



SMITHSONIAN INSTITUTION
U. S. NATIONAL MUSEUM

Vol. 104

Washington : 1955

No. 3341

SOME POLYCLAD FLATWORMS
FROM THE WEST INDIES AND FLORIDA

BY LIBBIE H. HYMAN

The polyclads collected on the *Fish Hawk* Expedition to Puerto Rico in 1898-99 and by the Smithsonian-Hartford Expedition to the West Indies in 1937 have been turned over to me for identification by the U. S. National Museum. There are further available four vials of polyclads taken by W. G. Hewatt in 1946 at Puerto Rico. These three collections furnish the basis for the present article and probably give a fair but far from exhaustive picture of the polyclad fauna of the West Indies. As technical terms and taxonomic categories are carefully defined in an extensive article of mine recently published (Hyman, 1953), it appears unnecessary to repeat these definitions here. Definitions will be limited to families and genera not represented in that article.

Order POLYCLADIDA

Suborder ACOTYLEA

Section CRASPEDOMMATA

Family DISCOCELIDAE Laidlaw, 1903

DEFINITION: Craspedommata without definite tentacles and with or without definite tentacular eye clusters; pharynx ruffled, medially located; copulatory apparatus close behind the pharynx; prostatic vesicle, when present, interpolated; typically with numerous small

prostatic apparatuses in the wall of the male antrum and the penis papilla (when present); female apparatus with a Lang's vesicle.

Genus *Adenoplana* Stummer-Traunfels, 1933

DEFINITION: Discocelidae with or without tentacular eye clusters; mouth behind the pharynx; gonopores separate; male gonopore with or without small accessory pore; with interpolated prostatic vesicle situated above the male antrum; penis papilla wanting; wall of male antrum with numerous prostatic apparatuses.

TYPE SPECIES: *Polycelis obovata* Schmarda, 1859.

Adenoplana antillarum, new species

FIGURE 81, *a-c*

MATERIAL: One specimen from the Smithsonian-Hartford Expedition.

FORM: Small, thick, opaque, slender (fig. 81, *a*); 8 mm. long by 2 mm. wide (preserved); without any indication of tentacles.

EYES: Limited to the anterior end (fig. 81, *a*); marginal eyes relatively large, forming a band along the anterior margin, scarcely extending to the level of the brain; tentacular clusters wanting; what may

EXPLANATION OF FIGURES

1, marginal eyes	26, ejaculatory duct
2, cerebral eyes	27, brain
3, tentacular eyes	28, parasites?
4, frontal eyes	29, muscle masses
5, pharynx	30, prostatic expansion
6, uteri full of eggs	31, cement duct
7, female gonopore	32, sphincter
8, male gonopore	33, prostatic mass
9, cement glands	34, spermiducal vesicles
10, male antrum	35, cirrus sac
11, prostatoids	36, brown network
12, prostatic vesicle	37, orange spots
13, prostatic glands	38, grayish black markings
14, common sperm duct	39, orange border
15, female antrum	40, marginal glands
16, cement pouch	41, epidermis
17, vagina	42, bundles of rhabdites
18, Lang's vesicle	43, main intestine
19, mouth	44, sucker
20, tentacles	45, intestinal network
21, spermiducal bulbs	46, penis stylet
22, seminal vesicle	47, penis sheath
23, prostatic duct	48, uterine vesicle
24, penis papilla	49, accessory vesicles
25, entrance of oviduct into vagina	50, entrance of sperm duct

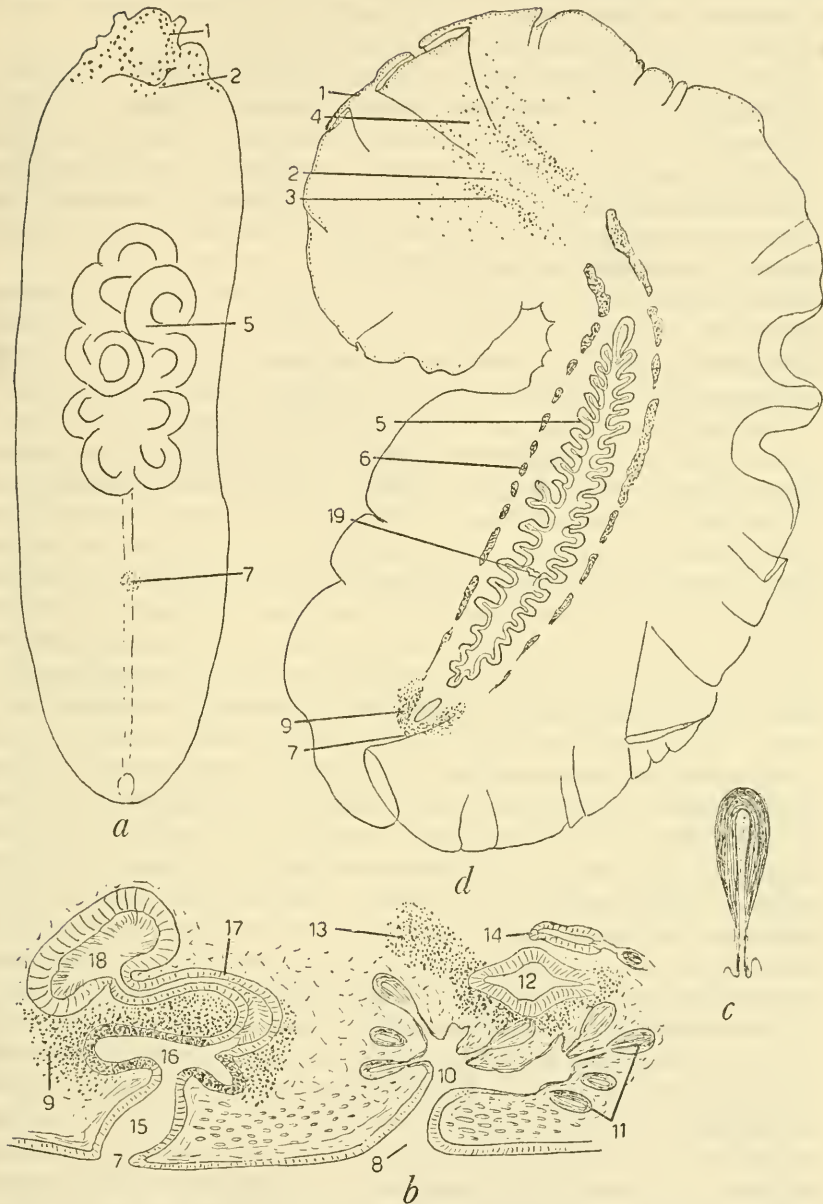


FIGURE 81.—*a-c*, *Adenoplana antillarum*: *a*, dorsal view; *b*, sagittal view of copulatory apparatus; *c*, a prostatic. *d*, *Indistylochus hewatti*, dorsal view. (For explanation see facing page.)

be considered cerebral groups extend from brain region anterolaterally to meet the marginal band; due to a deep fold in the brain region, there may be some uncertainty about the cerebral eyes.

COLOR: Indeterminable; specimen was dark brown like most preserved polyclads; this color often bears no relation to the color in life.

DIGESTIVE TRACT: Pharynx central, elongated, with heavy folds (fig. 81,*a*); the position of the mouth could not be ascertained due to the opacity of the specimen and was not found on sections. In the other known species of this genus, the mouth lies just behind the pharynx, an unusual position in polyclads.

COPULATORY APPARATUS: The male apparatus lies immediately behind the pharynx but could not be seen in the whole specimen; the female gonopore was seen and is indicated in figure 81,*a*. The copulatory apparatuses are shown in sagittal view in figure 81,*b*. Due to the condition of the specimen, not all details could be determined. The male apparatus is typical of the genus; the male gonopore leads into a male antrum, tubular at first, then expanding into a chamber with irregular walls. These walls contain a number of small prostatic apparatuses, or prostatoids as I have elsewhere called them. There are probably about 25 of these altogether but only a few occur in the median sagittal plane; most of them are in the lateral walls and do not show in figure 81,*b*. As both Stummer-Traunfels (1933) and Marcus (1950) have figured parasagittal sections of the male apparatus, it appears unnecessary to present such a view here. The prostatoids of *A. antillarum* differ somewhat from those figured for the two other known species of the genus. In the other species the muscular wall is thin and the glandular interior relatively large. In *A. antillarum* (fig. 81,*c*), the prostatoids are of bulbous shape with a thick muscular wall and slender glandular interior. They narrow to a tubular terminal part that appears sclerotized with dense nuclei and that opens on a little projection of the antrum wall. A definite penis papilla is wanting but the dorsal antrum wall presents a rather large eminence. The antrum wall lacks the web of muscle fibers seen in the two other species of the genus; muscle fibers, evidently transverse, were seen only below the main part of the antrum. Above the antrum lies a prostatic vesicle of angular shape and unusual appearance. It is lined by a tall epithelium but lacks the muscular investment usual to prostatic vesicles. It is accompanied, especially ventrally, by masses of eosinophilous granulations, presumably representing prostatic glands. The entrance of the prostatic vesicle into the male antrum could not be found nor was the entrance of the sperm duct into the vesicle trace-

able. There appears to be a common sperm duct with rather thick walls; this could be seen above the prostatic vesicle but could not be traced definitely into it although there is little doubt that it must enter the dorsal wall of the vesicle. There are no indications of a seminal vesicle in any of the three known species of this genus, but one of the other species has spermiducal bulbs. There was no indication of these in *antillarum*. A small accessory male gonopore close to the main gonopore occurs in the two other species of *Adenoplana* but is wanting in *antillarum*, at least in the available specimen.

The female apparatus differs markedly from that of the other species of the genus. The female gonopore lies well behind the male pore (fig. 81, *b*) and leads into a broadly tubular antrum that enters the middle of an expanded, dorsoventrally flattened cement pouch. This pouch is surrounded by a cloud of cement glands whose granular secretion fills its epithelial lining. From the anterodorsal region of the cement pouch, the vagina proceeds dorsally as a tube that soon turns posteriorly, lying above the cement pouch, and enters the middle of the ventral surface of the sacciform Lang's vesicle. This vesicle consists of a tall ciliated epithelial wall. The beginning of the vagina is slightly expanded and also ciliated. The entire female apparatus is wanting in muscularity. The entrance of the oviduct into the vagina could not be found.

DIFFERENTIAL DIAGNOSIS: *Adenoplana antillarum* differs from the other two known species of the genus—*A. obovata* (Schmarda), 1859, redescribed by Stummer-Traunfels, 1933, and *A. evelinae* Marcus, 1950—in body shape, eye arrangement, details of the female apparatus, and lack of an accessory male pore. Both these species are of broadly oval form with definite tentacular and cerebral eye clusters and an extended marginal band of eyes, and in both the female apparatus lacks a cement pouch and has a crescentic Lang's vesicle. They further are provided with a very small male pore alongside the principal one.

DISTRIBUTION: Collected by W. L. Schmitt on the Smithsonian-Hartford Expedition (specimen No. 23) at Charlotte Amalie, St. Thomas, Virgin Islands, Apr. 4, 1937, on shore of harbor.

HOLOTYPE: Anterior part as whole mount, posterior part as sagittal sections (2 slides), deposited in the U. S. National Museum, No. 24630.

REMARKS: Although the male apparatus of the specimen agrees well with that of the other species of the genus, the specimen differs so much from them in body shape, eye arrangement, and details of the female apparatus that it will be desirable to remove it to a new genus if similar species are found.

Family STYLOCHIDAE Stimpson, 1856

Genus *Stylochus* Ehrenberg, 1831*Stylochus megalops* (Schmarda), 1859

FIGURE 82, a, b

Dicelis megalops Schmarda, 1859, p. 15, pl. 2, fig. 30.

Stylochus heteroglenus, Schmarda, 1859, p. 34, pl. 7, fig. 77.

Stylochus megalops, Stummer-Traunfels, 1933, p. 3488, figs. 1-4; p. 3556, figs. 126-128.

MATERIAL: One specimen from the *Fish Hawk* Puerto Rico Expedition.

FORM: Almost circular, 20 mm. long by 17 mm. wide but evidently much contracted; the Schmarda specimens were broadly oval, measuring 14 by 9 and 12 by 9 mm.; margins much ruffled and folded, probably the result of contraction; with a pair of nuchal tentacles, contracted as usual to a bulbous shape (fig. 82, a).

EYES: There are numerous eyes in each tentacle, also some around their bases; the cerebral eyes are rather scanty, consisting of loose groups between the tentacles; frontal eyes are lacking; the marginal band is fairly wide and extends back less than half the body length (fig. 82, a). On account of the many folds and general opacity of the specimen, the eyes were not distinguished with entire satisfaction.

COLOR: The specimen shows the usual dark brown color common to preserved polyclads. According to the original colored figures of Schmarda, the species is light brown with dots and reticulations. However, these figures appear to have been made from preserved material, not from life.

DIGESTIVE TRACT: The pharynx is central with a few broad, much ruffled lateral folds. On account of the darkened condition of the specimen no other details of the digestive tract could be ascertained. The mouth is beneath the posterior part of the pharynx (fig. 82, a).

COPULATORY APPARATUS: Lies close behind the pharynx, therefore far from the posterior margin (fig. 82, a). In the whole specimen the outline of the prostatic vesicle could be seen in this position; farther on, the uteri extended anteriorly to either side of the pharynx (fig. 82, a). Sagittal sections were made of the postpharyngeal region. They revealed an unfortunate fold between the male and female apparatuses that somewhat distorted the relations of these parts, but the specimen proved in fair histological condition. The male apparatus was found to have been cut nearly sagittally but, owing to the fold just mentioned, the female apparatus was cut crosswise. The details of both structures agree well enough with the two figures furnished by Stummer-Traunfels (1933), but they differ in small details.

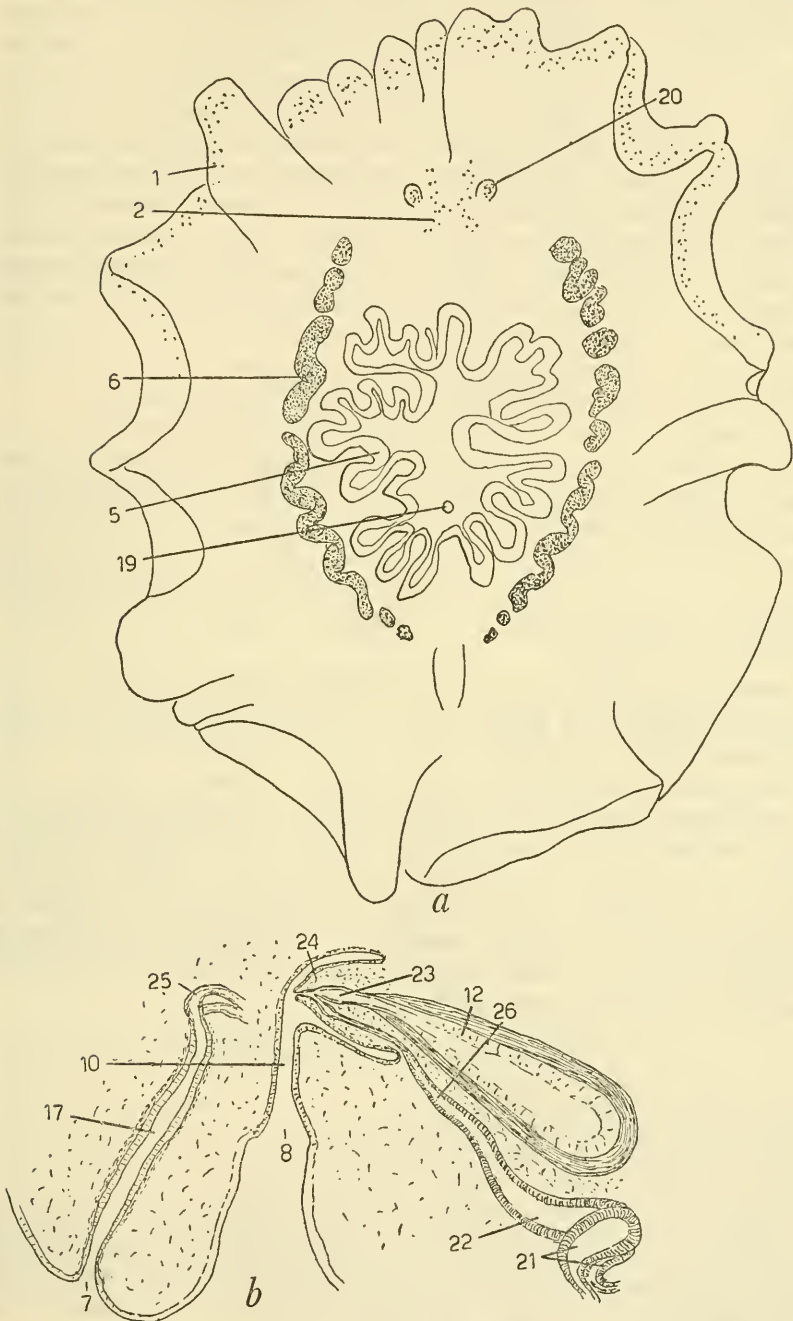


FIGURE 82.—*Stylochus megalops*: *a*, dorsal view; *b*, sagittal view of copulatory apparatuses. (For explanation see page 116.)

The male antrum is much longer than in the *Schmarda* specimens reinvestigated by Stummer-Traunfels but this may be the result of the distortion in that region. The penis papilla is a good-sized conical eminence within which the prostatic duct parts from the ejaculatory duct. The former leads into the elongated, horizontally oriented prostatic vesicle (fig. 82,*b*) that has a muscular wall of moderate thickness and an equally thick lining which was disintegrated into strands. Prostatic glands were not in evidence. Ventral to the prostatic vesicle the ejaculatory duct runs a slightly sinuous course, gradually widening into a bulbous seminal vesicle with well-developed muscular walls of circular fibers. Into either side of this seminal vesicle open short spermiducal bulbs that form the terminations of the sperm ducts. With the seminal vesicle proper they form the tripartite type of seminal vesicle common to many species of *Stylochus*.

The female gonopore lies considerably behind the male one. As typical of the genus, it leads into a vertically ascending tubular vagina that terminates with the reception of the two oviducts. As the vagina was cut crosswise in the series of sections, its exact form could not be determined. Stummer-Traunfels' figures indicate a pronounced forward curve of the vagina that did not seem to be present in my specimen. The vagina has a fair muscular investment; cement glands were not in evidence.

DISTRIBUTION: The *Schmarda* specimens came from Jamaica. The present specimen was taken on the *Fish Hawk* Expedition at Playa de Ponce Reef, Puerto Rico, Feb. 1, 1899. It is probable that the species is fairly common in the West Indian region.

SPECIMEN: Anterior half as whole mount, posterior half as sagittal serial sections (four slides) deposited in the U. S. National Museum.

REMARKS: This species belongs to the long list (26) of *Stylochus* species (see Hyman, 1953) in which the marginal eyes are limited to the anterior part of the body margin. It is further characterized by a tripartite seminal vesicle of which the lateral limbs, formed of the spermiducal bulbs, are unusually short.

Stylochus oculiferus (Girard), 1853

Imogine oculifera Girard, 1853, p. 367.

Stylochus oculiferus, Diesing, 1861, p. 570.

Stylochus floridanus Pearse, 1938, p. 71, fig. 24.

Stylochus oculiferus, Hyman, 1940, p. 464, figs. 27, 28a.

REMARKS: A fine large specimen of this species was collected by H. Dodge at Dick's Point, New Providence Island, in the Bahamas. Preserved, it had retained the typical coloration of light brown dotted with small rose-red spots. The specimen has been deposited in the American Museum of Natural History. As will appear in this paper,

there are known at present six polyclad species common to Florida and the West Indies. *Stylochus oculiferus* was previously recorded only from the coasts of Florida and North Carolina.

Indistylochus, new genus

DEFINITION: Stylochidae of elongated oval form without tentacles; with tentacular and cerebrofrontal eyes; male apparatus with very small prostatic vesticle located ventral to the very large and elongated seminal vesticle; vagina extremely long, slanting forward above the male apparatus, then recurving parallel to itself, terminating at the oviduct entrance; Lang's vesticle wanting.

TYPE SPECIES: *Indistylochus hewatti*, new species.

Indistylochus hewatti, new species

FIGURES 81,*d*; 83,*a*

MATERIAL: Two specimens sent by Hewatt.

FORM: Elongate oval with rounded ends (fig. 81,*d*); both specimens had set into a curved shape as shown in figure 81,*d*; tentacles absent; margins ruffled; about 20 mm. long by 8 mm. wide.

EYES: There is an elongated group of tentacular eyes on each side; between the tentacular groups the cerebrofrontal eyes extend forward as distinct linear groups that, anterior to the tentacular eyes, join and spread anteriorly but do not reach the marginal eyes; there are also scattered eyes lateral to and behind the tentacular groups. The marginal eyes are very small and located close to the margin; they extend, mostly as a single row, around the anterior margin back to about the level of the most posterior of the cerebrofrontal eyes.

COLOR: Light brown, white middorsally in life; preserved specimens show the usual brown color.

DIGESTIVE TRACT: Pharynx long and narrow with a number of lateral folds, posteriorly located (fig. 81,*d*); the mouth was seen posterior to the middle of the pharynx.

COPULATORY APPARATUS: Situated immediately behind the pharynx, near the posterior margin (fig. 81,*d*). The postpharyngeal part of one specimen was removed and sectioned sagittally. Study of these sections showed that the animal is a stylochid, not a cryptocelid as was supposed from external appearance. A sagittal view of the copulatory apparatuses is shown in figure 83,*a*. The sperm ducts approach the male apparatus from below and enter, apparently separately, the proximal end of the seminal vesicle. The latter is a large sac of elongated oval form. After receiving the sperm ducts into its narrow beginning, it proceeds forwards for a short distance,

then turns abruptly backwards, at the same time greatly increasing in size. It then proceeds posteriorly as a long oval sac with a thick muscular wall. The interior in the sectioned specimen is filled with sperm. Upon approaching the vicinity of the penis, the seminal vesicle narrows to an ejaculatory duct that curves ventrally and joins the prostatic duct inside the penis papilla. The prostatic vesicle is a very small oval sac lying beneath the narrowed distal part of the seminal vesicle. It has a thick muscular wall and a glandular lining filled with eosinophilous granules. Its duct immediately joins the ejaculatory duct and the common duct so formed proceeds to the tip of the penis papilla. The latter is a well formed conical projection housed in a male antrum that follows its contours. The male antrum shortly opens below by the male gonopore.

The female gonopore is situated shortly behind the male gonopore. It leads into a short tubular female antrum that at once continues as the vagina. The latter is a ciliated tube of extraordinary length that runs forward above the seminal vesicle to a point slightly anterior to the vesicle's anterior end, then it turns abruptly posteriorly and parallels its former course until it reaches a level of about that of the female gonopore, where it terminates on receiving the two oviducts separately. The vagina is ciliated throughout and accompanied along its entire course by an immense mass of cement glands that practically fill all the space between the seminal vesicle and the dorsal body wall, as well as extending far anterior to the curve of the vagina. Lang's vesicle is wanting and there is no other extension of the vagina caudad of the entrance of the oviducts. The uteri extend forward alongside the pharynx nearly to the level of the most posterior eyes (fig. 81,d).

DISTRIBUTION: Collected by W. G. Hewatt on Mar. 13, 1946, at East Point Beach, Boquerón, Puerto Rico, under beds of *Mytilus* between tides.

HOLOTYPE: One whole mount deposited in the U. S. National Museum, No. 24620; also one set of sagittal serial sections of the copulatory region in that institution (four slides), No. 24621.

REMARKS: This species combines the characters of several genera of the Stylochidae without fitting satisfactorily into any of them. A greatly reduced prostatic vesicle is also seen in *Parastylochus*, *Enterogonia*, and *Cryptophallus*; an excessively long vagina occurs in *Meixneria* and *Idioplana*; the prostatic vesicle lies to the ventral side or at least the anterior side of the seminal vesicle in *Cryptophallus*; but in no other stylochid genus is found a combination of these characters plus an enormous increase in the size of the seminal vesicle. It therefore appeared necessary to create a new genus for the species.

Family CRYPTOCELIDAE Laidlaw, 1903

Anandroplana, new genus

DEFINITION: Cryptocelidae of elongate oval form; band of marginal eyes completely encircling the margin; pharynx long, much ruffled; male apparatus close behind the pharynx; lacks seminal vesicle, prostatic vesicle, and penis papilla; male apparatus excessively muscular; Lang's vesicle wanting.

TYPE SPECIES: *Anandroplana muscularis*, new species.

Anandroplana muscularis, new species

FIGURES 83,*b*; 84,*a*

MATERIAL: One specimen from the Smithsonian-Hartford Expedition of 1937 to the West Indies.

FORM: Elongate oval with rounded ends (fig. 83,*b*), 17 mm. long by 7 mm. wide; margins somewhat ruffled, indicating some contraction.

EYES: Distinct cerebral and tentacular clusters are present, each of a considerable number of eyes (fig. 83,*b*); the cerebral eyes form oval groups to either side of the brain, of 20 to 25 relatively large eyes each; the much smaller and more numerous (40 to 60) eyes of the tentacular groups extend forward between and beyond the cerebral clusters. The band of marginal eyes completely encircles the margin; it consists of rather small eyes, as usual in the family, and diminishes in width posteriorly.

COLOR: Preserved specimen appears dark brown.

DIGESTIVE TRACT: The rather large, elongated, and much ruffled pharynx is rather centrally located (fig. 83,*b*); a distinct circular opening just behind its last fold was taken to be the mouth. A similar position of the mouth occurs in another cryptocelid genus, *Ommatoplana* Laidlaw, 1903a. Because of the dark color no further details of the digestive tract were evident in the specimen.

COPULATORY APPARATUS: The postpharyngeal region was removed and sectioned sagittally. It was found in bad condition, with many cracks and tears but all parts of the copulatory apparatuses seemed to be present. The male apparatus lies close behind the pharynx so that the last folds of the latter are in contact with the antrum wall. A sagittal view of the apparatuses, insofar as they could be ascertained, is given in figure 84,*a*. The male apparatus is unusual in that it lacks seminal vesicle, prostatic vesicle, and penis papilla. It appears to consist wholly of a very large antrum with irregular walls excessively provided with muscles. The muscles seem to occur in lengthwise cords united with each other in a weblike

fashion (fig. 84,*a*). They fill practically all the space between the cavity of the antrum and the dorsal and ventral body walls. Most of the fibers of the muscle masses course around the antrum in a circular direction. The antrum presents numerous bulges into the lumen but its exact shape could not be determined because of the many cracks. It opens below by what appeared to be a very large gonopore but the limits of this also remain uncertain. An anterior ventral diverticulum of the antrum is provided with eosinophilous glands, at least along its lower wall, and probably represents a prostate. It

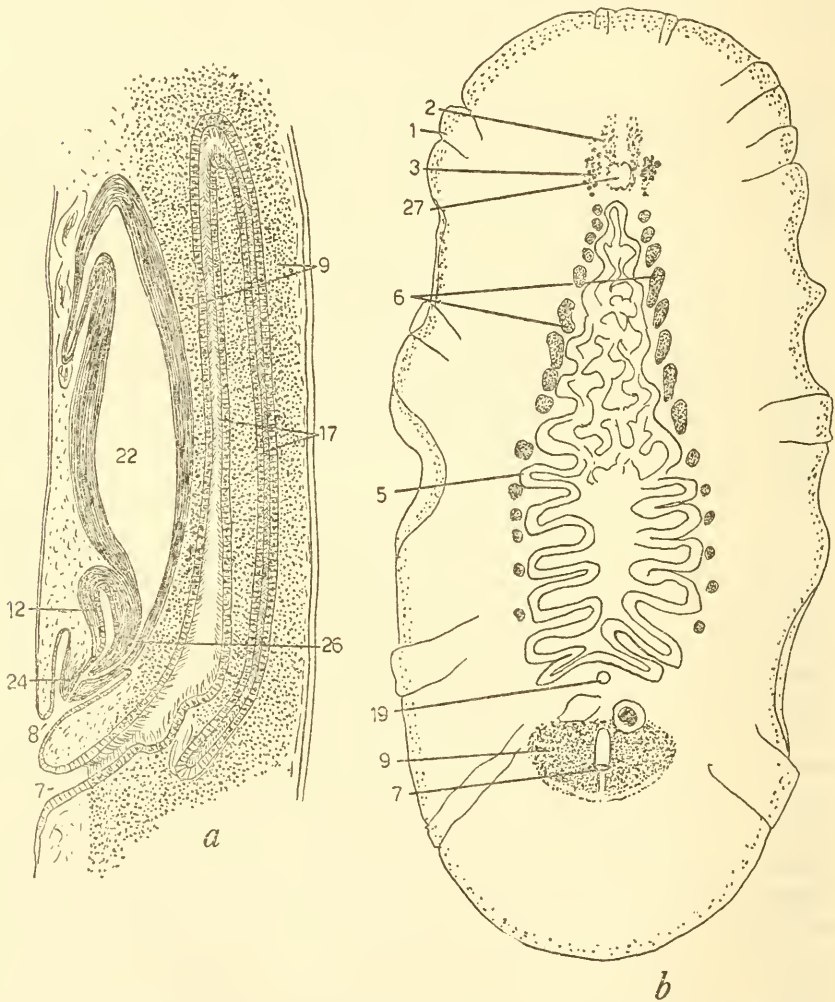


FIGURE 83.—*a*, *Indistyllochus hewatti*, sagittal view of copulatory apparatuses; *b*, *Anandropiana muscularis*, dorsal view. (For explanation see page 116.)

is conjectured that the sperm ducts enter the anterior end of this prostatic region but they could not be traced in the specimen.

The female apparatus had suffered less damage than the male apparatus but it had one bad crack. The female gonopore lies far behind the male pore (fig. 84,*a*) and leads into a tubular antrum that soon expands into a vaginal chamber receiving some glandular secretion. This chamber is succeeded by a horizontal tube that presumably springs from the roof of the chamber, but a crack here made it impossible to trace the connection. This tube extends posteriorly and terminates in a rounded vesicle that was at first thought to be a Lang's vesicle, but, as it is surrounded by eosinophilous glands and receives abundant secretion, it seems necessary to conclude that it is the proximal part of the vagina. The oviducts could not be traced satisfactorily but they appeared to enter the ventral wall of this sacciform expansion. Between male and female gonopores the body wall musculature is greatly thickened and this musculature continues along the female antrum and first expansion of the vagina. A large mass of cement glands extends from this expansion backwards to and around the proximal chamber of the vagina, and also from the vagina forward up to the male antrum.

DISTRIBUTION: Collected by W. L. Schmitt off Puntilla Point, Puerto Rico, at $3\frac{1}{2}$ fathoms on a bottom of broken shell, broken coral, and mud on Mar. 29, 1937.

HOLOTYPE: Anterior part as whole mount, postpharyngeal region as serial sagittal sections (seven slides) deposited in the U. S. National Museum, No. 24632.

Anandropilana portoricensis, new species

FIGURES 84,*b*; 85,*a*

MATERIAL: One specimen presented by W. G. Hewatt.

FORM: Elongate oval, rounded anteriorly, bluntly pointed posteriorly (fig. 84,*b*), 32 mm. long by 15 mm. wide, alive, extended. There is a large tear on one side of the rear half of the specimen but fortunately this did not involve any part of taxonomic importance. To either side of this tear occur several large balls that are probably of parasitic nature, but sections of them did not serve to elucidate their identity. It seems most probable that they are trematode metacercariae but no suckers were found.

EYES: Tentacular eye groups are wanting. The cerebral eyes form a single triangular cluster (fig. 84,*b*); anterior to this cluster, loose frontal eyes extend on each side towards the marginal eyes without reaching them. The marginal band of eyes completely encircles the margin, diminishing in width posteriorly (fig. 84,*b*). All of the eyes are unusually large and conspicuous for a cryptocelid.

COLOR: Mottled grayish-brown on a light background in life, and this pattern was retained over most of the specimen; a bit of it is indicated at the posterior end in figure 84,*b*.

DIGESTIVE TRACT: There is an elongated, much ruffled pharynx situated somewhat anteriorly in the body (fig. 84,*b*); no other details of the digestive tract could be ascertained.

COPULATORY APPARATUS: Could not be seen in the worm when whole but was surmised to be located just behind the pharynx to the right of the tear. This region was accordingly removed and sectioned sagittally. It was found to contain the whole of the copulatory apparatus but there was much damage present and, further, through a mishap, some of the most important sections were smeared. However, it was possible to make out practically all of the details of the sexual apparatus and a sagittal view, which is slightly restored, is given in figure 85,*a*. As in the preceding species, the male apparatus lacks penis papilla, prostatic vesicle, and seminal vesicle, but the male gonopore is of the usual size and leads into a normal tubular male antrum. This antrum shortly presents a glandular lining and continues into a sacciform expansion also lined by a glandular epithelium and surrounded by eosinophilous glands. This portion of the male canal undoubtedly represents a prostate, although a definite prostatic vesicle is wanting. Antrum and prostate show little muscularity. From the anterior wall of the prostatic chamber a tube extends anteriorly in a horizontal plane for some distance and then recurves on itself and runs posteriorly parallel to its former course. This tube appears to be a common sperm duct. It is surrounded by an immense muscular mass of circular fibers that extends anteriorly almost to the posterior end of the pharyngeal folds. The proximal end of the common sperm duct, situated shortly anterior to the male antrum, could be traced into the spermiducal vesicles.

The female gonopore lies some distance behind the male pore, but, because of a deep fold between the two gonopores in the present specimen, it appears not far behind the male pore in figure 85,*a*. The female gonopore leads into a short antrum that expands at once into a cement pouch receiving a large number of cement glands both anteriorly and posteriorly. From the cement pouch the vagina, lined by a tall epithelium and with somewhat muscular walls, ascends dorsally and expands into a small chamber, also considerably muscular. From this chamber the vagina continues at right angles posteriorly as a short narrow tube encircled by a mass of circular muscle fibers forming a sphincter. The vagina then widens into a long broad tube with glandular lining encircled by muscle fibers and it finally terminates by receiving separately the two oviducts at its proximal end. A Lang's

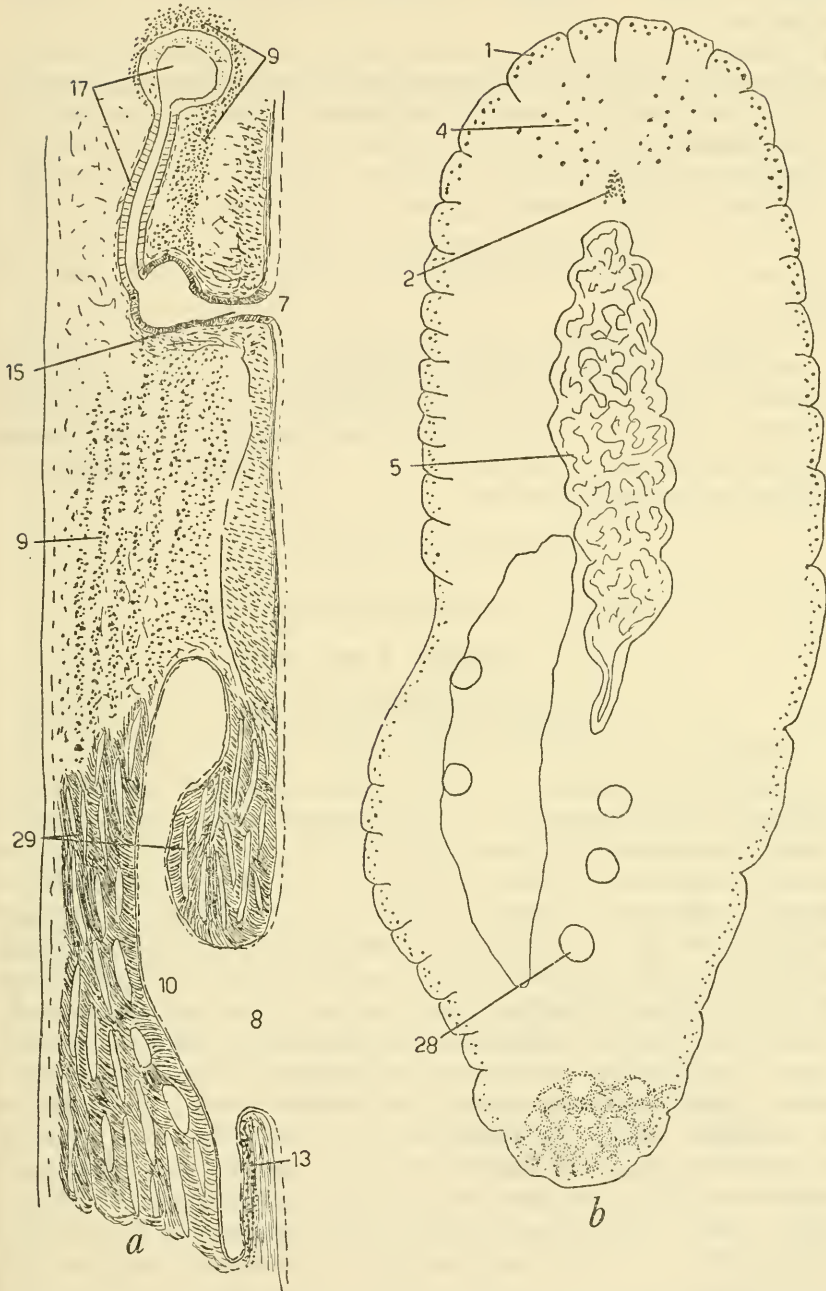


FIGURE 84.—*a*, *Anandroplana muscularis*, sagittal view of copulatory apparatuses; *b*, *A. portoricensis*, dorsal view. (For explanation see page 116.)

vesicle is absent. The course of the uteri was not evident on the whole specimen.

DIFFERENTIAL DIAGNOSIS: *Anandroplana portoricensis* differs from the preceding species in eye pattern and in that the muscular mass of the male apparatus surrounds the common sperm duct, whereas in *A. muscularis* it surrounds the male antrum.

DISTRIBUTION: Collected by W. G. Hewatt at Rincón Playa, Puerto Rico, Mar. 7, 1946, under flat rocks in the surf zone.

HOLOTYPE: Anterior half as whole mount, copulatory region as sagittal serial sections (eight slides), deposited in the U. S. National Museum, No. 24619.

REMARKS: These two species of *Anandroplana* are rather astonishing in their almost total want of the usual parts of the male copulatory apparatus and also in the proximal expansion of the vagina into a glandular chamber. Although they bear some resemblance to the cryptocelid genus *Ilyplanoides* Kato, 1944, one might be justified in creating a new family for them.

Section SCHEMATOMMATA

Family LEPTOPLANIDAE Lang, 1884

Genus *Notoplana* Laidlaw, 1903

Notoplana insularis Hyman, 1939

Notoplana insularis Hyman, 1939a, p. 1, figs. 1-3.

REMARKS: Five specimens of this species received from the U. S. National Museum were found in the present material. The species is readily recognized, when mounted whole, by the penis stylet and the characteristic eye arrangement with the tentacular clusters incorporated into the cerebral groups to form a linear arrangement on each side. As the species is sufficiently described and illustrated in the original account, it appears unnecessary to repeat this information here. The original specimen was 9 mm. long; the present ones are 5.5, 7, 9, 11, and 14 mm. in length but, as all are somewhat contracted, it seems probable that the species may reach a length of 18-20 mm. when extended alive, although on the whole it is a rather small species of the genus. All of the specimens are of the brown color usual in preserved polyclads; probably in life the species is pale. The specimens were collected as follows: Biscayne Bay, Fla., by F. M. Bayer, Aug. 1, 1951; eastern shore of harbor, Charlotte Amalie, St. Thomas, Virgin Islands, by W. L. Schmitt on the Smithsonian-Hartford Expedition, Apr. 4, 1937; Playa de Ponce Reef, Puerto Rico, on the *Fish Hawk* Expedition, Feb. 1, 1899 (two specimens); and Port of Spain, Trinidad, by W. L. Schmitt, Apr. 18, 1939. The original specimen came from Old Providence Island. Evidently the species is

common in the Caribbean and West Indies and also occurs on the southern part of the coast of Florida. There appears to be some variation in the length of the stylet in different parts of this range. The stylet appears shorter in the Trinidad and Old Providence Island specimens than in those from Florida and the West Indies; but this appearance is not correlated with the length of the specimens as the Florida specimen is very small. The West Indies and Trinidad specimens have been returned to the museum as whole mounts.

Notoplana ferruginea (Schmarda), 1859

Polycelis ferruginea Schmarda, 1859, p. 22, fig. 48.

Discocelis binoculata Verrill, 1901, p. 43, pl. 5, figs. 2, 3.

Notoplana bahamensis Bock, 1913, p. 208, text-figs. 41, 42, pl. 6, figs. 2, 3.

Notoplana ferruginea Stummer-Traunfels, 1933, p. 3521, figs. 61-63.

Notoplana caribbeana Hyman, 1939a, p. 2, figs. 4-8.

Notoplana binoculata Hyman, 1939b, p. 8, figs. 13, 14.

REMARKS: I took four specimens of this species alive in the intertidal zone of South Bimini, Bahamas, in August 1952, and four additional specimens were found in the present material as follows: three from the *Fish Hawk* Expedition to Puerto Rico—one collected at Fajaido, Feb. 17, 1899, and two taken at Ensenada, Honda, Culebra, no date—and one collected by W. G. Hewatt at Caya Enrique, Parquero, Puerto Rico, Nov. 22, 1945, under coral rock. The original Schmarda specimen came from Jamaica; Verrill found the species in the Bermudas; the Bock specimens came from Andros Island in the Bahamas; and the specimen taken on the Presidential Cruise of 1938 came from Old Providence Island. Evidently the species is common in the Caribbean-West Indian region. The trivial name is a misnomer, as *N. ferruginea* is milky white when alive but it tends to darken on preservation; two of the *Fish Hawk* specimens were practically black. The species probably shows some geographic variation and at one time (Hyman, 1939b, p. 9) I regarded the Bermudan form, *N. binoculata*, as distinct from the West Indian and Caribbean specimens; but I am now convinced that all of the names given in the synonymy belong to one species. The figures of the eyes given by Bock (1913) and Hyman (1939a) are more characteristic of the species than the eye figure of Stummer-Traunfels (1933, p. 3523). In the latter, the cerebral eyes are more scanty and smaller relative to the tentacular eyes than in the specimens available to me. Whether the Jamaica specimens actually differ in these regards from specimens from the Bahamas and Puerto Rico cannot be decided without more material from Jamaica. The characteristic feature of this species is the heavy musculature ventral to the long tubular male antrum. The specimens sent by the U. S. National Museum have been returned to that institution.

Crassandros, new genus

DEFINITION: Leptoplanidae of oval form without tentacles; with cerebral and tentacular eye clusters; male apparatus with seminal vesicle and interpolated prostatic mass, not formed into a vesicle; ejaculatory duct surrounded by a heavy musculature; penis papilla wanting; female apparatus typical, with Lang's vesicle.

TYPE SPECIES: *Crassandros dominicanus*, new species.

Crassandros dominicanus, new species

FIGURES 85,b,c; 86,a

MATERIAL: One specimen sent by the U. S. National Museum.

FORM: Oval with broad ends (fig. 85,b) but evidently much contracted; 11 mm. long by 8 mm. wide; without tentacles.

EYES: Due to the general opacity of the specimen and the presence of heavy folds in the eye region, the eyes were not distinguished with entire satisfaction. What could be seen of them is represented in figure 85,c. There is a cluster of tentacular eyes on each side of the anterior part of the brain. The cerebral groups consist of scanty loose eyes behind, in front of, and to the outer side of the tentacular groups.

COLOR: This is the usual brown found in preserved polyclads and does not indicate the color in life.

DIGESTIVE TRACT: The elongate pharynx could be imperfectly seen in the whole animal in a central location with the mouth beneath the posterior part of the pharynx (fig. 85,b).

COPULATORY APPARATUS: Could be seen in the whole animal as three masses behind the pharynx, therefore much posterior in position. These three masses appear to be the prostatic mass, the muscular mass around the ejaculatory duct, and the female apparatus. The copulatory region was removed and sectioned sagittally. It showed breaks and tears and unfortunately had not been cut sagittally as intended. It is reconstructed in figure 86,a. The spermiducal vesicles approach the anterior end of the male apparatus from behind and form short spermiducal bulbs that join the retort-shaped seminal vesicle, and thus form a tripartite seminal vesicle that has thick muscular walls of mainly circular fibers. It is in continuity, without any intervening duct, with a rounded mass composed of eosinophilous granulations that appears to represent the prostate but is not formed into a definite prostatic vesicle. There seem to be a few muscle fibers among the granulations but the mass is singularly devoid of musculature. The ejaculatory duct from the seminal vesicle was obvious at first but could not be clearly traced through the prostatic mass. The prostatic mass is followed by an elongated area composed almost wholly of circular muscle fibers through which runs a longitudinal duct that is obviously the ejaculatory duct. This duct finally curves ventrally and opens

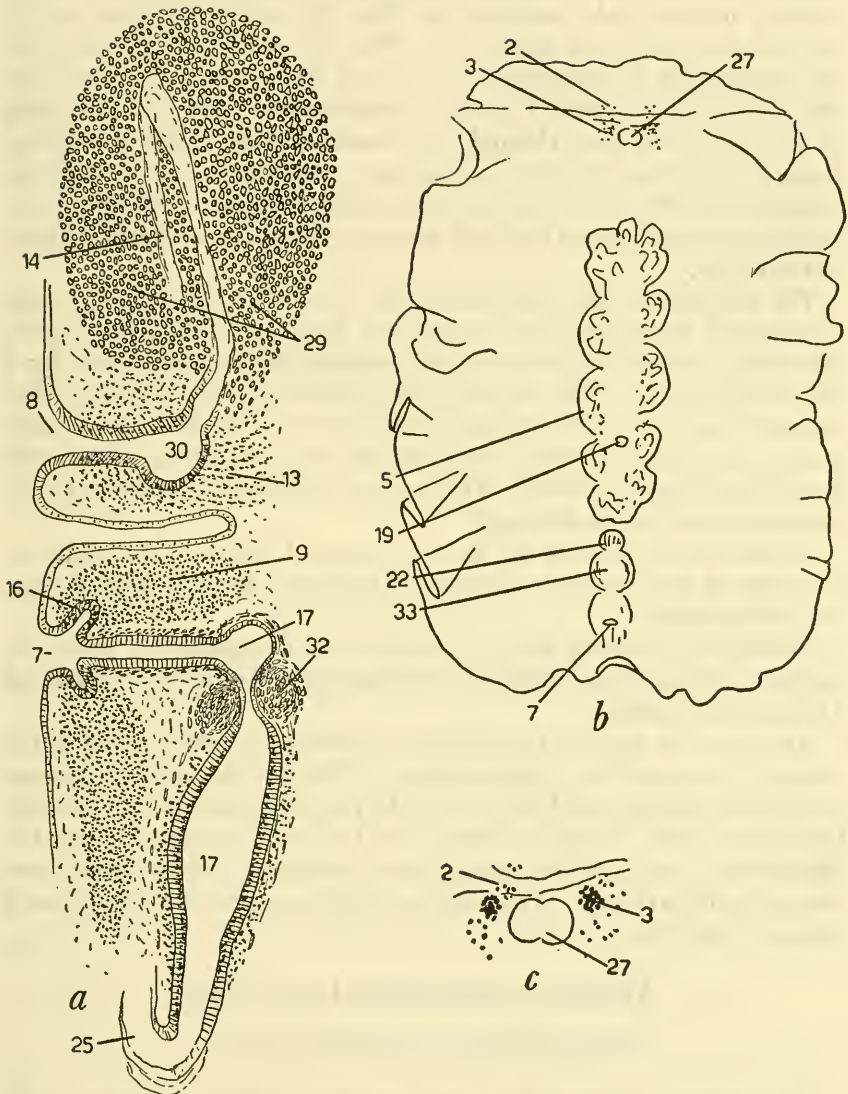


FIGURE 85.—*a*, *Anandroplana portoricensis*, sagittal view of copulatory apparatuses. *b*, *c*, *Crassandros dominicanus*: *b*, dorsal view; *c*, eyes. (For explanation see page 116.)

into the posterodorsal angle of the male antrum. No penis papilla could be discerned, but the fact that the sections were not exactly sagittal made interpretation here difficult. There is a broad but dorsoventrally flattened male antrum that narrows to a tubular portion opening by the male gonopore, so that the entire male antrum is shaped something like a mushroom. That this is antrum is shown by the identity of its epithelial lining with that of the general body epithelium and the marked difference between this lining and the lining of the ejaculatory duct through the muscular mass. This distinction does not show very well in the drawing. The muscular mass fills the whole space between the dorsal antral wall and the ejaculatory duct and also extends around the duct for some distance dorsal and anterior to the latter.

The female pore lies well behind the male pore and has a typical leptoplanid structure. The gonopore leads into a vagina with markedly scalloped walls and a tall epithelial lining surrounded by a fair musculature. The vagina slopes forward, then makes a pronounced backward curve, receives the oviducts into its ventral wall, and continues as a short duct of Lang's vesicle that soon terminates in a small oval Lang's vesicle. The course of the uteri in relation to the pharynx could not be followed.

DISTRIBUTION: Taken by R. G. Fennah for the U. S. National Museum in rock pools at Marigot, Dominica, British West Indies, December 1939.

HOLOTYPE: Anterior half as whole mount, copulatory region as sagittal serial sections (three slides) deposited in the U. S. National Museum, No. 24622.

REMARKS: It appeared impossible to fit this species into any of the existing genera of the Leptoplanidae. Whereas the general appearance of the specimen and the form of the female apparatus are typically leptoplanid, the curious massivity of the male apparatus and the absence of a penis papilla and a formed prostatic vesicle depart from the norm of the family. The relation of this genus to other leptoplanid genera is not clear.

Family PLANOCERIDAE Lang, 1884

Genus *Gnesioceros* Diesing, 1861

DEFINITION: Planoceridae with cuneate pellucid bodies; with tentacles containing eyes; with true seminal vesicle and interpolated prostatic vesicle; distal end of cirrus sac shaped like a conch or cowry shell, armed with parallel toothed bands; vagina with a powerful musculoglandular fold; Lang's vesicle transverse.

TYPE SPECIES: *Planaria sargassicola* Mertens, 1833.

Gnesioceros floridana (Pearse), 1938

Imogine oculifera, Verrill, 1892, p. 475, pl. 40, fig. 1 (not *I. oculifera* Girard, 1853).

Stylochoplana floridana Pearse, 1938, p. 77, fig. 27.

Stylochoplana oculifera Pearse and Walker, 1939, p. 18, fig. 10.

Gnesioceros verrilli Hyman, 1939c, p. 146, figs. 14-16.

Gnesioceros floridana, Hyman, 1940, p. 478.

REMARKS: Two specimens of this species, one juvenile and the other mature, were taken by W. L. Schmitt in the Smithsonian-Hartford Expedition on the east shore of the harbor at Charlotte Amalie, St. Thomas, Virgin Islands, Apr. 4, 1937. They have been returned to the museum as a whole mount. This species is easily recognized as a whole mount by the conchlike cirrus end covered with parallel toothed bands. As the general appearance and sexual anatomy of this species have been described and figured by Hyman (1939c) under the name *Gnesioceros verrilli*, repetition appears unnecessary here. This species is common along the Atlantic coast from Massachusetts to Texas. I take this opportunity of placing on record the sending by J. Hedgpeth of a number of specimens of *G. floridana* from Port Aransas, Tex. No doubt the *Gnesioceros sargassicola lata* included in a faunal list (no author, no date) from Grande Isle, off Louisiana, is a misidentification of *G. floridana*.

Genus *Styloplanocera* Bock, 1913

DEFINITION: Planoceridae of long slender form with tentacles; eyes inside the tentacles and around their bases; with seminal vesicle and interpolated prostatic vesicle; cirrus sac elongated containing a narrow sinuous ejaculatory duct lined with spines; Lang's vesicle with a pair of lateral pouches that extend far forward.

TYPE SPECIES: *Stylochus fasciatus* Schmarda, 1859.

Styloplanocera fasciata (Schmarda), 1859

FIGURE 86,*b*

Stylochus fasciatus Schmarda, 1859, p. 33, pl. 7, fig. 76.

Styloplanocera papillifera Bock, 1913, p. 233, text-figs. 47, 48, pl. 5, fig. 16, pl. 6, figs. 4-7.

Styloplanocera fasciata, Stummer-Traunfels, 1933, p. 3550, figs. 119, 120.

REMARKS: As Bock has given an excellent illustrated account of this species and Stummer-Traunfels has verified the description, there is no necessity for spending words upon it. A single specimen was taken by W. G. Hewatt at Rincón Playa, Puerto Rico, Mar. 7, 1946, under flat rocks in surf. This species is easily recognized as a whole mount (fig. 86,*b*). The specimen was 18 mm. long by 7 mm. wide, in life, and light gray with brownish tints. The Schmarda specimen

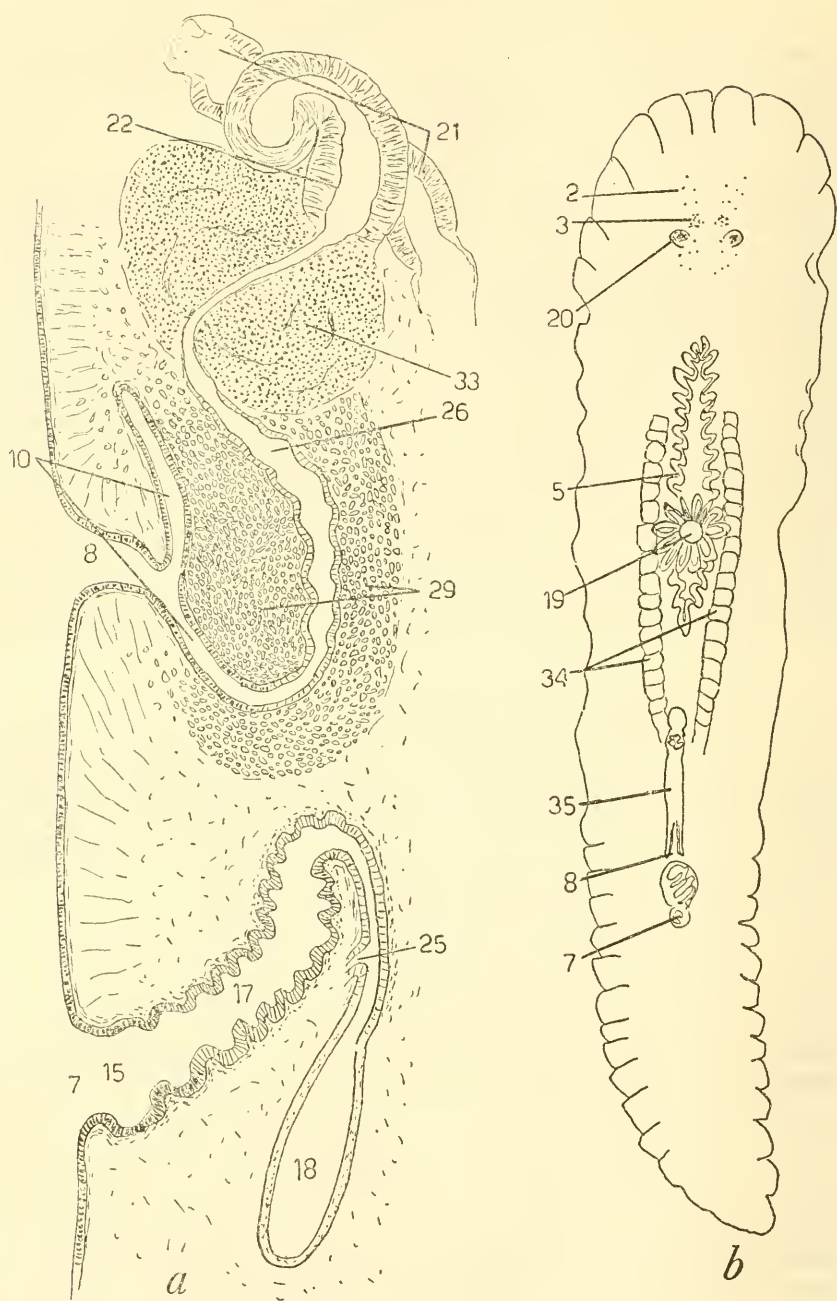


FIGURE 86.—*a*, *Crassandros dominicanus*, sagittal view of copulatory apparatuses; *b*, *Styloplanocera fasciata*, dorsal view. (For explanation see page 116.)

came from Jamaica and the Bock specimens from Barbados, Jamaica, and St. Croix, Virgin Islands. It is thus apparent that the species is common throughout the West Indies.

Suborder COTYLEA

Family PSEUDOCERIDAE Lang, 1884

Genus *Thysanozoon* Grube, 1840

Thysanozoon nigrum Girard, 1851

Thysanozoon nigrum Girard, 1851, p. 137.

Thysanozoon nigrum, Hyman, 1939b, p. 15, fig. 22; 1940, p. 484.

REMARKS: A specimen of this species was collected by Mabel Bishop, wife of the resident naturalist, off the dock in front of the Lerner Marine Laboratory, North Bimini, Bahamas. The animal was caught swimming around a light placed under water. This species was previously recorded from Bermuda and the coast of Florida.

Genus *Pseudoceros* Lang, 1884

Pseudoceros splendidus Stummer-Traunfels, 1933

Pseudoceros superbus Lang, 1884, p. 540, pl. 5, fig. 5.

Pseudoceros splendidus Stummer-Traunfels, 1933, p. 3487.

REMARKS: A specimen of this handsome species was taken by W. G. Hewatt under a flat rock in one foot of water on a shore subject to wave action at Rincón Playa, Puerto Rico, Mar. 9, 1946. The specimen is stated by the collector to have been 38 mm. long and 12 mm. wide, hence rather small as the original specimen of Lang was 60 mm. long and 25 mm. wide. The color of the dorsal surface is described in Hewatt's notes as brown with a chocolate brown middorsal area and a bright orange band around the border edged on each side by a chocolate brown line. The anterior margin shows a white line. Although Lang's specimen was of a much darker ground color there is little doubt of the identification.

Pseudoceros splendidus is apparently cosmopolitan. The type locality is the Mediterranean and the species has since been found at Bermuda (Hyman, 1939b) and the Galápagos Islands (Plehn, 1896). The present record is the first for its occurrence in the West Indies. Plehn's identification appears dubious.

Hewatt, like Lang, noted that the species is active, swimming with undulations when disturbed.

Family EURYLEPTIDAE Lang, 1884

Genus *Prostheceraeus* Schmarda, 1859*Prostheceraeus floridanus*, new speciesFIGURE 87,*a*

MATERIAL: One specimen sent alive by H. Humm of Florida State University.

FORM: When crawling alive, extended, typical of the genus (fig. 87,*a*); narrow anteriorly with rounded margin and conspicuous, slender, pointed tentacles; widening gradually posteriorly, then narrowing slightly again to the rounded posterior end; when at rest, broadly oval. Length, extended, 12 mm., but as the animal is juvenile, presumably a much greater size is attained.

EYES: As usual in the genus, there is a pair of cerebral clusters near the anterior end; eyes occur on the rounded margin between the tentacle bases and numerous along the tentacles.

COLOR: Very distinctive; most of the dorsal surface has a brown network; laterally near the margin there is an irregular row of orange dots interspersed among grayish black markings that extend nearly to the margin; along the margin runs a fine orange line. This color pattern contrasts with the white background. Tentacles black. An attempt is made to represent the color pattern by stippling in figure 87,*a*.

DIGESTIVE SYSTEM: The tubular pharynx occurs in the usual anterior location. The digestive system was plainly seen in the animal when alive but is not evident in the mounted specimen. The main intestine extends back from the pharynx to a point about one-fifth the body length from the posterior end and gives off numerous side branches that anastomose into a small-meshed network extending throughout the body.

REPRODUCTIVE SYSTEM: There are no traces of any part of the reproductive system, hence the specimen is juvenile. However, the color pattern furnishes sufficient recognition.

DIFFERENTIAL DIAGNOSIS: This species is distinguished from other species of the genus by the color pattern.

DISTRIBUTION: Taken Nov. 29, 1952, by dredging some distance out in the Gulf of Mexico off the northwestern coast of Florida.

HOLOTYPE: The specimen, mounted whole, is deposited in the U. S. National Museum, No. 24632. The delicate animal was badly distorted by fixation but the color pattern is well retained.

Genus *Acerotisa* Strand, 1923***Acerotisa multiceles*, new species**FIGURES 87,*b,c*; 88,*a**Acerotisa* sp. Hyman, 1952, p. 199.

MATERIAL: Six specimens from the Smithsonian-Hartford Expedition (No. 21).

FORM: Broadly oval, with rounded ends (fig. 87,*b*); the largest specimen is 8 mm. long by 6 mm. wide, the smallest, which is nevertheless fully mature, is about 3.5 mm. long by 2.5 mm. wide. The middle of the anterior margin shows two slight protrusions bearing the tentacular eyes.

EYES: More numerous than in any other species of the genus; as usual they vary in number with the size of the animal. The cerebral clusters form two elongated, somewhat wedge-shaped groups that range from 32 to 35 in the smallest of the available specimens to 45 in the largest. The tentacular groups, found on the slight anterior protrusions, range from 42 to 45 in the smaller, up to 50 to 55 in the larger specimens.

COLOR: White covered with minute black dots. The dotting is evident in the preserved specimens and is shown in part of figure 87,*b*. These dots are probably groups of rhabdites.

DIGESTIVE TRACT: Typical of the genus. The short tubular pharynx occurs in the anterior body third, directly behind the brain and cerebral eye clusters. It leads into the main intestine, a broad tube extending posteriorly in the midline and terminating blindly some distance anterior to the posterior margin. The intestine gives off a limited number of lateral branches (the number could not be exactly determined) that anastomose into an extensive network. This network was evident in some of the specimens and is indicated in part of figure 87,*b*. An intestinal network occurs in some other species of *Acerotisa*, namely, *A. meridianus* Ritter-Zahony, 1907; *A. typhlus* Bock, 1913; and *A. arctica* Hyman, 1953.

MARGINAL GLANDS: A distinctive feature of this species is the presence of a row of flask-shaped glands along the entire margin except for the tentacular protrusions, as shown in figure 87,*b*. In sections these glands appear as empty flasks opening through the epidermis. They are located in the mesenchyme internal to the epidermis (fig. 87,*c*).

COPULATORY APPARATUS: A set of sagittal sections was prepared and also a set of transverse sections, but neither was entirely satis-

factory due to a lack of good fixation. However, the main features of the copulatory apparatuses have been ascertained and are represented in figure 88,*a*. The male apparatus is crowded beneath the rear part of the pharynx. The male pore leads into an antrum containing the penis, inclosed in a long narrow sheath. The penis stylet is also long with a blunt tip. The penis is bent at an acute angle to the rest of the male apparatus. The small papilla that bears the stylet contains as usual two ducts that unite within it. One duct, the prostatic duct, leads to the oval prostatic vesicle. The other duct pursues a rather narrow course for some distance, then widens into the retort-shaped seminal vesicle with prominent circular muscle fibers forming its walls. The rear part of the seminal vesicle turns forward and receives at once the voluminous spermiducal vesicles from in front.

The female gonopore lies well behind the male pore and opens into a sacciform antrum that is not, as might be supposed, a cement pouch and does not receive cement glands. Instead the cement glands open into a vertical narrow vagina extending dorsally from the antrum and acting as a cement duct. From this the vagina continues dorsally as a widened tube that turns back and receives the uteri. A pair of very large uterine vesicles, one of which is shown on figure 88,*a*, was evident in the live specimen (Hyman, 1952, fig. 3) and in the set of sagittal sections but cannot be seen on the preserved whole specimens nor in the set of transverse sections. The latter, however, is badly broken in the region of the vesicles. The vesicles are packed with eosinophilous material of indeterminable nature. The connection of the uterine vesicles with the rest of the female apparatus could not be traced in the available material.

DIFFERENTIAL DIAGNOSIS: *Acerotisa multiceclis* differs from other species of the genus in the large size, numerous eyes, and provision of the margin with a row of flask-shaped glands.

DISTRIBUTION: Florida, West Indies. A specimen collected Apr. 16, 1951, at Alligator Harbor, northwest coast of Florida, was sent alive by H. Humm. Two preserved specimens, taken Aug. 1, 1951, by F. M. Bayer in the Biscayne Bay region of Florida, were sent preserved by the U. S. National Museum. From the same institution came four preserved specimens collected Mar. 29, 1937, by the Smithsonian-Hartford Expedition along the shore of San Juan Harbor, Puerto Rico.

HOLOTYPE: One whole mount deposited in the U. S. National Museum, No. 24627; also one other whole mount and one set of transverse sections (six slides) to that institution, Nos. 24628, 24629.

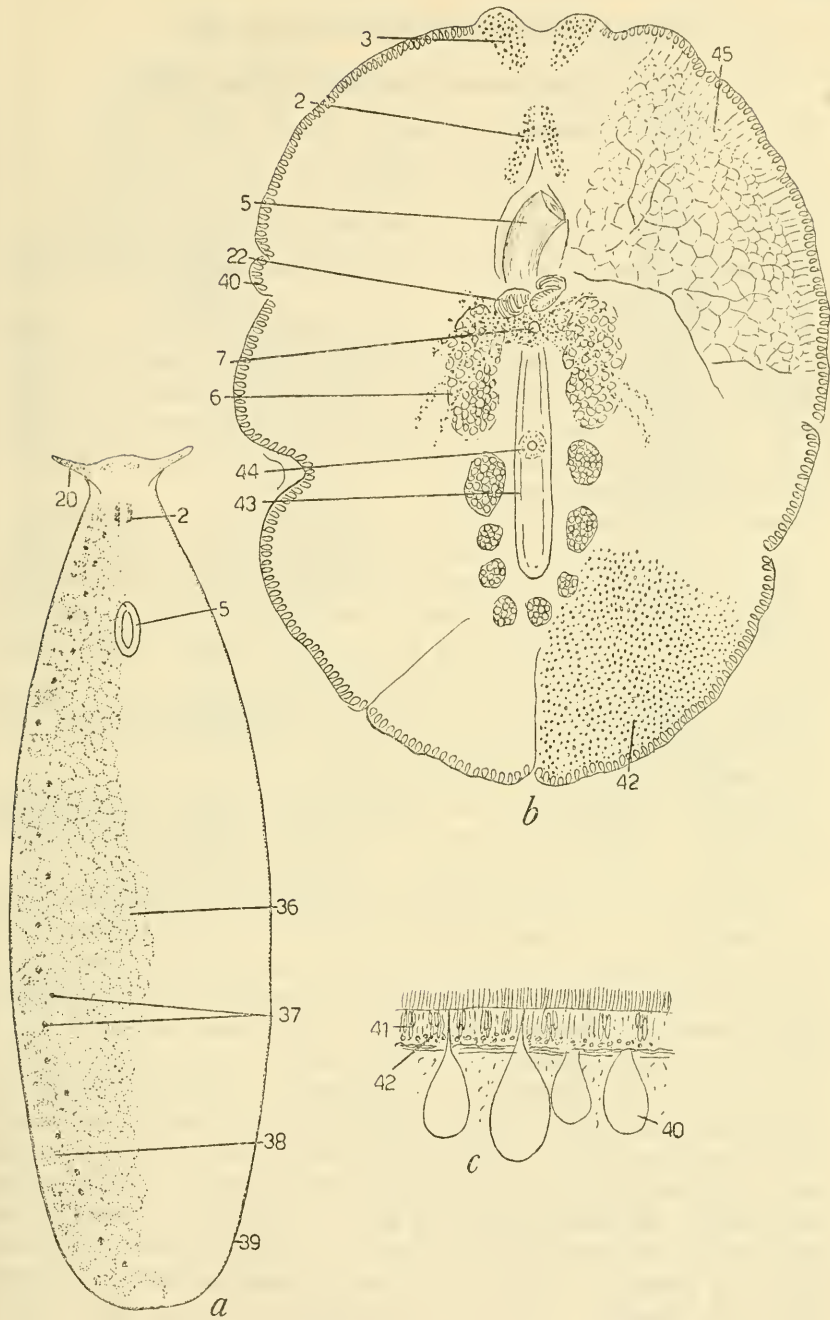


FIGURE 87.—*a*, *Prostheceraeus floridanus*, dorsal view, living specimen, crawling extended *b, c*, *Acerotisa multicelis*: *b*, dorsal view; *c*, marginal glands. (For explanation see page 116.)

Family PROSTHIOSTOMIDAE Lang, 1884

Genus *Prosthiostomum* Quatrefages, 1845*Prosthiostomum pulchrum* Bock, 1913FIGURES 88,*b*; 89,*a*

Prosthiostomum pulchrum Bock, 1913, p. 285, text figs. 62, 63; pl. 5, fig. 10.

MATERIAL: Five specimens from the Smithsonian-Hartford Expedition (Nos. 23, 32, 66).

FORM: Typical of the genus, slender, elongated (fig. 88,*b*); of small size, largest specimen 9 mm. long by about 1.5 mm. wide; type specimen was 12 mm. long. Bock's statement that the species is relatively broad and short for the genus is not upheld by the specimens available to me, which show the usual long slender shape. No doubt the single specimen he had was contracted.

EYES: The rather large cerebral eyes form two wedge-shaped groups, not well separated from each other, of about 40 eyes each, in the larger specimens; the band of eyes along the anterior margin contrasts with the cerebral eyes by the small size of its members (fig. 88,*b*). The marginal band is also very short, not extending beyond the anterior end of the cerebral groups.

COLOR: Apparently a dirty tan with brown or black spots. The spots are evident in some of the specimens.

DIGESTIVE TRACT: Typical of the genus.

COPULATORY APPARATUS: The postpharyngeal part of one specimen was sectioned sagittally and proved in good condition. A sagittal view of the copulatory apparatuses is shown in figure 89,*a*.

As Bock's specimen was imperfect in the male region and his figure small and lacking in detail, it appears desirable to give a figure here. As found by Bock, the male and female gonopores and the large sucker are close together. The male pore leads into a long antrum slanting markedly forward; this has a rather thick muscular layer outside the lining epithelium. At its anterior end it enlarges and curves posteriorly, terminating with the penis. The penis papilla is a small eminence bearing the penis stylet, which is surrounded distally by the usual penis sheath. The male antrum is continued as a narrow cavity around the penis papilla, and that portion of this cavity traversed by the base of the penis stylet is provided, as usual in the genus, with prostatic glands. Three ducts unite inside the penis papilla—a larger ejaculatory duct, and two smaller ducts, one from each of the accessory vesicles. The latter are, as usual in the genus,

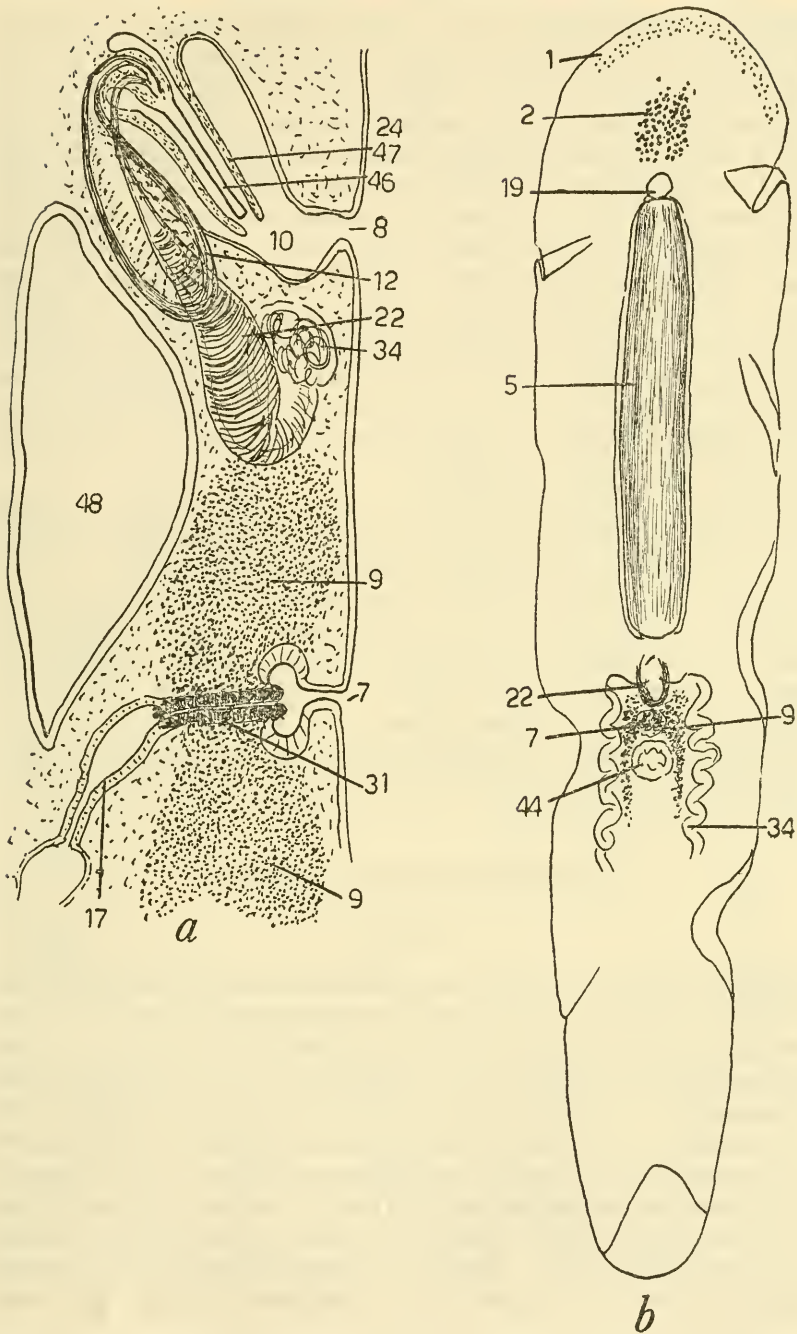


FIGURE 88.—*a*, *Acerotisa multiceles*, sagittal view of copulatory apparatuses; *b*, *Prosthiosomum pulchrum*, dorsal view. (For explanation see page 116.)

spherical muscular bodies with a small central lumen from which the duct leads to the penis papilla. One of the vesicles is situated below the anterior part of the seminal vesicle, the other between this and the penis papilla. The seminal vesicle is of long oval shape with a thick muscular wall that receives the two sperm ducts separately into its ventral wall at about its middle. From the anterior narrowed end of the seminal vesicle the sinuous ejaculatory duct proceeds into the penis papilla. The female apparatus lies close behind the posterior blind end of the seminal vesicle. The female gonopore leads into a pouchlike female antrum from which the vagina ascends, presenting immediately a pouchlike expansion and then narrowing to a short duct receiving the uteri. The sucker is a very large pouch, larger than the female apparatus, and lies shortly behind the latter, slightly closer to it than the distance between the two gonopores (fig. 89,a).

DISTRIBUTION: West Indies. The type specimen came from Andros Island, in the Bahamas. The present specimens were collected by W. L. Schmitt on the Smithsonian-Hartford Expedition. Three came from the eastern shore of the harbor at Charlotte Amalie, St. Thomas, Virgin Islands, Apr. 4, 1937; one from a coral reef at St. Croix, Virgin Islands, Apr. 8, 1937; and the fifth from the shore at Banana Bay, Water Island, St. Thomas, Virgin Islands. The species appears common in the West Indies.

SPECIMENS: Three whole specimens on two slides and one set of sagittal sections of the sexual region (one slide) have been returned to the U. S. National Museum.

Genus *Prosthiostomum*, juvenile

FIGURE 89,b

REMARKS: In the material from the Smithsonian-Hartford Expedition there was found a very small juvenile specimen of a *Prosthiostomum* that did not seem to belong to *P. pulchrum*. The eyes of this specimen are shown in figure 89,b. The number of eyes is not significant as the eyes increase with age, but the large size of the marginal eyes in comparison with the cerebral eyes and the division of the marginal eyes into two groups by a median gap indicate that the worm belongs to some other species than *pulchrum*. The specimen also does not fit into the other species of *Prosthiostomum* known from the West Indies, *P. angustum* Bock, 1913. There is considerable resemblance as to eye arrangement with *P. lobatum* Pearse, 1938, from Florida. The speci-

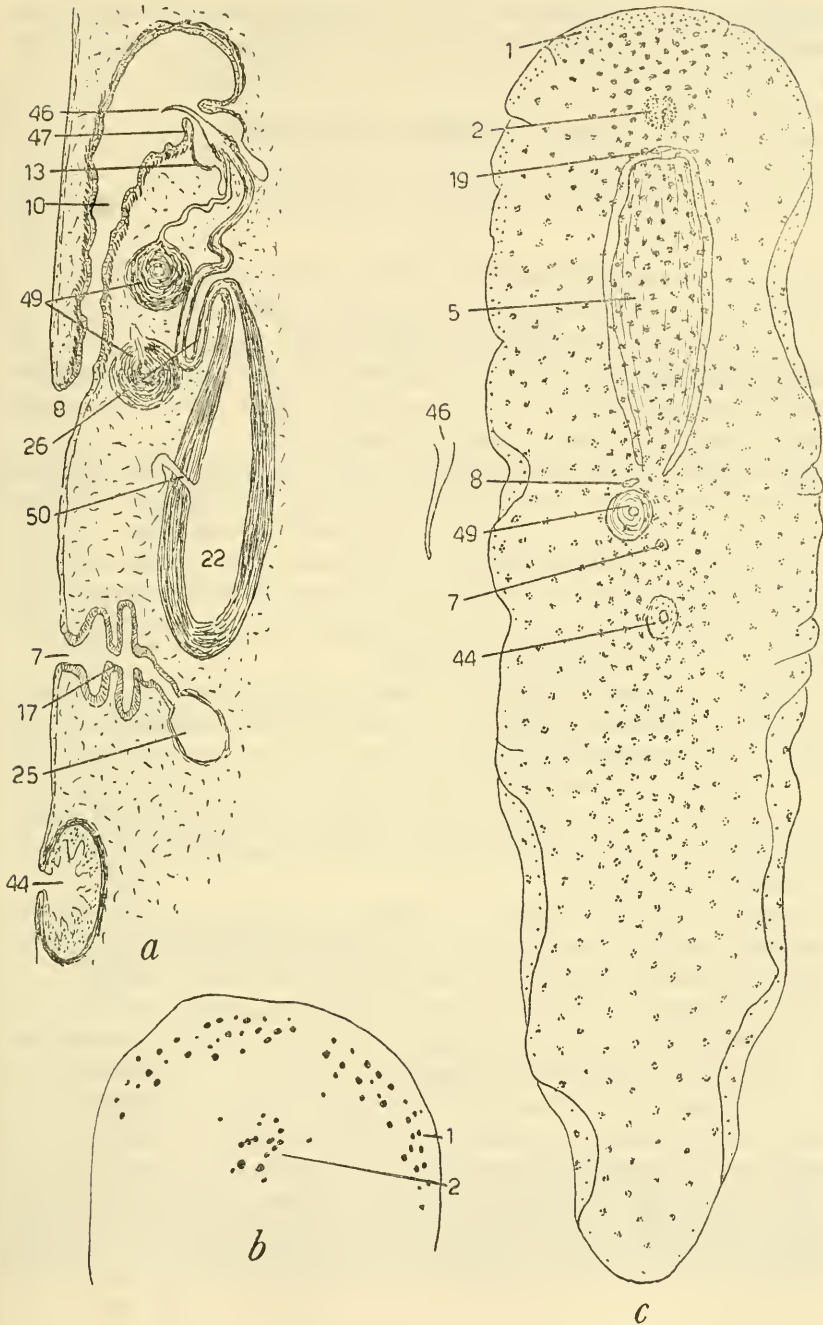


FIGURE 89.—a, *Prosthlostomum pulchrum*, sagittal view of copulatory apparatuses; b, *Prosthlostomum*, juvenile; c, *Enchiridium periommatum*. (For explanation see page 116.)

men was taken in the vicinity of Fort San Gerónimo, west end of San Juan Island, Puerto Rico, Mar. 27, 1937. The specimen shattered on an attempt to mount it whole and had to be discarded.

Genus *Enchiridium* Bock, 1913

Enchiridium periommatum Bock, 1913

FIGURE 89,c

Enchiridium periommatum Bock, 1913, p. 287, text figs. 64-66, pl. 5, fig. 6.

MATERIAL: One preserved specimen sent by H. J. Humm.

FORM: Typical of the genus, elongate, with rounded anterior end and bluntly pointed posterior end (fig. 89,c). The specimen was 30 to 40 mm. long, alive, when moving, by 10 to 12 mm. wide; on preservation the animal contracted to a length of 23 mm.

EYES: There is the usual pair of cerebral clusters, close together; they contain more eyes than as depicted by Bock. The marginal eyes completely encircle the margin, as diagnostic of the genus, and the arrangement is similar throughout the genus, that is, the marginal band is wide around the anterior end but, at about the level of the anterior part of the pharynx, rapidly thins to a single file of eyes that continues along the rest of the margin.

COLOR: Bock was unable to give the color of his specimen. Thanks to notes furnished by Dr. Humm, it can be stated that the species is white, dotted with rounded brown spots that are more concentrated in the middorsal region and more scattered towards the margin and posterior end, as shown in figure 89c. It appears that all three species of *Enchiridium* known from the shores of the American continent have the same color pattern.

DIGESTIVE TRACT: Identical throughout the family, with long tubular pharynx in the anterior region opening by the mouth shortly behind the brain and long main intestine giving off side branches.

COPULATORY APPARATUS: Removed from the specimen and sectioned and found in good histological condition. As Bock has figured the apparatus, it appears unnecessary to illustrate it here or give a detailed description. The female gonopore is half way between the male gonopore and the sucker as shown in figure 89,c; the male apparatus and gonopore were displaced laterally in the specimen, no doubt as a result of distortion during fixation. The male antrum leans forward more in the specimen than as shown in Bock's figure but otherwise there is good agreement with Bock's figures. The very

elongate penis papilla appears to be the chief distinguishing feature of this species. The penis stylet as seen in the whole specimen is drawn to the side of figure 89,c.

DISTRIBUTION: The original specimen came from Thatch Island, in the Danish West Indies. The present specimen was taken with a dredge at about 40 feet in the Gulf of Mexico about 12 miles southeast of Alligator Point in Franklin County, northwestern Florida, Dec. 20, 1952.

SPECIMEN: The specimen remains in my possession.

Summarizing remarks

There are herein reported 15 species of polyclads taken in the West Indies. Two other species known to occur in the West Indies have since been taken on the Gulf coast of Florida but were not refound in the present collections from the West Indies. The species taken from the West Indies may be tabulated as follows:

Acotylea

Discocelidae

Adenoplana antillarum, new species

Stylochidae

Stylochus megalops (Schmarda),
1859.

Stylochus oculiferus (Girard), 1853

Indistylochus hewatti, new genus,
new species.

Cryptocelidae

Anandropilana muscularis, new genus,
new species.

Anandropilana portoricensis, new
species.

Leptoplanidae

Notoplana insularis Hyman, 1939

Notoplana ferruginea (Schmarda),
1859.

Crassandros dominicanus, new genus,
new species.

Planoceridae

Gnesioceros floridana (Pearse), 1938

Styloplanocera fasciata (Schmarda),
1859.

Cotylea

Pseudocceridae

Thysanozoon nigrum Girard, 1851

Pseudoceros splendidus Stummer-
Traunfels, 1933.

Euryleptidae

Acerotisa multicelis, new species

Prosthlostomidae

Prosthlostomum pulchrum Bock,
1913.

It may be useful to others to list here additional species that have been reported from the West Indies in the literature but that were not refound in the present material, although two of them have since been taken in the Gulf of Mexico:

Stylochidae

Woodworthia atlantica Bock, 1913

Cryptocelidae

Phenocelis purpurea (Schmarda), 1859

Leptoplanidae

Phylloplana purpurea (Schmarda),
1859

Prosthiostomidae

Prosthiostomum angustum Bock, 1913*Enchiridium periommatum* Bock, 1913

There are two more Schmarda species reported from Jamaica, *Leptoplana macrosora* and *Stylochus dictyotus*, the types of which could not be found by Stummer-Traunfels (1933) when reinvestigating the Schmarda material. The colored figures in the Schmarda publication suggest that *Stylochus dictyotus* is identical with *Stylochus megalops*. *Leptoplana macrosora* is probably unrecognizable and the same may be said of *Leptoplana* sp. recorded from Jamaica by Andrews (1892).

Therefore 20 recognizable species of polyclads are now known from the West Indies. Seven of these occur on the coast of Florida: *Stylochus oculiferus*, *Phaenocelis purpurea*, *Notoplana insularis*, *Gnesioceros floridana*, *Acerotisa multiceles*, *Thysanozoon nigrum*, and *Enchiridium periommatum*. These same species occur in the Gulf of Mexico, at least near the Florida coast, but, in fact, the polyclad fauna of the Gulf of Mexico is poorly known. *Notoplana ferruginea*, *Pseudoceros splendidus*, and *Thysanozoon nigrum* are found at Bermuda, and *Notoplana insularis*, *Notoplana ferruginea*, and *Gnesioceros floridana* are probably spread throughout the Caribbean. The available data indicate the existence of a polyclad fauna centering in the West Indies and spreading from there slightly into the Bermudas, more extensively onto the coasts of Florida and into the Caribbean, and slightly into the Gulf of Mexico.

A surprising feature of the West Indian polyclad fauna is the dearth of the cotylean polyclads of the families Pseudoceridae and Euryleptidae that are usually a conspicuous element in tropical and subtropical waters. In this respect the West Indies are inferior to southern California and the Gulf of California, although having a more southerly location, and also inferior to the Bermudas.

A further peculiarity of West Indian polyclads is the tendency to an excessive muscularity of the male apparatus, seen in no less than four species: *Anandroplana muscularis*, *A. portoricensis*, *Notoplana ferruginea*, and *Crassandros dominicanus*.

A new euryleptid cotylean, *Prostheceraeus floridanus*, is described from the Gulf coast of Florida.

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