

♀. Similar to the male, but with the front slightly convex, the prothorax less sharply contracted apically, and with the two prothoracic tubercles replaced by a concentric ridge.

Long. 1.4–1.5 mm.

*Hab.* India, Nilgiri Hills.

Type in the collection of Mr. H. E. Andrewes.

In neither sex do there appear to be many scales on the prothorax, unless they have been worn off in the series of specimens examined. The species is very closely allied to *C. tiliæ*, Panz., but is easily separated from it by the elytral clothing alone.

#### Genus WEBBIA, Hopk.

*Webbia dipterocarpi*, Hopk., ♂ ♀.

*Hab.* Philippine Islands.

Several females from Penang and a pair from Sarawak (Mt. Matang).

#### XVI.—On a curious Malformation in *Tænia saginata*.

By H. A. BAYLIS, M.A.

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A VERY curious specimen of the common tapeworm of man, *Tænia saginata*, recently came into my hands through the courtesy of Mr. W. T. Hillier, of the Pathological Department of the Queen's Hospital for Children, Hackney. As is so often the case with cestodes removed by anthelmintic remedies, the head and anterior portion of the strobila were not recovered. The absence of the head is regrettable, as it might have thrown interesting light on the peculiarities of the worm.

The total length of the fragment recovered was about 165 cm. In its general shape and appearance there is nothing remarkable. It is flattened dorso-ventrally as usual, and most of the segments are of the size and shape characteristic of *T. saginata*. On closer inspection, however, two types of anomaly are found to occur very frequently:—

- (1) Imperfectly divided segments, with two or more genital pores on alternate sides, and a separate set of internal organs corresponding to each pore.
- (2) Segments normally divided from their neighbours, but with two genital pores, on opposite sides but at the same level.



Some idea of the proportions of normal and abnormal segments in this specimen may be gathered from the following figures for a portion measuring about 70 cm. in length.

Complete intersegmental divisions .....	70
Imperfect intersegmental divisions .....	17
Normally-divided segments with single pore (normal condition) .....	6
Normally-divided segments with two opposite pores ..	46

The first-mentioned kind of abnormality calls for passing comment only. It is by no means uncommon in *Tænia saginata*; indeed, as Leuckart\* remarks, "traces of it may be seen in almost every chain." The commonest case is that in which the division extends only a little way across the width of the strobila. Sometimes it reaches to the middle line, or beyond it. Owing to the divided side being longer than the undivided side of the joint, the partial dividing-line usually curves forwards somewhat before it disappears. This forward curve may be carried so far that it meets the preceding intersegmental division, in which case a triangular "supernumerary" segment is formed, wedged in between two normal segments. Such "supernumerary" segments may occasionally be the starting-points of the double, or rather forked, chains of segments that are sometimes met with.

The second anomaly (segments with two opposite genital pores) is more remarkable. Leuckart observed such segments in *T. saginata*, but says of them† "here one finds behind each opening a set of male and female ducts, with cirrhus-pouch and vesicula seminalis, but the reproductive organs proper are as usual—the two vaginæ passing into a common shell-gland, and into a single uterus." In the present case, however, further examination shows that the reduplication is not confined to the pores and ducts—*there are two complete and bilaterally symmetrical sets of genital organs in each of the segments with double pores*. Each vagina has its own distinct shell-gland, yolk-gland, ovary, and uterus. The two uteri present a remarkable appearance in gravid segments (see figure), running forward parallel to each other, and each sending out the usual lateral branches. The branches on the two inner, opposed sides of the uteri, however, have not room enough for their normal development, and are stunted and frequently unbranched, many of them containing few or no

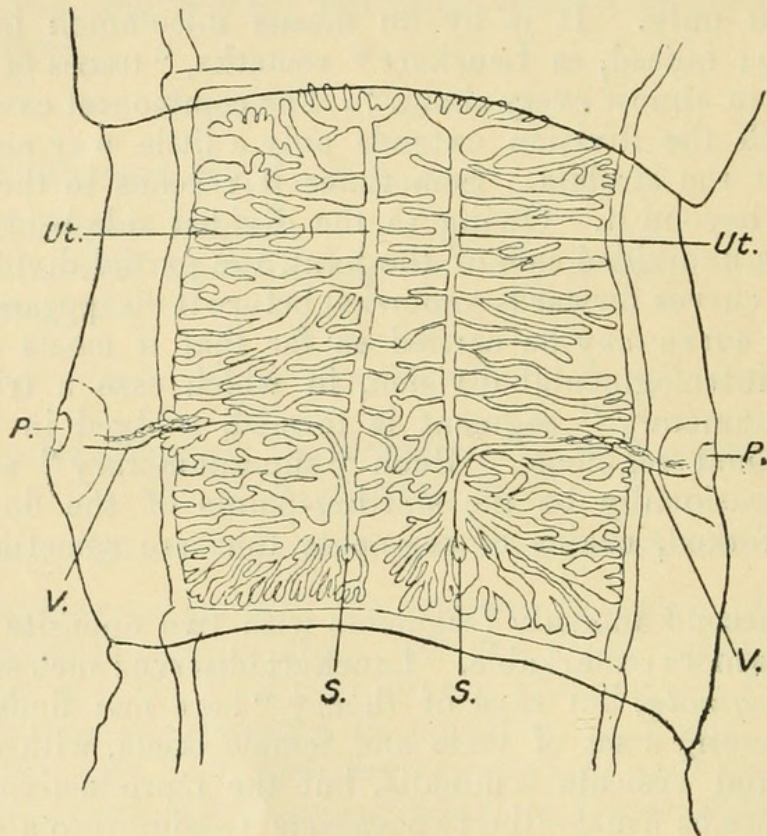
\* 'The Parasites of Man,' English translation by W. E. Hoyle, 1886, p. 450.

† *L. c.* p. 451.



ova; while the branches on the outer sides appear normal. In younger segments the finger-shaped lobes of the inner halves of the two ovaries are in close contact and somewhat confused.

As regards the female apparatus the condition in most of the segments of this worm is similar to that normally found in certain genera of cestodes (*Dipylidium*, *Moniezia*, *Cittotænia*, to mention only a few well-known examples), but



Gravid segment of *Tænia saginata*, showing abnormal, bilaterally symmetrical arrangement of the genital organs.

*P.*, *P.*, the two genital pores, from which the two vaginæ, *V.*, *V.*, lead to two shell-glands, *S.*, *S.* From these the main stems (*Ut.*, *Ut.*) of the two uteri extend forward parallel to each other.

unknown in *Tænia*. Were *T. saginata* not well known to be a variable species, such a peculiarity might have been considered sufficient ground for creating not merely a new species but even a new genus. There can, however, be no question of this kind in this case, for two reasons. In the first place, the strobila is not entirely composed of double segments, but here and there we find a normal segment with a single pore and median uterus. In the second place, the reduplication extends also to the male organs—not only to the ducts, but



to the testes themselves. This is shown by the great overcrowding of these organs in the median field of the segments, between the two uteri. Here we have, I think, clear evidence that two sets of testes, enough for two segments—fused together, as it were, side by side,—overlap each other at the point of junction.

Both sets of organs in the double segments appear to be functionally active, as is shown by the presence of spermatozoa in the two vasa deferentia, and by the large numbers of normal ova in the two uteri.

Apart from the genital apparatus, the double segments appear to be normal—the excretory system, for example, shows only the usual two pairs of longitudinal vessels and the usual transverse connections.

In examining the possible causes of this malformation, it must not be confused with the cases of “triradiate,” “prismatic,” or “polyradiate” cestodes, which have been noted by many observers, and recently studied by Foster\*, who has found forty-four instances of the phenomenon mentioned in literature. The triradiate forms, as far as is known, are always associated with a triradiate scolex, with six suckers instead of four, and their segments usually have only a single genital pore situated on one of the three “wings.” Where two or more pores are present, they are not, as in the present case, placed at the same level on opposite sides, but one behind the other, usually in regular alternation. It is not, therefore, to cases of this sort that we must look for an explanation of the double symmetrical arrangement. Had the scolex been available, it is, of course, possible that the worm might have proved to be some kind of “double-headed monster”; but this is rendered rather improbable by the fact that a certain proportion (though a very small one) of the segments are of normal type, with single pore and single set of genital organs.

On the whole, it seems more likely that we have here a case where the tendency repeatedly to form partially-divided and “supernumerary” segments, which has been seen to be very marked, has been carried a step further than usual, and many of the divisions have failed to make their appearance at all. We know that there is a tendency for supernumerary segments to assume a position diagonal to the long axis of the worm, and that they often cause the succeeding segment to be pushed out laterally in the opposite direction so as to form a kind of “elbow” in the strobila. If this process

\* ‘Journal of Parasitology,’ ii. no. 1 (1915), p. 7.



were pushed to extremes at the time of the formation of the young segments (when presumably they are in a plastic condition), and if at the same time the intersegmental division were suppressed, the result would be a "double segment" of the kind that has been described. It is difficult, of course, to understand what force or forces may have been operating to bring about such a condition, but it is suggested that some such process may have been the cause of this malformation, rather than that the specimen is a "double monster."

Although a number of records are to be found in literature of segments of *T. saginata* with two opposite or nearly opposite genital pores, I have been unable to find an account of a case similar to the present example, with two bilaterally symmetrical sets of internal organs. A very curious case has, however, been described and figured by Blanchard \*, where a single segment, in a chain otherwise consisting of quite normal segments, contained a set of organs at each end, both leading into a common uterus in the normal median position. The ovary, yolk-gland and associated organs at the posterior end of the segment were arranged in the usual order, but those at the anterior end were reversed, so as to form a "mirror-image" of the former. Each set had its own ducts and pore, the pores being situated one on either side of the segment, but not quite opposite to each other. Although this has been referred to as a single segment, it ought perhaps to be regarded as two segments, since there was a partial transverse division on one side.

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XVII.—*Indo-Malayan and Australian Noctuidæ.*

By Colonel C. SWINHOE, M.A., F.L.S., &c.

Subfamily *SARROTHRIPINÆ*.

*Characoma perfecta*, nov.

♂. Upperside: fore wing grey irrorated and suffused with pale black, a deep black patch on middle of costa angled downwards, narrowly extending on costa to near apex, and also to the base of the wing, its inner edge with a white patch irrorated with black and containing on its lower part three black spots and another below near the

\* Bull. Soc. Zool. France, xv. 1890, p. 166. The writer is indebted to Prof. A. Railliet for drawing his attention to this case.



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