

affording one of the distinctions between plants and animals, but this outer coat of the Ascidians is an animal product, though not more essentially a part of the Tunicate's body than the shell of an oyster or clam. A thin epidermis covers the tunic, in which pigmented cells occur, and these migrate into the tunic itself and impart to the animal its colour, which is very brilliant and striking in some Ascidians.

A few words only can be added about the life-history and development of Tunicates. Eggs and sperms are produced by the same individuals, though some are protandric, and do not produce eggs until after the sperms are ripened; but budding also occurs, and reproduction by stolons, a peculiar phenomenon. From the egg issues a larva, very like a tadpole, the enlarged head of which possesses several sticky papillæ for the purpose of adhering to external objects. A strong muscular tail permits it to progress actively through the water. A rod passes down the centre of the tail composed of a row of cells at first, but later by the coalescence of these cells, it appears as a clear hyaline resistant rod, or axis, representing the notochord or primitive backbone of all higher animals. This first indication of a vertebral column is a profoundly interesting feature in Tunicates. Hardly less interesting are the larval organs of vision and hearing, though, like mythical Cyclops, there is only one eye, and the ear or otocyst is unpaired. Some Tunicate larvæ secrete a clear gummy blanket or floating house, and live in it for a time, at the sea's surface. *Oikopleura* does that.

It is unnecessary to describe subsequent changes further than to say that, at a certain stage, the wriggling tadpole becomes rooted by its mouth-end to rocks or other objects, loses its tail, its eye, its ear, and other organs, and becomes changed into a leathery sac-like creature, sightless and motionless, the typical rooted Ascidian, such as those Dr. Huntsman describes. There are three main types among the Tunicates, viz.: the Ascidiaceæ, the Thaliaceæ, and the Larvaceæ, and over one hundred genera. A promising field waits investigation, and Dr. Huntsman's additions to our knowledge proves what a great opportunity for scientific discovery young Canadian workers have who resort to our three Government biological stations each summer. The Tunicates offer a fruitful field for research. Science has revealed unexpected marvels in the study of these lowly-looking Tunicates, but while they are degenerate, as a class, they appear undoubtedly to have formed the starting point whence higher animals have evolved, and have progressed in an ascending scale until Man, the highest Chordate or Vertebrate, developed.