the principal localities; it is widely distributed in Russia, and has been recorded from Poland, Denmark, Germany, as well as from France and Britain, though it is possible that the cases occurring in these latter countries have been due to importation.

The genus *Ligula* has the segmentation obscure or indistinguish­able. About six species are known. One is found encapsuled in a monkey, one in the common seal, others in reptiles and teleosteans. *Archigetes sieboldi* (fig. 3, B) occurs in the body-cavity of an Oligochætous worm (*Tubifex rivulorum*); it is about 3 mm. long, and consists of an oval body (scolex), to which is attached a cylin­drical tail (proscolex), bearing at the posterior extremity three pairs of hooks ; both these parts are capable of motion. The scolex has eight longitudinal excretory canals, and a terminal vesicle; the ventrally situated genital aperture is the common exit of the vas deferens, the vagina, and a uterus separate from the latter; the development is direct, and it attains sexual maturity without a change of host. *Duthiersia,* Perrier (34), contains two species, both from the intestines of varanian lizards. The genus is characterized by the presence of two large compressed frilled suckers, separated by a septum and perforated at their bases. The proglottides have three genital apertures resembling those of *Bothriocephalus.*

The genus *Tetrarhynchus* was, a few years ago, made the subject of an elaborate memoir by Pintner (9), who investigated *T. longi- collis,* V. Ben. The head, in which its most striking anatomical peculiarities are situated, really includes both the head and neck of previous authors (fig. 5, A) ; it is some 9 ∙94 mm. long, but only 0∙75 mm. in diameter, and bears at its anterior end two obliquely placed oval disks (fig. 5, B), each of which is perforated towards the apex by two round holes through which the four proboscides pro­trude. Each of these disks, moreover, shows traces of a division into two, a fact which indicates that it is formed by the fusion of two suckers corresponding to those commonly found in tape-worms. The flattening in this genus seems to be in a direction at right angles to that in which it usually takes place. The proboscides, which are the most characteristic organs of the genus, are four in number, and protrude from or can be retracted into the anterior surface of the head. Each consists of three parts :—(1) the toothed portion is the most anterior ; it is shaped like a long narrow glove­finger, like which it is invaginable; on its external surface it bears rows of hooks, closely set in diagonal lines (fig. 5, C); there are two forms of these : those which are directed outwards are large triangular hooks, with apices pointing backwards, whilst those situated on that surface of the proboscis which is turned towards the other proboscides are fine, delicate, and curved ; between the hooks are fine chitinous hairs; (2) the membranous sheath is firmly attached where the general surface of the body passes over into the toothed portion around the orifice of the invagination ; it consists of a thick homogeneous transparent skin, apparently an excretion of cells lining the cavity of the pro­boscis ; (3) the muscular portion is the most posterior of all, and is composed of six layers, remarkable as containing striped muscular fibres ; throughout all these three portions of the proboscis there extends a retractor muscle. The action of these various structures is not thoroughly understood, but it is probable that the proboscis is protruded by the action of the last-named muscular sheath, whilst it is retracted, after the relaxation of this, partly by the retractor muscle and partly by the pressure of the surrounding medium.

The family *Tæniadœ* is usually described as containing only the one genus *Tænia,* but, owing to the number and variety of its species, of which more than 350 have been described, it has been subdivided into groups, regarded by different authors as genera or subgenera. The subjoined arrangement is mainly that of Leuckart. It labours under the disadvantage that its chief divisions are based upon the bladder-worm or larval stage, which is only known in the case of comparatively few species.

I. *Cystici* (cystic tape-worms).—Head rarely unarmed; usually provided with a rostellum and with one or more rows of hooks ; proglottides longish oval when mature ; uterus with median stem and lateral branches ; the larva has a caudal bladder containing fluid.

1. *Cystotænia,* Leuckart.—The head arises in the wall of the embryonic bladder.

1. *Tænia saginata,* Göze. —Without hooks ( = *T. medio- canellata,* Küchenmeister, = genus *Tæniarhynchus,* Weinland).
2. *Tænia solium,* Rudolphi. — Head with a double circlet of hooks.
3. *Tænia acanthotrias,* Weinland.—Head with a triple circlet of hooks ( = genus *Acanthotrias,* Weinland).

2. *Echinococcifer,* Weinland.—The heads arise in special brood-capsules. *Tænia echinococcus,* V. Siebold.

II. *Cystoidei* (ordinary tape-worms).—The larva has no distended caudal bladder containing fluid.

1. *Hymenolepis,* Weinland.—Proboscis with a single row of small hooks. *Tænia nana,* V. Siebold, *T. flavopunctata,* Weinland.

2. *Dipylidium,* Leuckart.—Head with several rows of hooks, each with a discoidal base ; a right and left set of genital organs in each joint, the uterus, however, being single and common to the two. *Tænia cucumerina,* Rudolphi *(=T. elliptica,* Batsch).

Hamann (2) has recently proposed a new genus, *Ptychophysa,* for *Tænia lineata,* Göze, which is defined by the following characters :—(1) the porus genitalis is on the surface and not on the margin of the joints ; (2) the vaginal opening is anterior to that of the cirrus ; (3) at a certain period the uterus is convoluted ; (4) there is a peculiar shell-gland. In many of these characters the species shows a resemblance to the *Bothriocephalidæ.*

*Occurrence in Man.—*The Cestodes which in the adult state infest man, with their corresponding larvæ and temporary hosts, are as follows :—

Tænia saginata. Cysticercus bovis. Ox.

T. solium. C. cellulosæ. Pig, man.

T. nana. (?) (?)

T. flavopunctata. (?) (?)

T. madagascariensis. (?) (?)

T. cucumerina. C. T cucumerinæ. Trichodectes canis.

Bothriocephalus lotus. Pike, burbot.

B. cristatus. (?)

*B. cordatus.* Fish (?)

Other species, however, inhabit the human body in their larval condition ; a list of them, with the corresponding adult forms and permanent hosts, is subjoined :—

*Cysticercus cellulosæ. Tænia solium.* Man.

*C. acanthotrias. T. acanthotrias* (incog.) (?)

*C. tenuicollis. T. marginata.* Dog, wolf.

*Echinococcus. T. echinococcus.* Dog.

*Phylogeny.—*There can be no doubt that the Cestodes and Tre­matodes are intimately related and have sprung from a common ancestor ; there are so many structural peculiarities in which they agree (compare Trematodes), and they are connected by so many intermediate forms, that their affinity can admit of no doubt. According to Leuckart, the original ancestor of both was probably allied to the Planarians, while Huxley (22, pp. 213, 676) points out that it is at all events possible that they have no connexion with free forms but have always been anenterous, and in fact are nothing but “ gigantic morulæ, so to speak, which have never passed through the gastrula stage. ”

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