

THE POLYCLAD TURBELLARIANS FROM THE PHILIPPINE ISLANDS.

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Recently the collection of Polyclads made by Dr. Paul Bartsch of the United States National Museum during the Albatross Philippine Expedition has been entrusted to me for report. Small as the collection is, it proved to be an interesting one in that it was found to comprise in all 11 species, of which 4 appear to be new to science.

The following is a list of the species dealt with in the present paper:

ACOTYLEA.

Family STYLOCHIDAE.

1. *Cryptophallus bartschi*, new species.

COTYLEA.

Family PSEUDOCERIDAE.

2. *Thysanozoon auropunctatum* Kelaart-Collingwood.
3. *Pseudoceros hancockanus* (Collingwood).
4. *Pseudoceros litoralis* Bock.
5. *Pseudoceros buskii* (Collingwood).
6. *Pseudoceros concinnus* (Collingwood).
7. *Pseudoceros rubrotentaculatus*, new species.
8. *Pseudoceros philippinensis*, new species.

Family EURYLEPTIDAE.

9. *Prostheceraeus papilio* (Kelaart).
10. *Prostheceraeus meleagrinus* (Kelaart).

Family DIPLOPHARYNGEATIDAE.

11. *Simplicioplana marginata*, new genus and new species.

Owing to the fact that there is only a single example of each of these species, with exception of one, and also because the state of preservation does not permit a close study, I have now confined myself to such a diagnosis of each form as shall render its future identification a matter of reasonable certainty.

It is my duty to express my warmest thanks to Prof. Paul Bartsch for his aid in securing for me the privilege to examine this interesting collection and for placing at my disposal a series of notes made by him and colored drawings taken while the worms were living.

ACOTYLEA.

Family STYLOCHIDAE.

Genus CRYPTOPHALLUS Bock.

1. CRYPTOPHALLUS BARTSCHI, new species.

Plate 1, fig. 1; text figs. 1, 2.

In the collection there were five specimens which appear to represent a new species. They were found creeping on the reef in

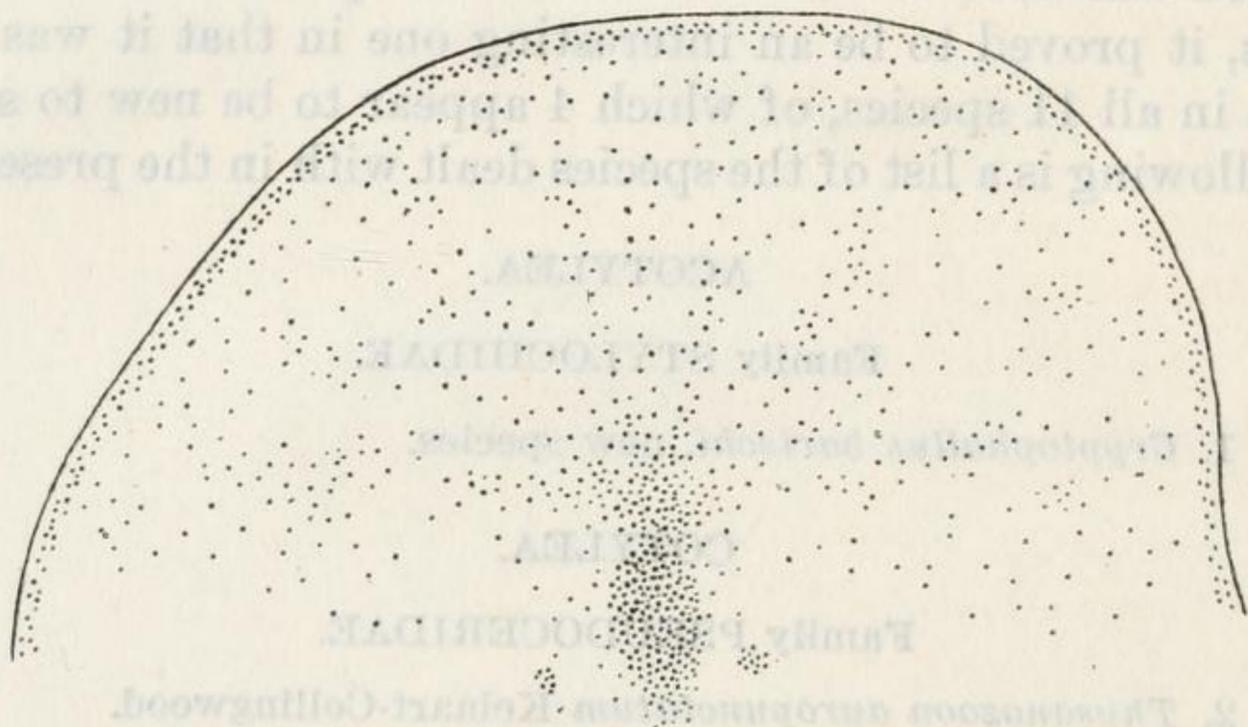


FIG. 1.—ARRANGEMENT OF EYESPOTS IN CRYPTOPHALLUS BARTSCHI.

Tominado Island, Tawi Tawi, in February. The holotype has been given the United States National Museum Cat. No. 19102.

The body in the living state was elongate-oval in shape and moderately firm in texture. In the preserved state it is of a wavy outline and without any sign of tentacles. Judging from the presence of a group of eyespots in a certain position lateral to the cerebral group of eyes, however, the present species may be provided with a pair of very small tentacles, as is the case with *Cryptophallus wahlbergi* Bock¹. One of the specimens in the living state had a total length of about 65 mm. and a breadth of 25 mm. in the broadest part of the body.

The dorsal surface was of a chocolate-brown color, a little darker in the median than in the marginal parts, owing to a touch of dark blue. The extreme margin was white, but the white rim was exceedingly narrow. Along the sides of the pharynx were visible the uteri

¹ Bock, 1913, Zool. Bid. f. Uppsala, vol. 2, p. 120.

to a certain degree as two somewhat lighter colored streaks. The ventral surface was a little paler than the dorsal.

Completely round the margin of the body are numerous small eyespots which form a crowded row. In addition to these there is a large number of eyespots scattered over the anterior end of the body, extending back as far as the brain, where they are thickly set. Further, some eyespots form a crowded cluster on each side of the brain which apparently represent a tentacular group of eyes.

The genital organs are constructed on the same plan as in *C. wahlbergi*. The vasa deferentia, proceeding straight backward, turn abruptly round at near the male gonopore and then pursue a directly opposite course, to enter the base of the penis, without forming any seminal vesicle, differing to that extent from *C. wahlbergi* in which the seminal vesicle is formed on either side. Within the penis bulb they unite into a common duct, the ejaculatory duct, which opens into the anterior part of the penis sheath near the tip of the penis. Embedded in the penis bulb, just posterior to the ejaculatory duct, is the prostate, which is a small pear-shaped organ and opens near the apex of the penis together with the ejaculatory duct. The penis is of conical shape and projects downward into a cavity, whose walls form the penis sheath. This cavity opens directly to the exterior by the male gonopore which lies a little behind the pharyngeal cavity.

The female gonopore occurs a short distance posterior to the male and leads into a narrow irregular antrum, which in turn is

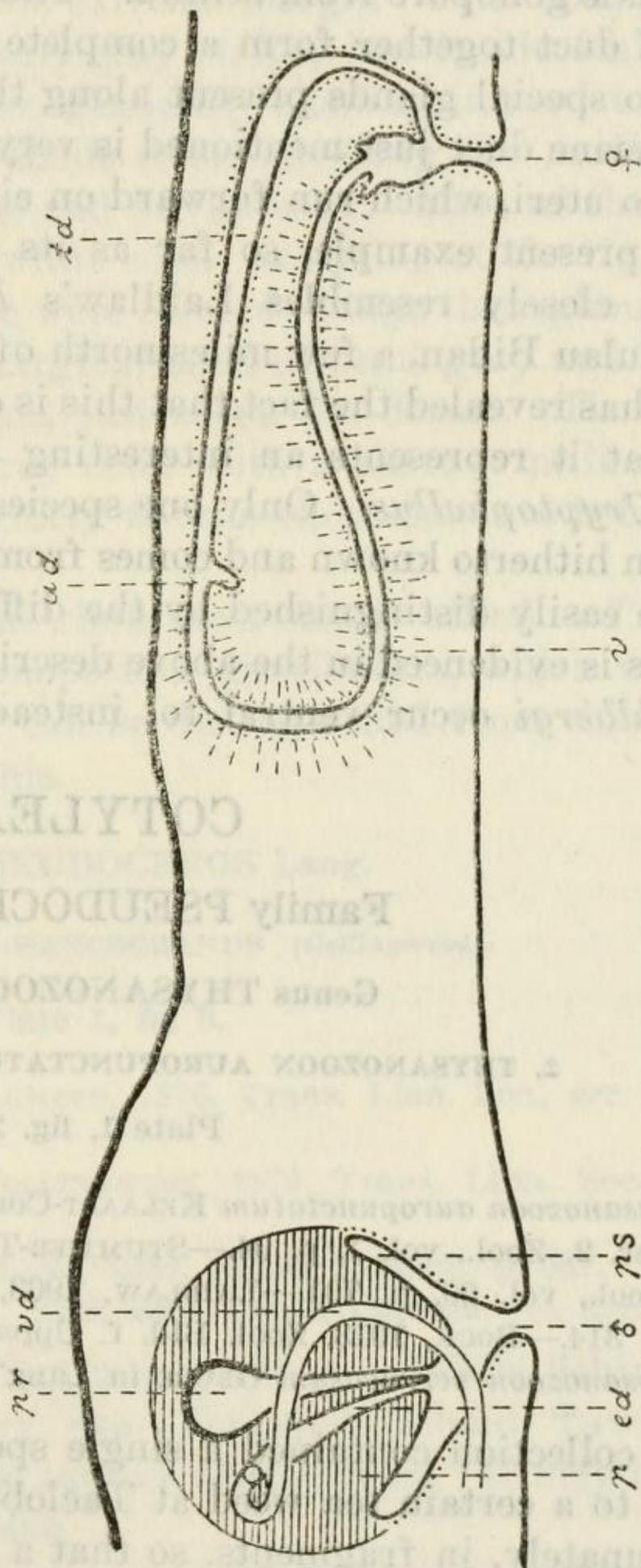


FIG. 2.—DIAGRAMMATIC REPRESENTATION OF THE GENITAL ORGANS OF *C. BARTSCHI* IN SAGITTAL SECTION.
ed, EJACULATORY DUCT; *p*, PENIS; *pr*, PROSTATE; *ps*, PENIS SHEATH; *td*, TERMINAL VAGINAL DUCT; *ud*, UNPAIRED UTERINE DUCT; *v*, VAGINA; *vd*, VAS DEFERENS; *v*, VAGINA; *vd*, VAS DEFERENS; *v*, VAGINA; *vd*, VAS DEFERENS; ♂, MALE GONOPORE; ♀ FEMALE GONOPORE.

continuous with the vagina extensively surrounded by numerous glands. The vagina proceeds forward for some little distance, then bends abruptly upward and backward and soon receives on the ventral side a common uterine duct. Beyond this point the terminal vaginal duct runs backward and downward, describing an arcuate course, and finally opens into the antrum a little inward to the external female gonopore from behind. Thus the vagina and the terminal vaginal duct together form a complete irregular loop. There seem to be no special glands present along this terminal duct. The common uterine duct just mentioned is very short and divides anteriorly into two uteri, which run forward on either side.

The present example, so far as its external characters are concerned, closely resembles Laidlaw's *Latocestus agrus*,² a species from Pulau Bidan, a few miles north of Penang; but a closer examination has revealed the fact that this is only a superficial resemblance and that it represents an interesting new species referable to the genus *Cryptophallus*. Only one species, *C. wahlbergi*, of this genus has been hitherto known and comes from South America. *C. bartschi* may be easily distinguished by the different feature of the male organs, as is evidenced in the above description. Besides, the organs in *C. wahlbergi* occur ventral to, instead of behind, the pharyngeal cavity.

COTYLEA.

Family PSEUDOCERIDAE.

Genus THYSANOZOON Grube.

2. THYSANOZOON AUROPUNCTATUM Kelaart-Collingwood.

Plate 1, fig. 2.

Thysanozoon auropunctatum KELAART-COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 94.—STUMMER-TRAUNFELS, 1895, Zeitschr. f. wiss. Zool., vol. 60, p. 701.—LAIDLAW, 1903, Proc. Zool. Soc. London, vol. 1, p. 314.—BOCK, 1913, Zool. Bid. f. Uppsala, vol. 2, p. 252.

Thysanozoon verrucosum GRUBE in Lang's Monogr., p. 537.

The collection contained a single specimen, which was found adhering to a certain sea weed at Tacloban, Leyte, in April, and was, unfortunately, in fragments, so that a satisfactory examination was not possible. According to Professor Bartsch's note and colored drawings taken from the living form, this planarian seems to be identical with Kelaart's *Thysanozoon auropunctatum*, which is known to occur in Samoa, Arip on the west coast of Ceylon, Pulau Bidan on the west coast of Malacca, and Cape Jaubert in West Australia.

² Laidlaw, 1903, Proc. Zool. Soc. London, vol. 1, p. 312.

The body in life was elongate-oval in shape and had the margin very strongly frilled. The frontal margin was folded in a pair of tentacular horns about 5 mm. apart. Irregularly distributed all over the dorsal surface were numerous slenderly conical papillae of varying size. The worm in the expanded state measured 85 mm. in length and 38 mm. in breadth at the middle of the body.

Almost completely round the extreme margin of the body, on the dorsal surface, was a pale pearl-gray stripe, just inside which was a broad band of a sooty color, gradually shading inward to plumbeous. A somewhat darker shade occurred along the median line from the tentacles to near the end of the body. Most of the dorsal papillae were generally of a white color, excepting at the tip, which was orange. Frequently some were colored orange throughout. The ventral surface presented a marginal band of pearl gray and a broad purplish sooty one within this, just as on the dorsal. The rest of the surface was of a pearl-gray color with a narrow median white streak which extended posteriorly from a short distance behind the anterior margin.

The present species is on the whole most closely allied to *Thysanozoon brocchi* (Grube) of cosmopolitan distribution, which varies in color to some extent. But it can be distinguished from this by the possession of an unpaired penis.

Genus PSEUDOCEROS Lang.

3. PSEUDOCEROS HANCOCKANUS (Collingwood).

Plate 1, fig 3.

Proceros hancockanus COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 91.

? *Stylochopsis malayensis* COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 94.

Prostheceraeus hancockanus LANG, 1884, Naples Monogr., p. 567.

Pseudoceros malayensis BOCK, 1913, Zool. Bid. f. Uppsala, vol. 2, p. 258.

Professor Bartsch secured but one specimen. While fishing with a submarine light in February, near Tominado Island, Tawi Tawi, it was found swimming on the surface of the water. It may be identical with *Proceros hancockanus*.

The body in the living state was of a thick, broad, leaflike shape with frilly margin. The tentacles appeared as two S-shaped lobes of the anterior margin of the body. When the worm was at rest, they were folded back on the dorsal surface. In the expanded state the body measured 46 mm. long by 24 mm. across the widest part at the middle.

The dorsal surface was of a blackish-brown color with a much darker shade along the median line, and was margined nearly all

around by a narrow light-gray band; just inside this was a second one of similar width of Chinese orange. The tentacular lobes were colored like the general surface, but lacked the sub-marginal band of Chinese orange. The ventral surface was of a much lighter color than the dorsal. Along the median line was a pearl-gray streak which extended posteriorly from near the anterior margin of the body.

Numerous small eyespots, though difficult to detect owing to a poor state of preservation, appear to be distributed on the tentacular folds in two distinct clusters; and an oval elongated group of eyes, divisible into two closely approximated clusters, occurs dorsal to the brain.

Situated near the beginning of the middle third of the body is the mouth, which leads into the pharyngeal cavity with the plicated pharynx. The ventral sucker occurs slightly behind the middle of the body.

Instead of strongly folded, **S**-shaped lobes, the tentacles in Collingwood's form are in his figure shown as a pair of long prominent processes. Excepting such a difference, it is difficult to find any distinguishing character.

Laidlaw,³ although harboring some suspicion, puts on record a form from Pulau Bidan, a little north of Penang, which is perhaps referable to the present species.

The present form is almost exactly similar in color to Stimpson's *Callioplana marginata*,⁴ an Acotyloid species from Japan, but is beyond doubt distinguished from it by the presence of marginal, instead of nuchal, tentacles.

4. PSEUDOCEROS LITORALIS Bock.

Plate 1, fig. 4.

Pseudoceros litoralis Bock, 1913, Zool. Bid. f. Uppsala, vol. 2, p. 259.

The collection contained one specimen, which I have identified as *Pseudoceros litoralis* Bock, a species from the Gulf of Siam. It was found on coral sand and shell bottom at a depth of 21 fathoms off Sulade Island, Sulu Archipelago.

The body in life was thin leaflike in shape and of a sinuous outline. The anterior margin was elevated and folded in two **S**-shaped loops of tentacular folds, while the posterior was evenly rounded. The fully extended animal measured 20 mm. in length and 14 mm. in breadth.

The dorsal surface was of a uniform velvety dark-brown color with a touch of purple. Just inside the extreme margin of the

³ Laidlaw, 1903, Proc. Zool. Soc. London, vol. 1, p. 315.

⁴ Yeri and Kaburaki, 1918, Journ. Sci. Coll. Imp. Univ. Tokyo, vol. 39, art. 9, p. 32.

same color occurred a submarginal band of orpiment orange, which was interrupted at the extreme anterior end only. An elevated papilla, which was about 2 mm. high and presented a basal ring of orpiment orange and a black tip, was located a little to the left of the tentacle of the same side and just inside the submarginal orange band above mentioned. The ventral surface was of a somewhat paler color than the dorsal and presented a median line of smoky gray.

Numerous small eyespots are scattered over each tentacular fold, and they also occur over the brain in a group which is faintly divisible into two clusters.

The mouth opens nearly between the anterior and the middle third of the body, leading into the pharyngeal cavity with the pharynx plicated. The ventral sucker occurs slightly in front of the commencement of the posterior third of the body.

Unfortunately the genital organs were not developed in the specimen examined.

As with the present specimen, most of the examples examined by Bock are of a uniform brown color and are marked by two distinct narrow marginal stripes, the inner chrome yellow and the outer black, though some presenting, besides these, a narrow rim of a paler color. Under this circumstance I feel it advisable to refer the present example to Bock's *Pseudoceros litoralis*.

So far as concerns the coloration, the present specimen appears to be very closely allied to *Pseudoceros superbis* Lang which is known to occur in the Mediterranean and also in the Pacific, off the Galapagos Islands. According to Bock, however, it differs from this in having only a single penis.

5. PSEUDOCEROS BUSKII (Collingwood).

Plate 1, fig. 5.

Proceros buskii COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 91.

Pseudoceros buskii LANG, 1884, Naples Monogr., p. 547.—LAIDLAW, 1902, Fau. & Geogr. Maldive & Laccadive Archip., vol. 1, pt. 3, p. 298.

In the collection was a single individual of a species which is perhaps identical with Collingwood's *Proceros buskii* from Singapore. It was found on the reef in Cataingan Bay, Masbate, in April.

The body in the living state was of an elongate-oval shape with the margin very strongly frilled. The tentacles appeared as two short folds of the frontal margin of the body. In the expanded state the specimen had a total length of 50 mm. and a breadth of 20 mm.

Dorsally the body was bordered all around by a narrow marginal band of citron yellow, immediately interior to which was a broad purplish-black band, gradually grading inward into a cream

color with numerous fine reticulations of poppy red. Along the median line occurred a longitudinal band of a yellowish-white color. The ventral surface was almost exactly similar in color and markings to the dorsal, excepting the purplish-black band, which was more or less broad. The internal structures were discernible with more or less distinctness by tubular white markings.

The state of preservation makes it very difficult to detect the arrangement of eyespots with any degree of accuracy. The eyespots, which are exceedingly numerous, are scattered over the tentacular flaps and also occur forming a single circular cluster slightly posterior to the tentacles.

The mouth, which leads into the pharyngeal cavity with the pharynx plicated, appears to open at the hind end of the first fourth of the body, and the ventral sucker lies a little behind the center of the body.

The present specimen, though sexually mature, was unfortunately in an unfit state for close examination of the genital organs.

In his description of the species from Singapore Harbor, Collingwood gives the color of the body as a rich velvety olive green, but in his figure the body is shown rather as black. Although there exists a small difference in the ground color, as is evident from the above, I feel justified in identifying the present specimen with Collingwood's species.

The present species appears to be closely allied to *Pseudoceros flavomarginatus* Laidlaw,⁵ a species from Minikoi, Laccadive Group, so that they may be identical; and it, according to Laidlaw, is also known to occur in Hulule and Minikoi.

6. PSEUDOCEROS CONCINNUS (Collingwood).

Plate 1, fig. 6.

Proceros concinnus COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 90.—LANG, 1884, Naples Monogr., p. 593.

Only a single example, which, although showing a small difference in the feature of its tentacles, appears to be identical with Collingwood's *Proceros concinnus* from the islands of Labuan and Pulo Daak near the mainland of Borneo, was found on the head of coral in about 2 feet of water on the shore of Papahag, Tawi Tawi, in February. No specimen unfortunately came under my direct observation; and the following is based upon Professor Bartsch's note and colored drawing.

The body was of a thin leaflike shape in the living state, its lateral margin being slightly frilled. The tentacles appeared as two S-shaped, folded outgrowths of the anterior body margin, differ-

⁵ Laidlaw, 1902, Fau. & Geogr. Maldives & Laccadive Archip., vol. 1, pt. 3, p. 298.

ing from Collingwood's form, in which they are pointed at the tip. When in motion the tentacular folds projected for about 4 mm. In the fully extended state the body may have reached 55 mm. in length and 18.5 mm. in breadth.

The present example bears a close resemblance to Collingwood's form in color. The entire margin of the body was marked on the dorsal surface by a narrow band of cobalt blue. Along each side of the median line occurred a narrow line of Antwerp blue, which fused with its fellow of the opposite side before reaching the anterior and posterior extremities. The space inclosed between was of the same color as the rest of the dorsal surface, which was pale cream buff with numerous small lighter hydrophanous spots of varying size and distribution. The ventral surface was uniformly cream with a border of cobalt blue just as on the dorsal. The dorsal median blue lines were faintly visible from the ventral side.

As is evident from the above, the present specimen has small folded tentacles, whereas Collingwood's form bears tentacles of a slender conical shape. *Proceros concinnus*, in fact, appears almost certainly to be an Euryleptid, as mentioned by Laidlaw,⁶ who, although not having made any precise identification, has given a note on several examples of a species colored exactly like this, whilst the present example is undoubtedly a member of the genus *Pseudoceros*. In spite of such a small difference in the tentacles, it may, I think, be advisable to refer this to *Pseudoceros concinnus*, because of a close resemblance in their coloration.

7. PSEUDOCEROS RUBROTENTACULATUS, new species.

Plate 2, fig. 7; text figs. 3, 4.

Only one individual, which appears to represent a new species, was found in the crevice of coral between tide marks at Dumurug Point, in Cataingan Bay, Masbate, in April; holotype, Cat. No. 19103, U.S.N.M.

This species in the living state was of a small leaflike shape with a sinuous outline. The anterior margin gave rise to a pair of tentacular folds. In the expanded state the length of the body was 14 mm. and the breadth 10 mm.

The dorsal surface was of a cream color with a narrow marginal band of bright cobalt blue, decidedly intensified between the two tentacular folds, where the band was about twice as wide as the rest. The tentacular folds presented a bright orange-colored spot on the outer side of the tip. Extending from the tentacular region to near the posterior margin of the body were three bright

⁶ Laidlaw, 1903, Proc. Zool. Soc. London, vol. 1, p. 315.

buff bands of almost similar breadth, each of which was bordered by a narrow, deep, tawny-brown stripe. One followed the median line; the other two ran parallel to it, with an interspace as broad as

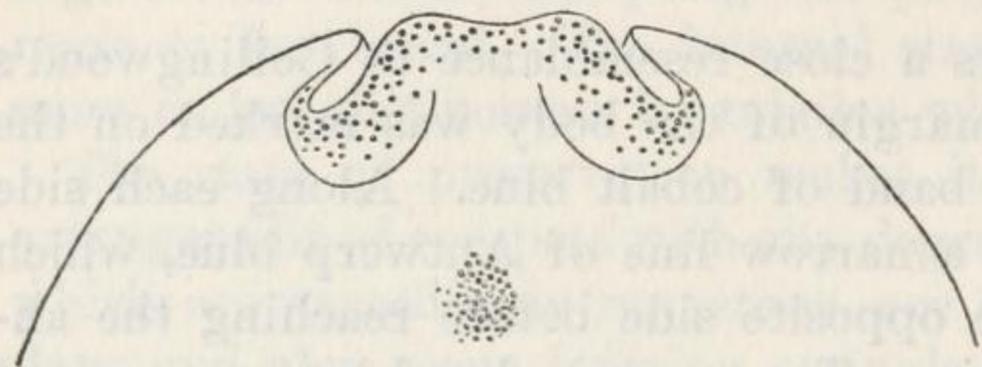


FIG. 3.—ARRANGEMENT OF EYESPOTS IN *PSEUDOCEROS RUBROTENTACULATUS*.

or broader than the buff bands. The ventral surface was of a uniform pale buff color with a bright cobalt marginal stripe, just as the dorsal.

Numerous small eyespots are found irregularly arranged along the margin of the tentacular folds and also occur forming a crowded cluster over the brain. The mouth is placed at the beginning of the middle third of the body and opens nearly into the middle of the much-folded pharynx, which is nearly one-third as long as the body. The main gut is narrow, of a considerable length, and gives rise to numerous pairs of lateral branches, the subdivisions of which do not undergo anastomosis. At the hind end the main trunk becomes somewhat dilated. The ventral sucker occurs a little anterior to the hind end of the middle third of the body.

The male gonopore lies in the median line slightly behind the pharyngeal cavity. The vas deferens pursues a backward course and bends inward a little behind the genital opening, finally to unite with its mate of the opposite side into a median canal, which rises upward to continue with the anteriorly directed, wide seminal vesicle having a thick muscular coating composed of two sets of fibers, circular and longitudinal. Anteriorly the vesicle gives rise to a slender duct, the ejaculatory duct, which turns abruptly downward just behind the prostate, and after receiving the duct of this organ enters the penis. The prostate is of a pyriform shape and lies just dorsal to the base of the penis, which is represented by a long chitinous stylet hanging vertically in the sheath. The antrum

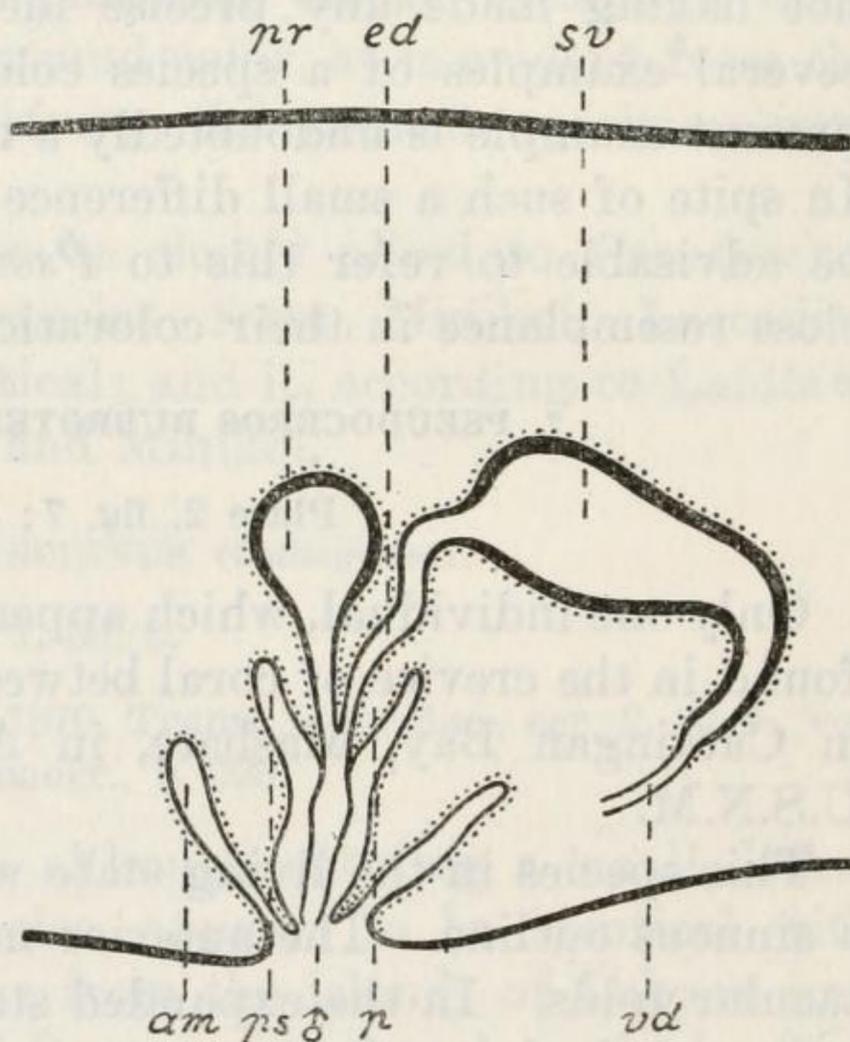


FIG. 4.—MALE GENITAL ORGANS OF *P. RUBROTENTACULATUS* IN SAGITTAL SECTION. *am*, ANTRUM MUSCULINUM; *sv*, SEMINAL VESICLE. OTHER LETTERS AS IN FIG 2.

musculinum forms an oblique upwardly directed, annular out-bulging before opening to the exterior.

In having three bands of almost similar breadth, each of which was bordered by a narrow dark pigmented stripe, the present spe- (Kelaart), which will be described later. But it stands distinctly at variance from this chiefly in the different features of the tentacles and coloration, as may be seen from the description.

8. *PSEUDOCEROS PHILIPPINENSIS*, new species.

Plate 2, fig. 8.

A single representative of this interesting new species was collected in Subic Bay, Luzon, in January, holotype, Cat. No. 19104, U.S.N.M.

The body in the living state was firm in texture, leaflike in shape, and had the margin strongly frilled. The frontal margin shows an aspect somewhat similar to that in *Pseudoceros bedfordi* Laidlaw⁷ from Singapore Harbor, the tentacles forming two loops, as is seen in figure 8. In the resting state the body measured 40 mm. long by 10 mm. across in the broadest part. When swimming it may have reached about 75 mm. in length.

The dorsal surface was of a velvety black color with a touch of purple and was marked by a median stripe of light purple, extending through about two-thirds the length of the body posteriorly from the anterior margin. On each side of the median stripe, a short distance from it, was an ashy-gray band of twice the width of the median one. These two bands extended from the anterior margin to near the posterior. Further, the body was bordered all around by two narrow bands of almost similar breadth, the outer marginal band orange chrome and the inner submarginal white, shading to ashy at the inner border. In the anterior median parts of the ventral surface was a white shade, extending about halfway across the body. The rest of the surface was of a velvety black color, as on the dorsal. The extreme margin was orange chrome, but the rim was very thin.

The deep pigmentation makes it impossible to determine the arrangement of eyespots.

This strikingly handsome specimen was unfortunately broken in part, so that a satisfactory examination was not possible. It may, however, be provided with a pair of the male organs.

⁷ Laidlaw, 1903, Proc. Zool. Soc. London, vol. 1, p. 314.

Family EURYLEPTIDAE.

Genus PROSTHECERAEUS Schmarda.

9. PROSTHECERAEUS PAPILIO (Kelaart).

Plate 2, fig. 9.

Planaria papilionis KELAART, 1858, Journ. Ceylon Branch Roy. Asiat. Soc., 1856-1858, p. 136.

Acanthozoon papilio COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 95.

Pseudoceros? papilio LANG, 1884, Naples Monogr., p. 546.

A single specimen, which may be identical with Kelaart's *Planaria papilionis* from Ceylon, was collected in Subic Bay, Luzon, in January. Unfortunately no specimen was brought under my direct examination. The following description is based upon Professor Bartsch's careful note and colored drawing.

The body in life was oval in shape and had a frilled margin. The tentacles appeared as two short, obtusely pointed outgrowths of the anterior margin of the body. In the resting state the worm measured 22 mm. long by 15 mm. broad; when fully extended it may have reached 35 mm. in length.

The dorsal surface was of an ashy-gray color, merging to deep purplish brown on either side, and was mottled more or less uniformly all over with minute dark-brown spots. The extreme margin was marked by a narrow colorless stripe, as is seen in Collingwood's figure. A longitudinal band of an ashy-gray color with a touch of purple extended almost throughout the median line.

The present example shows a slight difference in its general coloration from Kelaart's form, which is of a yellow color. It may, however, be advisable to regard this as a variation. After some hesitation I have referred this specimen to *Planaria papilionis* and arranged it under the genus *Prostheceraeus* on account of a close resemblance of their markings and short, obtusely pointed tentacles.

This specimen seems to be closely allied to Laidlaw's *Pseudoceros collingwoodi* from Pulau Bidan, near Penang, in which the dorsal surface is of mottled dark-brown or brownish-white color and is bordered by a thin white marginal stripe. One of the distinctive characters is the presence of an equally fine black submarginal line just inside the marginal.

10. PROSTHECERAEUS MELEAGRINUS (Kelaart).

Plate 2, fig. 10; text fig. 5.

Planaria meleagrina KELAART, 1858, Journ. Ceylon Branch Roy. Asiat. Soc., 1856-1858, p. 137.—LANG, 1884, Naples Monogr., p. 613.

Stylochoplana meleagrina COLLINGWOOD, 1876, Trans. Linn. Soc., ser. 2, Zool., vol. 1, p. 98.

In the collection there is a single individual, which seems to agree with Collingwood's description and figures of *Planaria meleagrina* Kelaart from Ceylon, so far as they go. It was collected in the Bay

of Lianga, Mindanao, in May. An examination has revealed that this form may be referred to the genus *Prostheceraeus*.

The body in the living state was of a leaflike shape, its margin being frilled to a certain extent. The tentacles were represented by two hornlike projections arising from the anterior margin of the body. When fully extended the animal was 17 mm. in length and 7 mm. in breadth.

The dorsal surface was light buff and margined almost completely by a narrow dark-blue stripe. In addition to this there were, as in *Pseudoceros rubrotentaculatus* already described, three bands of a dark-brown color, a median and a pair of lateral, each bordered by a much deeper color. The median band was wide and extended from behind a group of eyespots over the brain to a point some little distance from the posterior extremity. The lateral pair, which were somewhat narrower and much lighter in color, occupied a position nearly halfway between the median band and the lateral body margin and extended a little farther forward and backward. At the base of each tentacle there was a yellow spot. In the preserved state the tentacles show a black color at the tip on account of the presence of well-developed pigments.

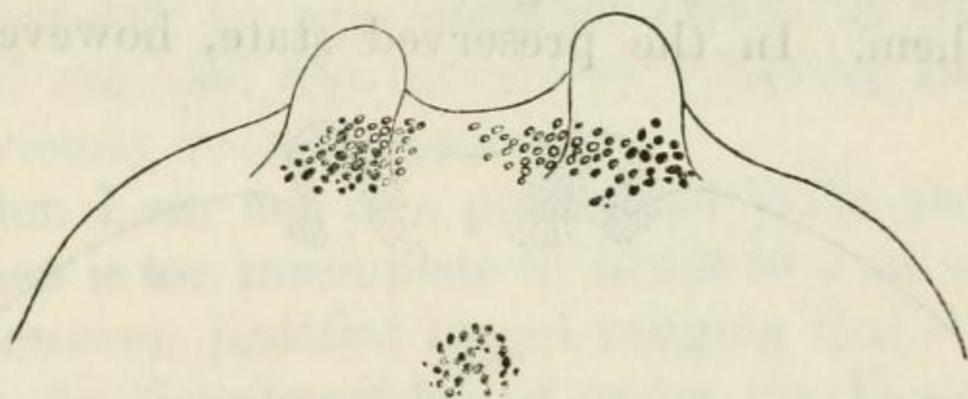


FIG. 5.—ARRANGEMENT OF EYESPOTS IN *PROSTHECERAÆUS MELEAGRINUS* (KELAART).

The ventral surface was, like the dorsal, of a bluish-white color with a dark brownish-blue marginal stripe. The dorsal markings were visible on the outside with more or less distinctness.

At the base of each tentacle are numerous small eyespots, which assume an irregular group on both sides, dorsal and ventral, and they also occur in a horseshoe-shaped cluster above the brain.

The position of the mouth could not be detected, since the specimen was unfortunately in a state unfit for close examination. Lying in the anterior half of the body is the pharynx, which is of smaller size. Along the median line runs the main trunk of the intestine with numerous lateral branches, the subdivisions of which form a highly anastomosing system before reaching the margin of the body. The ventral sucker is placed at a short distance behind the middle of the body.

According to Collingwood's description and figures, Kelaart's original form is provided with a pair of linear appendages on the occipital region above the eyespots. The ground color, which is white in the central and light blue in the marginal parts of the body, is marked almost completely by a narrow black marginal stripe and

also by three longitudinal broad bands of brownish red, each edged with black pigments. Though showing such differences in color and also in the feature of the tentacles, the general appearance agrees with that of the example which I have examined.

Family DIPLOPHARYNGEATIDEA.

SIMPLICIPLANA, new genus.

11. SIMPLICIPLANA MARGINATA, new species.

Plate 2, fig. 11; text fig. 6.

Only a single individual, which seems to represent a new genus and species, was collected in Tominado Island, Tawi Tawi, in February, holotype, Cat. No. 19105, U.S.N.M.

The body in life was leaflike in shape and of a strongly frilled outline. The tentacles appeared as two simple folds of the frontal body margin, so that this form seemed to be destitute of them. In the preserved state, however, they are rather distinct.

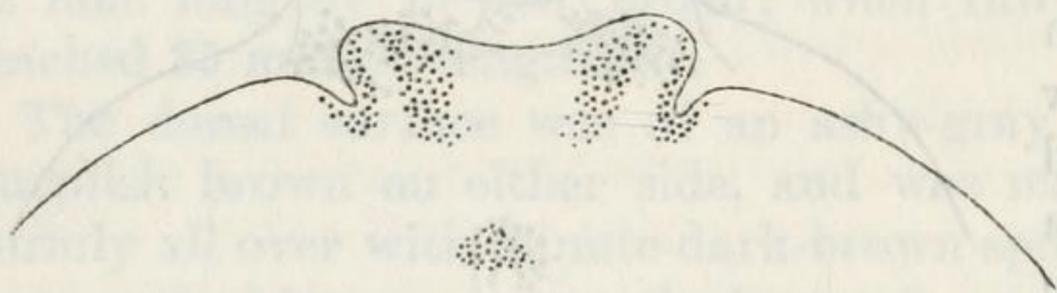


FIG. 6.—ARRANGEMENT OF EYESPOTS IN SIMPLICIPLANA MARGINATA.

The worm in the expanded state had a total length of 25 mm. and a breadth of 11 mm.

The ground color of the dorsal surface was wax yellow, excepting the extreme margin marked by a narrow greenish-white stripe; just inside this was a broader band of pale olive, grading over inward to the general color. A white band ran along the median line almost throughout the entire length of the body. Slightly behind the anterior margin was located a small spot which appeared to represent the position of eyespots in a cluster. The ventral surface was similar in color to the dorsal, excepting the occurrence of an ill-defined greenish cord.

Distributed on the tentacular flap are numerous small eyespots, which form two irregular groups, as is shown in figure 6. Other eyespots, of somewhat larger size, also occur over the brain in an almost circular cluster.

So far as my observation goes, the present species appears to be devoid of any ventral sucking disk. Placed in the anterior third of the body is the unfolded pharynx, which appears to open to the exterior at the middle of its cavity. The main gut trunk gives off numerous lateral branches, the subdivisions of which form a highly anastomosing system. Some interest attaches to the presence of minute gut diverticulae, which arise from the dorsal wall of the main

trunk and end blindly in the parenchyma just beneath the basement membrane.

The genital organs, though difficult to observe owing to a poor state of preparation, seem to be constructed on a plan similar to those figured by Von Plehn⁸ for *Diplopharyngeata filiformis*, a species from Sumatra. Just behind the pharynx lie the male organs, in which no seminal vesicle nor prostate of any kind could be detected in the sections available.

The female gonopore is situated nearly at the middle of the body and leads into an irregular antrum, which in turn appears to connect with the vagina.

In spite of fundamental similarity in the structure of the genital organs and also of the absence of the ventral sucker, the present species appears to be somewhat related to Plehn's *D. filiformis*, just mentioned, but is distinctly at variance from this in some respects. *D. filiformis* is wholly devoid of any trace of tentacles, has the pharynx reduplicated, and presents no anastomosing system of the intestine. For the present I can not feel certain of referring the present example to any previously recorded genus.

As to its systematic position I am not in a position to make any assertion, because the specimen is too incomplete to admit of a satisfactory diagnosis. I feel, however, justified in not ranging this remarkable form either under the Pseudoceridae or under the Euryleptidae, chiefly on account of appearing devoid of prostate and sucking disk of any kind, not to speak of other points of differences. Provisionally it may be placed under the Diplopharyngeatidae.

EXPLANATION OF THE PLATES.

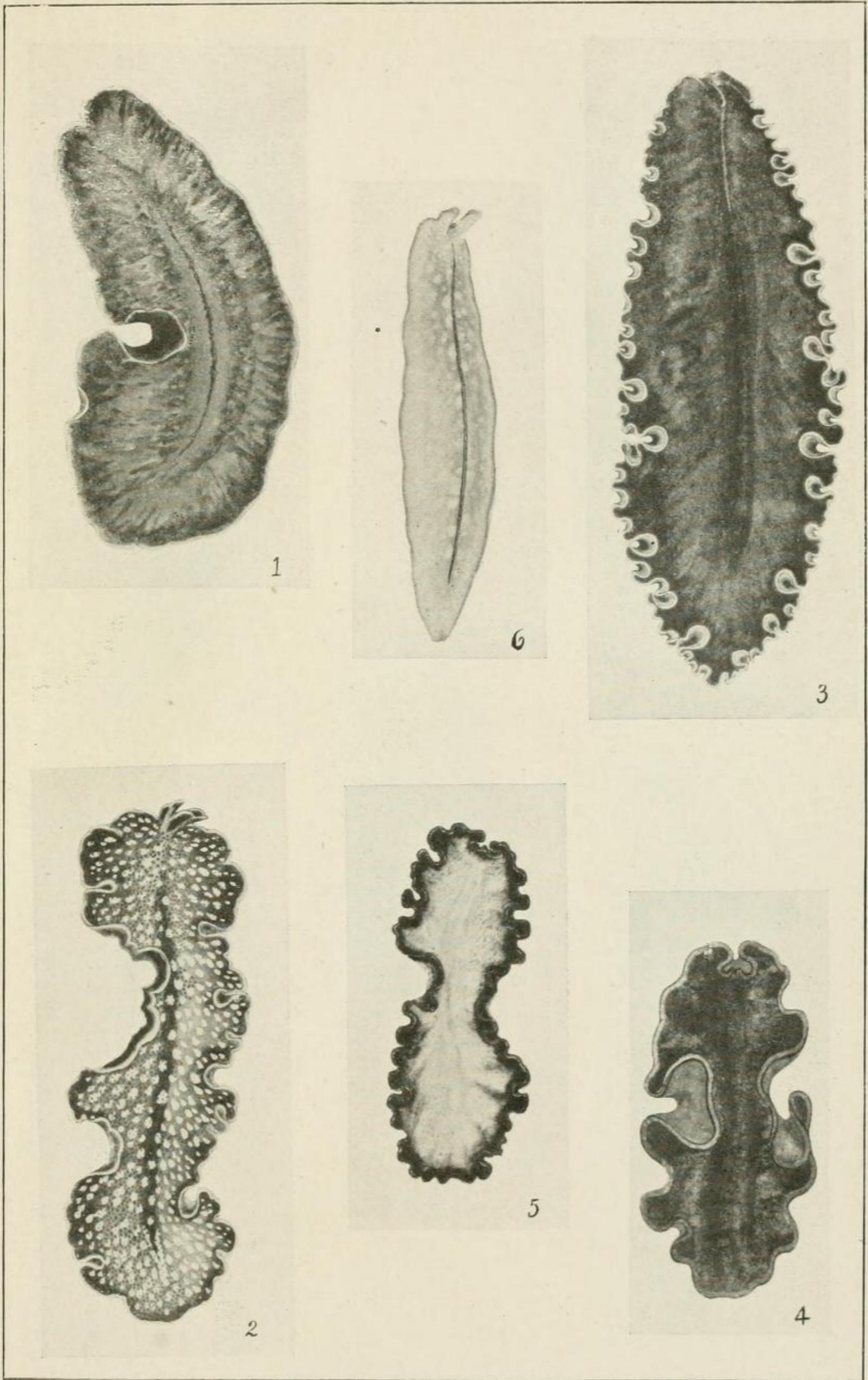
PLATE 53.

- Fig. 1. *Cryptophallus bartschi*, new species, about natural size.
 2. *Thysanozoon auropunctatum* Kelaart-Collingwood, about $\times 2$.
 3. *Pseudoceros hancockanus* (Collingwood), about $\times 2$.
 4. *Pseudoceros litoralis* Bock, about $\times 2$.
 5. *Pseudoceros buskii* (Collingwood), about natural size.
 6. *Pseudoceros concinnus* (Collingwood), about natural size.

PLATE 54.

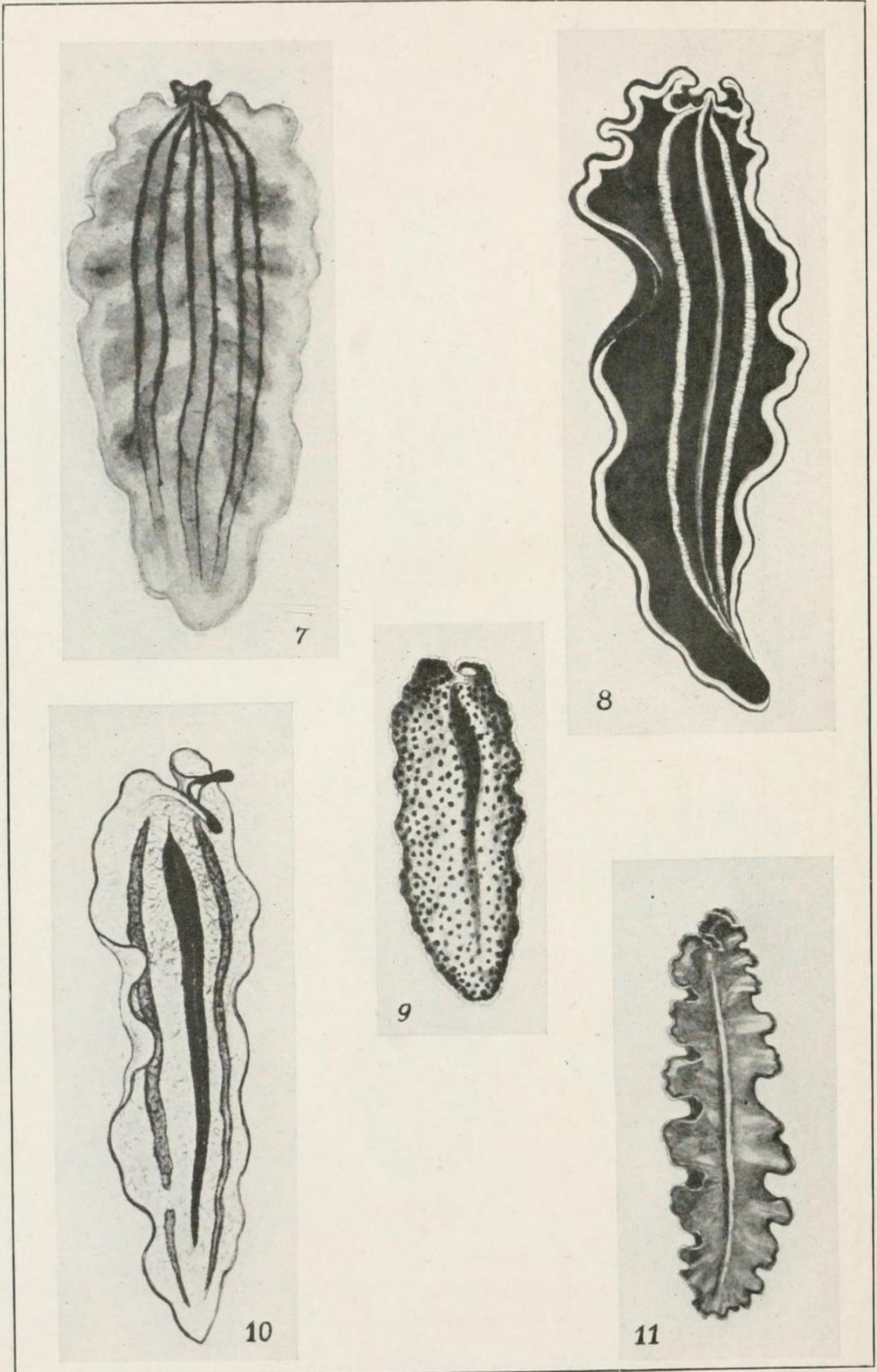
- Fig. 7. *Pseudoceros rubrotentaculatus*, new species, $\times 5$.
 8. *Pseudoceros philippinensis*, new species, $\times 2$.
 9. *Prostheceraeus papillo* (Kelaart), $\times 2$.
 10. *Prostheceraeus melcagrinus* (Kelaart), $\times 5$.
 11. *Simpliciplana marginate*, new species, $\times 2$

⁸ Von Plehn, 1896, Jena. Zeitschr., vol. 30, p. 167, pl. 13, fig. 12.



POLYCLAD TURBELLARIANS FROM PHILIPPINE ISLANDS.

FOR EXPLANATION OF PLATE SEE PAGE 849.



POLYCLAD TURBELLARIANS FROM PHILIPPINE ISLANDS.

FOR EXPLANATION OF PLATE SEE PAGE 649.