constitute the family *Helicidae,* order *Pulmonata,* sub-order *Stylommatophora.* The families *Limacidae, Arionidae* and *Oncidiidae* of the same sub-order, include nearly all the slugs. The *Oncidiidae* are entitled to the name “ sea-slugs,” as they are shell-less Pulmonates living on the seashore, though not actually in the sea. The term “ water-snails ” includes the whole of the remaining sub-order of the *Ptdmonata,* namely, the *Basommato- phora,* in which the eyes are sessile, with the exception of the *Auricιdidae.* The latter are terrestrial and occur mostly near the seashore. Thus the whole of the *Pulmonata* (which breathe air, are destitute of gill-plumes and operculum and have a complicated hermaphrodite reproductive system) are either snails or slugs. But there are a considerable number of snails, both terrestrial and aquatic, which are not Pulmonates. The land-snails which have no gill-plume in the mantle-chamber and breathe air, but have the sexes separated, and possess an operculum, belong to the orders *Aspidobranchia* and *Pectinibranchia,* and constitute the families *Helicinidaei Proserpinidae, Hydrocenidae, Cyclophoridae, Cyclostomatidae* and *Aciculidae.* The fresh-water snails which are not Pulmonates are the *Paludinidae, Valvatidae* and *Ampul- laridae,* together with *Neritina,* a genus of the *Neritidae.* These all possess a fully developed gill-plume and are typical Pectini- branchs of the sub-order *Taenioglossa,* most of the members of which are marine.

The family *Ηelicidae* has a world-wide distribution. In *Helix* the spire forms a more or less obtuse-angled cone ; there are above 1200 species, of which 24 are British. *Helix nemoralisi* L.,of which *H. hortensis* is a variety, is one of the commonest forms. *Helix pomatia,* L., is the largest species, and is known as the “ edible snail ”; it is commonly eaten in France and Italy, together with other species. It was formerly believed to have been introduced into Britain by the Romans, but there is no doubt that it is a native. In *Succinea* the cone of the spire is acute-angled ; three species are British. In *Vi Irina* the spire is very flat and the surface glassy. In *Bulimus* the spire is elongated with a pointed apex. *Pupa* is named from its resemblance to a chrysalis, the apex being rounded. The shell of *Clausilia* is sinistral and its aperture is provided with a hinged plate. The commoner European slugs of small size all belong to the genus *Limax,* in which the opening of the mantle-chamber is posterior. *L. flavus* is the cellar slug. *L. agrestis, L. arborum, L. maximus* occur in gardens and fields. The larger black slugs are species of *Arion,* of which two are British, *A.ater* and *A. hortensis. Testacella haliotidea* is common in Great Britain and throughout Europe.

The species of *Helix* are all herbivorous, like the Pulmonata generally; snails and slugs are well-known enemies to the gardener. The animals being hermaphrodite copulate reciprocally. The eggs of *Helix* are laid separately in the earth, each contained in a calcified shell ; those of *Limax* are also separate, but the shell is gelatinous. *Helix* hibernates in a torpid condition for about four months, and during this period the aperture of the shell is closed by a calcareous membrane secreted by the foot.

The *Limnaeidae* occur in all parts of the world. *Limnaeus* contains the largest species. *L. pereger,* Müller, is ubiquitous in Great Britain and common all over Europe. All the species are usually infested with *Cercariae* and *Rediae,* the larval forms of Trematode parasites of vertebrates. *L. truncatulus* harbours the *Cercaria* of *Fasciola hepatica,* the liver-fluke, which causes rot in sheep. *Ancylus,* which occurs in rivers, has a minute limpet-like shell. *Planorbis* has the spire of the shell in one plane. *Physa* is smaller than *Limnaeus* and has the upper part of the spire much shorter. In the *Auriculidae* the aperture is denticulated. *Auricula* is confined to the East Indies and Peru. *Carychium minimum* is British.

Of the *Cyclostomidae* only one species, *Cyclostoma elegans,* Müller, is British ; it hides under stones and roots. The *Helicinidae* are exotic, ranging from the West Indies to the Philippines. Of the *Aciculidae,* which are all minute, *Acicula lineata* is British.

The *Atnpullaridae* are confined to the tropics. *Ampullaria* has very long tentacles and a long siphon formed by the mantle. *Valvata* is common in fresh waters throughout Britain; the gill when the animal is expanded is protruded beyond the mantle-chamber. The *Paludinidae* are common in the N. hemisphere. *Paludina* and *Bithynia* are both British genera. In *Paludina* the whorls of the spiral are very prominent; the genus is viviparous, *Bithynia* is smaller and the shell smoother.

*Neritina* has a very small spire, the terminal portion of the shell containing nearly the whole animal.

For the morphology and classification of snails, see Gastropoda. A history of the British forms is given in Gwyn Jeffreys’s *British Conchology* (1862), and by Forbes and Hanley in *British Mollusca.* For speciegraphical details, see Woodward’s *Manual of the Mollusca* (1875), and Bronn’s *Tierreich* (Weichtiere). For *Fasciola hepatica,* see Thomas, *Quart. Journ. Mic. Sci.* (1882).

**SNAKE-BIRD** (the “ darter ” of many authors, and the *Plotus anhinga@@1* of ornithology), the type of a small but very well- marked genus of birds, *Plotus*, belonging to the family *Phalacro- coracidae* which contains the cormorants and shags. The name commonly given to it by the English in N. America was derived from its "long slender head and neck,” which, its body being submerged as it swims, “ appears like a snake rising erect out of the water ” (J. Bartram’s MS., quoted by G. F. Ord in A. Wilson’s *Am. Ornithology,* ix. 81). Snake-birds bear a general resemblance both outwardly and in habits to Cormorants (*q.v.*),but are much more slender in form and have both neck and tail much elongated. The bill also, instead of being tipped with a maxillary hook, has its edges beset with serratures directed backwards, and is sharply pointed—in this respect, as well as in the attenuated neck, likening the Snake-birds to the Herons; but the latter do not generally transfix their prey as do the former.

The male of the American species, which ranges from Illinois to the S. of Brazil, is in full breeding-plumage a very beautiful bird, with crimson irides, the bare skin round the eyes apple-green and that of the chin orange, the head, neck and most part of the body clothed in black glossed with green; but down each side of the neck runs a row of long hair-like white feathers, tinged with pale lilac. The much elongated scapulars, and the small upper wing-coverts bear each a median white mark, which on the former is a stripe pointed at either end, and on the latter a broad ovate patch.@@2 The larger wing-coverts are dull white, but the quill-feathers of the wings and tail are black, the last broadly tipped with brownish-red, passing into greyish-white, and forming a conspicuous band when the tail is spread in form of a fan, as it often is under water.@@3 The hen differs much in appearance from the cock, having the head, neck and breast of a more or less deep buff, bounded beneath by a narrow chestnut band; but otherwise her plumage is like that of her mate, only not so bright in colour. The Snake-bird frequents the larger rivers or back-waters connected with them, where it may be seen resting motionless on some neighbouring tree, generally choos­ing a dead branch, or on a “ snag ” projecting from the bottom, whence it plunges beneath the surface, in pursuit of its prey, to emerge, in the manner before related, showing little more than its slender head and neck. Its speed and skill under water are almost beyond exaggeration, and it exhibits these qualities even in captivity, taking—apparently without effort—fish after fish, however rapidly they may swim and twist, and only returning to its perch when its appetite is appeased or its supply of food exhausted. At liberty it will indulge in long flights, and those of the male at the breeding-

@@@1 “ Anhinga,” according to Marcgrav, who first described this bird *(Hist. rer. nat. Brasiliae,* p. 218), was the name it bore among the natives.

@@@2 These feathers are very characteristic of each species of the genus, and in India, says Jerdon, are among the Khasias a badge of royalty.

@@@3 This peculiarity, first pointed out to the writer by A. D. Bartlett, who observed it in birds in the Zoological Society’s possession, doubtless suggested the name of “ Water-Turkey ” by which in some places *Plotus anhinga* is said to be known.