Sub-family 2. *Hydrophinae.—*Tail laterally compressed ; marine.

Of sea-snakes some fifty species are known. All are inhabitants of the tropical Indo-Pacific ocean, and most numerous in and about the Persian Gulf, in the East Indian Archipelago, and in the seas between S. Japan and N. Australia. One species which is extremely common *(Pelamis bicolor)*, and which is easily recognized by the black colour of its upper and the yellowish tints of its lower parts (both colours being sharply defined), has extended its range W. to the sea round Madagascar, and E. to the Gulf of Panama. One species, however, *Dislira semperi,* is confined to the landlocked freshwater Lake Taal at Luzon in the Philippines. Sea-snakes are viviparous and pass their whole life in the water; they soon die when brought on shore. The scales are very small, often very much reduced, and there are frequently no enlarged ventrals on the compressed belly, but *Plalurus* has broad ventrals. Their motions in the water are almost as rapid as they are uncertain and awkward when the animals are removed out of their proper element. Their nostrils are placed quite at the top of the snout. These openings are small and provided with a valve interiorly, which is opened during respiration, and closed when the animal dives. They have very capacious lungs, extending back­wards to the anus; by retaining air in these extensive lungs they are able to float on the surface of the water and to remain under water for a consider­able length of time. Sea-snakes shed their skin frequently; but it peels off in pieces as in lizards, and not as in the freshwater snakes, in which the integuments come off entire. Several species are remarkable for the extremely slender and prolonged anterior part of the body, and very small head. The eye is small, with round pupil, which is so much contracted by the light when the snake is taken out of the water that the animal becomes blinded and is unable to hit any object it attempts to strike. The tongue is short, and the sheath in which it lies concealed opens near to the front margin of the lower jaw; scarcely more than the two terminating points are exserted from the mouth when the animal is in the water. The mouth shuts in a somewhat different way from that of other snakes: the middle of the rostral shield is produced downwards into a small lobule, which prevents the water from entering the mouth; there is generally a small notch on each side of the lobule for the passage of the two points of the tongue. The food of sea-snakes consists entirely of small fish; among them species with very strong spines. As all these animals are killed by the poison of the snake before they are swallowed, and as their muscles are perfectly relaxed, their armature is harmless to the snake, which begins to swallow its prey from the head, and de­presses the spines as deglutition proceeds. Sea-snakes belong to the most poisonous species of the whole order. Accidents are rarely caused by them, because they are extremely shy and swim away on the least alarm ; but, when surprised in the submarine cavities forming their natural retreats, they will, like any other poisonous terrestrial snake, dart at the disturbing object; and, when out of the water, they attempt to bite every object near them, even turning round to wound their own bodies. They cannot endure captivity, dying in the course of two or three days, even, when kept in capacious tanks. The greatest size to which some species attain, according to positive observation, is about 12 ft., and therefore far short of the statements as to the length of the so-called sea-serpents (*q.v.*). Boulenger has written an interesting account of sea-snakes in *Natural Science,* i. (1832), p. 44 seq.

Family 8. *Amblycepkalidae.—*The pterygoids are widely separated from the quadrates, not reaching beyond the level of the occipital condyle. This condition can be ascertained without dissection, when the mouth is opened widely. The squamosals are reduced to pad-like vestiges. Otherwise these snakes agree with the aglyphous Colubridae. Externally they are easily distinguished by the absence of a longitudinal groove on the skin. The head is thick, very distinct from the neck and the pupil is vertical, so that these harmless snakes look rather viperish. About 30 species, with several genera, are known from the oriental and neotropical regions. *Amblycephalus, e.g. monticola,* with compound body, in S.E. Asia.

Family 9. *Viperidae.*—The maxillaries are very short, movably pivoting upon the prefrontals and also attached to the ectopterygoids, so that they can be erected together with the large poison fangs, which, besides reserve teeth, are the only maxillarv teeth. There are also teeth on the palatines, anterior portion of the pterygoids, and on the short dentaries. The short squamosals are very loosely attached to the skull. The prefrontals are not in contact with the

nasals. The poison-fangs are "solenoglyphous," perforated, having a wide hole on the anterior side at the base, in connexion with the duct of the large, paired, poison-glands, the presence of which adds considerably to the characteristic broadness of the head. The hole leads into a canal, which opens as a semi-canal towards the end of the tooth. The supply of reserve teeth is indefinite; frequently one or two are lying ready and of equal size to the functional fangs.

All the Viperidae are very poisonous and all, except the African *Atractaspis,* viviparous. They include terrestrial, semi-aquatic and burrowing types; none of them with any signs of degradation; on the contrary they belong to the most highly organized of snakes. The family is cosmopolitan, excepting Madagascar and the whole of the Australian region.

Sub-family 1. *Viper inae,* vipers (*q.v.)* or adders.—Without an ex­ternal pit between eye and nose, and the maxillary bone is not hollowed out above. Absolutely restricted to the Old World, with 9 genera comprising about 40 species.

Sub-family 2. *Crotalinae.—*With a deep cavity or pit on either side between the eye and the nose, lodged in the hollowed-out maxillary bone. The lining of these pits is amply supplied with branches from the trigeminal nerves, but the function is still quite unknown. About 60 species of pit-vipers are recognizable. They can easily be divided into 4 genera: *Crotalus* and *Sistrurus* with a rattle at the end of the tail and restricted to America (see Rattlesnake); secondly, pit-vipers without a rattle: *Ancistrodon,* with large shields covering the upper surface of the head; with about 10 species, *e.g. A. halys* in the Caspian district, others in the Himalayas, Ceylon and Sunda islands. Notable American species are the following: X. *piscivorus,* the “ water-viper ” from Carolina and Indiana to Florida and Texas. This creature is semi-aquatic and lives chiefly on fishes; it grows to a length of about 5 ft. ; the general colour is reddish to dark brown,

even blackish, with darker cross-bands or C-shaped markings; a dark, light-edged band extends from the eye to the angle of the mouth. The under parts arc yellowish, more or less spotted or quite black. *A. contortrix* the “ moccasin-snake ” or “ copper-head,” so called because of its yellow to pink or pale-brown ground colour, with dark crossbars or triangular marks. The under surface is yellow to reddish, with dark specks. Full-grown specimens are about 1 yd. in length. The moccasin-snake ranges from Massachusetts and Kansas to Florida and Texas and into Mexico, preferring swampv localities or meadows with high grass, where it hunts for small mammals and birds. It is easily distinguished from other North