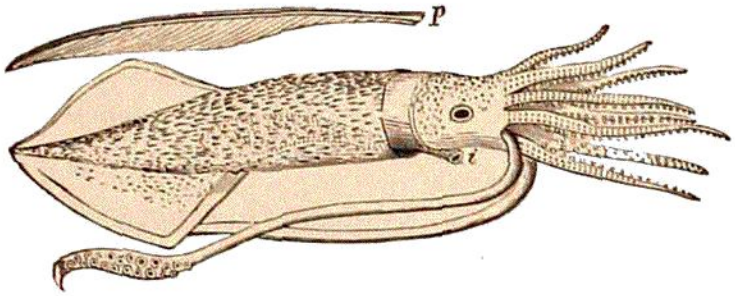
or 5 pairs of arms furnished with tentacles, suction-disks, or horny claws, as in the Cephalopods.

The subdivisions are as follows: —

1. **Cephalopods.** Free-swimming; having 4 or 5 or more pairs of arms arranged about the mouth (Fig. 392), so named from *κεφαλή, head*, and *πούς, foot*. Some, like the Nautilus, have an external chambered shell, and others (Squids) only an internal bone or pen. *Rhyncholites*, sometimes found as fossils, are the hawkbill-like jaws of the species of Ammonites.

The subdivisions are: the *Tetrabranchs*, or 4-gilled species (Fig. 401), including the Nautili and Ammonites, and the *Dibranchs*, or 2-gilled species, which never have an external chambered shell, and include the large Devil-fishes and the Argonaut, or Octopods; the Cuttle-fishes and Squids, or Decapods (Fig. 392). In the latter group, one pair of arms is very long, and there is an internal horny or calcareous bone (shell) sometimes called the pen (Fig. 392, *p*) situated in the back. One species of the Newfoundland seas has the body 15 feet long and the long arms about 35 feet. The Sepia, from its ink-bag, affords the brown paint called sepia; and its "pen" is the spongy cuttle-fish bone used to supply lime in bird-cages.

392.



The Calamary or Squid, Loligo vulgaris (length of body, 6 to 12 inches); *i* the duct by which the ink is thrown out; *p* the "pen."

2. **Pteropods.** — Free-swimming species, having for the purpose of locomotion (Fig. 400), a pair of paddle-like plates near the head; shell, when present, often slender, conical, thin, and glassy, but also of other shapes, and rarely spiral (Limacina). Named from *πτερόν, wing*, and *πούς*.

3. **Scaphopods.** — The foot adapted for burrowing. Shell tubular, conical, or oblong, slender, as in *Dentalium*. Named from *σκάφος, digging*, and *πούς*.

4. **Gastropods** (*Cephalophora*). — Head prominent and furnished with eyes and usually tentacles (Fig. 399); the mouth with a rasp-like tongue; the foot, for locomotion, a broad, flat, ventral surface, whence the name of the group (from *γαστήρ, the venter*); shell, a dorsal secretion, usually spiral, but in Chiton, a jointed symmetrical shield; in some, conical; sometimes wanting. Includes the Snails (Fig. 399) among land species, and the spiral shells of fresh and salt water, often called *Univalves;* also species without shells, some of which (*Nudibranchs*) have the gills in flower-like groupings on the back. The mantle varies much in extent, reaching (at the will of the animal) as far up the outside of a shell as the surface is highly polished. Besides the eyes of the head, several species of Naked Mollusks of the genus Onchidium have eyes over the back; and these eyes, unlike those of other Invertebrates, are like the eyes of Vertebrates in structure, a layer of rods and cones forming the outer layer of the retina, and the general arrangement of the parts being Vertebrate-like (Semper, *Animal Life*, 1881, page 371).

5. **Lamellibranchs** (Figs. 396–398). — Include the Clam, Oyster, and other "bivalves." They have no eye in the head portion, and no projecting head (whence called *Acephals*), and no teeth or denticles in the mouth. The foot in many is a tough, keel-shaped, or flattened muscular projection; but sometimes it is small and spins horny fibers (byssus) for attachment to rocks, and sometimes (as in Oysters, etc.) it is wanting. They have a bivalve shell, the valves situated either side of the body, and articulated together above between the *umbones*. The valves show, inside, the impressions of one (at 2, Fig. 398) or