PLATE 116, FIG. 1.

BEANIA MIRABILIS (JOHNSTON).

[Genus BEANIA (JOHNSTON). (Sub-kingd. Mollusca. Class Polyzoa. Order Infundibulata. Sub-order Cheilostomata. Family Bicellariidæ.)

Gen. Char.—Zoarium creeping or loosely adnate. Zoœcia disjunct, connected by (usually) corneous tubes, erect or decumbent, ovate or boat-shaped, entirely open in front and filled in by a membrane. Usually one or two capitate pedunculate avicularia, perfect, aborted or altered in form.]

DESCRIPTION.—Zoarium sub-erect or decumbent. Zoœcia erect, connected by long, filiform tubes springing from their bases; each cell boat-shaped, with a thickened rim, two sharp spines superiorly and 7–10 sub-marginal, incurved spines or costæ on each side, the uppermost of which is stouter than the others.

REFERENCES.—Busk, Cat. Mar. Pol. Brit. Mus., Pt. i, p. 32, pl. xxiv., Figs. 4, 5; Hincks, Brit. Mar. Polyzoa, p. 96, pl. iv., Figs. 8–10.

Port Phillip Heads, Mr. J. B. Wilson.

This exceedingly beautiful and interesting species, for the discovery of which in Australia we are indebted to Mr. J. B. Wilson, differs in no respect from the well-known European form. The figured specimen occurs on a small piece of sea-weed. The zoœcia are boat-shaped, of a beautiful silvery appearance, and connected by long delicate tubes attached to their bases. The superior thicker spine seems to me to be evidently the homologue of the frequently-modified avicularium in the Diachoridan species.

EXPLANATION OF FIGURES.

PLATE 116.—Fig. 1, portion of zoarium, magnified. Fig. 1*a*, single cell, more highly magnified.

PLATE 116, FIGS. 2 AND 4.

MUCRONELLA TRICUSPIS (HINCKS).

[Genus MUCRONELLA (HINCKS). (Sub-kingd. Mollusca. Class Polyzoa. Order Infundibulata. Sub-ord. Cheilostomata. Fam. Escharidæ.)

Gen. Char.—Zoarium crustaceous or erect and uni- or bi-laminate. Zoœcia with a sub-orbicular or semicircular orifice, the peristome of which is elevated into a more or less prominent inferior mucro.]

DESCRIPTION.—Zoarium encrusting. Zoœcia distinct, convex; primary mouth semicircular, with 3 or 4 long spines superiorly; secondary mouth with a pouch-like projection of the peristome below, the middle part forming a broad mucro and on each side produced into a sharp process. A raised avicularium on each side of the zoœcium below the mouth, with the long, pointed mandible directed outwards, and projecting

against the side of the mouth of the contiguous cell. Oœcia globular, smooth, occasionally with the margin thickened.

REFERENCES.—*Mucronella tricuspis*, Hincks, Ann. and Mag. Nat. Hist., Aug. 1881; *M. munita*, MacGillivray, Tr. Roy. Soc. Vict., July 1882.

Port Phillip Heads; Portland, Mr. Maplestone.

Of this common species there are two varieties which I, at one time, considered as distinct species. The one, which may be taken as the type, forms, when young, thin glassy layers on Retepores, shells, &c. The oral spines are long and only seen on the marginal zoœcia. The whole surface of the zoœcia is smooth. In older specimens there is no difference except what is due to increased calcification. The peristome below forms a pouch-like projection, divided superiorly into three parts—a central broader and two lateral sharper projections. The central part is traversed by a shallow, vertical groove which is frequently, as in the figure, replaced by an elevated band or ridge. In the other variety, which I have described as *M. munita*, the surface of the zoœcia is sharply areolated round the margin, and the spines are much thicker and persistent. Even when highly calcified the areolation is frequently retained, although sometimes obliterated. In one beautifully perfect young, growing specimen the marginal spines are thick, with conspicuous chitinous articulations; and many of the zoœcia have a calcareous nodule on the front.

EXPLANATION OF FIGURES.

PLATE 116.—Fig. 2, portion of zoarium of normal form, showing the young marginal zoœcia and those fully formed, oœcia, and avicularia projecting on the sides of the mouths of contiguous zoœcia. Spines are seen on the marginal zoœcia, but not on the others. Fig. 4, small portion of the variety *munita*, in which, however, the marginal areolation has disappeared. The bases of the persistent spines are shown.

PLATE 116, FIG. 3.

MUCRONELLA LÆVIS (P. McG.).

DESCRIPTION.—Cells broadly ovate, arranged in linear series, separated by deep grooves, slightly convex, smooth; mouth rounded above, a broad denticle deep in the lower lip; peristome raised round the lower lip, produced in the centre into a prominent square or blunt mucro; six stiff, articulated spines on the upper margin. Oœcium small, globose, smooth, three spines showing on each side in front of it.

REFERENCE.—P. H. MacGillivray, Tr. Roy. Soc. Vict., July 1882.

Sorrento, Mr. J. B. Wilson; Port Phillip Heads, on shells, &c.

Of a yellowish-brown color. Allied to *M. peachii*, from which it differs in the greater prominence of the mouth, the larger size of the mucro, the stouter spines (the articulations of which are usually darker colored), and the presence of three spines in front of the oœcium on either side. It is also closely allied to, and may prove to be identical with the *M. teres* described by Mr. Hincks from specimens dredged off Curtis Island.

EXPLANATION OF FIGURE.

PLATE 116.—Fig. 3, portion of specimen, magnified.

PLATE 116, FIGS. 5–8.

MUCRONELLA VULTUR (HINCKS).

DESCRIPTION.—Zoarium loosely attached or in hemeschara form. Cells large, distinct, surface cribriform, with numerous, slightly raised, circular foramina; mouth semicircular, with six spines on the upper margin; inside the lower lip a broad denticle, and on each side, separated by a rounded sinus, a sharp tooth; in front of the median denticle the peristome forms a large mucro, with a large avicularium on one side, the sharp point of the mandible of which is directed upwards. Occasionally a large avicularium, with a broad, blunt, tongue-shaped mandible on the front of a cell. Oœcium large, globular, closely and finely punctate, with, usually, a sharp point on each side of the opening.

REFERENCE.—Hincks, Ann. and Mag. Nat. Hist., Aug. 1882.

Port Phillip Heads; Portland, Mr. Maplestone; Warrnambool, Mr. Watts.

In this large and handsome species the zoœcia are of great size, and the massive mucro, with its long, pointed, lateral avicularium, is very conspicuous. The front of the mucro is frequently elevated into a stout knob or process. The zoœcia posteriorly are quadrate, and have very frequently a large round pore, usually situated about the centre of the upper margin, probably indicating the attachment of a radical fibre. It is nearly allied to *M.* (*Lepralia*) *Ellerii* (McG.), of which it ought possibly to rank only as a variety. In *M. Ellerii* the primary mouth is of the same structure, but the central mucro is smaller (although frequently with the projecting process), and there are usually additional blunt processes at the sides of the mouth. The zoœcia, moreover, are

oblique; and the oœcia are broader, the inferior angles not so sharply pointed, and there is a smooth space in front without any punctation.

EXPLANATION OF FIGURES.

PLATE 116.—Fig. 5, two mature zoœcia with oœcia, showing also the process on the mucro. Fig. 6, two cells from another specimen. Fig. 7, younger cells from another specimen, showing the growth of the mucro. Fig. 8, single marginal cell, showing the central and lateral denticles.

PLATE 116, FIG. 9.

CYCLICOPORA LONGIPORA (P. McG.).

[Genus CYCLICOPORA (HINCKS). (Sub-kingd. Mollusca. Class Polyzoa. Order Infundibulata. Sub-ord. Cheilostomata. Fam. Escharidæ.)

Gen. Char.—Zoarium encrusting or loosely adnate. Zoœcia elongated; mouth suborbicular, turned forwards, with a slightly-thickened margin. No avicularia. Oœcium prominent.]

DESCRIPTION.—Zoœcia much elongated, distinct, arranged in linear series, convex; surface smooth and sparsely punctured; mouth nearly circular, with the lower lip usually slightly straightened, margin thickened. Oœcium large, rounded, smooth.

REFERENCE.—*Lepralia longipora*, P. H. MacGillivray, Tr. Roy. Soc. Vict., July 1882; *Cyclicopora prælonga*, Hincks, Ann. and Mag. Nat. Hist., Oct. 1884.

Port Phillip Heads, mostly on calcareous nodules, common.

EXPLANATION OF FIGURE.

PLATE 116.—Fig. 9, portion of specimen, magnified.

The specimens and descriptions for the *Polyzoa* on this plate have been contributed by Mr. MacGillivray.

FREDERICK McCOY.

PLATE 117, FIGS. 1 AND 2.

BEANIA DECUMBENS (P. McG.).

[Genus BEANIA (JOHNSTON). (Sub-kingd. Mollusca. Class Polyzoa. Order Infundibulata. Sub-order Cheilostomata. Family Bicellariidæ.)

Gen. Char.—Zoarium creeping or loosely adnate. Zoœcia disjunct, connected by (usually) corneous tubes, erect or decumbent, ovate or boat-shaped, entirely open in front, and filled in by a membrane. Usually one or two capitate pedunculate avicularia, perfect, aborted or altered in form.]

DESCRIPTION.—Zoœcia much elongated; two or three short spines at the top; 14–16 long spines on each side, arching over the front of the cell and those of opposite sides interdigitating; at each upper angle a small capitate avicularium; connecting tubes springing from the extremities or sides, so that the cells are entirely decumbent.

REFERENCE.—P. H. MacGillivray, Tr. Roy. Soc. Vict., Dec. 1881.

Port Phillip Heads; first found by Mr. J. Bracebridge Wilson. Spreads in long, irregular lines over calcareous nodules. The connecting tubes are very short, and the zoœcia are arranged end to end, the branches, however, originating from the sides of the zoœcia. In many zoœcia there are one or two radical tubes from the sides, fixing them to the body on which they grow.

I have elsewhere given reasons for including most of the species of Diachoris in the present genus. The zoœcium in such a species as *D. spinigera*, as pointed out by Hincks (Polyzoa, p. 66), is identical in structure with that of a typical Beania. The number of the connecting tubes, the seemingly constant junction of each cell with six others, and, especially, the presence of capitate avicularia, constituted the reason for separating Diachoris; but Hincks has described a species, *D. intermedia*, in which the connecting tubes are four, and the symmetrical pattern is lost; and in Heller's *D. hirtissima* and the allied *B. conferta* (McG.) there are no avicularia. The character of the genus Beania, as now defined, depends on the structure of the cell, the margins being raised and front entirely open or membranous, their disjunction and connection with each other by tubes, and the presence of one or two perfect or modified capitate avicularia at or towards the oral end of the cell.

The systematic position of the genus is somewhat doubtful, but on the whole I agree with Mr. Hincks in referring it to

the Bicellariidæ. It is also closely related to the Membraniporæ through the very interesting *B. radicifera*, in which the original disjunction of the cells is shown by the short, thick, calcareous connection seen behind, and the avicularia, although sessile, are evidently a modification of the capitate form.

EXPLANATION OF FIGURES.

PLATE 117.—Fig. 1, two zoœcia of a series arranged end to end. Fig. 1*a*, single zoœcium with the first zoœcia of two branches springing from the sides. Fig. 2, outline of side view, to show the position of the attachment of the connecting tubes.

PLATE 117, FIG. 3.

BEANIA COSTATA (BUSK SP.).

DESCRIPTION.—Zoarium adnate or free; zoœcia connected with six others by corneous tubes; boat-shaped, rounded at either end; 4–6 spines above the mouth, and about 10 or 12 long incurved spines on each side of the aperture bending over the front, and those of opposite sides interdigitating; posterior surface of cells smooth; a capitate avicularium on each side opposite the mouth, usually directed upwards.

REFERENCE.—*Diachoris costata*, Busk, *Challenger* Polyzoa, p. 60, xxiv. f. 4.

Port Phillip Heads.

This species is allied to the *D. spinigera*, from which, however, it may readily be distinguished. The zoœcia are much smaller, the marginal spines more numerous and longer, and the avicularia are smaller, narrower, and more elongated.

EXPLANATION OF FIGURES.

PLATE 117.—Fig. 3, group of zoœcia, magnified. Fig. 3*a*, single zoœcium, more highly magnified; the outward direction of some of the marginal spines is owing to the irregular contraction of the sides of the cell in the dried specimen. Fig. 3*b*, back view of portion of same specimen.

PLATE 117, FIGS. 4 AND 5.

BEANIA CROTALI (BUSK SP.).

DESCRIPTION.—Zoarium loosely adnate or suberect; zoœcia erect, quadrate, each joined to six others by corneous tubes; from each upper angle a large lanceolate process (a modified avicularium) is directed downwards and inwards; posterior surface with several perforations at the base and on the sides.

REFERENCE.—*Diachoris Crotali*, Busk, Cat. Mar. Pol. Brit. Mus., pt. 1, p. 54, t. lxvi., figs. 1 and 2.

Port Phillip Heads; Portland, Mr. Maplestone.

The zoarium is partly free or adnate, and very loosely connected with the object on which it rests. The zoœcia are nearly erect, oblong. Each is connected with six others by tubes springing from the bases (not the sides and anterior extremity) of the zoœcia, the tubes thus forming a horizontal network from which the zoœcia are directed upwards. At each upper angle of the zoœcia there is articulated a lanceolate leaf-like process, the upper and narrower end of which forms a rounded knob. This process is hollowed on one surface, and has a prominent ridge on the other. There is no appearance of mandible, but there can be no doubt of its being a modified avicularium. At the base of the zoœcium, when viewed posteriorly, several rounded markings or openings are usually seen near the edge, mostly to one side, and they occasionally occur also on the sides of the erect part.

EXPLANATION OF FIGURES.

PLATE 117.—Fig. 4, anterior view of portion of a specimen. Fig. 4*a*, portion of the same, more highly magnified. Fig. 4*b*, posterior view of same. Fig. 5, side view of two zoœcia.

PLATE 117, FIGS. 6 TO 8.

BEANIA RADICIFERA (HINCKS SP.).

DESCRIPTION.—Zoarium attached by numerous radical tubes springing from the backs of the zoœcia; zoœcia large; aperture entirely membranous or slightly filled in below by a thin calcareous plate; two very short spines or tubercles above the mouth, and a long, incurved, blunt or occasionally furcate, rigid spine on one side, a short distance below the mouth; on the opposite side a large, sessile avicularium rising from a distinct broad base. Oœcia large, rounded, granular and pitted. Posteriorly, the zoœcia distinct, but each united by short calcareous tubes with six others, the spaces between the tubes appearing as round deep depressions.

REFERENCE.—*Membranipora radicifera*, Hincks, Ann. and Mag. Nat. Hist., July 1881.

Port Phillip Heads, on mud and sponges.

This is in many respects a most interesting form, marking, as it does, the transition from Beania (including Diachoris) to Membranipora. The zoœcia with the slight filling in inferiorly are Membraniporidan; but, although they are united in front, posteriorly they present the characteristic arrangement of Diachoris, the rounded openings seen being the spaces between the connecting tubes of the adjacent cells, which, instead of being long and chitinous, are here short and calcareous. The avicularium is also

transitional. It is not capitate, but has a broad calcareous basis, clearly representing the pedicle of the ordinary capitate form. The mode of attachment is peculiar, the zoarium being fixed by numerous radical tubes springing from the backs of the cells.

EXPLANATION OF FIGURES.

PLATE 117.—Fig. 6, front view of portion of specimen. Fig. 7, back view, showing connection of each zoœcium with six others by short, thick, calcareous tubes. Fig. 8, single zoœcium from another specimen, showing a few radical fibres.

PLATE 117, FIG. 9.

AMPHIBLESTRUM PATELLARIUM (MOLL SP.).

DESCRIPTION.—Zoœcia slightly separated and connected by short tubes, oval and lozenge-shaped; margins raised, crenulated; lower two-thirds filled in by a minutely granular calcareous expansion; aperture nearly semicircular, occasionally somewhat trifoliate. Oœcia rounded, smooth, with a thickened rim below.

REFERENCES.—*Mollia patellaria*, Smitt, Flor. Bryozoa, Pt. ii., p. 12, fig. 72 = *Diachoris patellaria*, Waters, Ann. and Mag. Nat. Hist., Feb. 1879 = *Membranipora patellaria*, P. H. MacGillivray, Tr. Roy. Soc. Vict., Dec. 1881.

Port Phillip Heads.

This species agrees with Beania and Diachoris in nothing but the disjunction of the cells; otherwise it is undoubtedly an *Amphiblestrum*, allied to *A. Rossellii*. It agrees perfectly with the form described by Waters, from the Bay of Naples, as *Diachoris patellaria* var. *multijuncta*. The cells are only slightly separated, and are sometimes so close that the connecting tubes cannot be distinguished. Each cell is connected with the adjacent ones by usually about twelve tubes. In the typical form, as figured by Smitt and Waters, the connecting tubes are much fewer. These naturalists consider Heller's *D. simplex* as the same species, which they refer to Moll's *Eschara patellaria*. I have not seen Moll's work, but Heller's figure certainly looks very different. No avicularia have been seen.

EXPLANATION OF FIGURES.

PLATE 117. — Fig. 9, group of zoœcia, magnified. Fig. 10, portion of another specimen, showing oœcia.

I am indebted for the specimens and descriptions of the Polyzoa on this plate to Mr. MacGillivray.

FREDERICK MCCOY.

PLATE 118, FIGS. 1 TO 5.

HORNERA FOLIACEA (P. McG.).

[Genus HORNERA (LAMX.). (Sub-kingd. Mollusca. Class Polyzoa. Order Infundibulata. Sub-order Cyclostomata. Family Idmoneidæ.)

Gen. Char.—Zoarium branched, branches distinct, anastomosing or connected by transverse bars. Zoœcia distinct, opening irregularly on one side of the branches. Oœcia dorsal or anterior.]

DESCRIPTION.—Zoarium rising from a discoid base, forming a foliaceous expansion, composed of sub-parallel branches dichotomously divided and connected by transverse bars forming oblong fenestræ; anterior surface divided into elongated, more or less rhomboidal, spaces by the approximation, at intervals, of slightly elevated longitudinal ridges; zoœcia opening in these spaces, exserted, the peristome produced and lacerated especially on the expanded outer lip; posterior surface longitudinally sulcate, the elevations between the sulci transversely marked by shallow grooves. Oœcia very large, bulging, extending usually over several branches, deeply and closely pitted.

REFERENCE.—*Hornera foliacea*, P. H. MacGillivray, Tr. Roy. Soc. Vict. = *Retihornera foliacea*, Busk, Brit. Mus. Cat., Marine Polyzoa, Part iii., p. 19, pl. xiii., figs. 1 and 2, pl. xix.

Port Phillip Heads; Portland, Mr. Maplestone; Western Port and Sealers' Cove, Baron von Mueller.

This beautiful and common species rises from a discoid base, spreads usually at first in a flabelliform manner, but ultimately becomes more or less convoluted, and frequently attains a size of two inches. The fenestræ are oblong, varying considerably in size according to age, sometimes narrower than the branches, sometimes as wide or even wider. The zoœcia are exserted in perfect specimens, with the peristome lacerated; in those at the margins of the branches the outer lip is much expanded, forming a laciniated lip with usually two or three teeth. There are seldom more than two or three rows of zoœcia in a branch, and their occurrence on the cross-bars is very infrequent. The surface of the branches is faintly granular and traversed by longitudinal, slightly elevated ridges, the approximation of which, at intervals, forms elongated, irregular, somewhat rhomboidal spaces in which the orifices of the cells are situated. The posterior surface is longitudinally sulcate, the intermediate elevations being marked by close transverse furrows. The depth of the posterior sulci, the distinctness of the

anterior ridges, and the prominence of the cell-mouths, of course, vary much with age. In some specimens numerous, small, sharp-pointed spines project from the edges of the fenestræ. These, however, are usually absent, even in perfect specimens. The oœcia are very large and prominent. They are seldom confined to one branch, but usually extend over several, generally bulging in the direction of the axis of each branch involved.

The genus *Retihornera* has been proposed by Kirchenpaur and adopted by Busk for the fenestrate species of *Hornera*. Such a species as *H. robusta* (McG.) shows the transition, and I cannot see any sufficient reason for dividing the old genus.

EXPLANATION OF FIGURES.

PLATE 118.—Fig. 1, specimen, natural size. Fig. 2, portion of the front of a specimen magnified. Fig. 3, portion of another specimen, more highly magnified, to show the expanded lacerated outer lip of the peristome of the zoœcia. Fig. 4, portion of the back of a specimen, showing two oœcia. Fig. 5, part of a specimen, with small spines on the edges of the fenestræ.

PLATE 118, FIGS. 6 TO 8.

HORNERA ROBUSTA (P. McG.).

DESCRIPTION.—Zoarium composed of one or more thick, flattened stems, from which lateral branches extend on either side, these lateral branches frequently anastomosing with each other and with those from adjacent stems; zoœcia arranged in numerous longitudinal rows, separated by raised ridges; mouth in the central zoœcia slightly exserted, in the lateral and those near the edge the peristome produced and irregularly dentate; posterior surface of zoarium longitudinally sulcate, the narrow intermediate ridges thickly punctate. Oœcium large, posterior, elongated in the direction of the branch, pitted.

REFERENCE.—P. H. MacGillivray, Tr. Roy. Soc. Vict., Dec. 1882.

Port Phillip Heads.

H. robusta attains a considerable size, a specimen dredged at Port Phillip Heads being two and a half inches by one and three-quarters. Its mode of growth is very characteristic. It originates from a single stem, usually subcylindrical, but sometimes broad or

indistinct. This divides usually into two, which again subdivide into several branches. From the main branches others spread on either side in a penniform manner, and these again give rise to smaller branches. These anastomose irregularly together, and the large branches from the neighbouring main stems frequently unite in the same manner. Some specimens consist only of a single stem with lateral branches. The resulting zoarium in those with several stems is more or less expanded and curled. The anastomoses are very irregular, and do not produce anything like the regular fenestrate arrangement seen in *Retihornera foliacea*. They seem to be frequently caused by the accidental contact of the peristomes of zoœcia in contiguous branches.

EXPLANATION OF FIGURES.

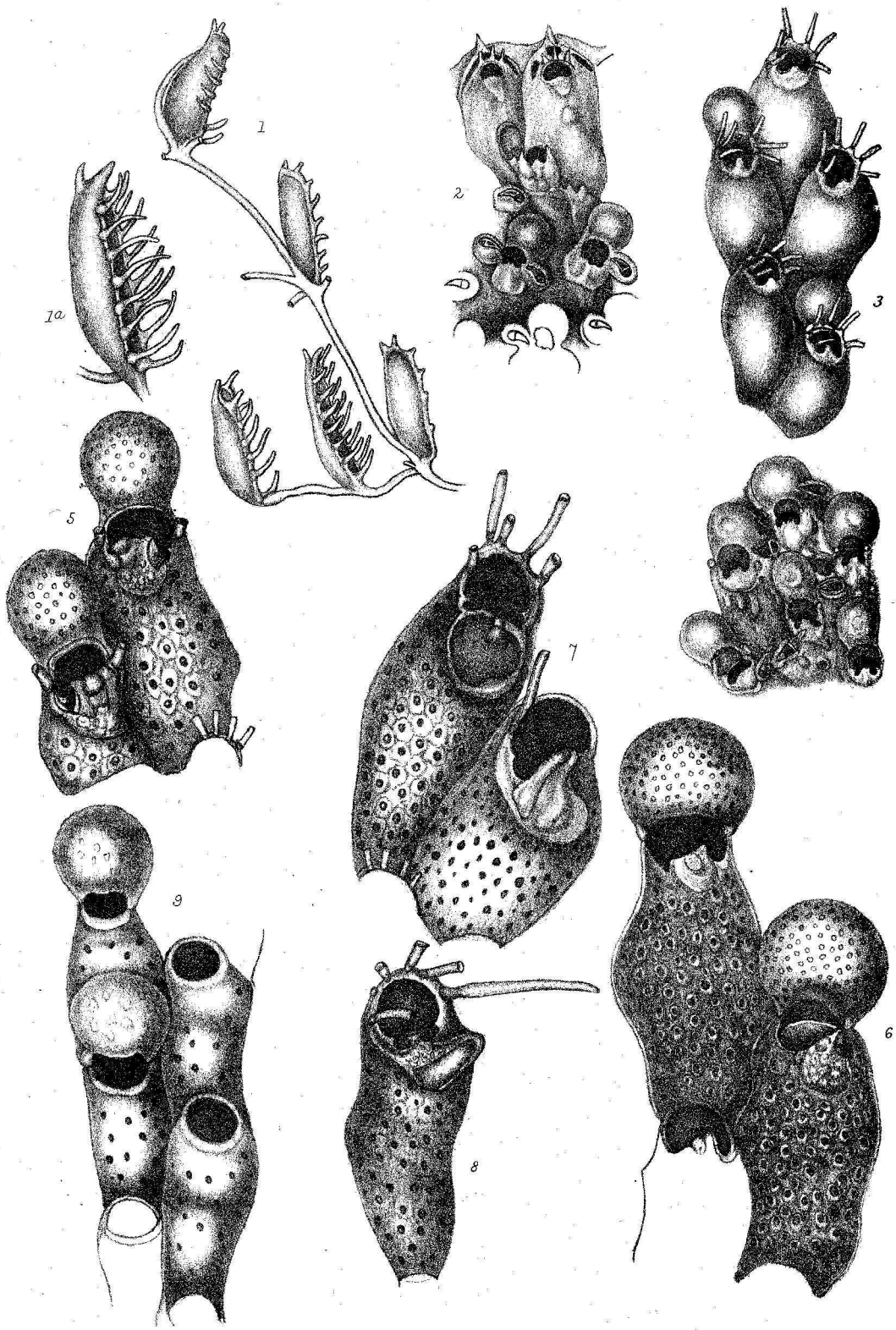
PLATE 118.—Fig. 6, specimen, natural size. Fig. 7, portion of a specimen, showing the anterior surface and the mode of formation of the anastomoses, magnified. Fig. 8, small portion of the back of another specimen, showing an oœcium.

Mr. MacGillivray has kindly contributed the specimens and descriptions of these species of *Retihornera* and *Hornera*.

FREDERICK McCOY.

ZOOLOGY OF VICTORIA

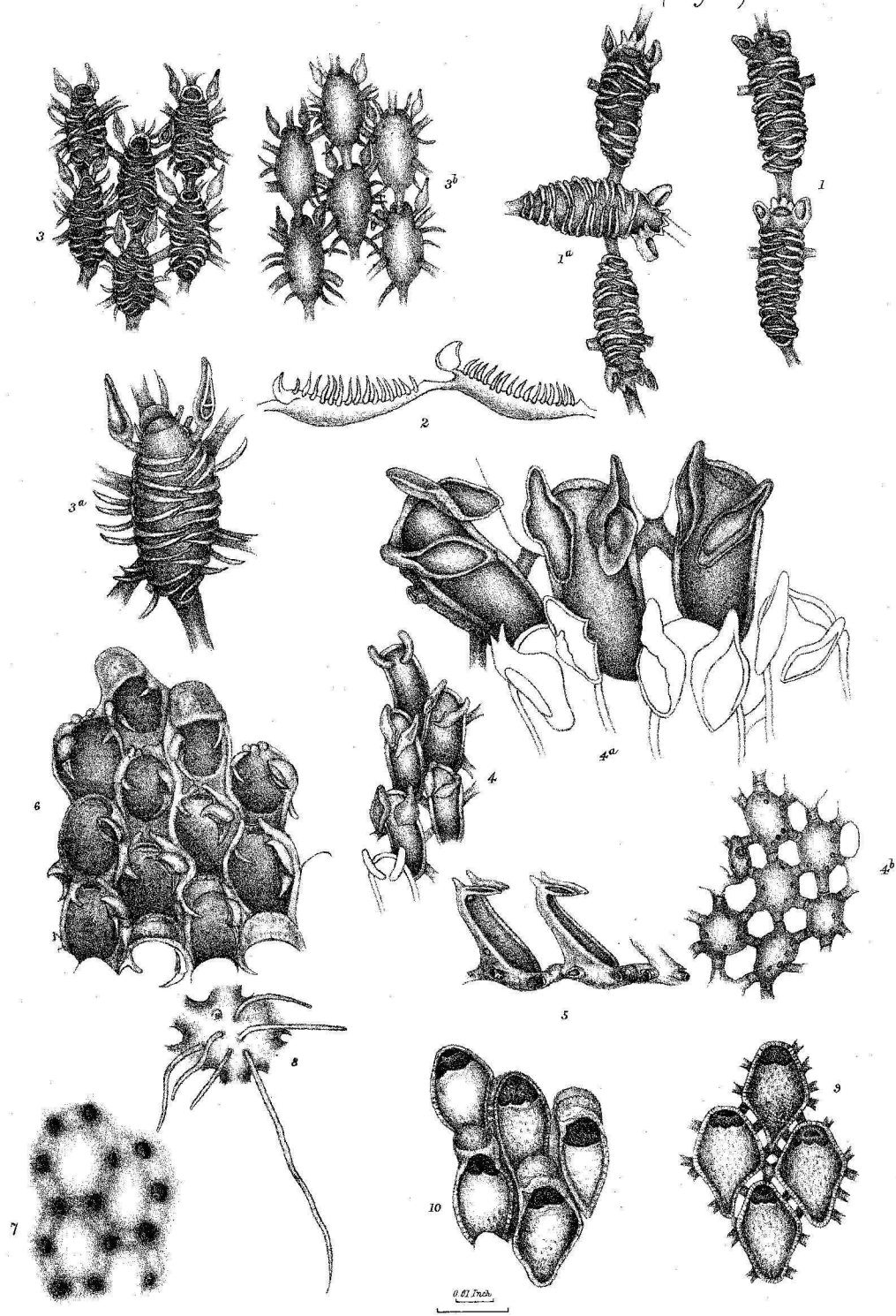
(Polyzoa)



P. H. MacGillivray del. J. Ripper lith. Prof. McCoy direx. Steam litho. Govt. Printing Office.

ZOOLOGY OF VICTORIA

(Polyzoa)



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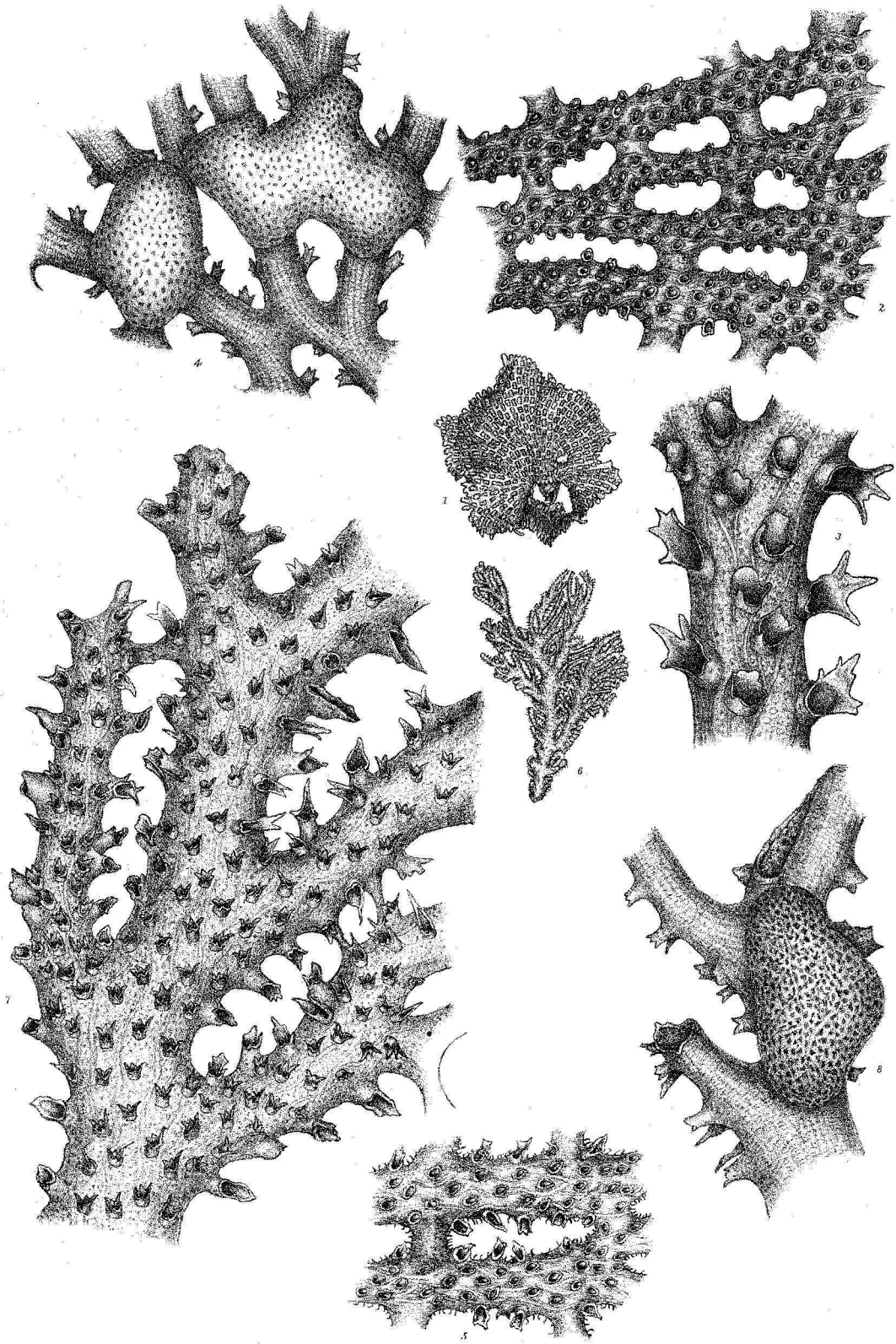
ZOOLOGY OF VICTORIA

(Polyzoa)



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