The excretory organs consist of flame-cells, richly convoluted canali- culi, and a pair of longitudinal canals leading to the exterior by one or more pores. The muscles are composed of outer circular and inner longitudinal layers, and of branched dorso-ventral fibres. The generative organs are of the complex hermaphroditic type described in Trematoda *(q.v.).* In these broad anatomical features both classes agree. But whilst in Trematoda a digestive sac is invariably present except in the sporocyst larval stage, the Cestodes possess no trace of this organ at any stage of their development. They obtain food entirely by osmosis through the striated cuticle, and this food consists not of blood, as in flukes, but of chyle, by which they are bathed in their favourite site, the small intestine

The second point of difference between tapeworms and Tre­matodes lies in the absence of a definitely demonstrable "brain.” The concentration of nervous matter and ganglionic substance at the oral end of Trematodes is equivalent to the “brain” of the Planarians, but the similar thickening in the scolex of Cestodcs is by no means so certainly to be called by that name. It appears to be primarily related to the organs of attachment and to have attained greater elaboration than the rest of the nervous system because the proximal end is the most specialized and most stimulated portion of the worm. Those Cestodes which possess no very distinct organ of attachment (such, for example, as *Gyrocotyle)* have no distinct ganglionic thickening more pronounced at one end of the body than at the other; and as these are forms which have retained more primitive features than the rest, and show closer affinity to the Trematodes, it seems highly probable that the complicated nervous thickening found in the scolex, and often compared with the “ brain ” of other Platyelmia, is a structure *sui generis* developed within the limits of the sub-class. In the opinion of several zoologists it marks the tail-end and not the head-end of the worm.

The third important contrast in structural features has also been acquired by the Cestoda Merozoa, namely, the repetition of certain organs in a metameric fashion. The Monozoa are unseg­mented; the *Ligulidæ* have segmented gonads and gonopores without any trace of somatic metamerization except secondary excretory pores in addition to the usual terminal one; the remaining Cestodes are unisegmental only in their larval stage, and all of them show in their later stages repetition of the reproductive organs and of the musculature. In addition, some show duplication of the gonads and of their ducts, so that we find both transverse and longitudinal repetition of these organs, without corresponding multiplication of the nervous ganglia mesenchyma, or excretory opening.

The last structural peculiarity of the group is the absence of the functions of regulation and reparation which are so highly developed in the more primitive Planarians. This statement is quite consistent with the continuous production of new segments at the neck of the scolex, for such a process is analogous to the development of the segments in a Chaetopod. which is a perfectly distinct phenomenon from the regeneration of new segments to supply the place of a head or tail-end or some other portion that has been lesioned. The replacement of detached mature proglottides at the distal end of the Cestode-body by others is not regeneration, for the replacing set has already developed, and in certain cases they can complete their development quite independently after being detached from the parent. More convincing evidence of the absence of true regeneration, however, is the argument from malformation and the phenomenon known as “ pseudo-scolex. " It has long been known that proglottides of the same species often exhibit sporadic mal­formation from the normal shape, and the evidence goes to show that the variation was due to arrested growth or some unusual stress or pressure which, acting upon the young strobila, produced a deformation, and that the proglottides so affected could not regain their normal form. The power of reparation, so conspicuous a feature of Turbellarians, is slight or absent in Cestodes. Moreover, injury to the scolex, or amputation of that organ, reveals the con­comitant absence of a regulative mechanism such as that which generally controls the form and fitness of regenerated organs. In such an event, a Cestode cannot replace the injured or severed portion. The first two or three proglottides merely become deformed and produce an appearance known as the pseudo-scolex. The absence of these functions of regeneration and of regulation affords, therefore, corroborative evidence of the highly specialized nature of the Cestode organization.

*Reproduction.—*The reproductive organs are usually repeated in each proglottis, and in some families two complete sets of such organs occur in each segment; in a few cases, parts only of the system are duplicated. The structure of these organs is seen in figs. 3, 6 and 7, and, as we have said, agrees closely with that of Trematodes. The chief difference between the reproductive organs of the two classes is the presence in Cestodes of a separate vagina and uterus, each of which opens in some families to the exterior by an independent pore. The vagina of Cestodes is undoubtedly comparable with the so-called "uterus ” of Trematodes, but the nature of the Cestode uterus is not so clear. It has been compared with the canal of Laurer of Trematodes (the vitello-intestinal duct of the ectoparasitic flukes), but if we take the more primitive Cestodes, and especially *Amphilina,* into consideration we find that

they possess, in addition to the uterus, an anterior vagina (usually present in Cestodes) and a posterior one. This last tube is probably the homologue of Laurer's canal (Goto, 8). The single anterior vagina is then comparable with the similarly named duct of ecto­parasitic Trematodes, in which group it is either single or double. The accompanying figure will assist this description.

*Life-Histories.―*The life-history of Cestodes consists of larval and adult stages, which are usually passed through in different hosts. The egg gives rise in the uterus to a six-hooked embryo, which reaches the first host in a variety of ways. It may hatch out as a ciliated organism (fig. 8, D) capable of living freely in water for at least a week *(Bothriocephalus)*, which then, if eaten by a stickleback, throws off its ciliated envelope, and creeps by the aid of the hooks through the intestinal wall into the body-cavity of the fish. Here it develops into a larval, or rather an adolescent form. In other cases the infection of the first host is brought about by the ingestion

of proglottides or of eggs which are disseminated along with the faeces of the final host and subsequently eaten by herbivorous or omnivorous mammals, insects, worms, molluscs or fish. Man himself, as well as other mammals, is the intermediate host of the dangerous parasite, *Taenia echinococcus,* in countries where cleanli­ness is neglected; the pig is the host of *Taenia solium, and other* cases may be seen from the table at the end of this article. The transition of the larva from the intermediate to the final host is accomplished by the habits of carnivorous animals. The Elasmo­branchs swallow infected molluscs or fish; pike and trout devour smaller fry; birds pick up sticklebacks, insects and worms which contain Cestode larvae; and man lays himself open to infection by eating the uncooked or partially prepared flesh of many animals.

The peculiar feature of the larval history of Cestodes is the de­velopment in most cases of a cyst or hydatid on the inner wall of which the scolex is formed by invagination. The cyst is filled with a toxic fluid and may bud off new or daughter scolices. In this way bladders as large as an orange and containing secondary bladders.