SNAKE-ROOT. In most countries where snakes abound some root or herb is used by the natives as an antidote for the bites of venomous species, and many herbs have consequently received the name of snake-root. Botani- cally speaking, the name properly belongs to *Ophiorrhiza Mungos,* L., a plant of the Cinchona family, used in the East Indies for the purpose above indicated. In medicine, however, the roots of *Aristolochia Serpentaria,* L., *Polygala Senega,* L., or *Cimicifuga racemosa,* Elliott, are alike under­stood by this name, being distinguished respectively as the Virginian, Seneka, and Black Snake-roots. The first is now employed as an aromatic antiseptic tonic in typhoid fever, the second as a stimulant expectorant in bronchitis, and the third as a sedative in rheumatic or inflammatory affec­tions, especially in muscular rheumatism and lumbago. The root of *Aristolochia reticulata,* Nutt., which is known in the United States as Red River or Texan Snake-root, is the kind most frequently met with in the United Kingdom as Serpentary or Virginian Snake-root. (See Guaco.)

The roots or rhizome of *Liatris spicata,* Willd., *Eryngium aquaticum,* L., and *Eupatorium altissimum,* L., have all been used in North America for snake-bites, the first two being known as Button Snake-root and the last as White Snake-root. The rhizome of *Asarum canadense,* L., passes under the name of Canadian Snake-root. All of these con­tain acrid or aromatic principles which, when a warm de­coction of the drug is taken, exercise a powerfully diapho­retic or, in some cases, diuretic action, to which any benefit that may be derived from their use must be attributed.

SNAKES constitute an order (*Ophidia)* in the class of Reptiles which is characterized by an exceedingly elongate body, cylindrical or sub-cylindrical, and terminating in a tapering tail. The integuments are folded into flat imbri­cate scales, which are rarely tubercular or granular. The spinal column consists of a very great number of vertebræ, with which the numerous ribs are movably articulated. Limbs are entirely absent, or only rudiments of the pos­terior occur more or less hidden below the skin ; there is no sternum. The bones of the palate and jaws are mov­able ; the mandibles are united in front by an elastic liga­ment and are very distensible. Generally both jaws and the palate are toothed, the teeth being thin and needle­like. There are no eyelids, no ear-opening. The vent is a transverse slit.

Great as is the difference in appearance between a typical snake and a typical lizard, the two orders of Ophidians and Lacertilians are nearly allied ; the former is probably merely a specialized descendant of the latter or of the pythonomorphous reptiles, or perhaps of both. Moreover, the living Lacertilians include forms which approach the Ophidians by having a greatly increased number of verte­bræ, a much advanced degradation of the scapular and pel­vic arches and limbs, a simple dentition, and the absence of eyelids and external ear-opening. And on the other hand we find Ophidians with a greatly diminished flexibility of the vertebral column, with closely adherent, smooth and polished scales, with a narrow mouth—totally unlike the enormous gape of the typical snakes—and even without that longitudinal fold in the median line of the chin which is so characteristic of the order *(Typhlopidæ).* Thus of the Ophidian characters as given above only that taken from the loose connexion of the bones of the skull remains as a sharp line of separation between snakes and lizards. The mandibulary symphysis is not by suture but by an elastic band ; the intermaxillary, palatine, and pterygoid bones are so loosely attached to the cranium that they can be easily pressed outwards and forwards, and the maxillary and mandibulary of one side can be moved in those directions independently of their fellows opposite. The intermaxillary is small, generally toothless, and coalesces

with the nasals and vomer into a single movable bone ; finally, the suspensory is much elongate and movable at both ends. This arrangement ensures an extraordinary degree of mobility and elasticity of all parts of the gape, which, however, varies in the different families of the order. For the other characteristic points of their structure and for their distribution, see Reptiles.

The number of known species of snakes has been given as 1500 by some authorities and as 1800 by others. The limits of their distribution seem to be the 70th parallel N. lat. in Europe, the 54th in British Columbia, and the 40th parallel S. lat. in the southern hemisphere. The num­ber of species and of individuals in a species is small in the temperate zones, but increases as the tropics are approached. In the tropical zone they are abundant, especially where a well-watered soil nourishes a rich vegetation, with glades open to the sun, and where a variety of small animals serve as an abundant and easily obtained prey. It is in the tropics also that the largest (boas, pythons) and the most specialized kinds occur (tree snakes, sea snakes, the large poisonous snakes). On the other hand, every variety of soil is tenanted by some kind of snakes : they form a contingent in every desert fauna. In accordance with this general distribution snakes show a great amount of differentiation with regard to their mode of life and general organization ; and from the appearance alone of a snake a safe conclusion can be drawn as to its habits. The following categories may be distinguished.

(1) Burrowing snakes, which live under ground and but rarely appear on the surface. They have a cylindrical rigid body, covered with generally smooth and polished scales ; a short strong tail ; a short rounded or pointed head with narrow mouth ; teeth few in number ; small or rudimentary eye ; no abdominal scutes or only narrow ones. They feed chiefly on invertebrate animals, and none are poisonous. (2) Ground snakes, living chiefly on the ground, and rarely ascending bushes or entering water. Their body is cylindrical, flexible in every part, covered with smooth or keeled scales, and provided with broad ventral and subcaudal scutes. All the various parts of their body and head are well proportioned; the non- poisonous kinds of ground snakes are in fact the typical and least specialized snakes, and more numerous than any of the other kinds. They feed chiefly on terrestrial vertebrates. The majority are non-poisonous ; but the majority of poisonous snakes must be referred to this category. (3) Tree snakes, which are able to climb bushes or trees with facility or pass even the greater part of their existence on trees. Their body is rarely cylindrical, generally compressed and slender ; their broad ventral scutes are often carinate on the sides. Those kinds which have a less elongate and cylindrical body possess a dis­tinctly prehensile tail. The eye is generally large. Their coloration consists often of bright hues, and sometimes resembles that of their surroundings. They feed on animals which likewise lead an arboreal life, rarely on eggs. Poisonous as λvell as innocuous snakes are repre­sented in this category. (4) Freshwater snakes, living in or frequenting fresh waters ; they are excellent swimmers and divers. The nostrils are placed on the top of the snout and can be closed whilst the animal is under water. Their body is cylindrical, moderately long, provided with narrow ventral scutes ; the tail tapering ; head flat, rather short ; and the eyes of small size. They feed on fish, frogs, and other aquatic animals, and are innocuous and vivipar­ous. (5) Sea snakes are distinguished by the compressed, rudder-shaped tail, supported by erect neural and hæmal spines. They never leave the sea (with the exception of one genus) and are unable to move on land. They feed on fishes, are viviparous and poisonous.