly said: When only a part of the body is seen between two roots of a bush, there seems to be no motion; the stripes merely get closer together, the snake gets smaller in size, and then isn't there. The color above is dark-brown, purplish or blackish, with a yellow or white line extending along the body rather high on each side. The belly is yellow; the under-tail a beautiful pink. Four and a half feet is a good-sized specimen. Its food consists of birds, small mammals, lizards and snakes, though it seems to prefer lizards. The Striped Racer has the peculiar habit of holding the head parallel to and a few inches above the ground and moving five or six inches of neck sideways back and forth in a waving motion, the head being held motionless. The young are striped like the parents, and are hatched from eggs. Last year's young are often found under boards, logs, etc., early in April. It is impossible to confuse this snake with any other species because any other snake with stripes on the sides does not have the typical racer head and long slim body. It is common throughout the county from the ocean to the mountains, especially in the chaparral. This snake does not do very well in a cage; in fact, most of the racers are not well suited to a life in captivity. They are too nervous and often injure their noses rubbing against the wire or glass.



CHAPARRAL PATCH-NOSED SNAKE

Salvadora hexalepis virgultea

The Patch-nosed snake is well named as its rostral plate is very large, recurved on top, with the lateral edges free, giving a very patch-like appearance to the end of its nose. The top color is brown or brownish-black, with a tan stripe extending down the middle of the back. Between the brown of the back and the yellow of the belly there are a few rows of light yellowish-brown scales which sometimes give the appearance of side stripes. Usually, however, these scales are the same color as the belly, or nearly so, so that no side stripes are apparent. The top of the head is brown. Although much larger snakes are reported, two and a half feet is average length for a good-sized specimen. The eye is large with a round pupil. The Patch-nosed Snake is closely related to the racers. It is moderately common from the ocean to the desert, usually in the brush. Lizards seem to be its principal food, although mice are sometimes taken. I have been unable to get it to eat anything but lizards in captivity. It is an egg-laying snake. It might be possible to confuse this snake with the California Striped King Snake, but the differences are obvious. The nose of this snake is nothing like that of the King Snake. There are no dark markings on the under-parts of the Patch-nose, whereas the under-tail of the Striped King is always dark. Another snake with which it might be confused is the Pacific Garter Snake—because they both have a stripe down the middle of the back—but the patch on the nose of this snake is its most readily noted distinguishing characteristic.

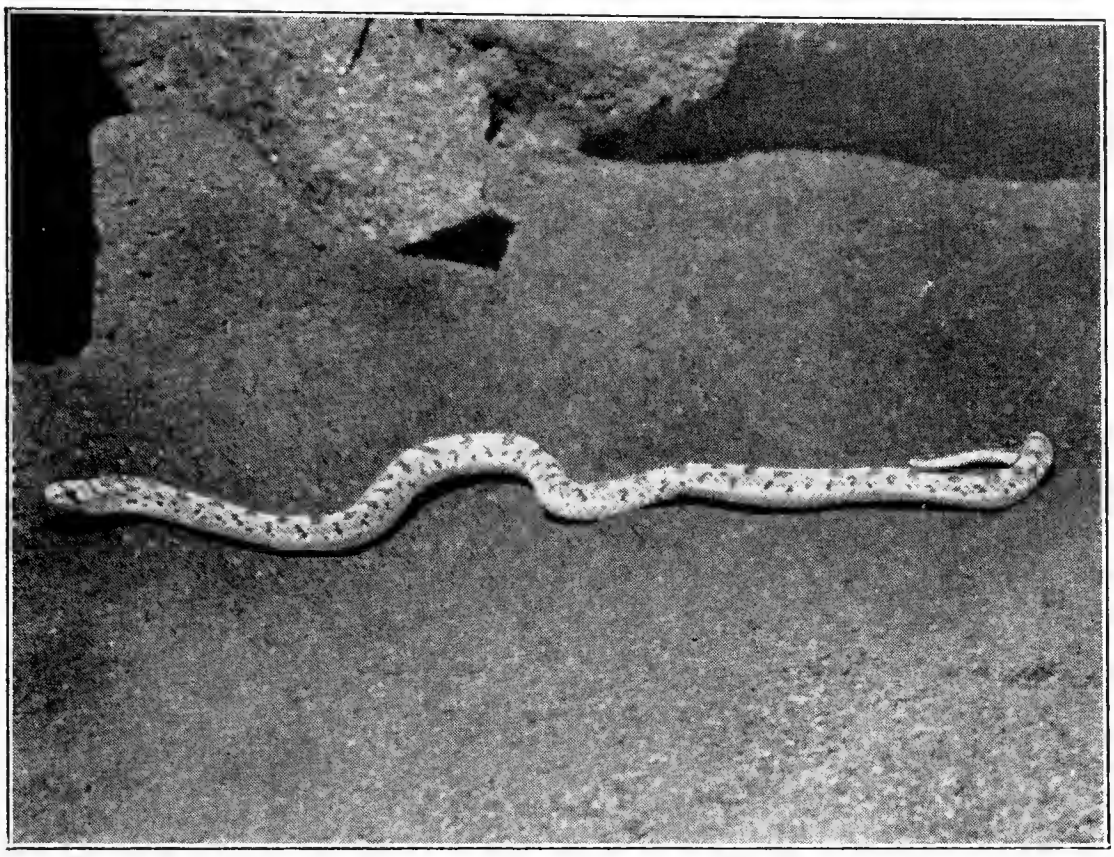


DESERT PATCH-NOSED SNAKE

Salvadora hexalepis hexalepis

This snake is our desert form of the Genus *Salvadora*. It is very similar in appearance to the coastal form but is distinguished at once by the greater width of the light stripe running down the back. Not only is this stripe wider but lighter as well, and the darker adjacent stripes being narrower give a decidedly lighter general appearance to this subspecies. The top of the head is gray. There is no difference in size between the two subspecies, two and a half feet being average length for a good-sized specimen. Their habits are similar. Both are alert, speedy snakes, watching intently a hand moving slowly toward them but seldom attempting to bite. One of the most common and easily caught lizards on the desert is the gecko *(Coleonyx variegatus variegatus)*, a nocturnal lizard about four inches long. This lizard is used in the Reptile House as food for lizard-eating snakes and the Patch-nose takes them with pleasure although they are probably not often eaten in the wild because the snake is diurnal.

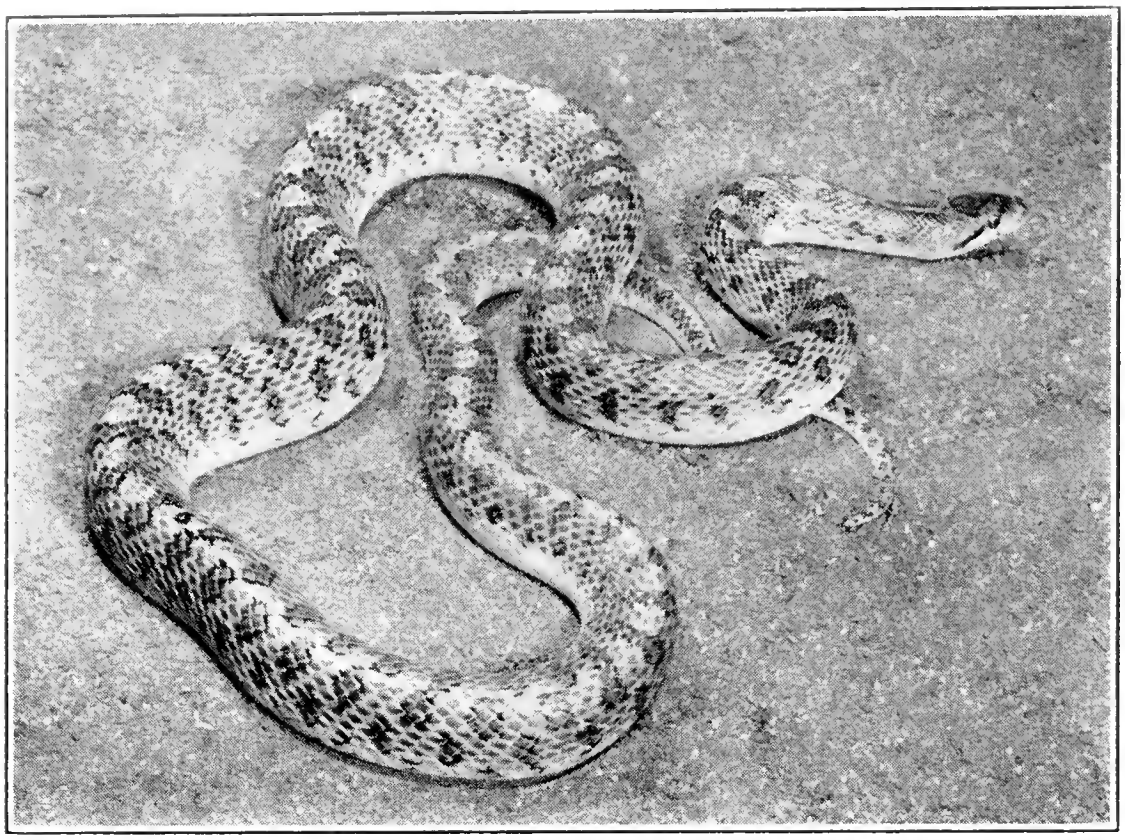
In the descriptions of the various snakes, a request is often made to bring reptiles to the San Diego Zoo. The same request is repeated here. We are always especially anxious to get females full of eggs. We usually get quite a few from the coastal side of the mountains but not very many from the desert. The best season for collecting these pregnant females is from early Spring to the middle of June, which is about the time the eggs are laid. Egg hatching in captivity is an uncertain undertaking at best but a great many things of interest to the science of herpetology can be learned this way and we are constantly working along these lines.



DESERT LEAF-NOSED SNAKE

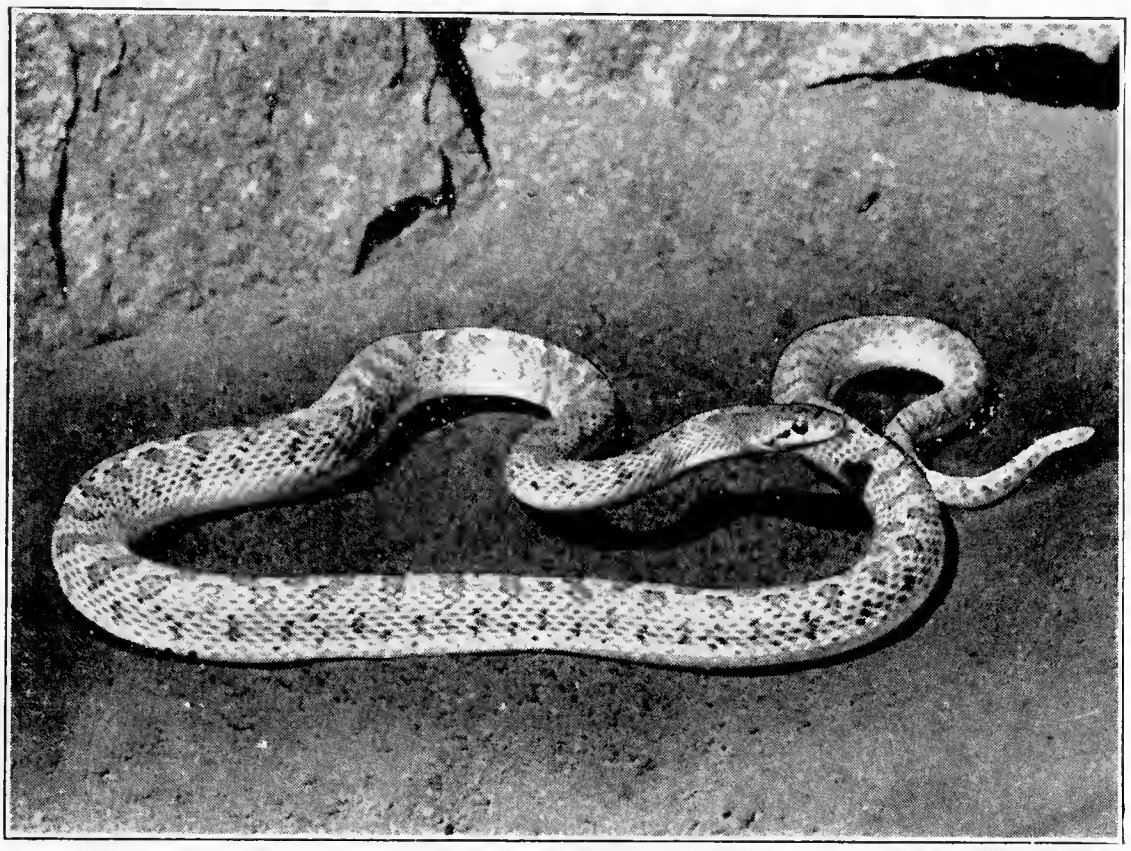
Phyllorhynchus decurtatus perkinsi

The first word of the scientific name of this snake *(Phyllorhynchus)*, which is Greek, is literally translated "leaf nose," which is its common name. Some specimens have smooth scales throughout, and others have faintly keeled scales at least toward the tail. This little snake, seldom more than twelve inches in length, is whitish above with small brown blotches on the back, and one or two rows of brown spots on the sides. The belly is white without markings. The nose-plate is very much enlarged with free lateral edges. It has a large eye, in proportion to its size, with an elliptical pupil. This is one of the common snakes of the desert and is nocturnal. Until a few years ago, it was believed to be extremely rare, only four specimens having been taken in this County from January, 1923, to December, 1930. Now, however, with the paved road in Borrego Valley and the technique of night collecting, more than four are often taken during one night's hunting. The word "rare" can be used with two distinct meanings. There may be few snakes of a given species in a certain locality and therefore the snake is rare; or few snakes may be collected, due to faulty technique in collecting, inaccessibility of location, etc., making the snake appear rare. The latter probably is true of many of our so-called rare snakes. The Leaf-nosed Snake feeds upon small lizards and their eggs. Small specimens tear off and eat gecko tails. Nothing seems to be known of its breeding habits except that the young are hatched from eggs. When annoyed it puffs out its throat vertically, apparently with the intention of looking formidable, but with such a little snake the valiant gesture is merely ridiculous.



CALIFORNIA GLOSSY SNAKE
Arizona elegans occidentalis

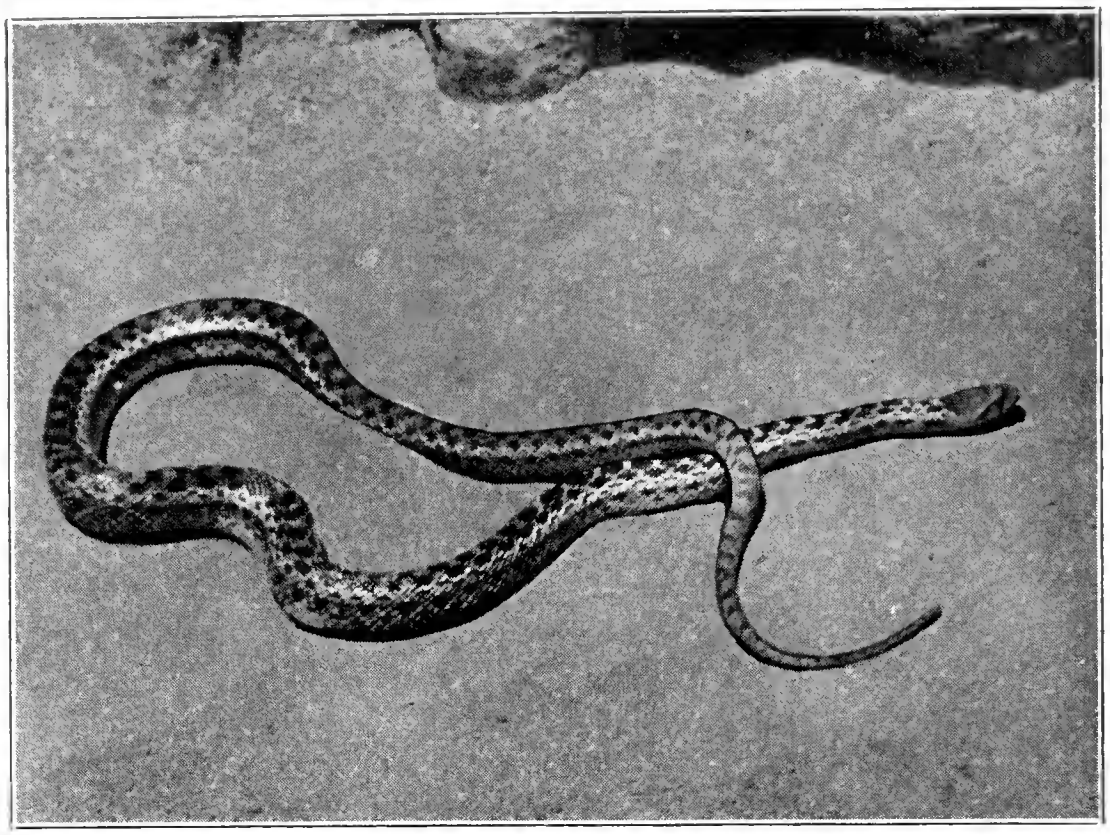
This moderately rare snake, a large specimen of which would be about three feet long, is found from the ocean to the desert foothills but not in the high mountains. It is a brownish snake, marked with a series of darker-brown blotches along the back. The blotches are about equal in extent to the interspaces between them. There are additional series of smaller blotches along the sides. The edges of the belly plates are marked with dark, otherwise the belly is light. This is the coastal subspecies of our Desert Glossy Snake and is very similar in appearance but much darker in color. Although there are outstanding exceptions it is a general rule that when two closely related snakes inhabit both the desert and the more humid areas, the desert form is lighter in color. The pupil of the eye looks round but on careful examination in bright light will be found to be slightly elliptical. This snake is often confused with the common Gopher Snake but can be immediately distinguished by its smooth scales, those of the Gopher Snake being rough or keeled. The Gopher Snake is much more common in the coastal area than the Glossy Snake and, surprisingly, the exact opposite is true in the Desert. The Glossy Snake is nocturnal, being seldom seen in the daytime. Its food consists principally of lizards and small rodents. This snake does not make a satisfactory display in the Reptile House because it stays buried in the sand, out of sight, most of the time.



DESERT GLOSSY SNAKE

Arizona elegans eburnata

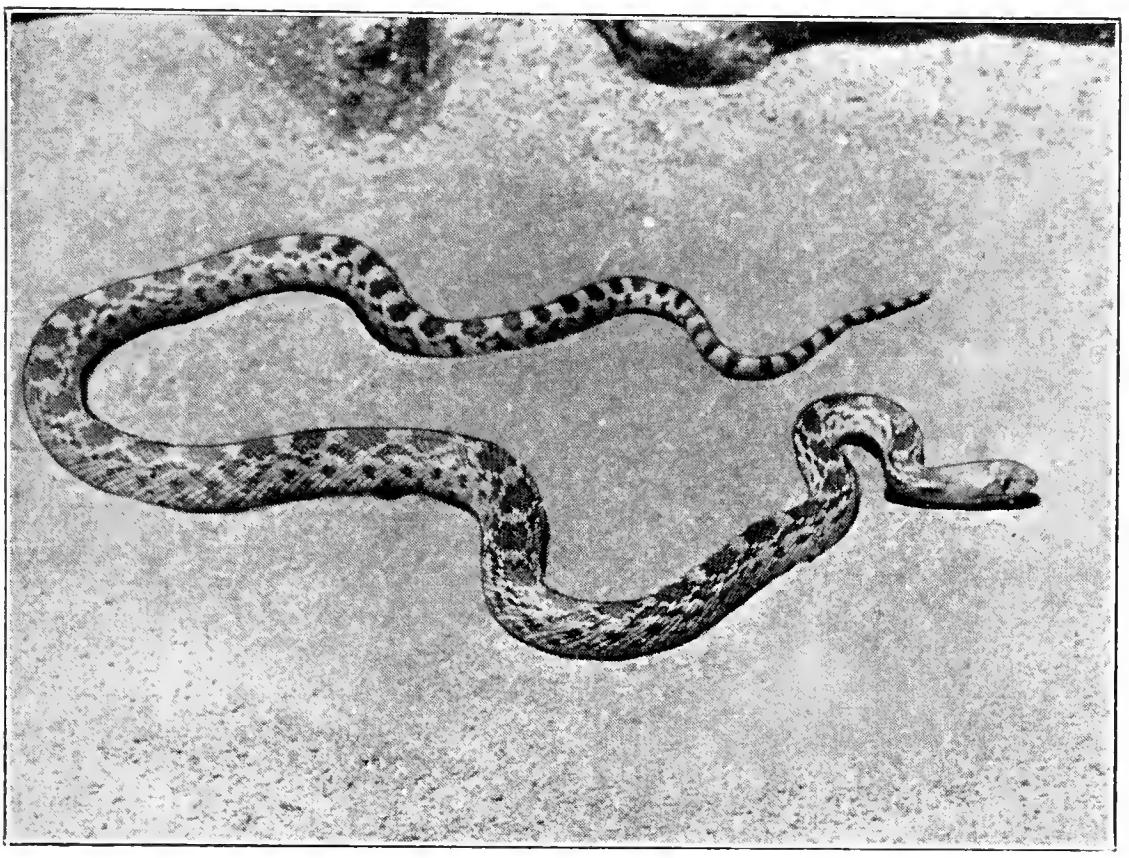
This snake is a desert subspecies closely related to the California Glossy Snake of the coastal area and is common in Borrego Valley. It is a cream-colored snake with light-brown blotches. The spaces along the back between the blotches are much wider than the blotches themselves. It is much lighter in color than its coastal cousin and lacks the dark marks on the edges of the belly plates. Although the pupil of the eye is actually slightly elliptical it looks round unless examined carefully in strong light. It is often confused with the Desert Gopher Snake because of the somewhat similar markings but can be distinguished at once by its smooth scales, those of the Gopher Snake being rough or keeled; also the Glossy Snake is much more common on the desert than the Gopher, a condition exactly opposite to that of their coastal subspecies. This is another of the snakes most often caught while crossing the desert roads at night. As one drives slowly along, the Desert Glossy Snake appears a moving white line in the beam of the headlights. When alarmed, its movements are more like the frantic wrigglings of the Garter Snake than the easy flowing motion of the racers. It is gentle and seldom attempts to bite. In captivity, it eats lizards, but (for me, at least) most specimens refuse mice, seeming to be afraid even of small ones. However, hair has been found in the stomach contents of wild specimens and in other snake collections captives have fed regularly on birds and small mice.



SAN DIEGAN GOPHER SNAKE

Pituophis catenifer annectens

This is the most common snake in San Diego County, being found from the ocean to the desert foothills; and also the most beneficial snake in killing mice, rats and other rodents that are so destructive of crops. Above, this snake is yellowish with a series of blotches of black (or occasionally dark brown) down the middle of the back, with other alternating series of blotches along each side, sometimes giving the appearance of a dark snake with yellow markings. Often the ground-color of the tail is reddish. There seem to be three distinct patterns on the back, the first third being mostly black, the rest of the body yellowish with dark blotches, and the tail yellow or reddish with dark cross-bands. The under-parts are yellow or orange with dark spots on the edges of some of the belly plates. In June, 1940, we received from Corona a giant Gopher Snake, six feet two and a half inches long, but four and a half feet is usually considered a large specimen. In June or July the female lays from six to a dozen eggs which hatch about two months later. There is a sounding-board flap of skin in the mouth of the Gopher Snake which makes possible a very loud hiss when the snake expels its breath. If the snake is picked up at once when found, it usually will not bite, and after a few moments will be content to be held, but if there is any delay in capturing it, the snake usually tries to bluff its way out, making great lunges, hissing very loudly, and biting at the first opportunity.



SONORAN GOPHER SNAKE

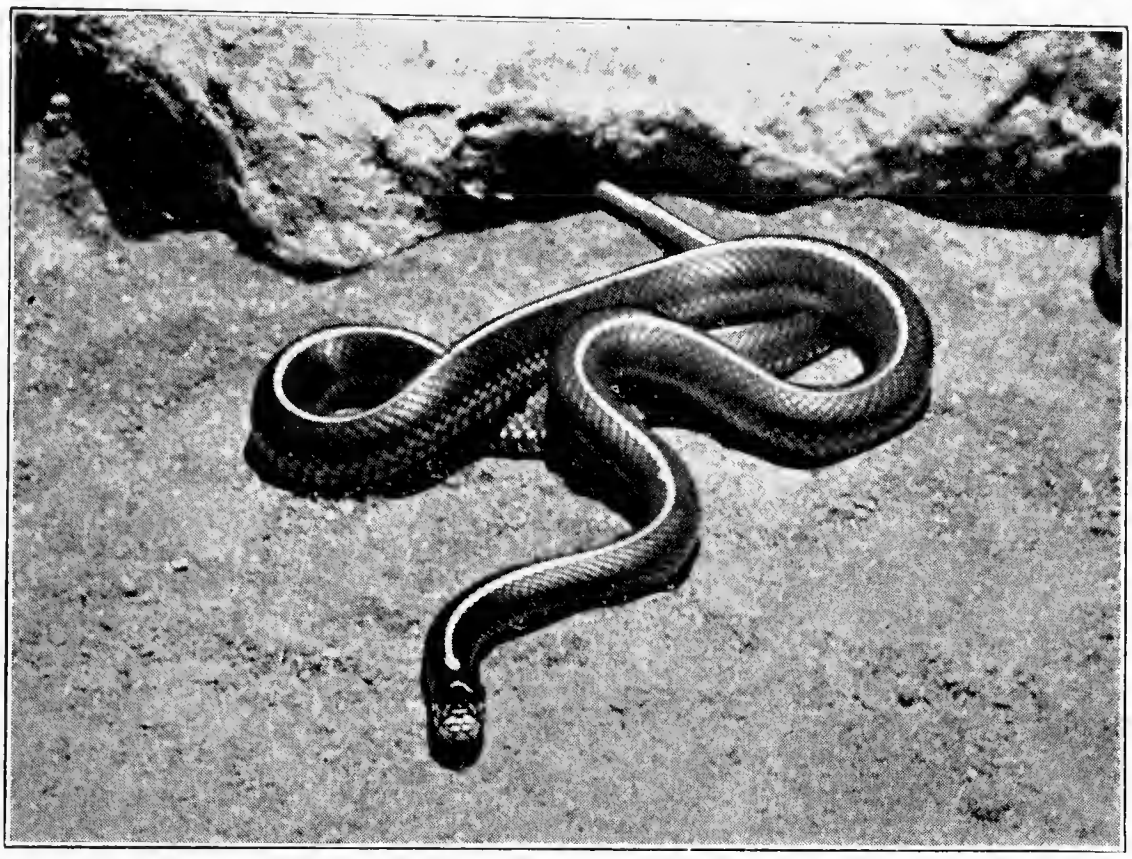
Pituophis catenifer affinis

The preceding snake is the most common in San Diego County, whereas this is one of the rarest, being found only in the desert foothills and the Borrego area, although common in the irrigated areas of Imperial County. It is confused with its near relative, the San Diegan Gopher Snake, but is much lighter in color and the blotches are brown. It never has the red on the tail which is sometimes found on the tail of its San Diego cousin. Also, this is a desert snake and is not to be expected elsewhere. The Sonoran Gopher Snake, as well as most other desert snakes, prefers for its hunting the cool of the evening or night rather than the heat of the day. Its food habits are probably the same as those of the common Gopher Snake although in captivity it seems to prefer smaller rodents than the latter. It is not usually taken on the bare desert, but rather in the more bushy places. This snake has the same sounding-board in the mouth (permitting it to make loud hisses) that is present in the mouths of all snakes of the genus *Pituophis*. For this reason the Gopher Snake is sometimes called "Blow Snake" and "Bull Snake." Both names are very appropriate. It vibrates its tail rapidly when annoyed and if the tail happens to be in dry leaves a sound is made somewhat like that of a rattlesnake. This vibrating of the tail is a common habit with several other genera of snakes. The Sonoran Gopher does well in captivity, soon losing all nervousness and rushing to accept food from the fingers when its cage door is opened. On cage cleaning day a smell of the shovel convinces the snake that no food is forthcoming and, losing all interest in the proceeding, it coils up in a corner.

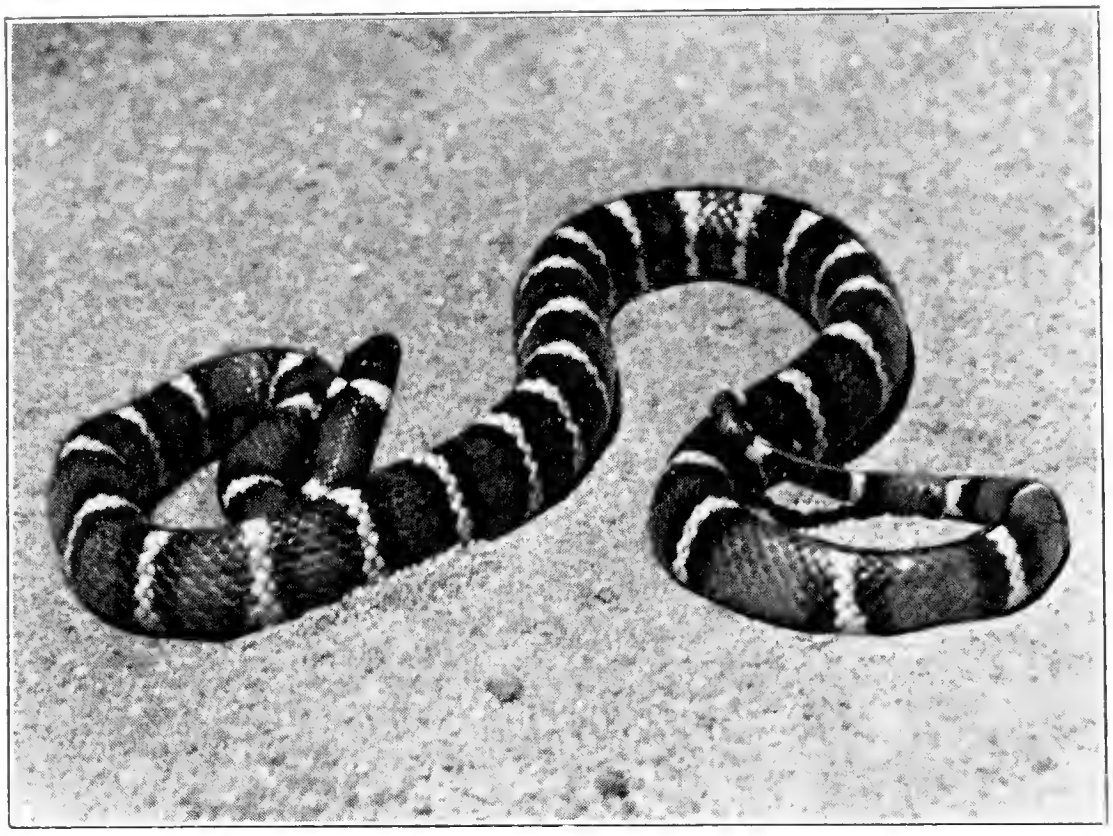
CALIFORNIA BANDED KING SNAKE
Lampropeltis getulus californiæ

This beautiful snake is common, being found from the ocean to the desert, often in the brush in the neighborhood of streams. The colors are brown, dark-brown, purplish, or almost black with yellowish or whitish markings; the pattern is in cross-bands. The light cross-bands are fairly narrow on the back, but become broader on the sides. The dark bands continue in more or less the same pattern across the belly. All King Snakes lay eggs, have eyes with round pupils, and are fairly thick in body with short tails; there is very little constriction at the neck. With all their ferocity toward other snakes, King Snakes are usually very gentle as far as man is concerned, seldom biting even when freshly captured.

A word might be said about the capturing of harmless snakes. No matter how one goes about catching a Red Racer, the probability of being bitten is high, but with other harmless snakes any attempt to grab the head of most of them results in a bite whereas if the snake is quickly but quietly picked up, not squeezed at all but permitted to slide from hand to hand until placed in a snake-sack, few accidents occur. This is especially true of the King Snake. Young snakes of all species are usually much more pugnacious than older ones. Even newly hatched babies of various species with part of the body still in the egg, will rear back and lunge at a finger. Sometimes the intention to bite is obvious but often the finger is struck by the closed mouth.



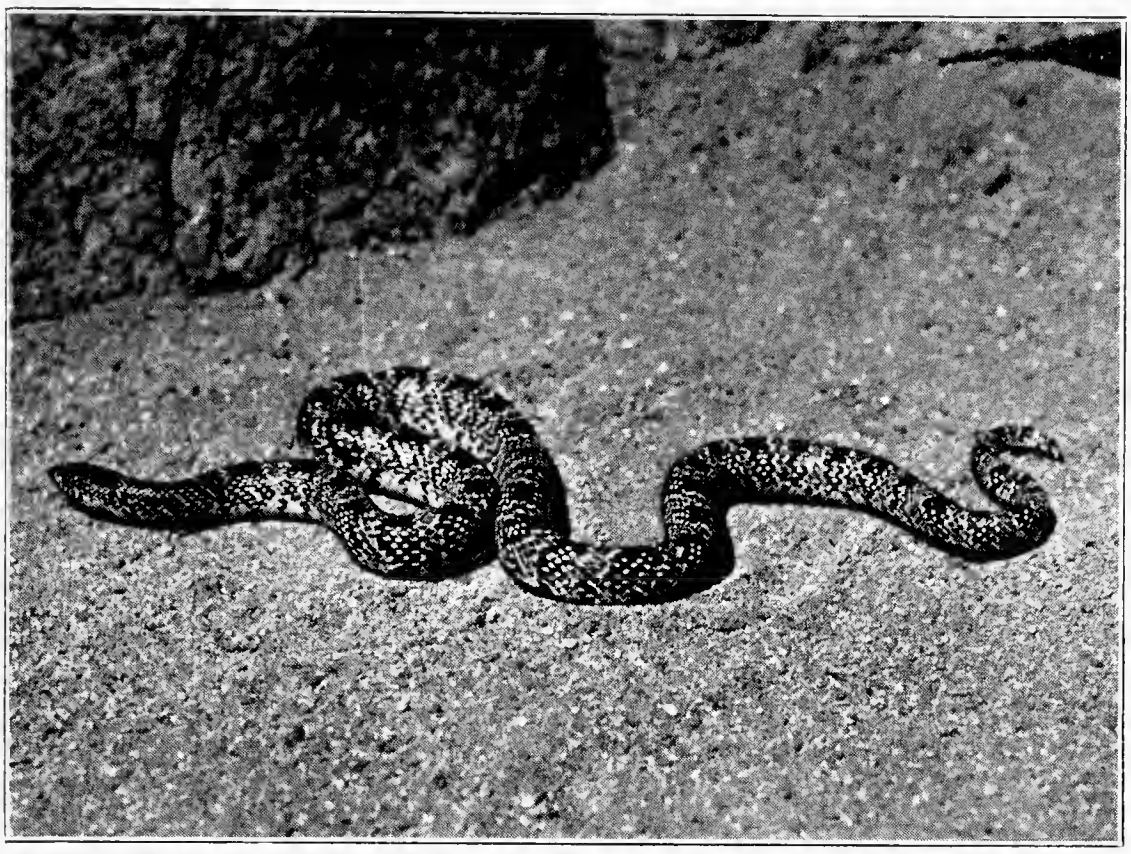
A striped phase of our local King Snake, called the California Striped King Snake, is pictured above. The colors are the same as those of the Banded King but the pattern is different. Down the middle of the back is a narrow yellowish or whitish line and sometimes just above the belly on each side is a line of light spots. Often the back line is broken into short lines or dashes. The under-parts may be light color, or mottled, or mostly dark, but always the under-tail is dark. Very rarely a specimen is found having a stripe (or dashes) along part of the back, and the rest banded like the California Banded King Snake. A snake of this description would not, of course, be identified by using the Key. Most of the King Snakes eat other snakes, often longer than themselves, as well as lizards, rodents, and occasionally birds and their eggs. King Snakes apparently are immune to the venom of the rattlesnake and eat rattlers as well as harmless snakes. It is not true, however, that a King Snake will go out of its way to kill a rattler. It is a very powerful constrictor and usually squeezes its victim to death, wrapping its whole body if necessary around its prey in tight coils. Although four foot specimens of the Striped King are sometimes found, the usual length is about three feet. It lays eggs which hatch about two months later. I do not believe it could be confused with any other back-striped snake, as the dark under-tail would identify it.



MOUNTAIN KING SNAKE

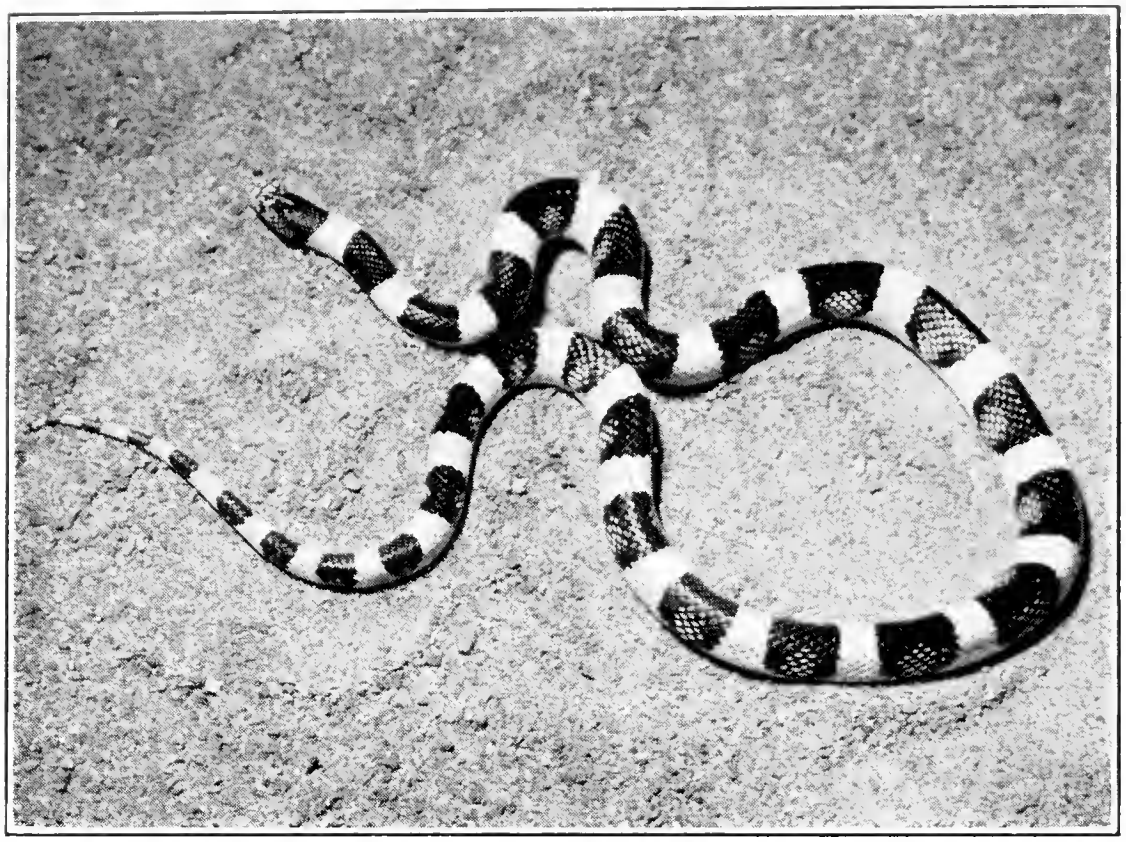
Lampropeltis zonata zonata

This is the most beautiful snake in San Diego County. It is often called Coral King Snake and is moderately rare, being found only in the timber in the mountains. We get more specimens from around Julian than any other one place. It is brilliantly banded with rings of red, black and white. The white rings are usually the same width all the way around, but the black and red vary a great deal, the red being often more or less absent toward the tail. Often someone comes to the Reptile House saying that he has killed a poisonous Coral Snake. There are three snakes in San Diego County that are often confused with the poisonous snake because they have similar colors, but with the exception of the Mountain King Snake they do not have the bands entirely encircling the body as does the poisonous Coral Snake, which *does not* occur in California. Although both snakes are ringed with the same colors, the order of the rings is different. In the non-poisonous Mountain King Snake there is a black ring on each side of the white ring (twice as many black rings as white), the colors being in this order—red, black, white, black, red, etc. In the *poisonous Coral Snake,* the order is red, white, black, white, red, etc. The food of the Mountain King Snake is lizards and small mice. It also eats snakes. Two feet is large, but specimens over 33 inches long have been taken. In the Reptile House it is not feasible to try to exhibit the poisonous Coral Snake because it stays burrowed under the sand out of sight. The best we can do is to show the Mountain King Snake and explain the difference on the card.



WESTERN LONG-NOSED SNAKE
Rhinocheilus lecontei lecontei

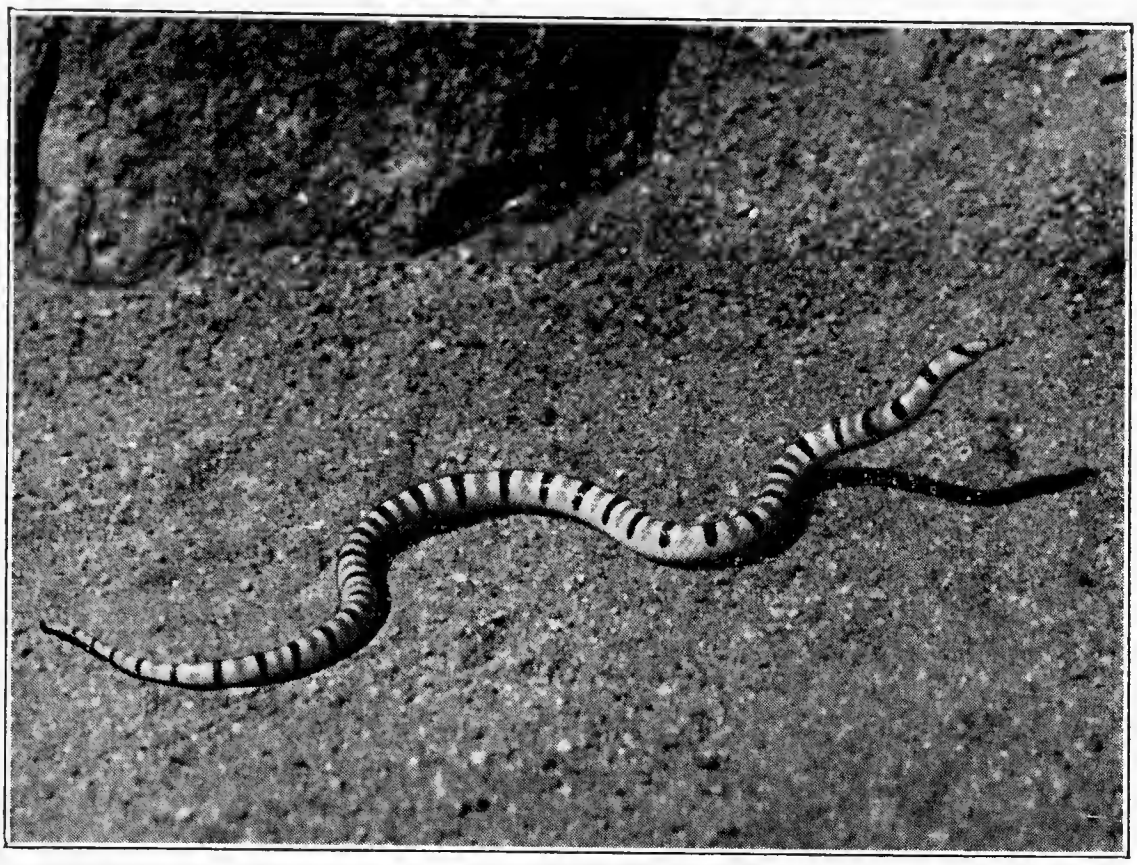
This is a very speckled snake. The upper surface has a series of dark-brown or black blotches with intervening spaces of yellow and red. Except on the top of the back, the dark scales have light spots on them, and the light scales have dark spots. With the speckled appearance, I do not believe this snake should be confused with any other in San Diego County. It sometimes is, however, on account of the red, yellow, and black, but no other snake with these colors has such a speckled appearance, and the single row of plates under all or most of its tail will serve to identify it. It is moderately common throughout the County from the ocean to the desert, (but not above an altitude of about 4,000 feet), being usually found in the brush. Large specimens are about two and a half feet long. The pupil of the eye is round. The food of this snake consists principally of lizards and small rodents, although snakes are sometimes eaten. The young are hatched from eggs. The Long-nosed Snake is crepuscular, preferring the dusk to the daytime. As is the case with all the nocturnal or crepuscular snakes, it is often captured in the daytime by turning over boards, stones, fallen signs, and anything else that lies flat, or nearly so, on the ground. Some species of snakes can be caught by prying off the flakes or cap rocks from the granite boulders. The Long-nosed Snake is a beautiful snake and does well in captivity, but it does not make a very satisfactory display in the Reptile House because of its burrowing habits, as it is under the sand, out of sight, most of the time.



DESERT LONG-NOSED SNAKE

Rhinocheilus lecontei clarus

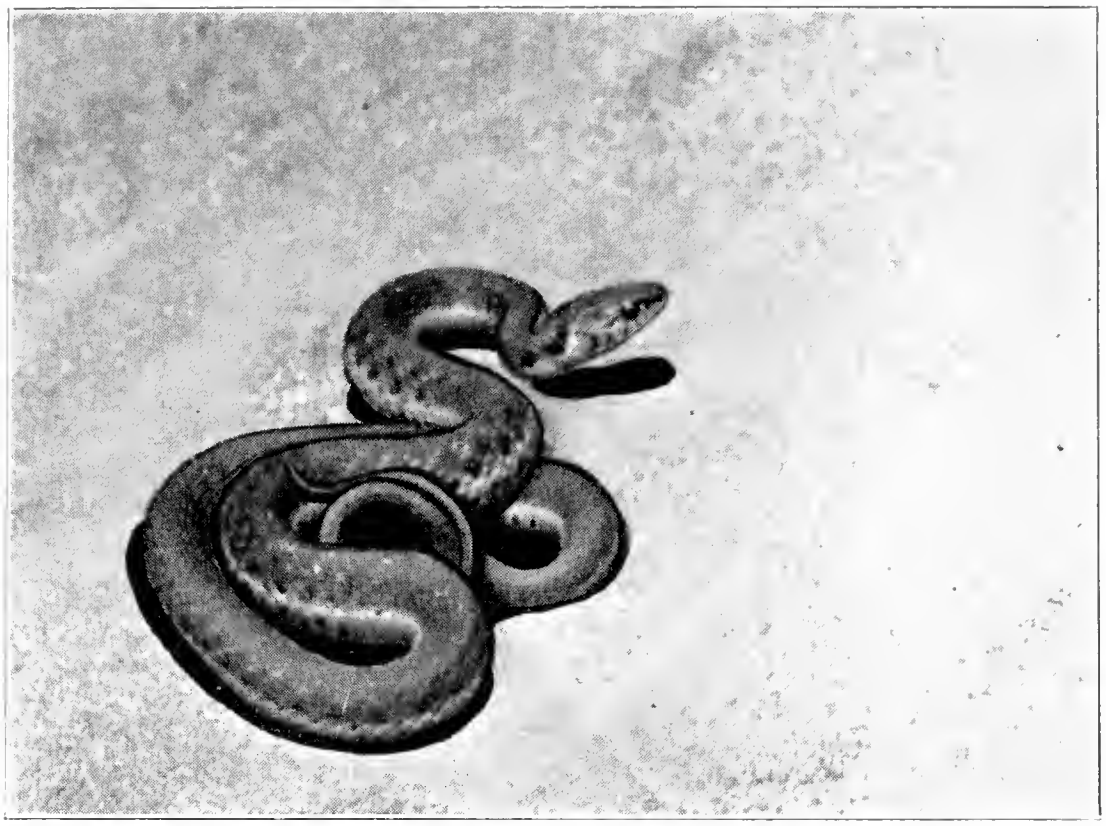
The Desert Long-nosed Snake is typically black and white. Occasionally there is a little sprinkling of pink in the white, and often on the lower side of the black blotches there are a few scales with white centers, but this snake does not have the speckled appearance of the Western Long-nosed Snake. The black blotches generally end at the side in a straight line rather than a point as is the case with its coastal representative. It might be confused with the Banded King Snake but the shape of the black blotches is different. The black bands of the King Snake continue in more or less the same pattern across the belly whereas in this snake they do not. Also, the Long-nosed Snake has a single row of plates under all or most of its tail, whereas in the King Snake these plates are divided, making a double row. As its name implies, the Desert Long-nosed Snake is found in the desert, and being a nocturnal snake, is often picked up at night in the beam of the headlights. Its principal food is lizards but it eats small rodents and snakes as well. Large specimens are about two and a half feet in length. The pupil of the eye is round. The young are hatched from eggs in late August or early September as is the case with most of our egg-laying snakes. Although the Long-nosed Snakes vibrate the tail rapidly when annoyed, as do so many other snakes, they seldom offer to bite. As has been said before, the bite of a harmless snake amounts to nothing more than a few pin pricks or small scratches. In the case of small snakes, the teeth are too small to draw blood. The only precaution that should be taken is the same as when the skin is broken from any cause. A little iodine — and forget it.



SHOVEL-NOSED GROUND SNAKE

Chionactis occipitalis annulata

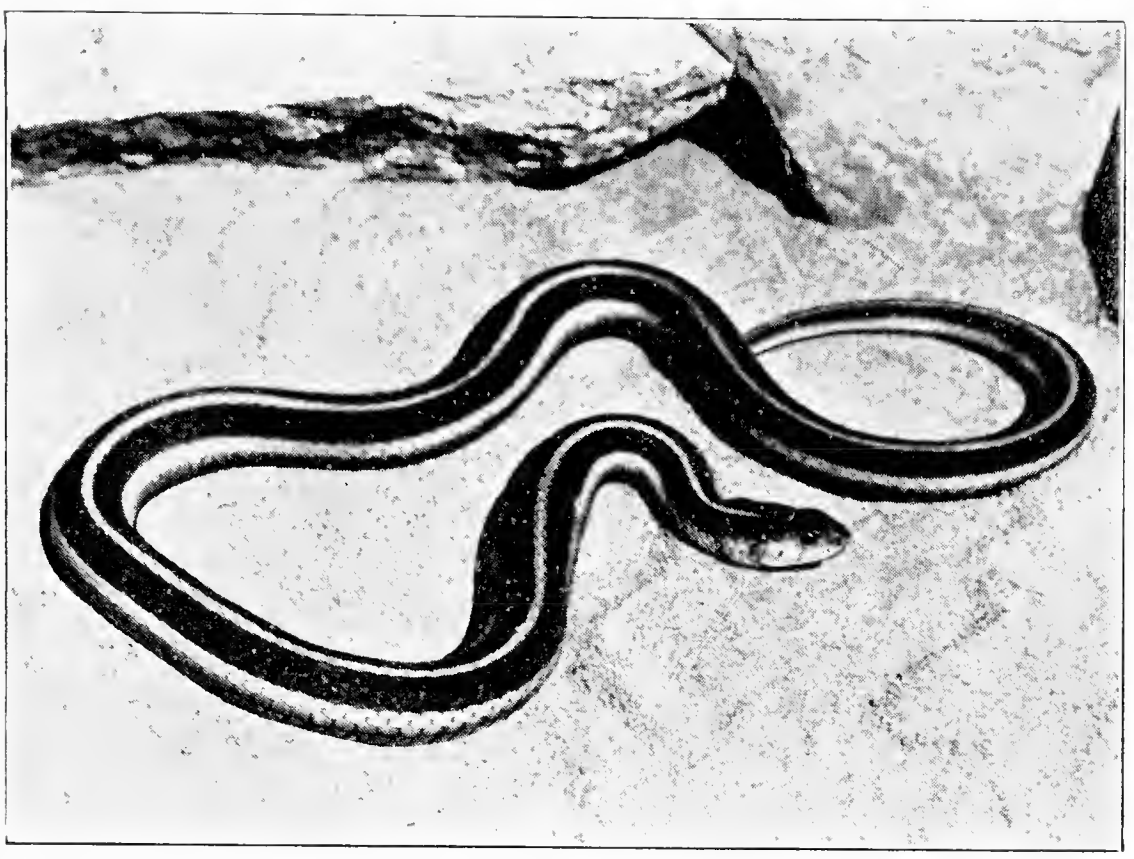
This is a nocturnal snake of small size. Ten or eleven inches is quite large, although record breakers come as long as sixteen or seventeen inches. Most specimens are no larger around than a lead pencil; the tail is short and quickly tapers to a point. It is found only in the desert, where it is common. It is a pretty snake, the top surface being yellow or cream with black bands; between the bands there is usually, but not always, a half-band of orange-red. The under surface of the tail is crossed by the dark bands and farther forward the belly is sometimes marked with blackish bands that usually coincide with the dark ones above. The upper jaw is flat and very protruding, giving the snake its common name. The under jaw fits up and inside the upper jaw so that nothing can get into the mouth while the snake goes burrowing through the sand—"Swimming through the sand," as someone has said. The pupil of the eye is round. The food probably consists principally of grubs, lizards and their eggs. They eat small scorpions both in the wild and in captivity. When this snake has red in its coloration, with its more or less band-like pattern of yellow, black and red, its description might suggest a Mountain King Snake, but a glance at the illustration shows how impossible it would be to confuse them. There is almost no similarity except color. The Shovel-nose is a hot tempered little fellow, especially the younger individuals. Most specimens resent being handled and assume a defensive attitude when a hand is moved near them. They are quick to strike but as the teeth are too small even to catch in the skin, it is difficult to tell whether they try to bite or just hit with the mouth closed. However, the mouth is often open and apparently the intention is to bite. It seems to be true of most snakes that the younger they are, the worse tempered.



SOUTHERN CALIFORNIA GARTER SNAKE

Thamnophis elegans hammondii

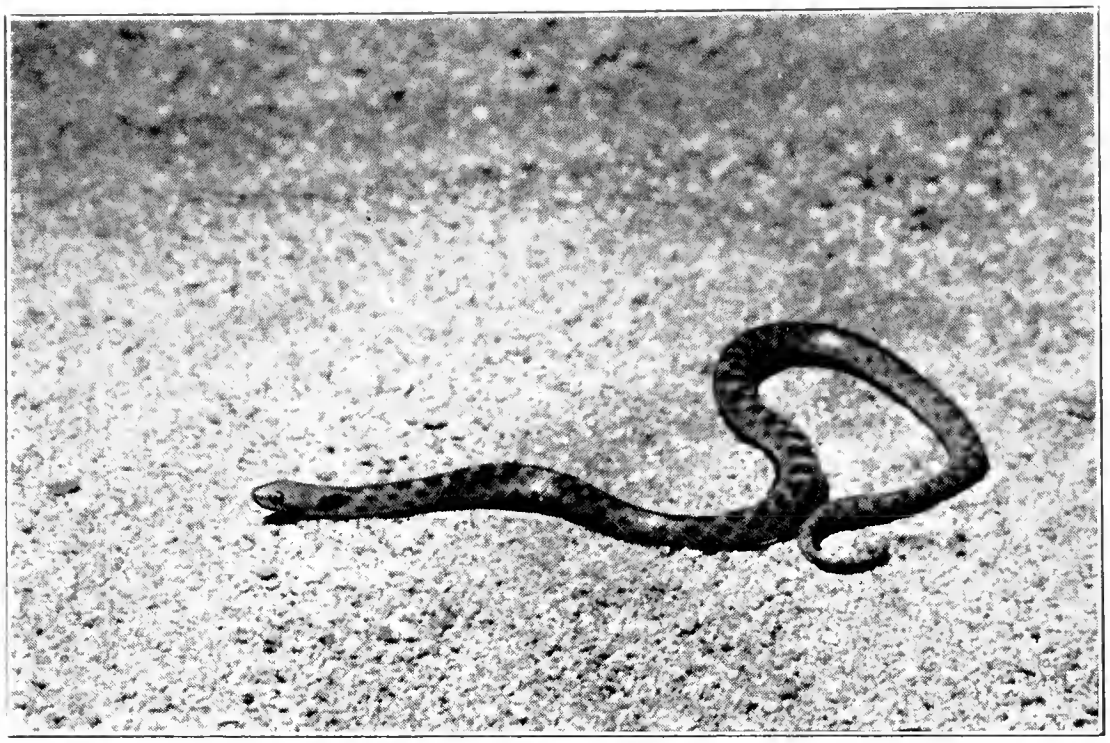
The race each year for first place as the most common snake in San Diego County is between this snake and the San Diegan Gopher Snake, with the honors usually going to the Gopher Snake. This Garter Snake is found beside almost any permanent stream or pond from the ocean to the desert foothills. The upper surface is dark with no central stripe. The side stripes are yellow and not always distinct. Above these stripes is a series of black squarish spots with yellowish spots between. Specks of white are found in both yellow and black spots. This side coloring is almost unnoticeable in old specimens, except when distended with food. The belly varies from dull yellow to dull orange-red. There being no stripe down the back at once removes all chance of confusing this snake with the succeeding garter snake, and the presence of some pattern, however indistinct, separates it in looks from the Yellow-bellied Racer. Garter Snakes have keeled scales whereas those of the Yellow-bellied Racer are smooth. None of the snakes in San Diego County except the two garter snakes has a red tongue with a black tip. The Garter Snake is never far from water, into which it dives at the first sign of danger. If not caught before entering the water, the chances are in favor of the snake, which swims to the bottom or behind a clump of plants, and remains perfectly still until the search is abandoned. Its food consists principally of frogs, toads and fish. The pupil of the eye is round, as it is in all the garter snakes. Specimens longer than forty inches have been taken, but usual garters are very much shorter — two to two and a half feet.



PACIFIC GARTER SNAKE

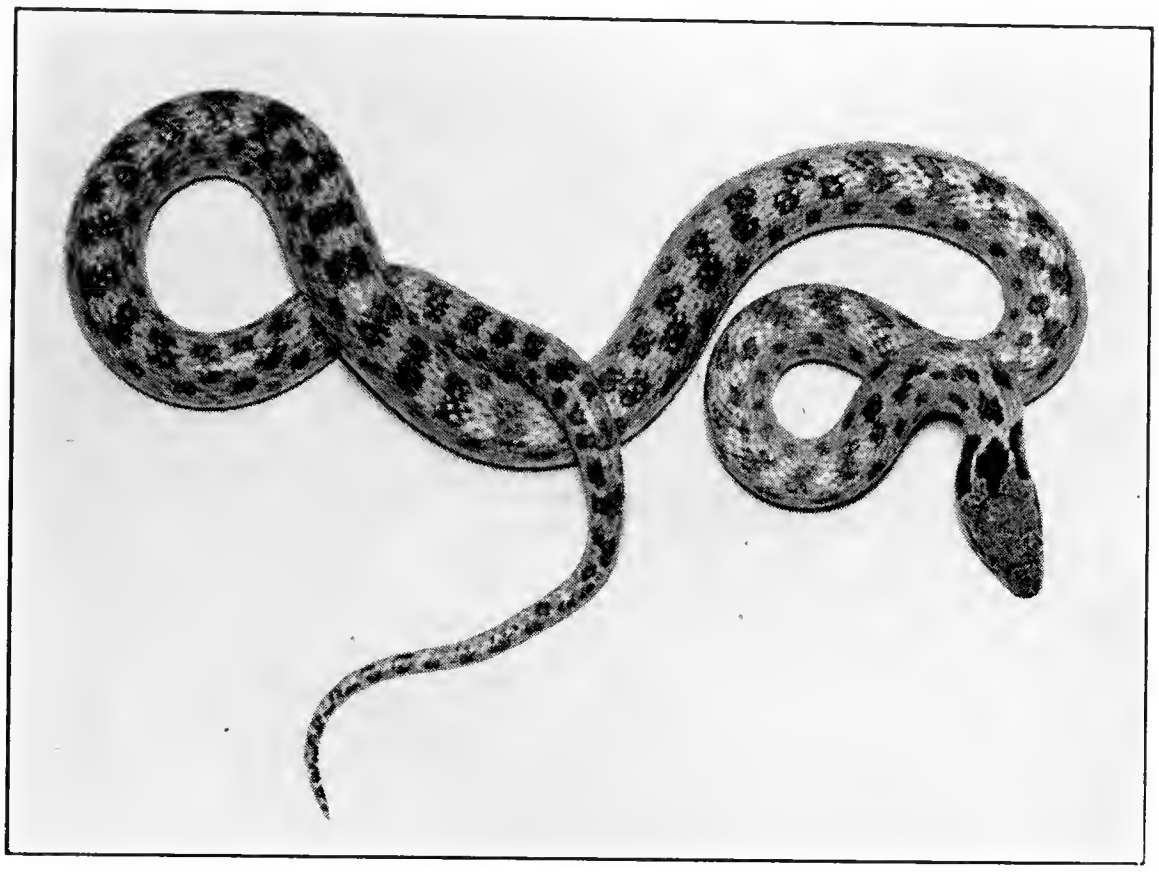
Thamnophis ordinatus infernalis

Individuals of this species differ so much in the details of coloration, that it would be impossible to describe them all. Most Pacific Garter Snakes found in San Diego County will be colored as follows: There is a yellowish line down the middle of the back, and a line of about the same color, or sometimes bluish, along each side on the second and third rows of scales. The belly is bluish or sometimes even the color of the side lines, which makes the snake appear to have only one stripe—the one on the middle of the back. The color between the stripes is black with red bars going up from the belly; sometimes these bars are very prominent and sometimes are represented only by red skin between some of the black scales. In this County it is a rare snake, all specimens having been taken in the northern part. Its food is almost entirely tadpoles, frogs, toads, and fish. The young snakes enjoy earthworms. Three feet is a very large snake; usual specimens are about two feet in length. When first caught, all of the garter snakes give off a very offensive odor which comes from a fluid expelled from glands through the anal opening. Once in captivity, this bad habit is forgotten, and the Garter Snake makes a splendid pet. Taking strips of fish when frogs are not available makes them easy to care for, and a box of sand or earth, with a pan of water in which to bathe, is all that is required. The young are born alive. We have had females of different species of Garter Snakes give birth to as few as three, and to as many as fifty-three young at one time.



COASTAL SPOTTED NIGHT SNAKE
Hypsiglena torquata klauberi

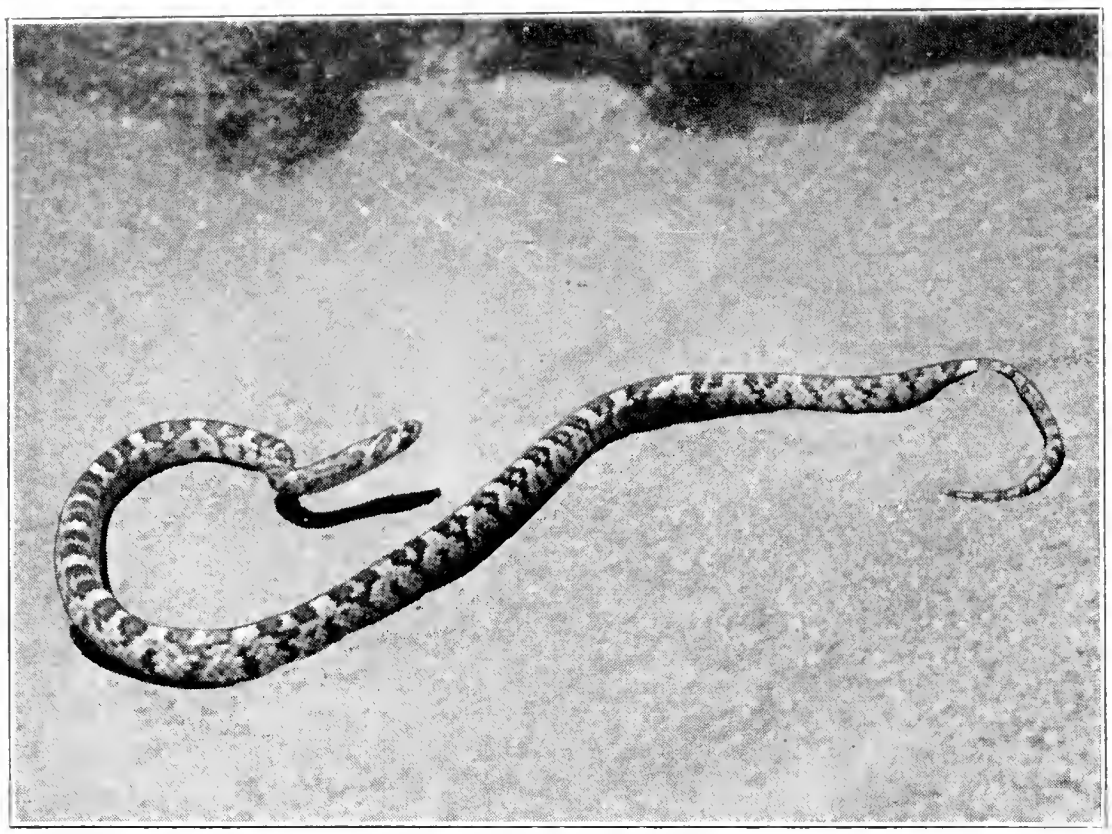
This small snake is yellowish above, covered with so many brown specks as to give it a light-brownish appearance. There are several rows of brown blotches along the back and sides, the larger blotches being along the back, often in two rows. There is a much larger brown blotch on each side of the neck. The belly is yellowish or whitish without markings except occasional specks of brown under the tail. A very large specimen is eighteen inches in length, though most individuals are less than a foot. It is a nocturnal snake with an elliptical pupil. This is one of the three mildly poisonous snakes in San Diego County but is absolutely harmless to man. It never attempts to bite, its teeth are too small to break the skin, and the venom is barely strong enough to subdue its prey, which consists principally of small lizards. It also eats baby snakes, slender salamanders, tree frogs and probably grubs. Usually taken under rocks, it is found from the ocean through the mountainous regions. It is moderately rare in San Diego County, although we get several each year. The Spotted Night Snake was first described from a specimen taken near Cape San Lucas at the tip of Baja California. We received three specimens from there some time ago and were astonished to learn that the natives consider it one of the most deadly snakes, although there are three different species of rattlesnake at the Cape. It may seem surprising that this snake, absolutely harmless to man, could be mistaken for a dangerous one, but here in the United States, as well as all over the world, people do not take the trouble to learn to distinguish the harmless from the dangerous snakes in their own localities.



DESERT SPOTTED NIGHT SNAKE
Hypsiglena torquata deserticola

This is one of the less common small desert snakes. In appearance it is very similar to the Coastal Spotted Night Snake but is much lighter in color. There are three dark blotches across the neck in both forms but in the case of this snake, the middle blotch touches the large scales at the back of the head or at least only misses it by one small scale. In the coastal form there are two or more small scales between the middle blotch and the large, paired scales at the back of the head. A Spotted Night Snake is occasionally brought to the zoo by a visitor who believes he has a baby rattlesnake. This snake has eyes with elliptical pupils as does the rattlesnake but there the similarity ends. Many snakes have elliptical pupils; some are dangerous, some are harmless and others belong to the group of mildly poisonous snakes (as does this one)—snakes that are poisonous to small lizards but absolutely harmless to man. When the rattlesnake is born it has a knob on the end of its tail called a pre-button. Any snake in California whose tail tapers to a point is not the least bit dangerous.

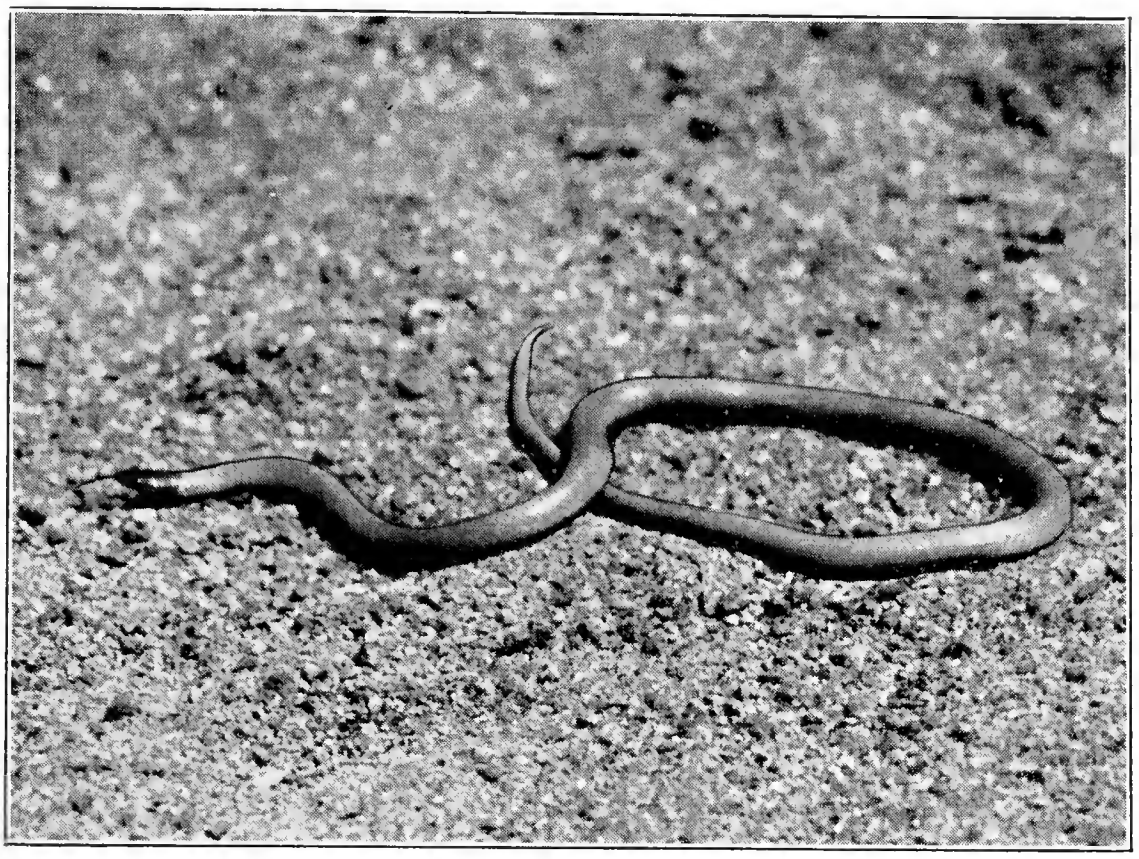
Most specimens of the Spotted Night Snake captured in Borrego Valley are less than a foot long. The food of the Desert Spotted Night Snake consists principally of lizards. It probably eats lizard eggs as well, as do several of the local desert snakes, and there is one record of a Spotted Night Snake from Utah that evacuated egg shells after having been captured. Like most of the desert snakes the Spotted Night Snake is nocturnal and most often captured when seen in the beam of the car headlights.



CALIFORNIA LYRE SNAKE

Trimorphodon vandenburghi

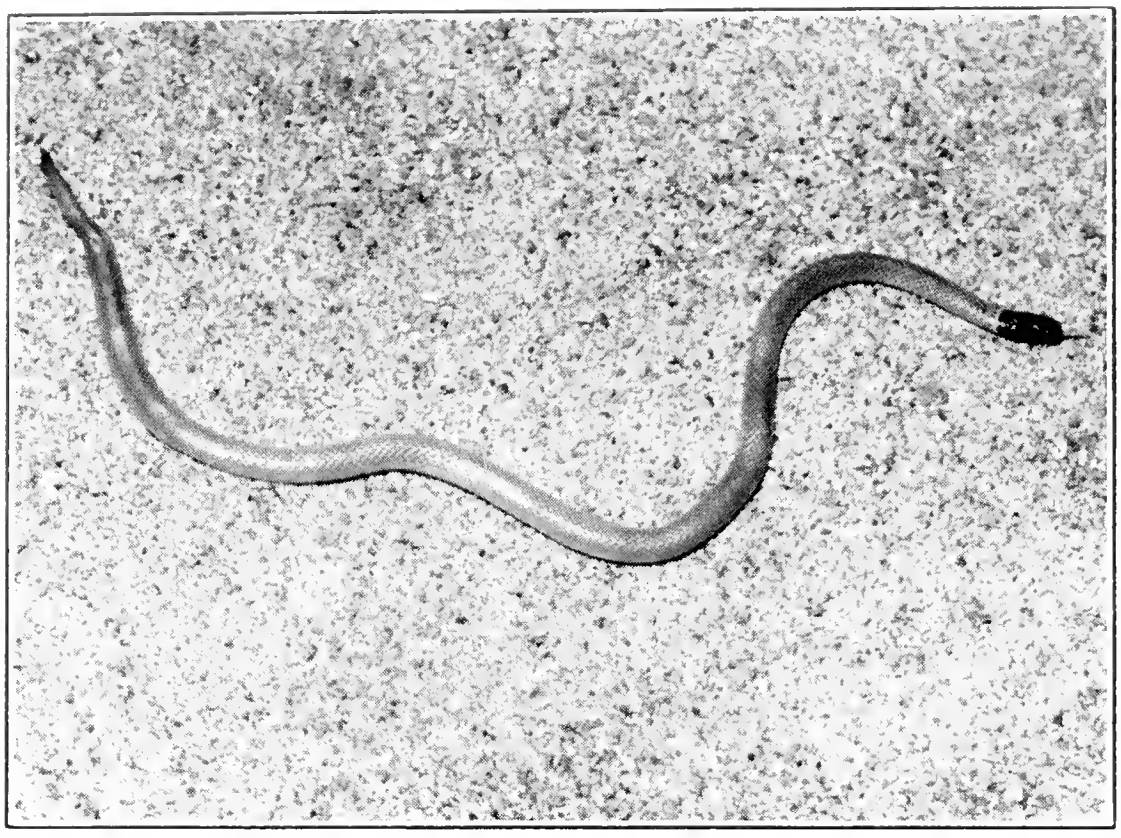
This moderately rare snake is light brown or gray, with brown blotches on the middle of the back, split in two by a light line, and small blotches on the side. The under-parts are white with occasional dark markings on the edges of the belly plates. There is a brown mark, the shape of which suggests a lyre, on the gray head which is broad and very distinct from the neck. The eyes are large, having elliptical pupils. This is one of the back-fanged snakes, but is harmless to man, as a bite from its small teeth would hardly break the skin and its venom is too weak to kill a mouse. It is hard to believe that a person bitten would permit the snake to advance its jaws, with their characteristic chewing motion, far enough to imbed its fangs. Although occasionally captured at night in the open, it is more often taken in rock crevices or under granite flakes. It occurs from the ocean to the desert foothills. It feeds upon lizards and probably snakes, as well as an occasional bat, and in captivity it has eaten small mice. The fact that the Lyre Snake uses two different methods to kill its prey is interesting. I have seen its close relative, the Baja California Lyre Snake *(T. lyrophanes)* wrap around a mouse in true constrictor style, and I am sure the animal was not far enough back in the mouth to be reached by the poison fangs. Also the regular back-fanged method was used by the same snake, working its food (this time a lizard) back to the fangs by a chewing motion and waiting for it to die. The young are hatched from eggs. A batch of 9 eggs laid July 8, 1947, hatched 79 days later. It reaches a maximum length of about three and a half feet, but most specimens are much smaller.



CALIFORNIA BLACK-HEADED SNAKE

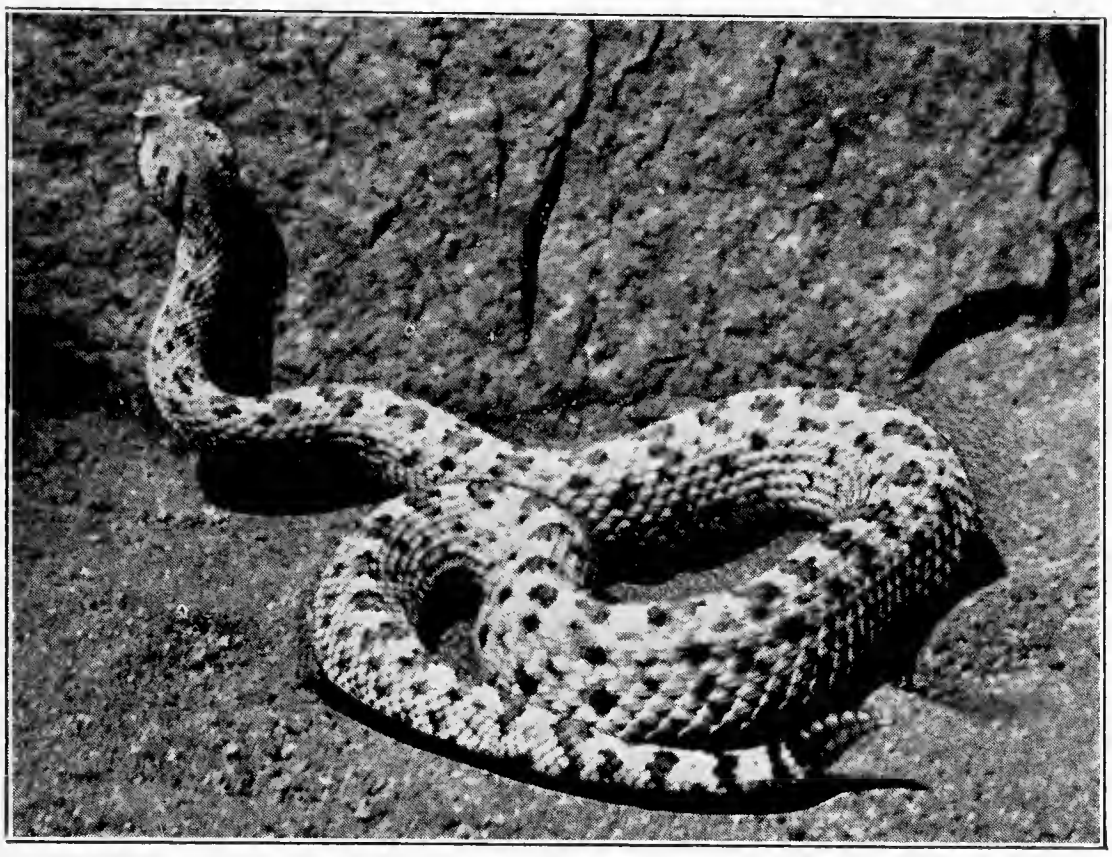
Tantilla eiseni eiseni

As its name indicates, this little grayish-brown, or grayish-pink snake has a black head, which is usually separated from the rest of the body-color by a whitish collar. The under-parts are pink, without spots. Twelve-inch specimens are large. This secretive snake is found from the ocean to the desert foothills, except in the high mountains. It is moderately rare and usually captured under rocks. Being very quick in its movements when its protective covering is removed, it often escapes the collector. The eye pupil is round. In the past it was believed that the Black-headed Snakes (Genus *Tantilla)* were poisonous, although, due to small size, harmless to man. The teeth in the back of the upper jaw are enlarged and grooved but the sectioning of the head when done at the Zoo Research Hospital showed no sign of poison glands, and the snake is now considered non-poisonous. The Black-headed Snake eats earthworms in captivity and presumably includes the soft-bodied larvæ of various insects in its diet. All of the small snakes, and particularly the burrowing ones, are hard to keep in captivity. They make poor exhibits because if allowed to burrow they cannot be seen, and if kept visible they do not do well. They require so much attention that in a large collection of snakes such as we have in the Reptile House they are seldom put on display except for short periods. This snake might be confused with the Ring-neck because both snakes have a collar, but the Black-headed Snake is one solid color underneath whereas the Ring-neck has dark dots on a yellow or orange belly contrasting with the under-tail, which is red.



DESERT BLACK-HEADED SNAKE
Tantilla eiseni transmontana

This is the desert subspecies of the California Black-headed Snake. It is similar in appearance to the coastal form but much lighter in color. Its head is black and its body cream-colored both on the back and belly. The collar separating the head from the body is not so pronounced, being only slightly lighter than the ground color. In San Diego County it has been taken only on the desert slope of the Borrego area. In size it is about the same as the California Black-headed Snake, twelve inches being a good sized specimen; its food habits are presumably the same. It is one of the rare snakes of the county, only a few specimens having been taken to date. Location of capture and lighter color separate it from its coastal relative. It should not be confused with the Ring-necked Snake, which is not found beyond the mountains; also the Ring-neck has spots on its belly whereas this snake does not. The Desert Black-headed Snake is one of the snakes most hoped for while collecting along the Borrego Road at night. Three men in a car drive along the right side of the road no faster than twelve miles an hour. One man sits on the right fender and watches the shoulder of the road. The driver watches the road itself. The third man keeps books and takes care of the specimens. The exact mileage, time, temperature and name of specimen captured is written down in the log as well as on a slip of paper which is dropped into a jar with each snake. All of these items are of value, but location is most important. A specimen without a location is worthless for scientific study. This technique of collecting can be very exciting if hunting is good and very tiresome if nothing shows in the headlight beam.

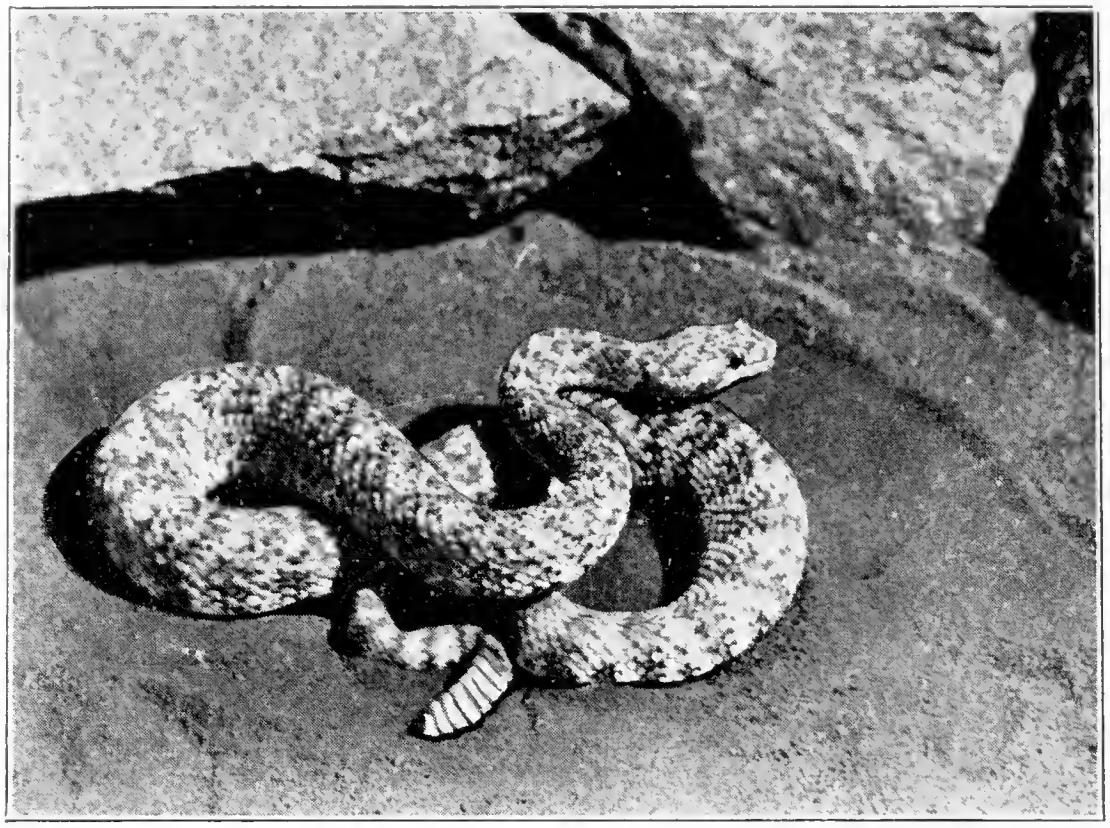


COLORADO DESERT SIDEWINDER

Crotalus cerastes laterorepens

With this snake we start the descriptions of the *only* dangerous snakes in California, the Rattlesnakes.

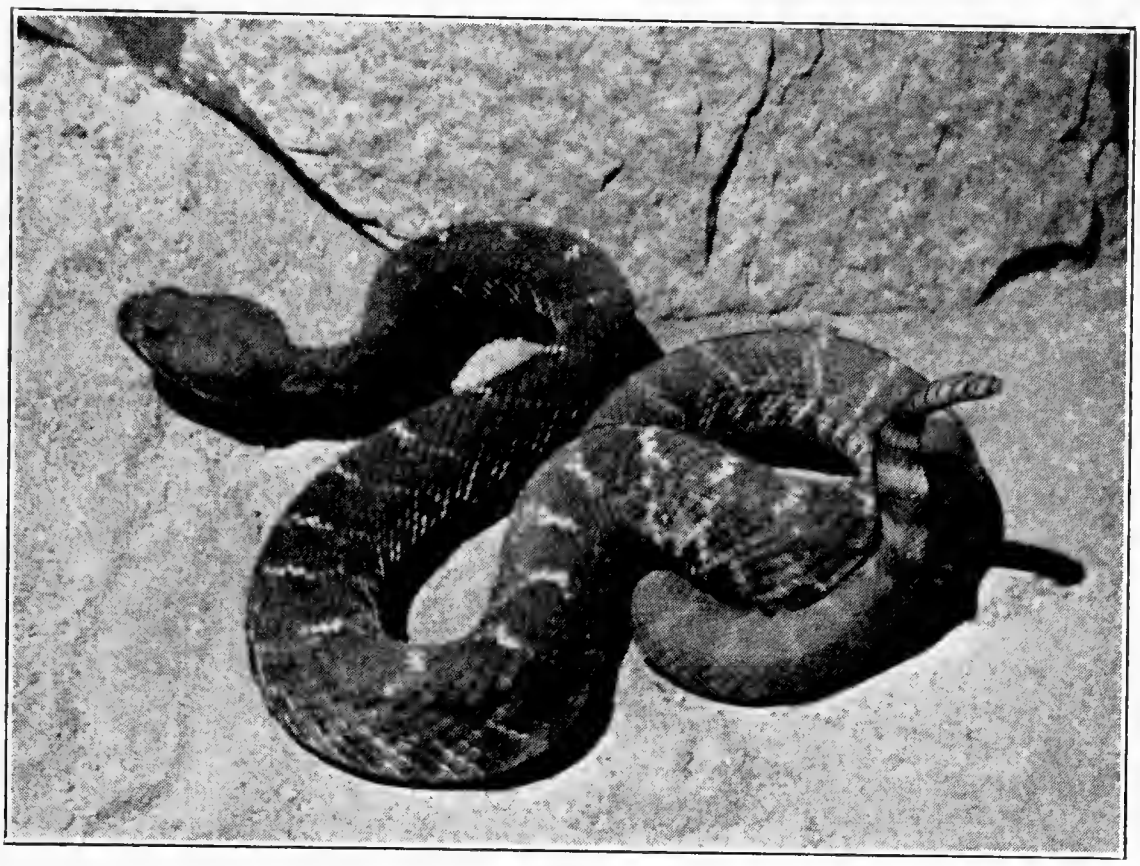
This small rattler is moderately common on the desert. It is nocturnal and often taken on the paved road in Borrego Valley after dark. In the spring, during April and May, many more are found than at any other time of the year. Few specimens are over two feet in length. The food of the Sidewinder consists of lizards and small rodents, wherein it differs from our other rattlers, which usually take only warm-blooded animals, at least in the case of the adults. The scales above the eyes are much enlarged, forming *prominent* horns, hence the name "Horned Rattlesnake" which is often applied to this snake. Its color is gray, or grayish cream, with blotches of brown or yellow down the back. The name "Sidewinder" is taken from its unique method of locomotion. Part of the body behind the head, where one might imagine the shoulders should be, is pressed down and the body thrown forward, resting on what might be called the hips. These imaginery hips are pressed down, and the body again thrown forward, leaving a track of oblique parallel unconnected lines. The head is pointed at an angle to the direction taken by the snake. In appearance, the snake seems to have a walking motion. This method depends upon pressing down on the sand and not pushing against the surface, which gives the snake better traction. That all desert snakes have not adopted this method of getting over the shifting sands is an unanswerable problem. This snake has such a small amount of venom and, being found only in the desert where there are relatively few human beings, is least dangerous of the rattlers in San Diego County. Nevertheless, it is dangerously poisonous and should be avoided.



SOUTHWESTERN SPECKLED RATTLESNAKE
Crotalus mitchellii pyrrhus

The color of the Speckled Rattler varies a great deal, being gray, yellow, tan, pink, and black and white. The band-like blotches are very irregular in design with no definite outlines, and the whole coloration gives a very speckled appearance. The tail is usually banded with black and white. The Speckled Rattler differs from the other rattlers in having small scales between the large nose plate at the front of the head and the plates that contain the nostrils. In the rest of our rattlers, the nose plate is in contact with the nostril plates. A specimen four feet long is good sized. It is common from the foothills to the desert, usually in rocky country. The food of this snake, as well as that of the other adult rattlers in the County (except the Sidewinder), consists principally of rodents. The young of all probably eat lizards as well.

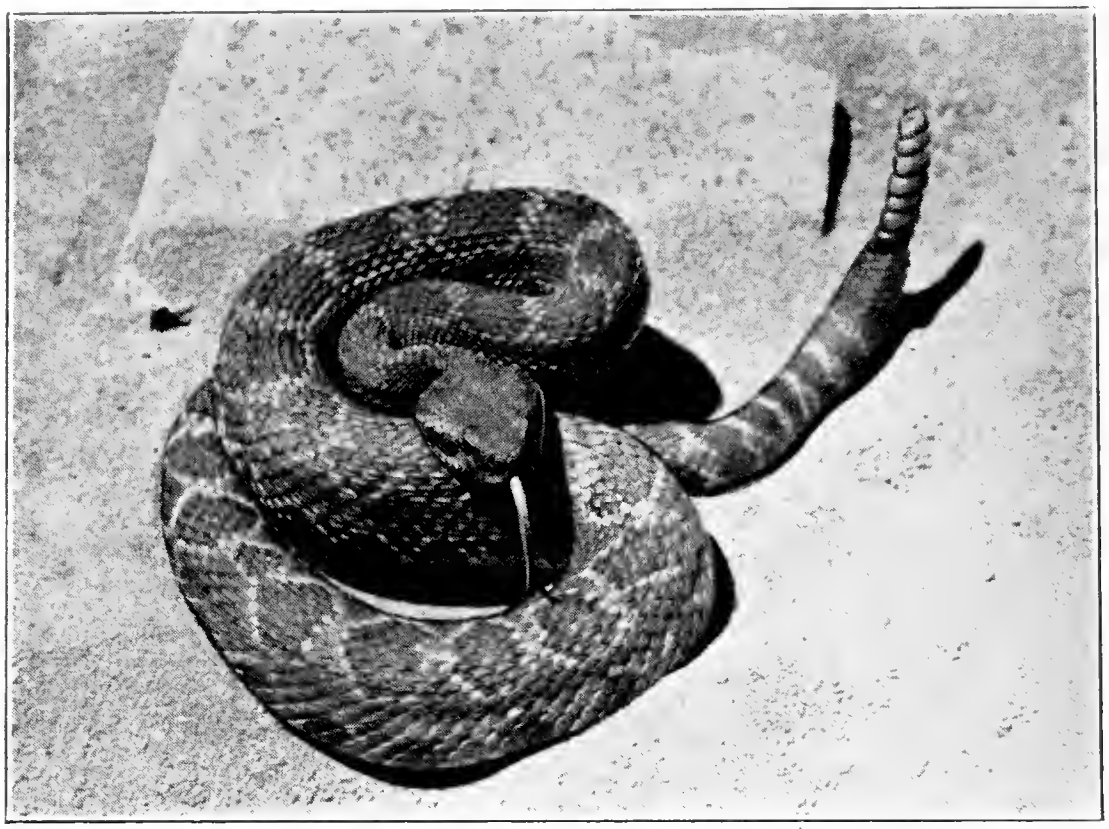
In all rattlesnakes the young are born alive, the number varying in the local species from three or four to as many as twenty. Six to twelve is the usual number. At birth they are provided with fangs and poison glands and have a button-like knob on the end of the tail. The length is eight to twelve inches, and the markings are more or less like the adults. With the flat, wide head, and the button, it could not be confused with any of the small snakes, nor with the young of any other snake. Any snake in California with a pointed tail is harmless to man.



RED DIAMOND RATTLESNAKE

Crotalus ruber ruber

This large rattler is found from the coast through the desert foothills, except on the mountain tops. Its color is usually red with few noticeable markings except the white scales which outline the diamonds, and these are often indistinct, particularly on the sides. The tail is marked with black and white rings. It is the mildest tempered of our rattlers, and is often captured and put in a snake sack without rattling at all. It rattles less and hisses more than the other rattlesnakes. After a short time in captivity, it becomes so tame that it is often handled, but this is a foolhardy practice by which nothing can possibly be gained to offset the inherent danger. The poison is lowest in toxicity of any of our rattlers, but the large amount of venom available and its wide-spread distribution makes it more dangerous than the Sidewinder, whose poison is more toxic, although there is less of it. Snakes four and a half feet in length are very large, and a six-foot specimen has never been brought to the Zoo. It is hard to understand why the length of snakes is so often exaggerated. A four-foot rattler with its large head and heavy body is usually described as "a rattlesnake six or seven feet long, and as big as my arm." I would like to measure one of these while it is still alive, because I can't understand why I can't catch such a one! The Red Rattlesnake seems to come out of hibernation earlier than the Pacific by a week or so. However, both of them, over a period of time, are taken during all months of the year.



SOUTHERN PACIFIC RATTLESNAKE
Crotalus viridis helleri

This is the most common rattlesnake in the County and is found from the coast to the desert foothills, including the tops of our mountains. It has been taken as high as 10,785 on Mt. San Jacinto in Riverside County. The Southern Pacific Rattlesnake covers so much territory and varies so much in coloration that several common names have been given to it. As the tail does not consist of black and white rings and there are no horns over the eye, it would seem impossible to confuse it with other rattlers of San Diego County. The ground color is grayish or brownish, or almost black, with a series of squarish blotches usually of a darker shade, and edged with yellow, orange, or light brown. The last half of the tail is solid color without bands. The young have a light stripe across the top of the head; this stripe is missing in the adults. A specimen three and a half feet long is good sized, although extra large ones a foot longer are sometimes found. The pupil of the eye is elliptical, as is the case with all rattlesnakes. The Southern Pacific Rattlesnake makes a great fuss when found in the field and takes more work to capture than most rattlers, sometimes jerking about so much that several segments of the rattle are broken off. Some individuals continue their nervousness in captivity and do not do well; a few calm down quickly and, becoming splendid "feeders," live a long time.

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