

Galatheascus striatus—a New Rhizocephalan.

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With 6 Figures in the Text.

A SPECIMEN of *Galathea strigosa* (L.) with a parasite of fairly large size at the abdomen was collected at the Looe-Eddystone Grounds near Plymouth on June 11th, 1913. Since then the decapod with its parasite has been in the collection of the Laboratory of the Marine Biological

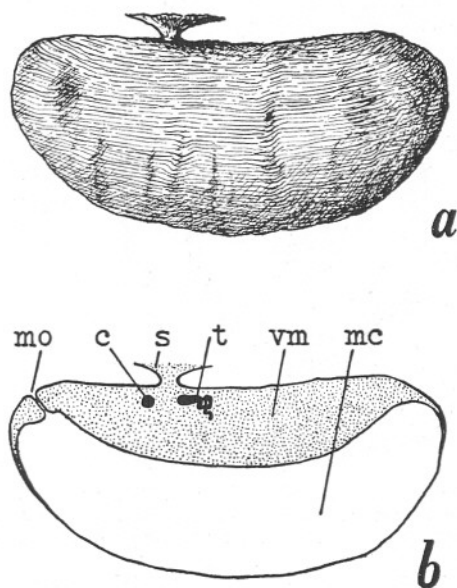


FIG. 1.—*Galatheascus striatus*. *a*, the animal from the left side; *b*, semidiagrammatic longitudinal section in which the genital organs of one side are shown also; *mo*, mantle opening; *c*, colleteric gland; *s*, stalk; *t*, testis; *vm*, visceral mass; *mc*, mantle cavity. $\times 3$.

Association. The specimen is different from all other parasites known to infest the species of the genus *Galathea*: at a first superficial inspection no mantle opening could be detected, and consequently it remained

doubtful whether the parasite belonged to the Rhizocephala or to some other group of Crustaceans. At my request Dr. E. J. Allen kindly put the animal at my disposal for further investigation. Fortunately the mantle cavity contained an enormous mass of nauplius larvæ, which proved that the parasite belongs to the Rhizocephala, as these larvæ have well-developed frontal horns (Fig. 6).

After some fragments of the mantle had been cut off for the study of its chitinous coverings a series of transverse sections was made from

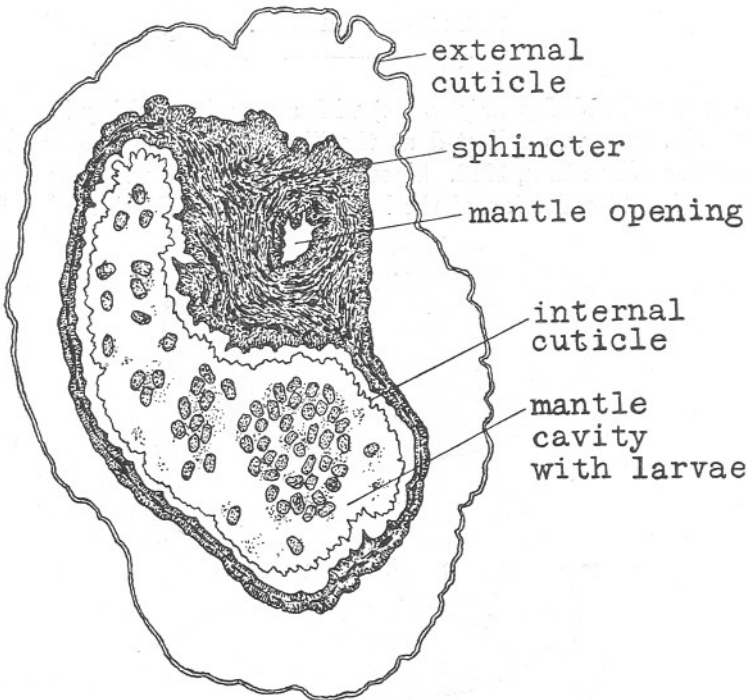


FIG. 2.—Transverse section through the anterior part of the body of *Galatheascus striatus*. The chitinous sheaths of both surfaces of the mantle have loosened from the muscular part. $\times 18$.

the whole animal. The study of its internal anatomy shows that the specimen is closely allied to *Peltogaster* and consequently has to be classified in the family *Peltogastridæ*. There are, however, sufficient characteristics which distinguish the specimen from the species of the genus *Peltogaster* to establish a separate genus, which may be called *Galatheascus*. The diagnosis of this genus is as follows:—

Galatheascus n. g. Body elongate oviform, mesentery very broad, extending from the anterior to the posterior extremity. Stalk in the anterior half of the body. Mantle opening extremely narrow. Colleteric

glands small, simple, in the neighbourhood of the stalk. Testes consisting of a very small straight part at each side of the median plane and a strongly coiled portion which passes into the vasa deferentia; the whole of the male genital organs in the region of the stalk.

The type species of this genus may be characterised especially by

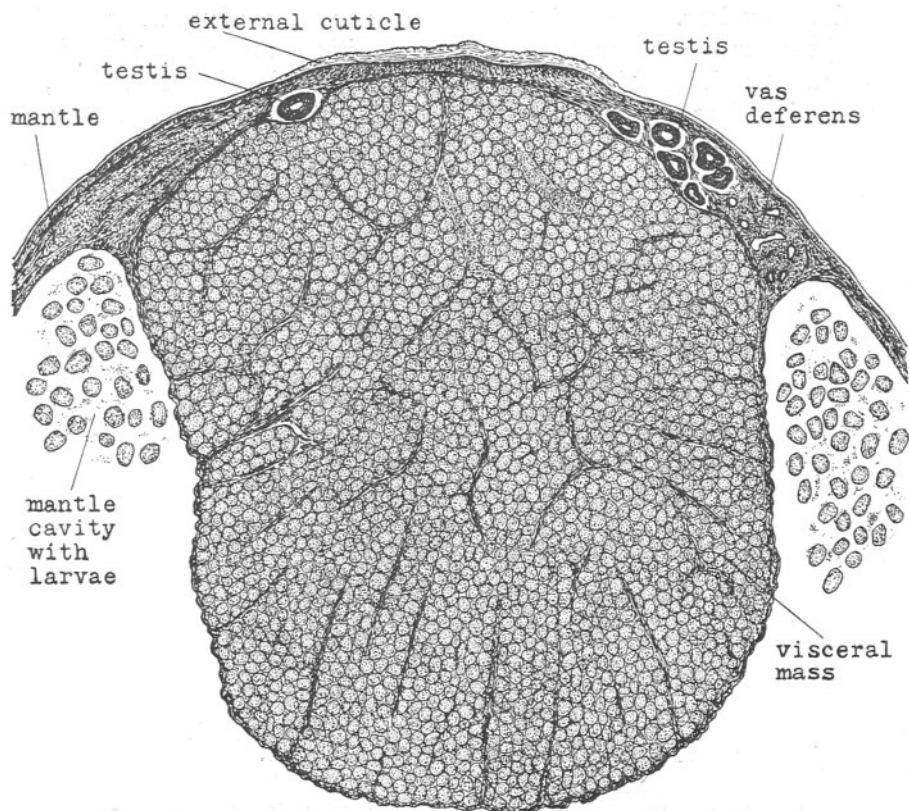


FIG. 3.—Transverse section through the region of the stalk of *Galatheascus striatus*. $\times 20$.

the structure of the chitinous parts of the mantle. So the following diagnosis of the species can be given:—

Galatheascus striatus n. sp. External cuticle of the mantle smooth, with shallow grooves extending over the surface in longitudinal direction. These grooves are about 0.2 mm. apart. The internal cuticle bears retinacula containing one to three spindles each. These spindles have a length of 20 to 25 μ .

A more elaborate description of the peculiarities of the only available specimen is given below.

The parasite was attached to the ventral surface of a specimen of *Galathea strigosa* (L.); between the second and the third abdominal segment. Its longitudinal axis had a direction perpendicular to that of its host; the anterior pole of the parasite was directed toward the right side of the host. The mantle opening is so small (diameter less than 0.5 mm.) that it escaped notice until the parasite could be studied in the series of sections. One of the most striking differences from the species of the genus *Peltogaster* is caused by the position of the stalk, which in *Galatheascus* is found in the anterior half of the dorsal surface (Fig. 1 *a, b*), whilst in *Peltogaster* the stalk is inserted to the mantle in the posterior

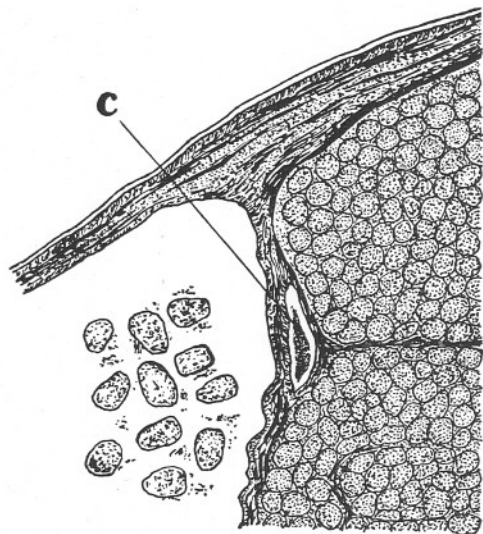


FIG. 4.—Part of a transverse section through *Galatheascus striatus*, slightly nearer to the anterior pole than that of Fig. 3, showing the colleteric gland (c). $\times 36$.

part of the body. In *Galatheascus* the stalk itself is slender, about 1 mm. thick, and very short. It is surrounded by an inconspicuous shield-like thickened part of the external cuticle; in Fig. 3 this thicker part of the chitin is visible. Muscles are present especially in the dorsal part of the animal and in the mantle. Moreover, the small mantle opening and the narrow tube connecting this opening with the mantle cavity are surrounded by an extremely strongly developed sphincter (Fig. 2). Besides these there is a thin layer of muscles enveloping the visceral mass. Between the groups of eggs in the ovary, which occupies almost the whole of the visceral mass, there are sparsely distributed muscular elements (cf. Fig. 3).

In the neighbourhood of the stalk the genital organs are found

(cf. Fig. 1 *b*). The structure of the testes does not differ in any significant detail from those of *Peltogaster*; the course of these organs, however, is different. Their closed extremity is directed toward the anterior pole; along a short distance they are straight, but soon the tubes continue their course in a very irregular coiled manner. As a result in sections through this region the lumen of the testis appears several times. One of the testes lies slightly behind the other, consequently in Fig. 3 the posterior part of one and the anterior part of the other testis is visible. After the coiled part of the testis this organ passes into the vas deferens, which has a much thinner wall and is less conspicuous; this part of the

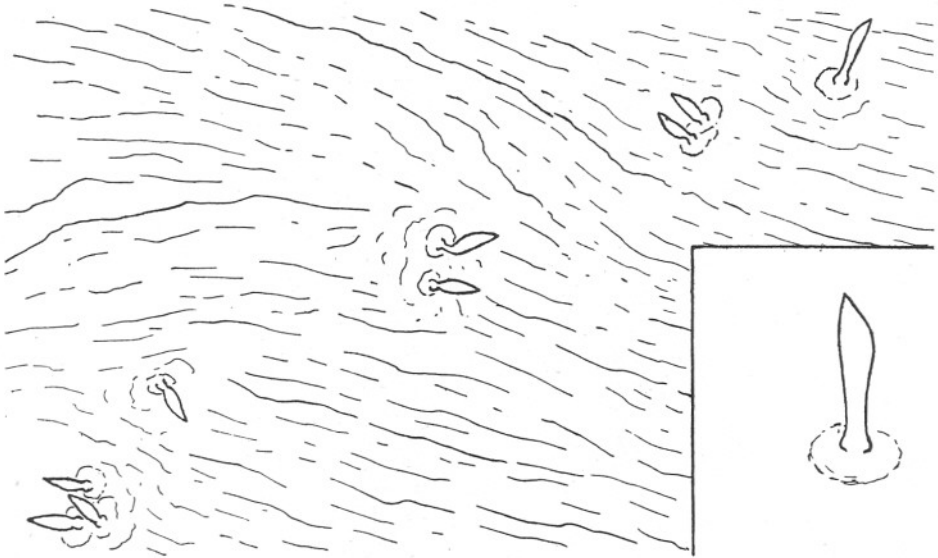


FIG. 5.—Retinacula on the internal cuticle of *Galatheascus striatus*. $\times 380$. In the right-hand corner of the figure one retinaculum more strongly enlarged ($\times 880$).

male genital organs also has a strongly irregular course. It terminates with the male genital opening which opens into the mantle cavity.

The colleteric glands have a very minute size: their diameter is less than 0.5 mm. They have an approximately circular lumen which is flattened in a lateral direction. On each side of the visceral mass, close to the insertion of the mantle, one of these organs is found. Inside the glands contain a coagulated mass, obviously the product of secretion of the gland cells. In general the colleteric glands of *Galatheascus* are built on the same plan as those of *Peltogaster*; they are probably even more simple than those of the latter genus.

With the exception of the shield-like part round the stalk the external cuticle of the mantle is comparatively thin (8–11 μ). In many parts of the

mantle it has loosened from the muscular elements (e.g. in the anterior part; cf. Fig. 2). The same holds true for the internal cuticle. The surface of the external cuticle is smooth except for the shallow longitudinal grooves mentioned above.

The internal cuticle of the mantle possesses a great number of retinacula (Fig. 5). Many of these consists of a single spindle, others have two, and others again three. The spindles are slender, pointed at the top, and do not bear barbs. In general they are like those of *Peltogaster paguri*, though they are of somewhat larger size (in *P. paguri* about $16\ \mu$, in *Galatheascus* $20\text{--}25\ \mu$).

The larvæ (Fig. 6) are strongly reminiscent of those of *Peltogaster*

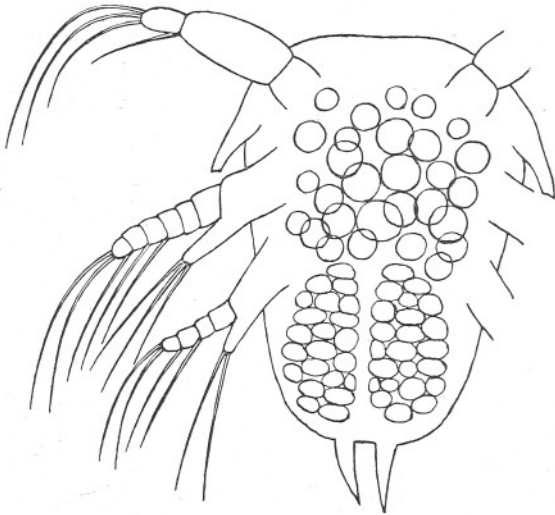


FIG. 6.—Nauplius larva of *Galatheascus striatus*, ventral view. $\times 250$.

(cf. Nilsson-Cantell, 1921); they also have approximately the same size, the total length on an average amounting to $250\ \mu$. In the nauplius of *Galatheascus* the lateral horns are directed more strongly backwards than in those of *Peltogaster*. For more particulars on the shape of the legs, etc., I refer to the figure. Probably on account of the insufficient state of preservation, the mouth parts and the frontal filaments could not be found. The eye also is invisible, so in all probability in the living larvæ it was devoid of pigment.

Galatheascus striatus is the first Peltogastrid known to infest a host belonging to the Galatheidæ. Other Rhizocephalid parasites are known to occur on Galatheidæ, but these are representatives of the genus *Lernæodiscus* (family *Lernæodiscidæ*, cf. Boschma, 1928). The only

Rhizocephalid hitherto known as a parasite of *Galathea strigosa* is the form designated by Smith (1906) as the new species *Lernæodiscus strigosa*, the diagnosis of which, however, is very incomplete. According to Smith it differs from *Lernæodiscus galatheæ* by having a very wide "anterior" hinge of the mesentery.

The position of *Galatheascus striatus* to its host differs from that in the other Peltogastridæ: the long axis of *Galatheascus* is perpendicular to that of its host. Consequently the diagnosis of the family Peltogastridæ as given in a previous paper (Boschma, 1928) has to be amended, the statement "long axis parallel to long axis of host" cannot remain in this diagnosis.

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