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NEW SPECIES OF TERTIARY CHEILOSTOME  
BRYOZOA FROM VICTORIA, AUSTRALIA

(WITH NINE PLATES)

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INTRODUCTION

Through the kindness of various Australian friends, particularly Dr. F. Chapman, I have from time to time received many packages of washings containing Tertiary bryozoans from Victoria, with the result that as our studies upon other faunas progressed, Dr. Canu and I were able not only to classify more accurately, and make new observations upon, the known Victorian species but also to bring to light a number of interesting new forms. By the fall of 1931 such a volume of notes had accumulated that Dr. Canu began their compilation for publication. On February 11, 1932, he completed the editing and forwarded the final pages of these notes to me. The next morning, awakening with a slight headache, which grew steadily worse, he passed away from cerebral hemorrhage within a few hours. Thus came to a close our association in scientific work of almost a quarter of a century.

Economic conditions have prevented the publication of our complete work upon this subject, and the following abridged descriptions of the new species are issued at the present time to make them available for stratigraphic use in South Australian geology. Our studies would seem to indicate that the Australian Tertiary does not cover a long time period. The bryozoan faunas are so unlike the standard associations in the Tertiary of Europe and America that no definite correlations have been made so far. Indeed, their nearest relations seem to be in the recent seas around Australia. All the types of the species here described are in the collections of the United States National Museum.

R. S. BASSLER.

Class BRYOZOA Ehrenberg  
Order CHEILOSTOMATA Busk  
Suborder ANASCA Levinsen

Division MALACOSTEGA Levinsen, 1909

Family MEMBRANIPORIDAE Busk, 1854

**ACANTHODESIA** Canu and Bassler, 1920

**ACANTHODESIA QUADRILATERA**, n. sp.

Plate 1, fig. 10

*Description.*—The zoarium is subcylindrical, consisting of six rows of zooecia arranged around a central line. The zooecia are distinct, adjacent to each other through their mural rims, elongated, rectangular. The mural rim is thin, rounded, granulated, common to the adjacent zooecia; the cryptocyst is flat, smooth, shorter than the opesium. The opesium is anterior, elongated, elliptical, regular, bordered by a salient cushion, ornamented by small, very short spicules.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.27 \text{ mm} \\ lo = 0.12 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.48 \text{ mm} \\ lz = 0.25 \text{ mm} \end{cases}$$

*Occurrence.*—Muddy Creek (Balcombian), and Orbost, Gippsland (Janjukian), Victoria.

*Holotype.*—U.S.N.M. nos. 85582, 85583.

**ACANTHODESIA REGULARIS**, n. sp.

Plate 1, fig. 3

*Description.*—Zoarium of slightly flattened, subcylindrical branches of 6 to 10 rows of zooecia arranged around a central line. Zooecia rectangular with granulated mural rim and a cryptocyst about three fifths as long as the opesium, which is anterior and elongated.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.30 \text{ mm} \\ lo = 0.18-0.20 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Ls = 0.60-0.65 \text{ mm} \\ lz = 0.30-0.35 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Cotypes.*—U.S.N.M. no. 85581.

**MEMBRANIPORA** Blainville, 1830**MEMBRANIPORA AREOLATA**, n. sp.

Plate I, fig. 2

*Description.*—The zoarium is bilamellar; the fronds have four or five longitudinal rows of zoecia on each face. The zoecia are distinct, separated by a furrow or by a quadrangular area more or less broad, a little elongated, elliptical. The mural rim is thin, flat, of irregular width, smooth, and bears distally a small transverse triangular avicularium with two denticles and a pointed beak. The opesium is large, of the same form as the zoecium. The quadrangular area is very irregular in form and position. Ovicell unknown.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.40-0.50 \text{ mm} \\ lo = 0.35 \text{ mm} \end{cases} \quad \text{Zoecium} \begin{cases} Ls = 0.60 \text{ mm} \\ ls = 0.45-0.50 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian; Aire Coastal Beds, Victoria.*Holotype.*—U.S.N.M. no. 60153.**VINCULARIA** Defrance, 1829**VINCULARIA GIGANTEA**, n. sp.

Plate I, fig. 4

*Description.*—The zoarium is rodlike (vincular) in form, composed of four or five longitudinal rows of cells arranged around a central line. The zoecia are distinct, *gigantic*, much elongated, rounded distally, narrowed proximally. The mural rim is thin, smooth, salient, rounded; the cryptocyst is very large, flat, smooth, or very finely granulated; the opesium is elliptical, elongated, margined by a salient swelling, terminal, and much smaller than the cryptocyst.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.50-0.65 \text{ mm} \\ lo = 0.30 \text{ mm} \end{cases} \quad \text{Zoecium} \begin{cases} Ls = 2.10 \text{ mm} \\ ls = 0.65 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.*Cotypes.*—U.S.N.M. no. 85905.**OTIONELLA** Canu and Bassler, 1917**OTIONELLA CIRCUMDATA**, n. sp.

Plate I, figs. 11, 12

*Description.*—The zoarium is a small, truncated, solid cone; the base is slightly convex and ornamented with sinuous radial lines; at

the periphery there are small elliptical cavities equally spaced, 11 or 12 in number, each containing a small avicularium. The zooecia are distinct, separated by their mural rim, arranged in radial rows, hexagonal. The mural rim is thin, salient; the cryptocyst is large, concave, deep, smooth; the opesium is terminal, orbicular, margined by a salient thread. The vibracula are very large, auriform, primoserial. The zooecia are not closed around the apex.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.07 \text{ mm} \\ lo = 0.07 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.25-0.30 \text{ mm} \\ ls = 0.25-0.30 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, near Hamilton, Victoria.

*Holotype.*—U.S.N.M. no. 85807.

#### Family HINCKSINIDAE Canu and Bassler, 1927

##### HINCKSINA Norman, 1903

##### HINCKSINA UNISERIALIS, n. sp.

Plate 2, fig. 9

*Description.*—The zoarium incrusts bryozoa. The zooecia are arranged in uniserial, ramified branches; they are large, much elongated, pyriform, and bear proximally a long caudal gymnocyst. The opesium is large, anterior, oval; the mural rim is salient, beveled, a little enlarged at the base and ornamented with spines. The ovicell is endozooecial, rather large, convex, smooth.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.40-0.45 \text{ mm} \\ lo = 0.20-0.25 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.55-0.80 \text{ mm} \\ ls = 0.35-0.40 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Corio Bay, Geelong, Victoria.

*Holotype.*—U.S.N.M. no. 85756.

#### Family ALDERINIDAE Canu and Bassler, 1927

##### MEMBRANIPORIDRA Canu and Bassler, 1927

##### MEMBRANIPORIDRA (?) ASYMMETRICA, n. sp.

Plate 1, fig. 9

*Description.*—The zoarium is bilamellar. The zooecia are large, distinct, separated by a very deep furrow, elongated, elliptical; the gymnocyst almost entirely surrounds the opesium; it is convex and salient on the lateral parts, concave, deep, and hidden proximally. The mural rim is a thin, sinuous thread bearing a salient, simple, or

bifurcated apophysis on one side only; the opesium is elongated, elliptical, asymmetrical. The proximal gymnocyst bears the ovicell or a large, transverse, inconstant, elliptical avicularium. The ovicell is hyperstomial, globular, smooth, closed by the opercular valve.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.37-0.45 \text{ mm} \\ lo = 0.15-0.20 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.75 \text{ mm} \\ lz = 0.30-0.40 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85794.

**ELLISINIDRA** Canu and Bassler, 1933

**ELLISINIDRA PYRIFORMIS**, n. sp.

Plate 4, fig. 7

*Description.*—The zoarium incrusts shell fragments. The zooecia are distinct, separated by a very shallow furrow, little elongated, elliptical, or almost transverse with a general *pyriform* aspect. The mural rim is very thin, filiform, rounded, smooth; it bears distally a small triangular, transverse avicularium; the opesium is very large and of the same form as the zooecium. The ovicell is small, convex, hyperstomial, closed by the operculum.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.35-0.40 \text{ mm} \\ lo = 0.30-0.40 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.45-0.50 \text{ mm} \\ lz = 0.40-0.50 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Flinders and Mount Gambier; Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. nos. 85691-85693.

**STAMENOCELLA** Canu and Bassler, 1917

**STAMENOCELLA FUSIFORMIS**, n. sp.

Plate 1, fig. 8

*Description.*—The zoarium is free, cylindrical. The zooecia are distinct, separated by a common mural rim, very elongated, *fusiform*; the gymnocyst is short, rectangular, very little convex, smooth. The mural rim is thin, rounded, smooth; the opesium is very much elongated, elliptical, terminal. The gymnocyst bears sporadically an orbicular avicularium. The ovicell is unknown.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.45 \text{ mm} \\ lo = 0.15-0.18 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.70 \text{ mm} \\ lz = 0.25 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85881.



## ALLANTOPORA Lang, 1914

## ALLANTOPORA CONFINIS, n. sp.

Plate 1, fig. 5

*Description.*—The zoarium incrusts shells and forms uniserial or pluriserial rows of zooecia. The zooecia are distinct, separated by a deep furrow, very elongated pyriform, simply adjacent in the multi-serial portion; the gymnocyst is large, very convex, smooth, narrowed proximally, forming a caudal portion. The mural rim is thick, rounded, smooth. It bears exteriorly to the termen a row of large spines entirely surrounding the opesium. Ovicell and ancestrula unknown.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.25-0.30 \text{ mm.} \\ lo = 0.18-0.20 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.60-0.75 \text{ mm} \\ lz = 0.30-0.40 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$  (= 4 square millimeters), 20-22.

*Occurrence.*—Balcombian beds at Muddy Creek and Janjukian at Flinders and Mount Gambier, Victoria.

*Cotypes.*—U.S.N.M. nos. 85598-85600.

## AMPHIBLESTRUM Gray, 1848

## AMPHIBLESTRUM GRANDE, n. sp.

Plate 1, fig. 1

*Description.*—The zoarium is bilamellar. The zooecia are distinct, separated by a deep furrow, very large, little elongated, ogival, surrounded on three quarters by a granular gymnocyst. The mural rim is salient, very thin distally, enlarged laterally, much attenuated proximally; the cryptocyst is shallow, flat, smooth, merging imperceptibly with the proximal gymnocyst; the opesium is large, terminal, transverse, pyriform, slightly trifoliated. The ovicell is hyperstomial, not closed by the opercular valve, globular, smooth, margined by an ectoecium, resting on the distal zooecium.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.30-0.35 \text{ mm} \\ lo = 0.35-0.40 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.75-0.90 \text{ mm} \\ lz = 0.50-0.75 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85602.

## RAMPHONOTUS Norman, 1894

## RAMPHONOTUS (?) LAMELLOSUS, n. sp.

Plate 2, fig. 1

*Description.*—The zoarium is bilamellar. The zooecia are distinct, separated by a shallow furrow, very much elongated, pyriform. The



mural rim is thin, salient, sharp, smooth; the cryptocyst is flat, smooth, little deep, as long or longer than the opesium; it bears on its proximal portion a large transverse, triangular avicularium, with denticles, and in which the beak is very pointed and often slightly curved; the opesium is elongated, elliptical, narrowed distally by two small condyles symmetrically placed. The ovicell is hyperstomial, placed on the cryptocyst of the distal zooecium, globular, smooth, crowned by a zooecial avicularium.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.20-0.25 \text{ mm} \\ lo = 0.13-0.15 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.60-0.65 \text{ mm} \\ lz = 0.32-0.35 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 21.

*Occurrence.*—Balcombian beds at Muddy Creek and Janjukian at Dartmoor, Victoria.

*Holotype.*—U.S.N.M. nos. 85850, 85853.

#### Family HANTOPORIDAE MacGillivray, 1895

##### TREMOPORA Ortmann, 1890

##### TREMOPORA ORBICULATA, n. sp.

Plate 2, fig. 3

*Description.*—The zoarium is unilamellar; the dorsal bears fenestrae. The zooecia are distinct, separated by a deep furrow in which the connecting tubes are visible, *orbicular*, or slightly elongated. The mural rim is thin distally and very much enlarged at the base; it bears two large distal spines and laterally a large elliptical avicularium placed very high, opposite which is situated a small avicularium or a short bifurcated spine. The opesium is elliptical or orbicular, of the same form as the zooecium.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.50 \text{ mm} \\ lo = 0.40-0.50 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.60-0.70 \text{ mm} \\ lz = 0.60-0.65 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85894.

##### TREMOPORA STAMINIS, n. sp.

Plate 2, figs. 4, 5

*Description.*—The zoarium is unilamellar, free. On the dorsal the fenestrae are short, linear, narrow, and separate the six more or less broad connecting tubes. The surface is convex, smooth, ornamented with small salient radicular pores. The zooecia are distinct, separated

by a deep furrow at the angles of junction; the mural rim is thin distally, somewhat enlarged at the base; it bears two small distal spines, simple or bifurcated. The avicularium is large, triangular, without pivot, placed on the mural rim and in the immediate vicinity of the opercular valve. The beak is salient outside of the cell, very slightly curved. At its base a large spine with numerous reticulated *filamentous* branches covers the zooecium and unites itself to the opposite side of the mural rim; the lacunae are little numerous, long and linear. Always on the mural rim in front of the large avicularium there is a small, branching palmate spine placed above the last ramifications of the large spine. The ovicell is hyperstomial, small, convex, granular.

*Measurements.*—

Opesium	{	$ho = 0.60-0.70$ mm	Zooecia	{	$Lz = 0.75$ mm
		$lo = 0.25-0.30$ mm			$lz = 0.45-0.50$ mm

Number of zooecia in  $4 \text{ mm}^2$ , 15.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85896.

#### Family ARACHNOPUSIIDAE Jullien, 1888

##### ARACHNOPUSIA Jullien, 1886

##### ARACHNOPUSIA LINEARIS, n. sp.

Plate 2, fig. 2

*Description.*—The zoarium is free and bilamellar. The zooecia are distinct, separated by a shallow furrow, very elongated, oval or elliptical; the frontal is a pericyst perforated by large lacunae; the latter are irregular, orbicular or crescentric, arranged irregularly in transverse rows. The opesium is semielliptical, transverse; the distal peristome is thin; the proximal lip is *linear*, thick, with a large indentation on one side; this indentation is the insertion of a large spine which has disappeared in fossilization. On the side opposite the indentation and adjacent to the peristome there is a small triangular avicularium, the beak oriented distally above each opesium, and adjacent to the peristome there is another small triangular avicularium, the beak of which is oriented proximally.

*Measurements.*—

Opesium	{	$ho = 0.10$ mm	Zooecium	{	$Lz = 0.90-1.15$ mm
		$lo = 0.20$ mm			$lz = 0.50$ mm

Number of zooecia in  $4 \text{ mm}^2$ , 9-10.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85603.

## Division COILOSTEGA Levinsen, 1909

Family OPESIULIDAE Jullien, 1888

**RECTONYCHOCELLA** Canu and Bassler, 1912**RECTONYCHOCELLA (?) DIMORPHOCELLA**, n. sp.

Plate 2, fig. 6

*Description.*—The zoarium is bilamellar. The ordinary zooecia are distinct, separated by a furrow of little depth, elongated, ogival. The mural rim is little distinct and is confused with the cryptocyst; the latter is smaller than the opesium, concave in its vicinity, somewhat convex proximally, slightly granular; the opesium is terminal, large, pyriform, narrowed toward the top by two small lateral condyles symmetrically placed. The accessory zooecia are membraniporoid; the elliptical opesium is surrounded by a rounded salient mural rim.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.35-0.40 \text{ mm} \\ lo = 0.30 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.65-0.80 \text{ mm} \\ lz = 0.55-0.60 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 12.*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.*Holotype.*—U.S.N.M. no. 85854.**FLORIDINELLA** Canu and Bassler, 1917**FLORIDINELLA AUSTRALIENSIS**, n. sp.

Plate 1, fig. 6

*Description.*—The zoarium is free, bilamellar; the fronds are narrow and bear on each face four longitudinal rows of cells. The zooecia are distinct, separated by their common mural rim, elongated, ogival, much narrowed proximally. The mural rim is thin, salient, rounded; the cryptocyst is large, shallow, concave, smooth; the opesium is terminal, elongated, semielliptical, with the proximal border straight or concave; two small distal condyles, symmetrically arranged, slightly contract the opesium.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.25-0.28 \text{ mm} \\ lo = 0.17-0.19 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.60-0.70 \text{ mm} \\ lz = 0.40-0.43 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.*Holotype.*—U.S.N.M. no. 85722.

## VIBRACELLA Waters, 1891

## VIBRACELLA PARVULA, n. sp.

Plate 3, figs. 8, 9

*Description.*—The zoarium is a small truncated, solid cone; the base is ornamented with numerous radial ribs, dichotomously dividing, each containing one or two rows of large lunularian pores. The zooecia are distinct, separated by their mural rim, small, hexagonal, arranged in radial rows. The mural rim is thin, salient; the cryptocyst is concave, shallow, smooth; the opesium is terminal, semielliptic, little elongated, the proximal border being a little convex with two lateral, shallow, opesiular indentations. The vibracula are large, auriform, primoserial.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.10-0.12 \text{ mm} \\ lo = 0.10 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.25 \text{ mm} \\ ls = 0.25 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85904.

## SELENARIA Busk, 1854

## SELENARIA TRIFOLIATA, n. sp.

Plate 2, figs. 7, 8

*Description.*—The zoarium is orbicular, cupuliform, thick, somewhat convex; the inner face is slightly concave, granular, costulated, with a row of large scattered pores in the middle of the radial ribs. The zooecia are distinct, adjacent through their mural rim, hexagonal, somewhat elongated or transverse. The mural rim is thin, salient; the cryptocyst is shallow, smooth, slightly concave. The opesium is slightly elongated, *trifoliate*; the distal portion is elliptical and bordered laterally by two triangular, very salient apophyses; the opesiular portion is linear, transverse, with two deep and rounded lateral indentations. The vibracula are primoserial, very large, auriform, separated into two parts by a salient point. The ancestrula is large and surrounded by 10 much smaller zooecia, of which 5 are vibracula.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.27-0.30 \text{ mm} \\ lo = 0.24 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Ls = 0.40-0.50 \text{ mm} \\ (marginal) \quad ls = 0.50 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. no. 85863.

**SELENARIA GRANDICELLA, n. sp.**

Plate 3, figs. 1, 2

*Description.*—The zoarium is orbicular, cupuliform, little convex. The zooecia are distinct, separated by a shallow furrow, very large, hexagonal, elongated or transverse; the cryptocyst is small, smooth, somewhat concave. The opesium is very large, trifoliate; the distal border bears a kind of vestibular arch; the lateral borders are sometimes a little salient; the proximal border is convex; the opesiular indentations are wide, deep, rounded. The vibracula are very large, auriform, primoserial; the inner distal portion is shallow. On the inner face of the zoarium there are broad radial ribs, convex, each perforated by two rows of large irregular lunularian pores.

*Measurements.*—

Opesium  $\left\{ \begin{array}{l} ho = 0.35 \text{ mm} \\ lo = 0.30 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz = 0.50 \text{ mm} \\ lz = 0.40-0.50 \text{ mm} \end{array} \right.$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85864.

## Family STEGANOPORELLIDAE Hincks, 1884

**SIPHONOPORELLA Hincks, 1880****SIPHONOPORELLA LIVINGSTONEI, n. sp.**

Plate 3, fig. 5

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a shallow furrow, elongated, elliptical, narrowed at the base; the mural rim is somewhat salient, slightly thickened, granulated; the cryptocyst is shallow, flat, granulated. The opesium is large, terminal, irregular; the polypidial tube is very salient, oblique, wide.

*Measurements.*—

Diameter of polypidial tube, 0.12-0.15 mm

Width of opesium, 0.35 mm

Zooecium  $\left\{ \begin{array}{l} Lz = 0.75-1.00 \text{ mm} \\ lz = 0.45 \text{ mm} \end{array} \right.$

Number of zooecia in 4 mm<sup>2</sup>, 12.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85884.

**SIPHONOPORELLA FILIPARIETIS, n. sp.**

Plate 3, fig. 4

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a deep furrow, elongated, ogival; the mural rim is round,

very thin, *filiform*, salient; the cryptocyst is shallow, flat, very finely granulated. The opesium is large, terminal, semielliptical, transverse; the polypidial tube is long, oblique, smooth, very narrow, expanded distally.

*Measurements.*—

Diameter of polypidial tube, 0.12 mm

Width of opesium, 0.40-0.45 mm

Zooecium  $\left\{ \begin{array}{l} Lz = 0.85 \text{ mm} \\ lz = 0.45-0.50 \text{ mm} \end{array} \right.$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85883.

Family THALAMOPORELLIDAE Levinsen, 1902

**THALAMOPORELLA** Hincks, 1887

**THALAMOPORELLA ELONGATA**, n. sp.

Plate 2, fig. 10

*Description.*—The zoarium is bilamellar; the fronds are narrow. The zooecia are distinct, separated by their mural rim, much *elongated*, narrow, subrectangular; the mural rim is thin, rounded, salient, joined to the peristome; the cryptocyst is concave, rather deep, finely granulated. The aperture is orbicular or a little transverse; the peristome is thin, salient. The opesiules are wide, short, placed in the neighborhood of the aperture.

*Measurements.*—

Apertura  $\left\{ \begin{array}{l} ha = 0.12-0.15 \text{ mm} \\ la = 0.15 \text{ mm} \end{array} \right.$  Zooecium  $\left\{ \begin{array}{l} Lz = 0.70-0.75 \text{ mm} \\ lz = 0.25-0.30 \text{ mm} \end{array} \right.$

Number of zooecia in 4 mm<sup>2</sup>, 21.

*Occurrence.*—Janjukian beds at Mitchell River, Victoria.

*Holotype.*—U.S.N.M. no. 85897.

Family ASPIDOSTOMATIDAE Jullien, 1888

**MACROPORA** MacGillivray, 1895

**MACROPORA CLARKEI ATTENUATA**, n. var.

Plate 4, fig. 1

*Description.*—The zooecia are separated by a furrow and not by a salient thread. Our specimens bear kenozoecia analogous to those figured by Waters, 1885. One of them bears traces of a broken ovicell.

*Occurrence.*—Janjukian beds at Flinders, Victoria.

*Cotype.*—U.S.N.M. no. 85781.



**MACROPORA QUADRISERIATA, n. sp.**

Plate 3, fig. 3

*Description.*—The zoarium is free, vincular, *quadriserial*. The zooecia are distinct, separated by a thin salient thread, elongated, hexagonal; the cryptocyst is large, little convex, perforated by numerous pores and ornamented with small tuberosities. The aperture is subterminal, large, semielliptical, transverse; the proximal border is straight with two small, lateral indentations; the peristome is very thick and salient. At the base of each zooecium there are two polygonal areas outlined by the ramifications of a separating thread.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.15-0.20 \text{ mm} \\ la = 0.20-0.25 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 1.25 \text{ mm} \\ ls = 0.75 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Bairnsdale, Victoria.*Holotype.*—U.S.N.M. no. 85705.

## Division PSEUDOSTEGA Levinsen, 1909

Family CELLARIIDAE Hincks, 1880

CELLARIA Lamouroux, 1812

CELLARIA ORBICULARIA, n. sp.

Plate 4, fig. 3

*Description.*—The segments are quadrangular. The zooecia are distinct, separated by their mural rim, much elongated, hexagonal; the mural rim is thick, rounded, regular, the cryptocyst is shallow, very little convex, finely granulated. The opesium is large, *orbicular*, without any proximal denticle, margined by a thick pad. The ovicell is endotochal; it is closed by an orbicular lamella forming a large area above the opesium.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.20 \text{ mm} \\ la = 0.20 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.90-1.00 \text{ mm} \\ ls = 0.45 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.*Holotype.*—U.S.N.M. no. 85623.

CELLARIA ATTENUATA, n. sp.

Plate 4, fig. 4

*Description.*—The segments are long and rounded distally. The zooecia are distinct, separated by a very thin salient thread, somewhat



elongated, hexagonal; the cryptocyst is convex and forms a shallow cavity in front of the aperture. The aperture is semielliptical, transverse; the proximal border is straight or a little concave, with two very small lateral indentations. The ovicell is endotoichal; its orifice is a thin, crescentic slit. The avicularian zoecia have a large semielliptical, transverse opesium.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.12-0.15 \text{ mm} \\ la = 0.15-0.17 \text{ mm} \end{cases} \quad \text{Zoocidium} \begin{cases} Lz = 0.75-0.80 \text{ mm} \\ lz = 0.50 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85617.

### Family MEMBRANICELLARIIDAE Levinsen, 1909

#### OMOIOSIA Canu and Bassler, 1927

#### OMOIOSIA ELONGATA, n. sp.

Plate 3, fig. 11

*Description.*—The zoarium is free, bilamellar. The zoecia are distinct, separated by their mural rim, *elongated*, hexagonal, arranged in alternating transverse rows; the mural rim is thick, salient, triangular in section; the cryptocyst is deep, concave, very finely granular and entirely surrounds the opesium. The opesium is large, elliptical, elongated, not adjacent to the mural rim, surrounded by a salient thread. The special zoecia are larger but of the same form; their opesium is elliptical, median, and measures 0.30 by 0.15 mm.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.20-0.22 \text{ mm} \\ lo = 0.15 \text{ mm} \end{cases} \quad \text{Zoocidium} \begin{cases} Lz = 0.60-0.65 \text{ mm} \\ lz = 0.35-0.40 \text{ mm} \end{cases}$$

Number of zoecia in 4 mm<sup>2</sup>, 24.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 86955.

### Division CELLULARINA Smitt, 1867

#### Family SCRUPOCELLARIIDAE Levinsen, 1909

#### CRASPEDOZOUM MacGillivray, 1886

#### CRASPEDOZOUM (?) ELONGATUM, n. sp.

Plate 3, figs. 6, 7

*Description.*—The zoarium is free, unilamellar, the fronds being formed of three longitudinal rows of zoecia. The zoecia are dis-

tinct, separated by a common mural rim, very *long*, ogival, a little narrowed proximally. The mural rim is thick, salient, rounded; the cryptocyst is very large, deep, concave, smooth; the opesium is terminal, elongated, elliptical, very finely crenulated. The zooecia of the median rows alone bear a large avicularian chamber; it is placed on the proximal cryptocyst where it occupies half of the length; it is rectangular and convex; the avicularium is median, small, salient, triangular, with the beak oriented proximally. The noncellular face of the fronds shows the limits of the lateral zooecia and their outlines without any apparent relation to the series of median zooecia.

*Measurements.*—

$$\text{Opesium} \begin{cases} ho = 0.35-0.40 \text{ mm} \\ lo = 0.25 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Lz = 1.15 \text{ mm} \\ lz = 0.45 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. no. 85721.

## Suborder ASCOPHORA Levinsen, 1909

Family CRIBRILINIDAE Hincks, 1880

CRIBRILINA Gray, 1848

CRIBRILINA CRASSICOLLIS, n. sp.

Plate 1, fig. 7

*Description.*—The zoarium is free, cylindrical, bifurcated, formed of four or five longitudinal rows of zooecia. The zooecia are distinct, separated by a furrow (when young), elongated, elliptical. A thick secondary calcification fills up the separating furrow joining together adjacent mural rims and surrounding the zooecium and the aperture. The frontal is convex, perforated by large lacunae arranged in quincunx. The apertural bar was rapidly covered with secondary calcification to form a thick peristome. The aperture is terminal, semielliptical, transverse, with a concave proximal border. Two small avicularia are arranged symmetrically on each side of the aperture.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.10 \text{ mm} \\ la = 0.18 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Lz = 0.65 \text{ mm} \\ lz = 0.45 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, and Janjukian beds at Batesford, Victoria.

*Cotypes.*—U.S.N.M. nos. 85664, 85665.

**CRIBRILINA TERMINATA CORONATA, n. var.**

Plate 3, fig. 12

*Description.*—The distal portion of the peristome is *crowned* with three or four avicularia.

*Measurements.*—

$$\text{Apertura} \begin{cases} ha = 0.15-0.20 \text{ mm} \\ la = 0.20 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Lz = 0.75-0.90 \text{ mm} \\ lz = 0.45-0.50 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 10-12.

*Occurrence.*—Balcombian at Muddy Creek, and Janjukian at Bairnsdale and Flinders, Victoria.

*Cotypes.*—U.S.N.M. nos. 85670, 85671.

**CRIBRILINA TRISERIATA, n. sp.**

Plate 3, fig. 10

*Description.*—The zoarium is free, unilamellar and formed of only *three rows* of cells. The zooecia are distinct, separated by a furrow, very elongated, elliptical; the mural rim is very thick, smooth, entirely surrounding the cell; the frontal is perforated by small lacunae separated by small granules. The aperture is semielliptical, transverse; it is surrounded by a very thick peristome joined with the mural rim. Two oblique, triangular avicularia are arranged symmetrically on each side of the proximal border of the aperture. The lateral zooecia are oblique and longer than the axial zooecia.

*Measurements.*—

$$\text{Apertura} \begin{cases} ha = 0.11 \text{ mm} \\ la = 0.16 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.90 \text{ mm} \\ lz = 0.45 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Flinders and Batesford, Victoria.

*Holotype.*—U.S.N.M. nos. 85668, 85669.

## Family PORINIDAE D'Orbigny, 1852

**PORINA D'Orbigny, 1852****PORINA FISSURIFERA, n. sp.**

Plate 4, fig. 11

*Porina gracilis* (pars) MacGillivray, Trans. Roy. Soc. Victoria, vol. 4, p. 103, pl. 14, fig. 21, 1895.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.14 \text{ mm} \\ lp = 0.14 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 1.5 \text{ mm} \\ lz = 0.60 (?) \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 10-11.

*Affinities.*—This species differs from *Porina (Acropora) gracilis* Milne Edwards, 1836, in its larger micrometric dimensions, in its ascopore, which is a longitudinal slit, 0.10 mm in length, decorated with two lateral lips, and in the presence of small spathulated latero-frontal avicularia.

*Occurrence.*—Balcombian beds at Muddy Creek, and Janjukian at Mount Gambier, Victoria.

*Holotype.*—U.S.N.M. nos. 85584, 85585.

**PACHYTHECELLA Bassler, 1934**

**PACHYTHECELLA UNIFASCIATA, n. sp.**

Plate 4, fig. 5

*Description.*—The zoarium is free, bifurcated; the branches are somewhat compressed and formed of two longitudinal rows of cells opening only on one side. The dorsal is convex and smooth, except that the outlines of the zooecia are marked off by ridges. The zooecia are indistinct, little elongated, smooth, the frontal is perforated by a large orbicular ascopore. The peristomie is little salient, rather long; the peristomice is orbicular; the peristome is thin, nonsalient.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.15 \text{ mm} \\ lp = 0.15 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.45 \text{ mm} \\ lz = 0.30 (?) \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85823.

**PACHYTHECELLA ARMATA, n. sp.**

Plate 4, fig. 8

*Description.*—The zoarium is free, bilamellar, formed of rather wide, compressed branches. The zooecia are indistinct, elongated, with very thick walls; the frontal is convex and covered with a large number of shallow pores. The peristomie is formed by the much thickened zooecial walls; the apertura is buried at the bottom of the peristomie and appears orbicular; the peristomice is orbicular and little distinct because of the absence of the peristome. On the marginal zooecia the ascopore is replaced by a large triangular, nonsalient, transverse, oblique avicularium; its beak is oriented exteriorly.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.15 \text{ mm} \\ lp = 0.15 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.60-0.75 \text{ mm} \\ lz = 0.35 (?) \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 18.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85822.

## Family TUBUCELLARIIDAE Busk, 1884

## TUBITRABECULARIA Canu and Bassler, 1934

## TUBITRABECULARIA PRODITOR, n. sp.

Plate 4, fig. 10

*Description.*—The zoarium is articulated; the segments are large, clavate, somewhat compressed at their extremity. The zooecia are indistinct, much elongated; the frontal is convex, smooth, bordered by large pores, and formed by an epicalcification hiding the peristomie and supported by thin trabeculae radiating from the ascopore. The peristomie (when visible) is long, oblique, much reduced, smooth, tubular; the peristomice is orbicular; the peristome is thin, smooth, sharp. The ascopore is small, tubular (when visible), placed at the base of the peristomie. The ovicelled zooecia are globular, salient, often grouped in variable numbers.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.10 \text{ mm} \\ lp = 0.10 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.70-0.80 \text{ mm} \\ ls = 0.40 (?) \text{ mm} \end{cases}$$

Number of zooecia in  $1 \text{ mm}^2$ , 5.*Occurrence.*—Balconbian beds at Muddy Creek, Victoria.*Holotype.*—U.S.N.M. no. 85886.

## Family PETRALIIDAE Levinsen, 1909

## PETRALIELLA MacGillivray, 1887

## PETRALIELLA VULTUR AVICULIFERA, n. var.

Plate 5, fig. 2

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a furrow, large, elongated, capitate; the frontal is convex and punctured by scattered pores. An avicularian umbo, very salient, very long and somewhat oblique, is placed before the aperture; the mandible is very long and placed laterally. The aperture is large, suborbicular, a little transverse; a small expanded lyrule is placed on the proximal border in the vicinity of two very short cardelles; the peristome is very thin, smooth, ornamented with four spines. On each side of the aperture there is a small elliptical *avicularium*, with pivot, oriented proximally; sporadically on the longer zooecia there are one or two small elliptical avicularia with pivot oriented distally.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha=0.16 \text{ mm} \\ la=0.20 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Lz=0.75-1.00 \text{ mm} \\ lz=0.40 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 12.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85825.

**PETRALIELLA TRACTIFERA, n. sp.**

Plate 5, fig. 1

*Description.*—The zoarium is unilamellar, perhaps orbicular. The zooecia are distinct, separated by a salient thread or by a thickened band, large, elliptical, elongated, swollen; the frontal is a tremocyst with large expanded pores and bearing an orbicular, salient, avicularian umbo. The shield is a narrow circular band surrounding the aperture; it bears from four to six large hollow spines. The aperture is large, circular; it bears proximally, a small lyrule and two transverse cardelles always placed at the same level as the distal border of the lyrule; the peristome is thin, smooth, salient, strengthened exteriorly by the shield. On the dorsal face of the zoarium, the zooecia are distinct, subhexagonal, separated by thickened salient bands forming an interzooecial epicalcification.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha=0.15-0.20 \text{ mm} \\ la=0.15-0.20 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Lz=0.75-0.80 \text{ mm} \\ lz=0.60 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 10.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85824.

**PETRALIELLA (?) DENTICULATA, n. sp.**

Plate 4, fig. 9

*Description.*—The zoarium is bilamellar with wide fronds. The zooecia are distinct, separated by a salient thread, very elongated, irregular; the frontal is somewhat convex, granulose, bordered with areolar pores. The peristomie is long, the peristomie is oblique, very irregular, with proximal border denticulated by two or three salient rounded mucrons. The aperture is buried at the bottom of the peristomie and bears a well-developed lyrule.

$$\text{Measurements.}—\text{Zooecium} \begin{cases} Lz=0.75-1.00 \text{ mm} \\ lz=0.40-0.50 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 15.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85826.



## Family GIGANTOPORIDAE Bassler, 1935

## GIGANTOPORA Ridley, 1881

## GIGANTOPORA HYSTRIX, n. sp.

Plate 4, fig. 2

*Description.*—The zoarium is free, cylindrical. The zooecia are distinct, separated by a large prominent thread, somewhat elongated, hexagonal; the frontal is convex, pierced by numerous small tremopores separated from one another by protruding spinelike granules. The peristomie is long, salient, partly buried on the distal zooecium; the peristomice is oblique, elliptical, transverse. The spiramen is large (0.17 mm wide) crescentic, somewhat tubular. The two avicularia are small, triangular, almost transverse.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.10 \text{ mm} \\ lp = 0.15 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.85 \text{ mm} \\ lz = 0.75 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85728.

## GIGANTOPORA HEXAGONALIS, n. sp.

Plate 4, fig. 6

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a salient thread, a little elongated, *hexagonal*; the frontal is transversely concave, formed by a tremocyst with small pores separated by regular tuberosities. The peristomice is subcircular; the peristome is smooth, thin, salient. The spiramen is large (0.14 mm wide), crescentic, bordered by a distinct thread. The two avicularia are large, triangular, oblique, with pivot. The beaks join on the median zooecial axis above the spiramen and form an angle with thickened lines which partially cover the peristomice.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.20 \text{ mm} \\ lp = 0.24 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.90 \text{ mm} \\ lz = 0.55 \text{ mm} \end{cases}$$

Number of zooecia in 4 mm<sup>2</sup>, 12.

*Occurrence.*—Balcombian beds at Muddy Creek, and Janjukian at Flinders, Victoria.

*Holotype.*—U.S.N.M. nos. 85725, 85726.

## GIGANTOPORA PERFORATA, n. sp.

Plate 5, fig. 10

*Description.*—The zoarium is free, bilamellar, formed of fronds of varying width. The zooecia are large, little distinct, elongated;



the frontal is little convex, punctured by rather large tremopores. The peristomie is large, orbicular or elliptical and elongated; the peristomie is very short; the peristome is rather thick, smooth, little salient. The spiramen is a simple *perforation* in the short peristomie. The ovicell is hyperstomial, opening largely in the peristome, very large, globular, covered with scattered tremopores. The two avicularia are small, triangular, transverse or oblique, pointed downward.

*Measurements.*—

Peristomie	{	$hp = 0.22-0.25$ mm	Zooecium	{	$Ls = 0.90-1.00$ mm
		$lp = 0.18$ mm			$ls = 0.65-0.70$ mm

Number of zooecia in  $4$  mm<sup>2</sup>, 8-10.

*Occurrence.*—Balcombian beds at Muddy Creek and Janjukian beds at Flinders, Victoria.

*Cotypes.*—U.S.N.M. no. 85729.

#### GIGANTOPORA ELONGATA, n. sp.

Plate 5, fig. 5

*Description.*—The zoarium is free, cylindrical. The zooecia are distinct, separated by a furrow bordered by two very thick salient threads, large, very *elongated*, sinuous; the frontal is a tremocyst, little convex and penetrated by rather large pores. The peristomie is short; the peristomie is orbicular or elliptical and transverse; the peristome is smooth, thick, little salient. The spiramen is large (0.25 mm wide) simple, not salient, margined, somewhat concentric. The two peristomial avicularia are large, triangular, with pivot; their beak is pointed, oriented toward the peristomie.

*Measurements.*—

Peristomie	{	$hp = 0.20$ mm	Zooecia	{	$Ls = 1.25-1.30$ mm
		$lp = 0.22-0.25$ mm			$ls = 0.65-0.75$ mm

Number of zooecia in  $4$  mm<sup>2</sup>, 6.

*Occurrence.*—Janjukian beds at Gellibrand, Victoria.

*Holotype.*—U.S.N.M. no. 85727.

#### GIGANTOPORA MINUTIPOROSA, n. sp.

Plate 5, fig. 9

*Description.*—The zoarium is unilamellar, thick. The zooecia are distinct, separated by a thick salient thread, elongated, subhexagonal; the frontal is somewhat convex, pierced with *very small pores* separated by small granulations. The peristomie is short, somewhat buried in the distal zooecium; the peristomie is large, orbicular or elliptical, and transverse, little oblique; the peristome is salient, thick granulated,

or crenulated. The spiramen is large (0.20 mm wide) distally tubular, granulated, oblique, oriented proximally. The two frontal avicularia are relatively small, triangular, with pivot; the beak is rounded and united to the thickened proximal portion of the peristome.

*Measurements.*—

Peristomie  $\left\{ \begin{array}{l} hp = 0.22 \text{ mm} \\ lp = 0.22-0.27 \text{ mm} \end{array} \right.$       Zoecium  $\left\{ \begin{array}{l} Lz = 1.08-1.17 \text{ mm} \\ lz = 0.63-0.72 \text{ mm} \end{array} \right.$   
 Number of zoecia in 4 mm<sup>2</sup>, 7.

*Occurrence.*—Janjukian beds at Flinders and Batesford, Victoria.

*Holotype.*—U.S.N.M. nos. 85730, 85731.

**GEPHYROPHORA** Busk, 1884

**GEPHYROPHORA BILAMELLARIA**, n. sp.

Plate 5, fig. 3

*Description.*—The zoarium is free, *bilamellar*; the fronds are broad and very thick. The zoecia are distinct, separated by a salient thread, large, rectangular, somewhat elongated; the frontal is little convex, almost flat, and formed by a granular tremocyst with numerous pores. The apertura is large, oval, with a broad, rounded proximal sinus; the peristome is thin and very little salient. The ovicell is very large, globular, of the same nature as the frontal. On each side of the apertura there is a large triangular avicularium with pivot, with beak very pointed and oriented obliquely toward the apertural sinus.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.20 \text{ mm} \\ la = 0.20 \text{ mm} \end{array} \right.$       Zoecium  $\left\{ \begin{array}{l} Lz = 0.70 \text{ mm} \\ lz = 0.50 \text{ mm} \end{array} \right.$   
 Number of zoecia in 4 mm<sup>2</sup>, 11.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85723.

**SPIROPORINA** Stoliczka, 1864

**SPIROPORINA TENUIS**, n. sp.

Plate 5, fig. 4

*Description.*—The zoarium is free, cylindrical, bifurcated, very thin, formed of only four rows of cells. The zoecia are distinct, separated by a very small and very finely crenulated thread, much elongated, subcylindrical; the frontal is convex, perforated by very small tremopores arranged in linear rows and separated by scattered granulations. The peristomie is little apparent and of variable length. The peristomie is elliptical, transverse, oblique; the peristome is

rather thick, fimbriated or crenulated. The spiramen is a small perforation placed in the vicinity of the peristomice.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.08 \text{ mm} \\ lp = 0.15 \text{ mm} \end{cases} \quad \text{Zoocium} \begin{cases} Lz = 0.45-0.50 \text{ mm} \\ lz = 0.25 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian at Muddy Creek and Janjukian at Corio Bay, Geelong, etc., Victoria.

*Holotype.*—U.S.N.M. no. 85738.

Family SCHIZOPORELLIDAE Bassler, 1935

Subfamily SCHIZOPORELLAE Canu and Bassler, 1917

**BUFFONELLODES** Strand, 1928

**BUFFONELLODES BACULINA**, n. sp.

Plate 5, fig. 11

*Description.*—The zoarium is free, cylindrical, formed of five or six longitudinal rows of zooecia. The zooecia are distinct, separated by a furrow, somewhat elongated, lozenge shape, wide; the frontal is convex, smooth. The apertura is elongated, oval, terminated proximally by a wide rounded sinus; the peristome is wide, smooth, little salient.

*Measurements.*—

$$\text{Apertura} \begin{cases} ha = 0.10-0.12 \text{ mm} \\ la = 0.08 \text{ mm} \end{cases} \quad \text{Zoocium} \begin{cases} Lz = 0.60-0.75 \text{ mm} \\ lz = 0.50 \text{ mm} \end{cases}$$

*Occurrence.*—Balcombian beds at Muddy Creek, and Janjukian beds at Boggy Creek, Victoria.

*Holotype.*—U.S.N.M. nos. 85606, 85607.

**STEPHANOSELLA** Canu and Bassler, 1917

**STEPHANOSELLA SEXSPINOSA**, n. sp.

Plate 6, fig. 1

*Description.*—The zoarium is incrusting. The zooecia are distinct, separated by a furrow, rather large, wide, ensiform; the frontal is convex, smooth. The aperture is suborbicular; the proximal border bears a wide rounded sinus; the peristome is very thin, little salient, ornamented with six very short spines. On each side of the aperture, distant from the peristome, there is a distinct, cylindrical, avicularian chamber, terminated by an orbicular, oblique orifice. The ovicell is hyperstomial, not closed by the operculum, very salient, globular, granulose, ornamented with a large, smooth triangular area. On certain zooecia, the aperture is hidden by a large flat mucron; it bears

very frequently the base of a very large transverse avicularium with spatulate pivot in which the beak is supported on the peristome of an adjacent zooecium.

*Measurements.*—

Aperture	{	$ha = 0.12$ mm	(including oral sinus)	{	$Lz = 0.65$ mm
		$la = 0.12$ mm			Zooecium

Number of zooecia in  $4 \text{ mm}^2$ , 16.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85885.

DAKARIA Jullien, 1903

DAKARIA CRASSOCIRCA, n. sp.

Plate 6, fig. 7

*Description.*—The zoarium is free, cylindrical, formed by four longitudinal rows of zooecia. The zooecia are distinct, separated by a furrow, at the bottom of which is a salient thread, elongated, elliptical; the frontal is very convex and covered with large infundibuliform tremopores. The aperture is transverse, semielliptical; the proximal border bears a very wide rounded sinus; the peristome is complete, *very thick*; between the inner proximal portion and the aperture, there is a small armature of little depth and characteristic of the genus. Ovicell unknown.

*Measurements.*—

Aperture	{	$ha = 0.12$ mm	Zooecium	{	$Lz = 0.84$ mm
		$la = 0.15$ mm			$lz = 0.55$ mm

*Occurrence.*—Janjukian beds at Bairnsdale, Victoria.

*Holotype.*—U.S.N.M. no. 85683.

SCHIZOBRACHIELLA Canu and Bassler, 1920

SCHIZOBRACHIELLA HEXAGONALIS, n. sp.

Plate 6, fig. 5

*Description.*—The zoarium is free, unilamellar. The zooecia are distinct, separated by a salient thread, *hexagonal*, somewhat elongated; the frontal is convex and formed of a tremocyst with small, numerous pores. The aperture, orbicular in aspect, is formed by a large semicircular anter and by a concave poster notched by a wide, shallow sinus separated from the anter by two small lateral indentations. Laterally, at the height of the apertural sinus there is either a longitudinal slit or a small elongated avicularium.

*Measurements.*—

Aperture  $\begin{cases} ha = 0.15-0.17 \text{ mm} \\ la = 0.17 \text{ mm} \end{cases}$       Zooecium  $\begin{cases} Lz = 0.80 \text{ mm} \\ lz = 0.50-0.55 \text{ mm} \end{cases}$

Number of zooecia in  $4 \text{ mm}^2$ , 11.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85861.

**CHIASTOSELLA Canu and Bassler, 1934****CHIASTOSELLA LAMELLATA, n. sp.**

Plate 6, fig. 8

*Description.*—The zoarium is free and lamellar; the fronds are more or less wide, bifurcated. The zooecia are little distinct, vaguely separated by a white line irregularly placed between the areolar pores, elongated; the frontal is narrow, bordered by two scattered rows of areolar pores concealing the little apparent pleurocyst. The aperture is semicircular; the proximal border is rectilinear and notched by a straight, short sinus rounded at its extremity; the peristome is thick, little salient, with four or five large distal spines. The ovicell is large, embedded in the distal zooecium, hyperstomial, not closed by the operculum; the ectooecium is large, circular, convex, smooth, ornamented on the periphery with lines of small pores arranged radially. The two avicularia are arranged transversely on the transverse median axis of the zooecium; they are long and thin with pivot, very pointed, projecting on the adjacent zooecia; their base is placed on the exterior line of areolar pores.

*Measurements.*—

Aperture  $\begin{cases} ha = 0.15 \text{ mm} \\ la = 0.10-0.12 \text{ mm} \end{cases}$       Zooecium  $\begin{cases} Lz = 0.60-0.65 \text{ mm} \end{cases}$

Number of zooecia in  $4 \text{ mm}^2$ , 16 to 20.

*Occurrence.*—Balcombian beds at Muddy Creek, and Janjukian at Mount Gambier, Victoria.

*Cotypes.*—U.S.N.M. nos. 85630, 85631.

**CHIASTOSELLA GIBBERA, n. sp.**

Plate 6, fig. 2

*Description.*—The zoarium is unilamellar. The zooecia are little distinct, elongated, irregular; the frontal is convex, ornamented with a longitudinal, median gibbosity surrounded by a double row of scattered areolar pores often separated by pseudocostules. The aperture is semielliptical, transverse; the proximal border is somewhat concave and bears a very narrow linear sinus; the peristome is non-

salient and bears four inconstant spines. The zoecial avicularium is transverse, thin with pivot, nonsalient, inconstant. The ovicell is unknown.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.12 \text{ mm} \\ la = 0.15 \text{ mm} \end{cases} \quad \text{Zoecium} \begin{cases} Lz = 0.60 \text{ mm} \\ lz = 0.25-0.30 \text{ mm} \end{cases}$$

Number of zoecia in  $4 \text{ mm}^2$ , 18-20.

*Occurrence.*—Janjukian beds at Bairnsdale, Victoria.

*Cotype.*—U.S.N.M. no. 85629.

#### CHIASTOSELLA POROSA, n. sp.

Plate 6, fig. 4

*Description.*—The zoarium is free, unilamellar. The zoecia are distinct, separated by a furrow, ogival, wide, often transverse; the frontal is convex, very *porous*, with much reduced pleurocyst. The aperture is suborbicular; the concave poster bears a rounded sinus of little depth; the peristome is wide, nonsalient, with three or four large spines. The avicularium is placed transversely on the median axis of the zoecium; it is very long, with pivot, with a beak thinned and placed on a convex, porous chamber. Ovicell unknown.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.16-0.20 \text{ mm} \\ la = 0.20-0.22 \text{ mm} \end{cases} \quad \text{Zoecium} \begin{cases} Lz = 0.70 \text{ mm} \\ lz = 0.80 \text{ mm} \end{cases}$$

Number of zoecia in  $4 \text{ mm}^2$ , 12.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85632.

#### CHIASTOSELLA GRANDICELLA, n. sp.

Plate 6, fig. 3

*Description.*—The zoarium is free, unilamellar. The zoecia are distinct, separated by a furrow, *very large*, ogival, very wide, transverse; the frontal is convex, porous, bordered by three rows of areolar pores leaving only a small frontal pleurocyst. The aperture is large, suborbicular; the proximal border is very concave with a wide, rounded, rather deep sinus; the peristome is very thick, nonsalient and provided with four large distal spines. The zoecial avicularium is very large, rather long, with pivot, arranged transversely; the beak is pointed. Ovicell unknown.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.22-0.25 \text{ mm} \\ la = 0.22 \text{ mm} \end{cases} \quad \text{Zoecium} \begin{cases} Lz = 0.90 \text{ mm} \\ lz = 0.80 \text{ mm (irregular)} \end{cases}$$

Number of zoecia in  $4 \text{ mm}^2$ , 5.



*Occurrence*.—Balcombian beds at Muddy Creek, Victoria.

*Holotype*.—U.S.N.M. no. 85628.

**CHIASTOSELLA PARVIPOROSA, n. sp.**

Plate 6, fig. 10

*Description*.—The zoarium is unilamellar. The zooecia are distinct, separated by a deep furrow, very large, ogival, little elongated, wide; the frontal is convex, covered with relatively *small pores*, without pleurocyst. The aperture, transverse and semielliptical in aspect, bears on its concave proximal border a small rounded sinus; the peristome is very thick, nonsalient, garnished with four large hollow spines. Ovicell unknown. The avicularium is large, transverse, borne on a large porous convex chamber; the beak is rather pointed; its base is placed on the first row of pores.

*Measurements*.—

$$\text{Aperture} \begin{cases} ha = 0.28 \text{ mm} \\ la = 0.25-0.27 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.50-0.60 \text{ mm} \\ lz = 0.50-0.55 \text{ mm} \\ \text{(without avicularium)} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 5.

*Occurrence*.—Janjukian beds at Flinders, Victoria.

*Holotype*.—U.S.N.M. no. 85627.

**EMBALLOTHECA Levinsen, 1909**

**EMBALLOTHECA INCLINATA, n. sp.**

Plate 6, fig. 6

*Description*.—The zoarium is bilamellar, with broad fronds. The zooecia are distinct, separated by a white nonsalient thread; the frontal is flat, perforated by large polygonal, expanded tremopores, rectangular and somewhat elongated. The aperture is semielliptical, transverse; the proximal border bears a semicylindrical mucron, *inclined* in the aperture; two small lateral cardelles are placed at the level of the distal border of the mucron; the peristome is incomplete, wide, smooth, nonsalient. The ovicells are enormous, embedded in the distal zooecium, very convex and salient, covered with large pores. The ovicelled zooecia are wider; their aperture is large (0.20 by 0.25 mm) and ornamented with two large cardelles; the peristomice is semielliptical, transverse.

*Measurements*.—

$$\text{Aperture} \begin{cases} ha = 0.10 \text{ mm} \\ la = 0.15-0.16 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.60-0.70 \text{ mm} \\ lz = 0.40-0.50 \text{ mm} \end{cases}$$

*Occurrence*.—Balcombian beds at Muddy Creek, Victoria.

*Holotype*.—U.S.N.M. no. 85701.



**EMBALLOTHECA GRANULATA, n. sp.**

Plate 5, fig. 7

*Description.*—The zoarium is bilamellar. The zooecia are distinct, separated by a deep furrow, rectangular, elongated, a little contracted behind; the frontal is convex, covered with *granules* separated by very small tremopores. The aperture is semielliptical, transverse; the proximal border is formed by a wide convex mucron; there are two cardelles, long, thin, oblique, oriented proximally; the peristome is thin, smooth, hardly salient. The ovicell is unknown.

*Measurements.*—

Aperture	{	$ha = 0.10$ mm $la = 0.18-0.20$ mm	Zooecium	{	$Lz = 0.75-0.90$ mm $lz = 0.40-0.50$ mm
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Number of zooecia in 4 mm<sup>2</sup>, 13, 14.

*Occurrence.*—Kalimman beds (bore no. 1, depth 110 feet) at Lakes Entrance, Victoria.

*Holotype.*—U.S.N.M. no. 85703.

**EMBALLOTHECA ANGUSTATA, n. sp.**

Plate 5, fig. 8

*Description.*—The zoarium is bilamellar. The zooecia are distinct, separated by a thin thread placed at the bottom of a furrow, much elongated, *very narrow*, of cylindrical aspect; the frontal is convex, finely granulose and perforated by a large number of very small tremopores. The aperture is semicircular; the proximal border is formed by a wide convex mucron presenting a small circular depression on the zooecial axis; the peristome is incomplete, smooth, salient. There are two thin cardelles.

*Measurements.*—

Aperture	{	$ha = 0.15$ mm $la = 0.17$ mm	Zooecium	{	$Lz = 0.80-0.95$ mm $lz = 0.35$ mm
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Number of zooecia in 4 mm<sup>2</sup>, 13.

*Occurrence.*—Janjukian beds at Orbost, Gippsland, Victoria.

*Holotype.*—U.S.N.M. no. 85704.

**SCHIZOPORELLA Hincks, 1877****SCHIZOPORELLA ORBICULIFERA, n. sp.**

Plate 6, fig. 9

*Description.*—The zoarium is free, cylindrical, formed of four or five longitudinal series of zooecia. The zooecia are distinct, separated by a very salient thread, lozenge-shaped, very much elongated, large;

the frontal is convex, formed by a granular tremocyst with very small and numerous pores. The aperture is semielliptical, transverse; the proximal border bears a small rounded sinus; the peristome is complete, thin, smooth, little salient and separated from the separating thread only by a small furrow. The avicularium is small, *orbicular*, a little salient, always placed in one of the two lateral angles. The ovicell is large, globular, placed on the distal zooecium, hyperstomial, closed by the operculum; its surface is granular. The aperture of the ovicelled zooecia is larger.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha=0.10-0.12 \text{ mm} \\ la=0.15 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz=0.90-1.00 \text{ mm} \\ lz=0.50-0.60 \text{ mm} \end{array} \right.$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Cotypes.*—U.S.N.M. no. 85856.

#### SCHIZOPORELLA MACGILLIVRAYI, n. sp.

Plate 9, fig. 5

*Schizoporella phymatopora* MacGillivray (pars), Trans. Roy. Soc. Victoria, vol. 4, p. 80, pl. 11, fig. 3 (not 2), 1895.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha=0.16 \text{ mm} \\ la=0.16-0.17 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz=0.77-0.85 \text{ mm} \\ lz=0.44-0.55 \text{ mm} \end{array} \right.$

*Structure.*—It is quite impossible that figures 3 and 2 of MacGillivray refer to the same species, for there is a great difference in the apertural dimensions. We consider figure 3 as representing a distinct species, *S. macgillivrayi*, very close to *S. alata*, and characterized by its orbicular aperture (not transverse), its rounded proximal sinus, absence of avicularia, and zooecia frequently axially disarranged.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85859.

#### SCHIZOPORELLA TENUILAMELLOSA, n. sp.

Plate 9, fig. 4

*Description.*—The zoarium is bilamellar; the fronds are flat, broad, and *very thin*. The zooecia are distinct, separated by a shallow furrow, rectangular, very long; the frontal is a little convex, smooth, bordered with about 10 large areolar pores. The aperture in transverse aspect is semielliptical; its proximal border is rectilinear and notched by a very small triangular sinus. Each zooecium bears on the median longitudinal axis of the frontal two very small avicularia; the first

is orbicular and placed a short distance from the apertural sinus; the second placed a little lower, is transverse, very thin, triangular. The ovicell is unknown.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.10 \text{ mm} \\ la = 0.09-0.10 \text{ mm} \end{array} \right.$  Zooecium  $\left\{ \begin{array}{l} Lz = 0.65-0.75 \text{ mm} \\ lz = 0.35-0.44 \text{ mm} \end{array} \right.$   
 Number of zooecia in 4 mm<sup>2</sup>, 15, 16.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85860.

**SCHIZOPORELLA PUSTULOSA, n. sp.**

Plate 5, fig. 6

*Description.*—The zoarium is bilamellar with very narrow fronds. The zooecia are distinct, separated by a furrow, at the bottom of which is a very thin thread, elongated, somewhat oval; the frontal is a pleurocyst ornamented with seven to nine large granules or *pustules* and bordered by six very small areolar pores much separated from each other. The aperture is small, oval, a little oblique, embedded; the proximal sinus is very wide, and triangular; the peristome is very thin, nonsalient and bears four very small and much scattered tuberosities. Ovicell unknown.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.10 \text{ mm} \\ la = 0.09 \text{ mm} \end{array} \right.$  Zooecium  $\left\{ \begin{array}{l} Lz = 0.60-0.75 \text{ mm} \\ lz = 0.35 \text{ mm} \end{array} \right.$   
 Number of zooecia in 4 mm<sup>2</sup>, 22-24.

*Occurrence.*—Janjukian, Aire Coastal beds, Victoria.

*Holotype.*—U.S.N.M. no. 85862.

**SCHIZOPORELLA ARCANA, n. sp.**

Plate 9, fig. 9

*Description.*—The zoarium is unilamellar. The frontal is not entirely perforated; the cells are surrounded with an olocystic band and bear below the aperture a macula of the same nature.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. no. 85857.

**SCHIZOPORELLA CLYPEATA, n. sp.**

Plate 6, fig. 11

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a very thin thread, very large, nonsymmetrical, much

elongated, of little width; the frontal is little convex and formed by a large pleurocyst forming a smooth, elliptical cushion or shield; it is surrounded laterally by a double row of areolar pores and proximally by four rows of scattered pores. The aperture is oval, axially disarranged, terminated by a narrow proximal sinus rounded at its extremity. A small oral avicularium, adjacent to the peristome is placed between the anter and the sinus. Another small zoecial avicularium is placed laterally on the exterior line of areolar pores and a little below the level of the proximal sinus. Ovicell unknown.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.26 \text{ mm} \\ la = 0.20 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Ls = 1.40 \text{ mm} \\ ls = 0.65-0.75 \text{ mm} \end{cases}$$

Number of zooecia in 4 mm<sup>2</sup>, 6.

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Holotype.*—U.S.N.M. no. 85855.

#### Subfamily EXOCHELLINAE Bassler, 1935

#### BATHOSELLA Canu and Bassler, 1917

#### BATHOSELLA LATICELLA, n. sp.

Plate 9, fig. 2

*Description.*—The zoarium is free, bilamellar, with narrow fronds. The zooecia are distinct, separated by a very deep furrow, elongated, globular, *very wide*; the frontal is rather convex, finely granular, pierced laterally by two or three pores. The aperture is large, elliptical, transverse, somewhat oblique; the peristome is thick, a little salient, smooth. On one zoecial margin there is a small triangular avicularium with pivot oriented distally.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.14 \text{ mm} \\ la = 0.20 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.85 \text{ mm} \\ ls = 0.50-0.55 \text{ mm} \end{cases}$$

Number of zooecia in 4 mm<sup>2</sup>, 12.

*Occurrence.*—Janjukian, Aire Coastal beds, Victoria.

*Holotype.*—U.S.N.M. no. 60211.

#### BATHOSELLA BULBOSA, n. sp.

Plate 9, fig. 1

*Description.*—The zoarium is free, bilamellar, of narrow fronds. The zooecia are distinct, separated by a deep furrow, large, elongated *bulbous*; the frontal is very convex, margined by two to four large

pores, and formed by a granular pleurocyst. The aperture is large, elliptical, transverse, oblique, often mucronated; the peristome is thick and granulated like the frontal. Laterally, on the transverse median axis of the zooecium and symmetrically arranged, there are two small elliptical, salient avicularia with pivot, oriented proximally.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.12-0.15 \text{ mm} \\ la = 0.20 \text{ mm} \end{array} \right.$  Zooecia  $\left\{ \begin{array}{l} Ls = 0.75-0.80 \text{ mm} \\ ls = 0.40-0.45 \text{ mm} \end{array} \right.$

Number of zooecia in  $4 \text{ mm}^2$ , 14 or 15.

*Occurrence.*—Janjukian, Aire Coastal beds, Victoria.

*Holotype.*—U.S.N.M. no. 60205.

**EXOCELLA** Jullien, 1888

**EXOCELLA GRANDIS**, n. sp.

Plate 9, fig. 3

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a salient thread, large, elongated, hexagonal; the frontal is a granular pleurocyst, bordered by large areolar pores separated by short costules. The apertura is semielliptical; the peristome is thin and salient; a salient rectangular mucron hides the proximal border of the apertura. The ovicell is globular, convex, granular. The avicularium is transverse, thin, triangular, acuminate; it replaces an areolar pore.

*Measurements.*—

Apertura  $\left\{ \begin{array}{l} ha = 0.15-0.17 \text{ mm} \\ la = 0.15-0.17 \text{ mm} \end{array} \right.$  Zooecia  $\left\{ \begin{array}{l} Ls = 0.75-0.90 \text{ mm} \\ ls = 0.50-0.70 \text{ mm} \end{array} \right.$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85711.

**DIDYMOSELLA** Canu and Bassler, 1917

**DIDYMOSELLA CLYPEATA**, n. sp.

Plate 9, figs. 7, 8

*Description.*—The zoarium is unilamellar, free; the fronds are narrow, bifurcated, formed of about seven longitudinal rows of cells; the dorsal is covered with an epicalcification hiding the form of the zooecia and on which there are deep longitudinal furrows. The zooecia are little distinct, separated by shallow and inconstant furrows, long aliform; the frontal is convex, formed distally by a shield, and proximally by a tremocyst with large pores. The shield is large, broad, smooth, perforated by two large foramina; its distal portion

is arched and separated by a deep furrow with two calcified bands attached to the peristome. The large zooecial avicularium is triangular, with pivot; its beak is oriented exteriorly toward the nearest zooecial margin. The peristomice is semielliptical, transverse, with somewhat concave proximal border; the peristome is thin, salient, ornamented with four spines, two of which are proximal.

*Measurements.*—

Peristomice  $\begin{cases} hp = 0.14 \text{ mm} \\ lp = 0.21 \text{ mm} \end{cases}$  Zooecium  $\begin{cases} Lz = 0.72-0.75 \text{ mm} \\ lz = 0.47-0.50 \text{ mm} \end{cases}$

Number of zooecia in  $4 \text{ mm}^2$ , 12.

*Occurrence.*—Muddy Creek (Balcombian), Anticline Creek, Dartmoor and Corio Bay, Geelong, Mount Gambier, etc., (Janjukian), Victoria.

*Holotype.*—U.S.N.M. nos. 85684-85688.

**ESCHAROIDES** Milne-Edwards, 1836

**ESCHAROIDES ERECTA**, n. sp.

Plate 9, fig. 6

*Description.*—The zoarium is free, erect, cylindrical, formed of four longitudinal series of zooecia. The zooecia are large, very elongated, somewhat aliform distally; the frontal is very convex, formed by a finely granulated pleurocyst, bordered by numerous areolar pores which separate very short costules; its distal portion is terminated by two large avicularian mucrons, very long, erect, hiding entirely the aperture and the locella. On each side of the aperture there is a small transverse, triangular avicularium in which the chamber is large, triangular, perforated in its middle by a small pore (radicell?).

*Measurements.*—Zooecium  $\begin{cases} Lz = 1.15-1.25 \text{ mm} \\ lz = 0.60 \text{ mm} \end{cases}$

*Occurrence.*—Janjukian beds at Gellibrand, Torquay, Mount Gambier, and Boggy Creek, Victoria.

*Holotype.*—U.S.N.M. nos. 85819, 85847.

Subfamily MICROPORELLAE Canu and Bassler, 1917

**MICROPORELLA** Hincks, 1877

**MICROPORELLA CAILLETI**, n. sp.

Plate 9, fig. 10

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a deep furrow, hexagonal, wide, very little elongated; the frontal is convex and is a finely granulated tremocyst perforated



by a large number of very small pores. The ascopore is transverse, elliptical or crescentric, salient and almost adjacent to the aperture. The aperture is semielliptical with a straight, transverse, proximal border; the peristome is distal, salient, thick, ornamented with several flat, short spines. The avicularium is lateral, large, transverse, triangular, with beak pointed and oriented exteriorly, placed at the side or a little below the ascopore; it surmounts a triangular chamber, salient, convex, covered by tremopores. The ovicell is hyperstomial, closed by the operculum, large, globular, of the same nature as the frontal.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.07 \text{ mm} \\ la = 0.15 \text{ mm} \end{array} \right.$  Zoocia  $\left\{ \begin{array}{l} Lz = 0.55 \text{ mm} \\ lz = 0.40-0.55 \text{ mm} \end{array} \right.$   
 Number of zoecia in  $4 \text{ mm}^2$ , 16.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85791.

**FENESTRULINA** Jullien, 1888

**FENESTRULINA PRAETEXTA**, n. sp.

Plate 9, fig. 11

*Description.*—The zoarium is free, bilamellar, bifurcated; the fronds are narrow and flabellate. The zoecia are distinct, bordered by a thin thread surmounting a large salient smooth cushion, triangular in section, much elongated, rectangular somewhat narrowed behind; the frontal is little convex, bordered laterally by areolar pores and proximally with some tremopores; it bears on the longitudinal axis a large orbicular or crescentric ascopore much removed from the aperture. The aperture is semielliptical, transverse, the poster being simply concave. Ovicell unknown.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.09 \text{ mm} \\ la = 0.13 \text{ mm} \end{array} \right.$  Zoecium  $\left\{ \begin{array}{l} Lz = 0.80 \text{ mm} \\ lz = 0.36-0.40 \text{ mm} \end{array} \right.$   
 Number of zoecia in  $4 \text{ mm}^2$ , 18.

*Occurrence.*—Janjukian beds at Flinders, Victoria.

*Holotype.*—U.S.N.M. no. 85720.

Subfamily HIPPOPORAE Canu and Bassler, 1917

**HIPPOMENELLA** Canu and Bassler, 1917

**HIPPOMENELLA PARVIPOROSA**, n. sp.

Plate 7, fig. 2

*Description.*—The zoarium is unilamellar and attached to fragments of bryozoa. The zoecia are distinct, separated by a rather deep



furrow, elongated, vaguely lozenge-shaped, enlarged on the transverse axis; the frontal is convex, smooth, bordered by a double row of numerous very small areolar pores separated by small radial costules. The aperture is oval, elongated; the anter is separated by two cardelles descending from the poster, which is smaller. The frontal avicularia are small, triangular, with pivot; the beak is salient, pointed, oriented proximally; they are placed indistinctly on the first or on the second row of pores; there are two or three on the same frontal.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.20 \text{ mm} \\ la = 0.16 \text{ mm} \end{cases} \quad \text{Zoocium} \begin{cases} Ls = 0.75-0.95 \text{ mm} \\ ls = 0.60 \text{ mm} \end{cases}$$

Number of zoecia in  $4 \text{ mm}^2$ , 10.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85755.

#### HIPPOMENELLA RARIROSTRATA, n. sp.

Plate 7, fig. 1

*Description.*—The zoarium is unilamellar. The zoecia are distinct, separated by a deep furrow, elliptical, little elongated; the frontal is very convex, smooth, bordered by a double row of areolar pores. The aperture is large, semielliptical, elongated, with convex proximal border, without peristome. The ovicell is large, buried in the distal zoecium, hyperstomial, closed by the operculum; its frontal is decorated with numerous radial lines of small pores separated from each other by very salient costules; the latter are arrested at the center by a large smooth, triangular area and a smooth, curved pad serves as the proximal limit. The frontal avicularia are rare, a single one, often absent, to a zoecium, small, triangular, placed very inferiorly on the inner line of areolar pores; they have a pivot and the beak is oriented proximally.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.18-0.20 \text{ mm} \\ la = 0.16-0.18 \text{ mm} \end{cases} \quad \text{Zoocium} \begin{cases} Ls = 0.66 \text{ mm} \\ ls = 0.45 \text{ mm} \end{cases}$$

Number of zoecia in  $4 \text{ mm}^2$ , 8.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85753.

#### HIPPOMENELLA MAGNA, n. sp.

Plate 8, fig. 13

*Description.*—The zoarium is unilamellar. The zoecia are distinct, separated by a deep furrow, fusiform, *large*, very elongated; the frontal is convex and formed by a reduced pleurocyst, elliptical, elongated, bordered by two or three rows of lateral areolar pores and by

four or five rows of proximal ones. In the inner row the areolar pores are small, numerous, and separated by short radial costules. The aperture is neatly hippoporiform; two long, oblique cardelles, placed low, separate a large orbicular anter from a poster smaller but wider and in which the proximal border is straight or a little convex; no salient peristome. There is only a single lateral avicularium to a zooecium; it is placed a little above the transverse, median zooecial axis; it is small, oval, oblique, with beak oriented exteriorly.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.22 \text{ mm} \\ la = 0.29 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 1.10-1.65 \text{ mm} \\ ls = 0.55-0.65 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 6.

*Occurrence.*—Janjukian beds at Torquay, 15 miles south of Geelong, Victoria (bore no. 1 at depth of 160 feet).

*Holotype.*—U.S.N.M. no. 85754.

#### HIPPOMENELLA VERMICULARIS, n. sp.

Plate 8, fig. 3

*Description.*—The zoarium is unilamellar, the zooecia are distinct, separated by a very deep furrow, elliptical, very short, swollen; the frontal is very convex and formed by a smooth pleurocyst, surrounded by four or five rows of large areolar pores. The aperture of the ovicelled zooecia is rectangular, a little transverse, narrowed in the inferior third. The proximal border is convex. The ovicell is enormous, globular, embedded in the distal zooecium perforated by large scattered pores and richly decorated by salient vermiform ridges. There are two avicularia symmetrically arranged on the transverse median axis of each zooecium and on the inner line of areolar pores; they are small, triangular, oblique; their beak is salient and is oriented exteriorly and proximally.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.15-0.20 \text{ mm} \\ la = 0.21 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.75 \text{ mm} \\ ls = 0.15 \text{ mm} \end{cases}$$

(Ovicelled zooecia)

Number of zooecia in  $1 \text{ mm}^2$ , 3.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85752.

#### HIPPOPORELLA Canu, 1917

#### HIPPOPORELLA TESTU, n. sp.

Plate 8, fig. 4

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a deep furrow, large, elongated; the frontal is very

convex, smooth, bordered by a line of small areolar pores much scattered. The aperture is large, transverse, having the form of a dish cover with concave proximal border; the peristome is incomplete, very little salient, thin, and bears six spines; the two proximal spines correspond to a slight lateral contraction of the aperture. The ovicell is large, globular, not closed by the operculum. A small oral avicularium placed on the line of the pores adjacent to the peristome is visible on one side of the aperture.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.24 \text{ mm} \\ la = 0.30-0.33 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz = 1.00 \text{ mm} \\ lz = 0.60 \text{ mm} \end{array} \right.$

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85760.

**HIPPOMONAVELLA** Canu and Bassler, 1934

**HIPPOMONAVELLA ACUTIROSTRIS**, n. sp.

Plate 7, fig. 5

*Description.*—The zoarium is incrusting. The zooecia are distinct, separated by a salient thread, polygonal, elongated; the frontal is little convex, smooth, bordered by very small and numerous pores. The aperture is suborbicular, very little elongated; the two cardelles are thin, salient, median; the peristome is terminal, thin, little salient. The avicularium is thin, triangular, elongated, almost adjacent to the peristome; the beak is very sharp and salient. Ovicell unknown.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.14 \text{ mm} \\ la = 0.13 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz = 0.72 \text{ mm} \\ lz = 0.47 \text{ mm} \end{array} \right.$

Number of zooecia in 4 mm<sup>2</sup>, 13.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85757.

Family SMITTINIDAE Levinsen, 1909

**SMITTINA** Norman, 1903

**SMITTINA PERFORATA**, n. sp.

Plate 7, fig. 3

*Description.*—The zoarium is unilamellar. The zooecia are distinct, separated by a very small furrow, elongated, elliptical; the frontal is convex, marginated by a salient pad, convex and formed by a smooth pleurocyst surrounded by a line of six to eight pairs of large areolar pores separated by very short costules. The aperture is sub-

orbicular; its proximal border bears a wide lyrule, salient and flat. In front of the aperture on the median longitudinal axis of the zooecium, there is a large orbicular perforation corresponding to an avicularium of the same form.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha=0.14 \text{ mm} \\ la=0.12 \text{ mm} \end{array} \right.$  Zooecium  $\left\{ \begin{array}{l} Lz=0.63 \text{ mm} \\ lz=0.41 \text{ mm} \end{array} \right.$

Number of zooecia in  $4 \text{ mm}^2$ , 13.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85868.

#### SMITTINA (?) PARVIOVICELLOSA, n. sp.

Plate 7, fig. 4

*Description.*—The zoarium is free, bilamellar, with wide, flat, or undulated fronds. The zooecia are distinct, separated by a salient thread, much elongated, fusiform; the frontal is convex, surrounded by small and very numerous areolar pores and formed by a rugose pleurocyst. The aperture is elliptical, transverse, without peristome. The ovicell is very small, globular, smooth, placed on the distal zooecium. The oral avicularium is small, adjacent to the aperture, elliptical, with pivot, placed on the median longitudinal axis of the zooecium.

*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha=0.10 \text{ mm} \\ la=0.13 \text{ mm} \end{array} \right.$  Zooecium  $\left\{ \begin{array}{l} Lz=1.00-1.24 \text{ mm} \\ lz=0.30-0.36 \text{ mm} \end{array} \right.$

Number of zooecia in  $4 \text{ mm}^2$ , 12.

*Occurrence.*—Janjukian beds at Orbost, Gippsland, Victoria.

*Holotype.*—U.S.N.M. no. 85869.

#### MUCRONELLA Hincks, 1880

#### MUCRONELLA ELONGATA, n. sp.

Plate 7, fig. 6

*Description.*—The zoarium is free, cylindrical, rectilinear, of small diameter (0.80 mm). The zooecia are distinct, separated by a small, little salient thread, very long, narrow, fusiform. The frontal is convex, smooth, surrounded by a row of 14 to 16 pairs of very small areolar pores. The peristome is salient, thin, elliptical, elongated; its proximal border bears a small mucron inclined in the peristomie; the aperture is visible at the bottom of the peristomie. The ovicell is large, salient, globular, placed on the distal zooecium, smooth, hyperstomial, opening in the peristomie.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.15 \text{ mm} \\ lp = 0.12 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 1.15-1.25 \text{ mm} \\ ls = 0.30-0.35 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Cotypes.*—U.S.N.M. no. 85806.

**SMITTINELLA** Canu and Bassler, 1934**SMITTINELLA MAGNA**, n. sp.

Plate 8, fig. 7

*Description.*—The zoarium is bilamellar with very narrow fronds. The zooecia are distinct, separated by a salient thread, *large*, rectangular, much elongated; the frontal is convex and perforated by three or four longitudinal rows of tremopores. The lateral zooecia are wider than the axial zooecia. The peristomice is suborbicular or elliptical; the peristome is salient, thin, sharp, complete, with a small proximal spiramen. The ovicell is large, globular, marginated, finely granulated with a large porous area.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.10-0.11 \text{ mm} \\ lp = 0.10-0.11 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.75-0.90 \text{ mm} \\ ls = 0.25 \text{ mm (axial)} \quad 0.30 \text{ mm (lateral)} \end{cases}$$

Number of zooecia in  $1 \text{ mm}^2$ , 3.

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Holotype.*—U.S.N.M. no. 86957.

**SMITTINELLA OSIFERA**, n. sp.

Plate 7, fig. 10

*Description.*—The zoarium is bilamellar with narrow fronds. The zooecia are distinct, separated by a small salient thread, somewhat fusiform, elongated; the frontal is convex, finely granulose and perforated by some scattered pores. The aperture is elliptical, transverse, with a very small proximal sinus; the peristome is complete, very thin, scarcely salient. There is a broad lyrule and two small cardelles. The ovicell is very large, salient, globular with broad margin and a very fragile orbicular area; the orifice is very large, transverse, of the form of an open mouth, with a proximal spiramen.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.12 \text{ mm} \\ la = 0.17 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.70-0.80 \text{ mm} \\ lz = 0.30 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 20-23.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. no. 85871.

**SMITTINELLA MAGNIPOROSA**, n. sp.

Plate 7, fig. 8

*Description.*—The zoarium is bilamellar with narrow, flat fronds. The zooecia are distinct, separated by a large salient thread, rectangular, short, elongated; the frontal is somewhat convex and perforated by a dozen large pores. The aperture is oval, a little elongated; the proximal sinus is more or less wide, and always rounded; the lyrule and the cardelles are very fragile. The peristome is wide but not salient. The ovicell is large, globular with a central area orbicular and fragile. The peristomice of the ovicelled zooecia is large, semi-circular, transverse; the spiramen is large, salient, constant.

*Measurements.*—

$$\text{Aperture} \begin{cases} ha = 0.12-0.15 \text{ mm} \\ la = 0.12 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.50-0.55 \text{ mm} \\ lz = 0.22-0.25 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 25-30.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85870.

**PORELLA** Gray, 1848**PORELLA TUBEROSA**, n. sp.

Plate 7, fig. 7

*Description.*—The zoarium is bilamellar. The zooecia are distinct, separated by a salient thread, elongated, fusiform; the frontal is convex, covered by tremopores separated by *tuberosities*. The aperture is suborbicular; a hollow, rounded proximal indentation serves as orifice for an orbicular avicularium opening into the peristomice; the chamber of this avicularium is large, smooth, and forms in front of the aperture a large gibbosity. The peristome is thin, little salient and forms a separating thread. The ovicell is very large; a small axial ridge separates it into two compartments. The ovicelled zooecia are broader; their aperture is enormous (0.15 by 0.25 mm).



*Measurements.*—

Aperture  $\left\{ \begin{array}{l} ha = 0.15 \text{ mm} \\ la = 0.15-0.17 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz = 0.75-1.00 \text{ mm} \\ lz = 0.29-0.34 \text{ mm} \end{array} \right.$   
 Number of zooecia in  $4 \text{ mm}^2$ , 15.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Holotype.*—U.S.N.M. no. 85843.

**PORELLA CYLINDROROSTRIS**, n. sp.

Plate 7, fig. 9

*Description.*—The zoarium is bilamellar. The zooecia are distinct, separated by a thick thread, very salient, smooth; they are elongated, polygonal; the frontal is little convex and perforated with large expanded tremopores. The peristome is thick, smooth, salient, covering proximally the avicularian chamber; the peristomic is elliptical and transverse or suborbicular; into the peristomic opens a large cylindrical avicularium, little salient, in which the orifice (invisible) is perpendicular to the apertural plane. The apertural chamber is large and forms a large convexity, salient, smooth, in front of the aperture. The ovicell is large, convex, margined, with a fragile orbicular area; it opens into the peristomic.

*Measurements.*—

Peristomic  $\left\{ \begin{array}{l} hp = 0.13 \text{ mm} \\ lp = 0.17 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz = 0.70-0.77 \text{ mm} \\ lz = 0.35-0.42 \text{ mm} \end{array} \right.$   
 Number of zooecia in  $1 \text{ mm}^2$ , 4.

*Occurrence.*—Janjukian beds at Torquay near Geelong, Victoria.

*Holotype.*—U.S.N.M. no. 85829.

**PORELLA BACULINA**, n. sp.

Plate 8, fig. 8

*Description.*—The zoarium is free, cylindrical, in the form of a baton. The zooecia are distinct, separated by a small salient thread, elongated, elliptical, large; the frontal is convex and perforated by numerous small tremopores. The peristome is salient, thick, smooth, complete; the peristomic is suborbicular; an elliptical avicularium is lodged in the proximal portion of the peristomic.

*Measurements.*—

Peristomic  $\left\{ \begin{array}{l} hp = 0.22-0.25 \text{ mm} \\ lp = 0.25 \text{ mm} \end{array} \right.$       Zooecium  $\left\{ \begin{array}{l} Lz = 1.10 \text{ mm} \\ lz = 0.50-0.55 \text{ mm} \end{array} \right.$

*Occurrence.*—Janjukian beds at Mitchell River, Bairnsdale, Mount Gambier, and Boggy Creek, Victoria.

*Cotypes.*—U.S.N.M. nos. 85830-85832, 85848.

**PORELLA OPERCULATA, n. sp.**

Plate 8, fig. 6

*Description.*—The zoarium is free, cylindrical, long. The zooecia are indistinct with thick walls, very long; the frontal is convex and covered with numerous tubular tremopores. The peristome is thick, smooth, very little salient; the peristomic is elliptical, elongated; the peristomie is deep and formed by the thickening of the zooecial walls; it contains in the proximal portion a large oblique avicularium, triangular, with pivot; the beak is oriented distally; the proximal portion is free or closed by a suborbicular, calcareous operculum. The ovicell is large, salient, globular, ornamented with a double row of large pores separated by short radial costules.

*Measurements.*—

$$\text{Peristomic} \begin{cases} hp = 0.27-0.30 \text{ mm} \\ lp = 0.17-0.20 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 1.10-1.20 \text{ mm} \\ lz = 0.50 (?) \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Cotypes.*—U.S.N.M. no. 85842.

**PORELLA EXCAVATA, n. sp.**

Plate 7, fig. 11

*Description.*—The zoarium is free, bilamellar; the fronds are cylindrical, flabellate or lamellar and narrow, bifurcated; there are from one to seven longitudinal rows of zooecia on each branch. The zooecia are distinct, separated by a salient thread, elongated, rectangular; the frontal is flat and perforated with tremopores. The peristome is thin, salient, smooth; it is indented in the proximal portion by a linear sinus at the bottom of which there is a flat lyrule; the sinus is prolonged on the median axis of the zooecium by a small, linear excavation in which is placed a small, triangular, thin, elongated avicularium; the peristomic is orbicular and small. The ovicell is very small, globular, smooth.

*Measurements.*—

$$\text{Peristomic} \begin{cases} hp = 0.12 \text{ mm} \\ lp = 0.12 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Lz = 0.75-0.90 \text{ mm} \\ lz = 0.25-0.30 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Cotypes.*—U.S.N.M. no. 85838.

**PORELLA RHOMBOIDALIS PARVIAPERTURA, n. var.**

Plate 8, fig. 1

*Description.*—The aperture is small. There is a small round avicularium supported on a flat wide lyrule. The separating threads of the zooecia are very salient and thin.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.20 \text{ mm} \\ lp = 0.18 \text{ mm} \end{cases} \quad \text{Zooecia} \begin{cases} Ls = 0.80-0.85 \text{ mm} \\ ls = 0.45 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 11.*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.*Holotype.*—U.S.N.M. no. 85841.**PORELLA RHOMBOIDALIS CRASSIMARGINATA, n. var.**

Plate 8, fig. 2

*Description.*—The aperture is smaller than in the type. The small avicularium is borne on a flat lyrule. The separating threads of the zooecia are little salient and very thick.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.20 \text{ mm} \\ lp = 0.15 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 0.80 \text{ mm} \\ ls = 0.50-0.60 \text{ mm} \end{cases}$$

Number of zooecia in  $4 \text{ mm}^2$ , 10.*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.*Holotype.*—U.S.N.M. no. 85844.**PALMICELLARIA Alder, 1864****PALMICELLARIA (?) MAGNA, n. sp.**

Plate 8, fig. 5

*Description.*—The zoarium is free, very long, filiform, formed of four longitudinal rows of zooecia opposed two by two. The zooecia are distinct, separated by a small, little salient thread, very large, very long, tubulose; the frontal is very convex, fibrous and garnished laterally with numerous small areolar pores. The peristome is very long, oblique, rather salient, thin, with an inferior lip more developed and convex; the peristomice is large, semielliptical, transverse. An oral avicularium with basal chamber large and globular opens laterally on the interior of the peristomie.

*Measurements.*—

$$\text{Peristomice} \begin{cases} hp = 0.20 \text{ mm} \\ lp = 0.30 \text{ mm} \end{cases} \quad \text{Zooecium} \begin{cases} Ls = 1.75-2.00 \text{ mm} \\ ls = 0.50 \text{ mm} \end{cases}$$

*Occurrence.*—Janjukian beds at Anticline Creek, Dartmoor, Victoria.

*Cotypes.*—U.S.N.M. no. 85818.

## Family CELLEPORIDAE Busk, 1852

COSTAZIA Neviani, 1895

COSTAZIA CONVEXA, n. sp.

Plate 8, fig. 10

*Haswellia producta* (pars) MacGillivray, Trans. Roy. Soc. Victoria, vol. 4, p. 137, pl. 14, figs. 17, 18 (not 16 and 20), 1895.

*Description.*—The zoarium is cylindrical. The zoecia are distinct, poorly oriented, separated by a deep furrow; the frontal is very *convex*, almost tubular, smooth, surrounded by areolar pores, terminated by a mucron bearing an avicularium hiding a part of the aperture. The aperture is elliptical, somewhat elongated, without cardelles. The ovicell bears a perforated costulated area. The interzoecial avicularia are large, spathulated, enlarged at the beak, directed toward the base of the branches.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. no. 85650.

## Family PHYLACTELLIDAE Canu and Bassler, 1917

PHYLACTELLA Hincks, 1880

PHYLACTELLA CHAPMANI, n. sp.

Plate 8, fig. 9

*Description.*—The zoarium incrusts shells. The zoecia are distinct, separated by a furrow, somewhat elongated, rather swollen; the frontal is convex, smooth in appearance but perforated by extremely small pores and bordered by larger, more scattered pores. The aperture is small, semielliptical, with two cardelles and a lyrule visible only after suitably inclining the preparation; the peristome is salient, somewhat thick. The ovicell is recumbent, small, globular, smooth, not closed by the operculum, opening in front of the oral mucron.

*Measurements.*—

Aperture	{	$ha = 0.07$ mm	Zoocia	{	$Lz = 0.60-0.90$ mm
		$la = 0.10$ mm			$lz = 0.50-0.75$ mm

*Occurrence.*—Balcombian beds at Muddy Creek and Janjukian beds at Torquay (bore, 160 feet deep), Victoria.

*Holotype.*—U.S.N.M. nos. 85820, 85821.

## Family ORBITULIPORIDAE Canu and Bassler, 1923

## STICHOPORINA Stoliczka, 1861

## STICHOPORINA (?) PARVICAPITATA, n. sp.

Plate 8, fig. 11

*Description.*—The small fragments of this species in our collection are incomplete, and it is difficult to classify them. The ovicell which ought to be closed by the operculum, is small and analogous to that of *Batopora* and *Orbitulipora*. We do not know if there was a central pit. The zooecial walls are olocystal with two or three pores at the base. On the interior face the zooecia are hexagonal, and without doubt this species is indeed one of the Orbituliporidae.

*Occurrence.*—Balcombian beds at Muddy Creek, Victoria.

*Cotypes.*—U.S.N.M. no. 85882.

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## PLATE I

(All illustrations on this plate are magnified,  $\times 20$ )

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## PLATE 2

(All illustrations on this plate are magnified,  $\times 20$ )

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(All illustrations on this plate are magnified,  $\times 20$ , unless otherwise indicated)

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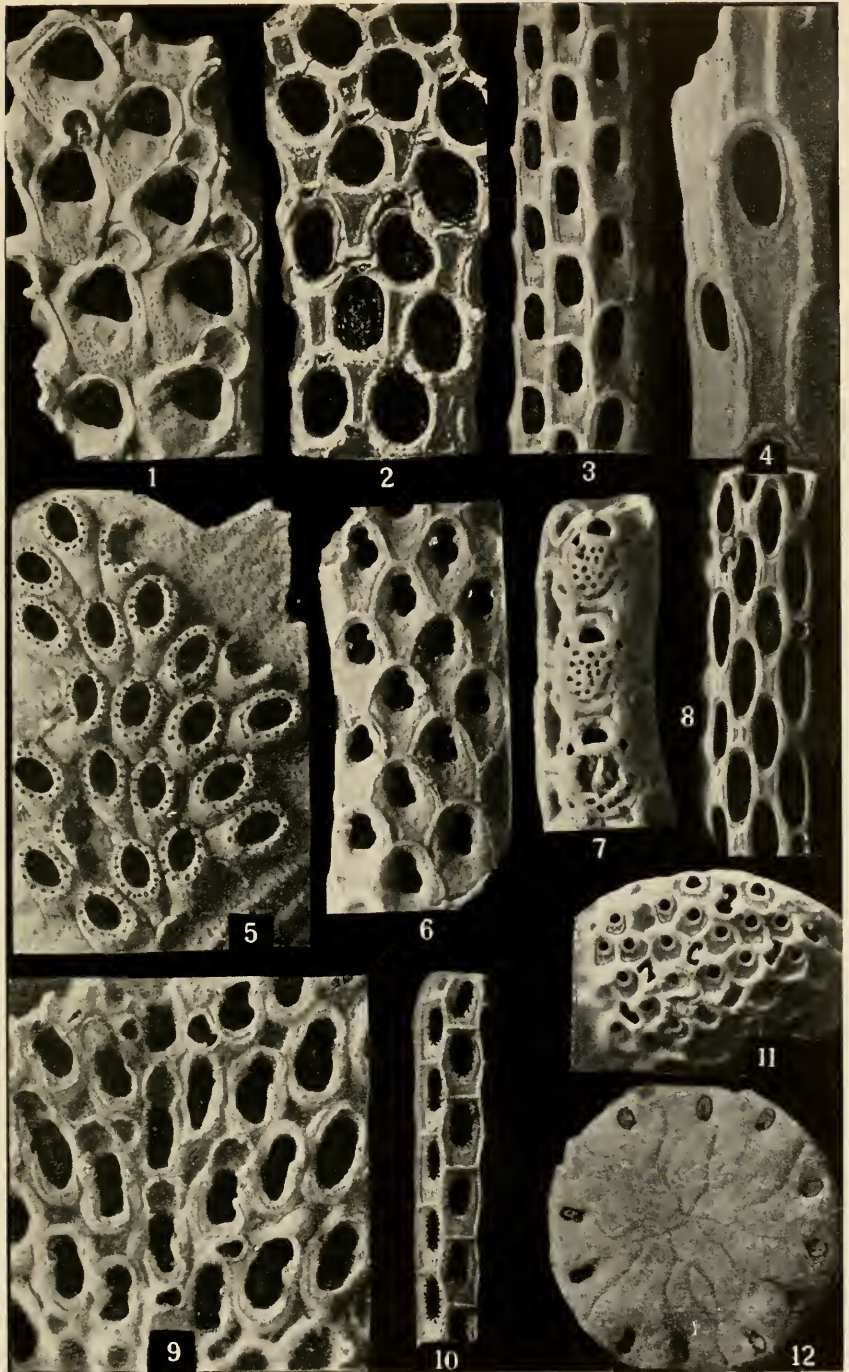
## PLATE 9

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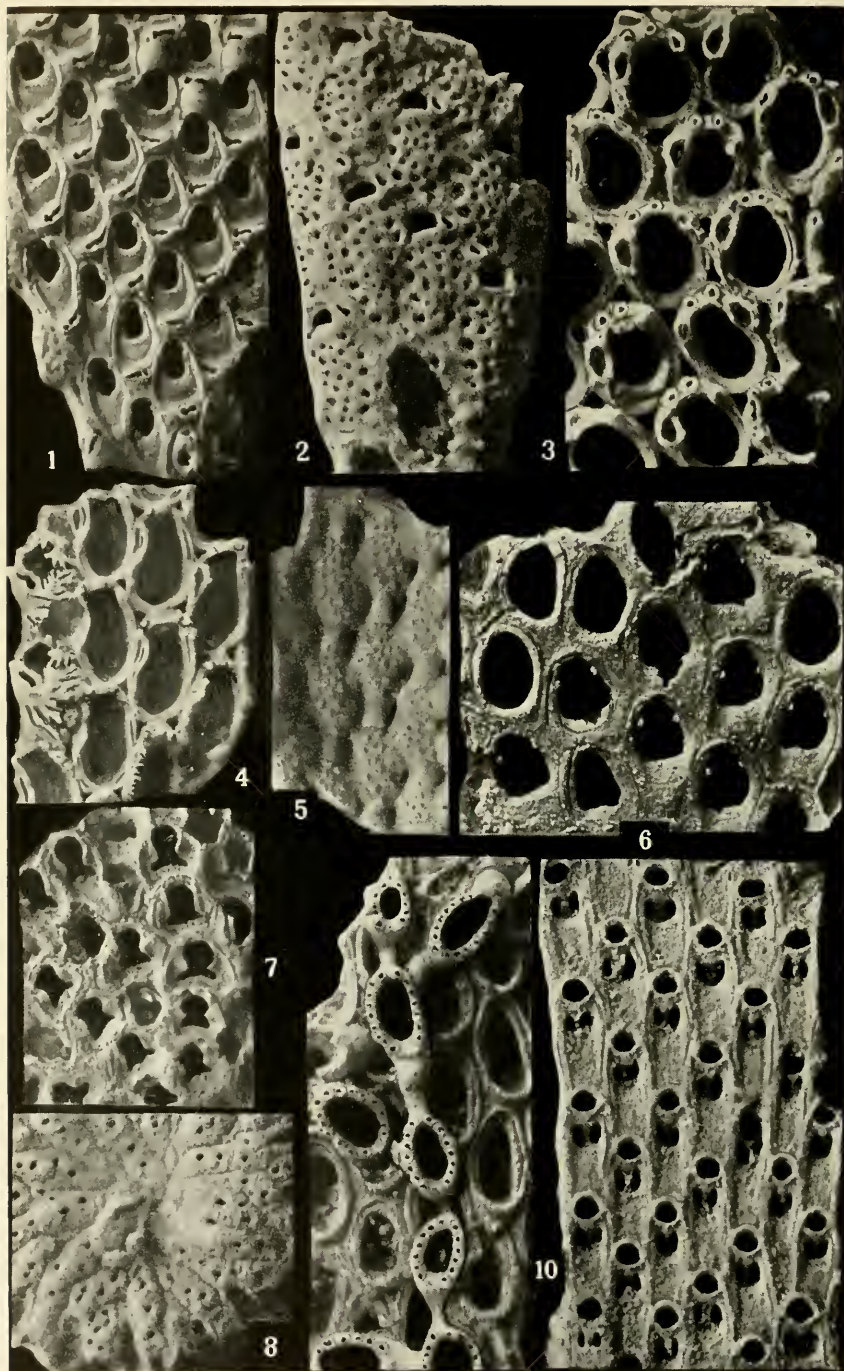
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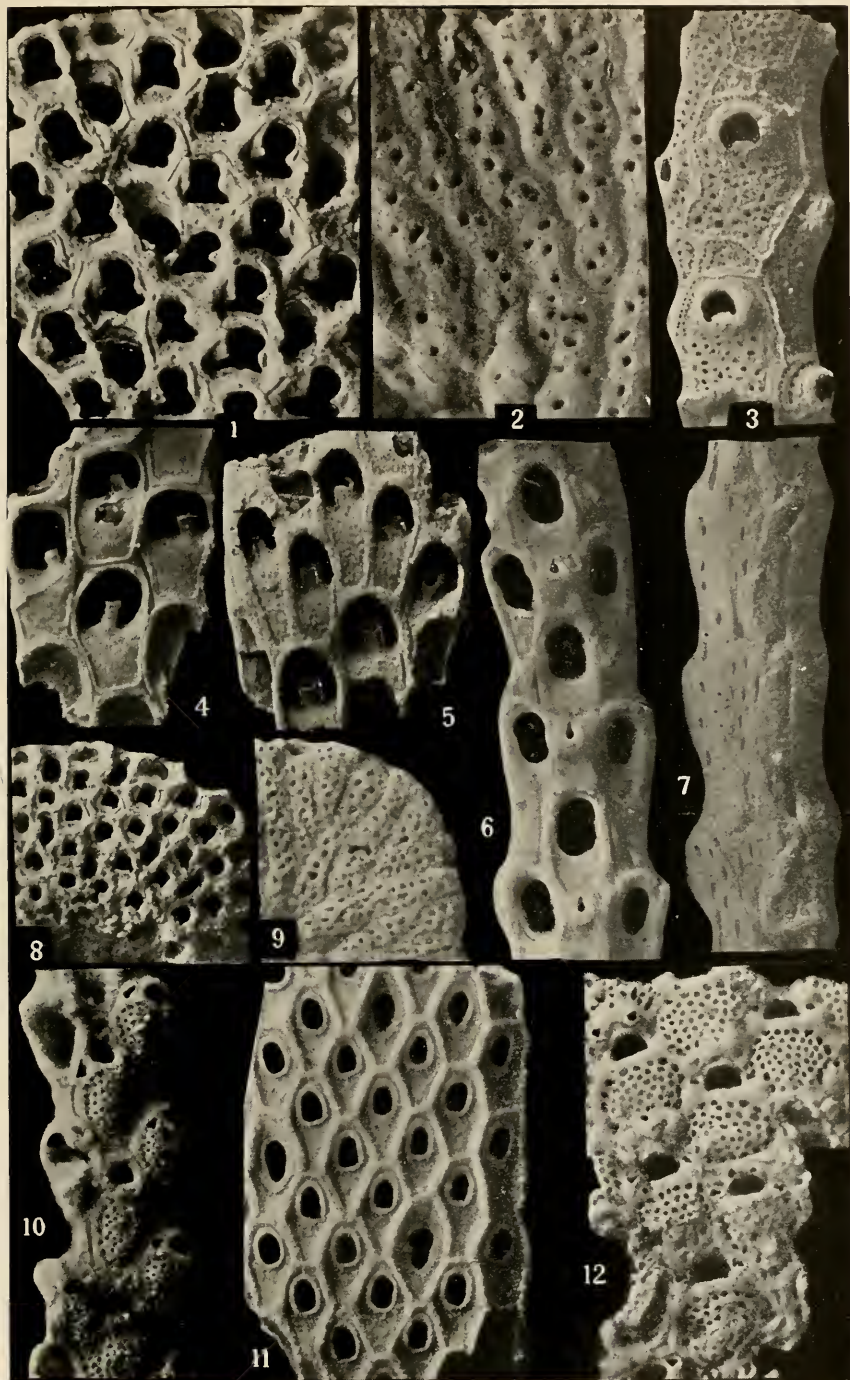


TERTIARY CHEILOSTOME BRYOZOA FROM VICTORIA, AUSTRALIA  
(For explanation, see page 45.)





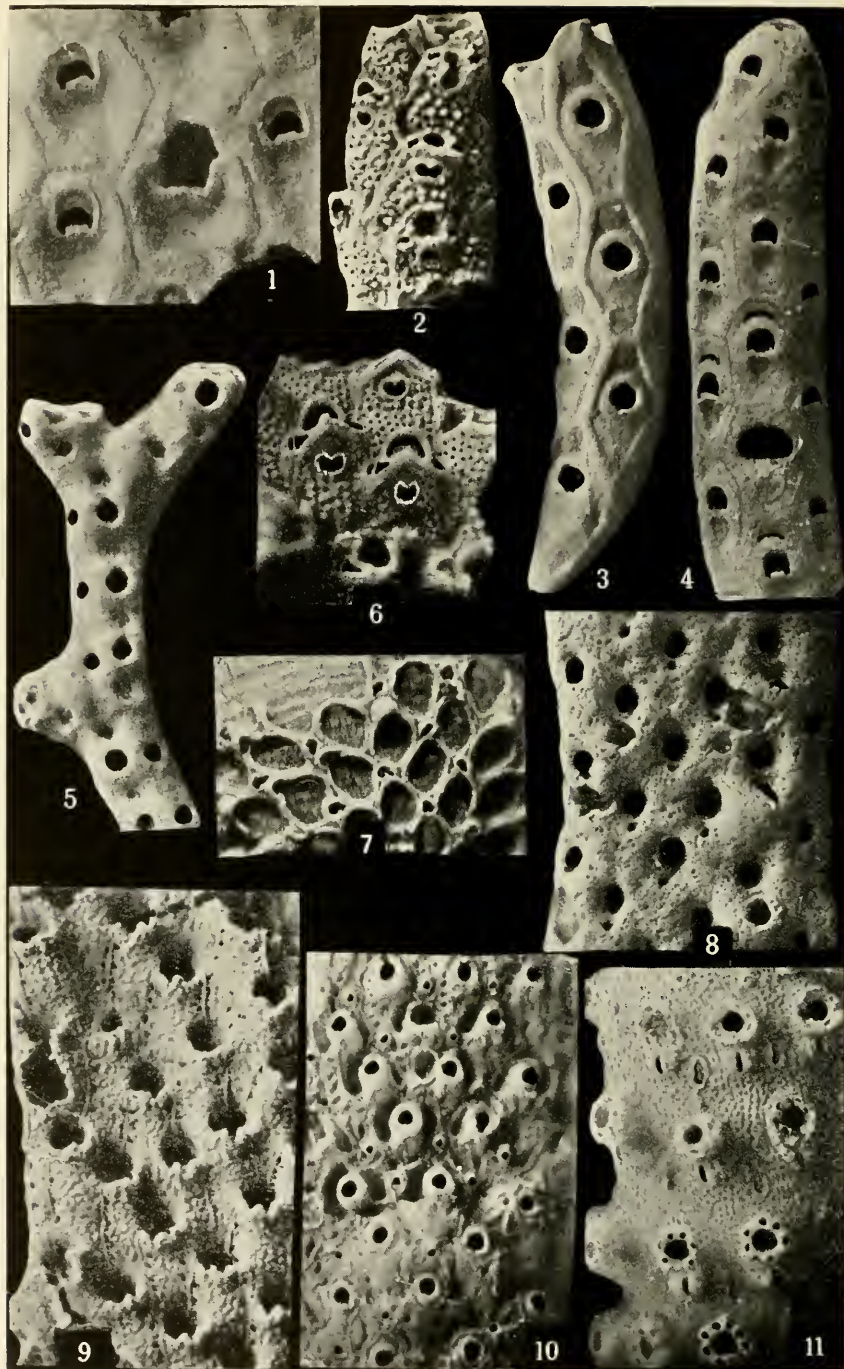
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(For explanation, see page 46.)



TERTIARY CHEILOSTOME BRYOZOA FROM VICTORIA, AUSTRALIA

(For explanation, see page 47.)

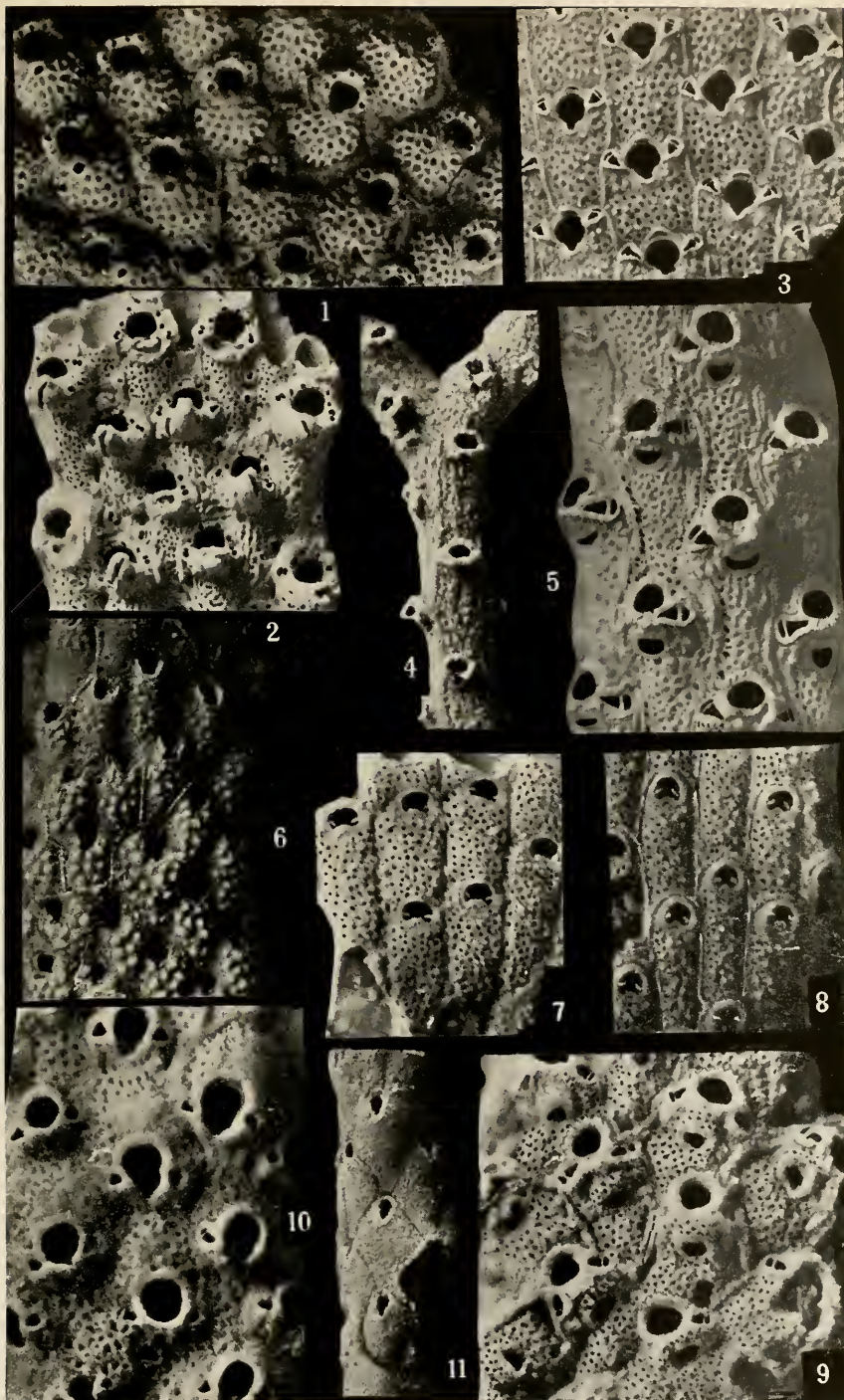




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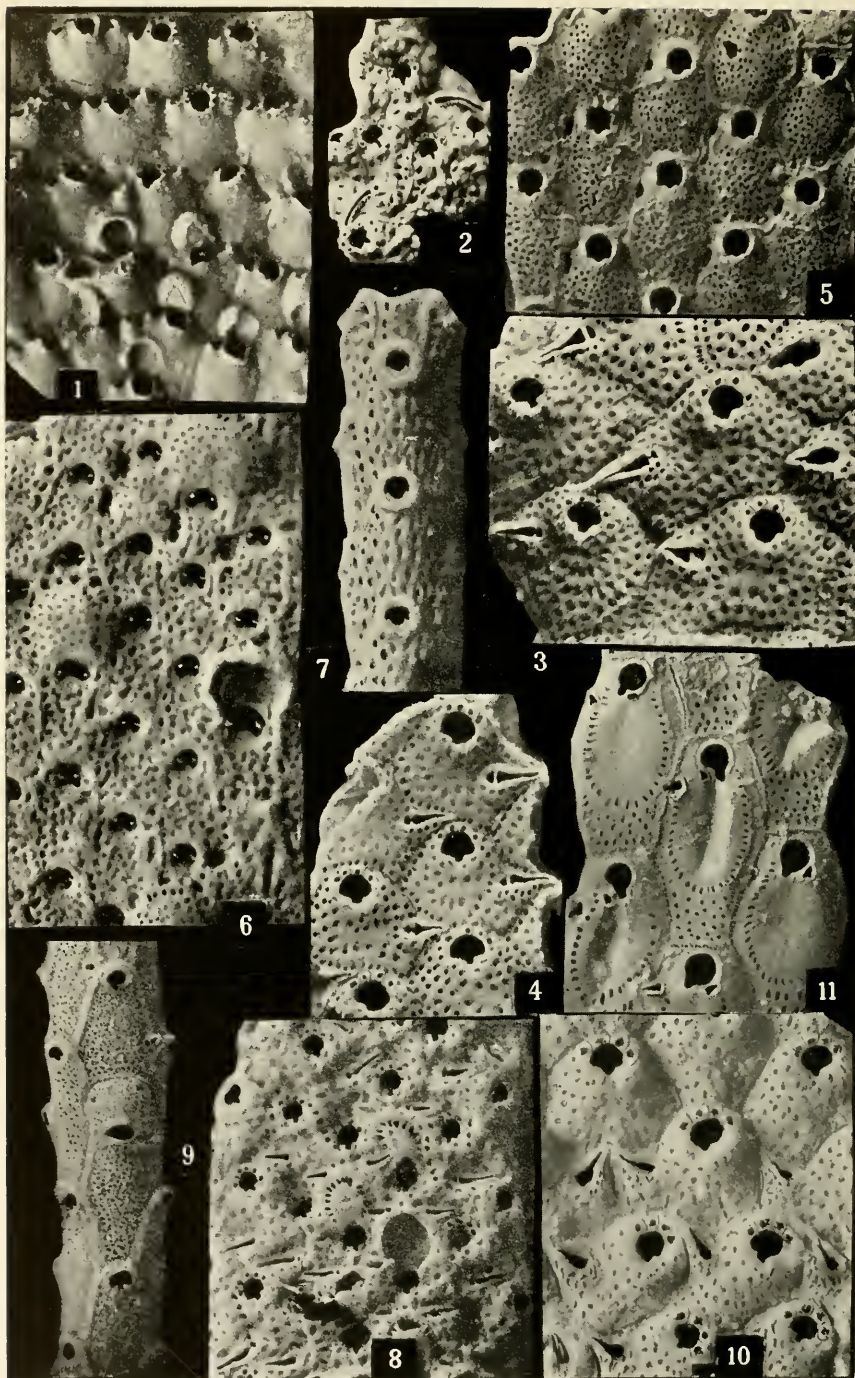
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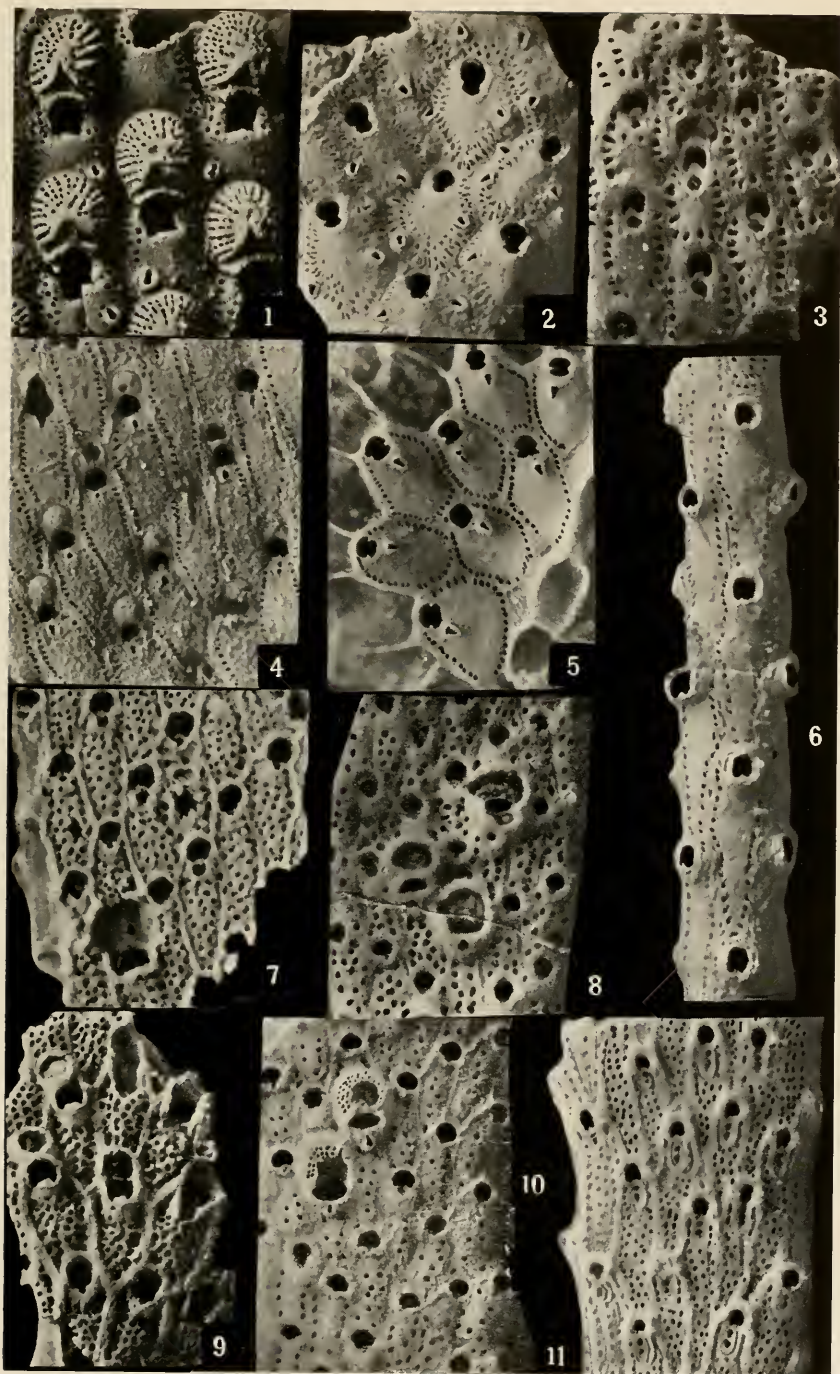
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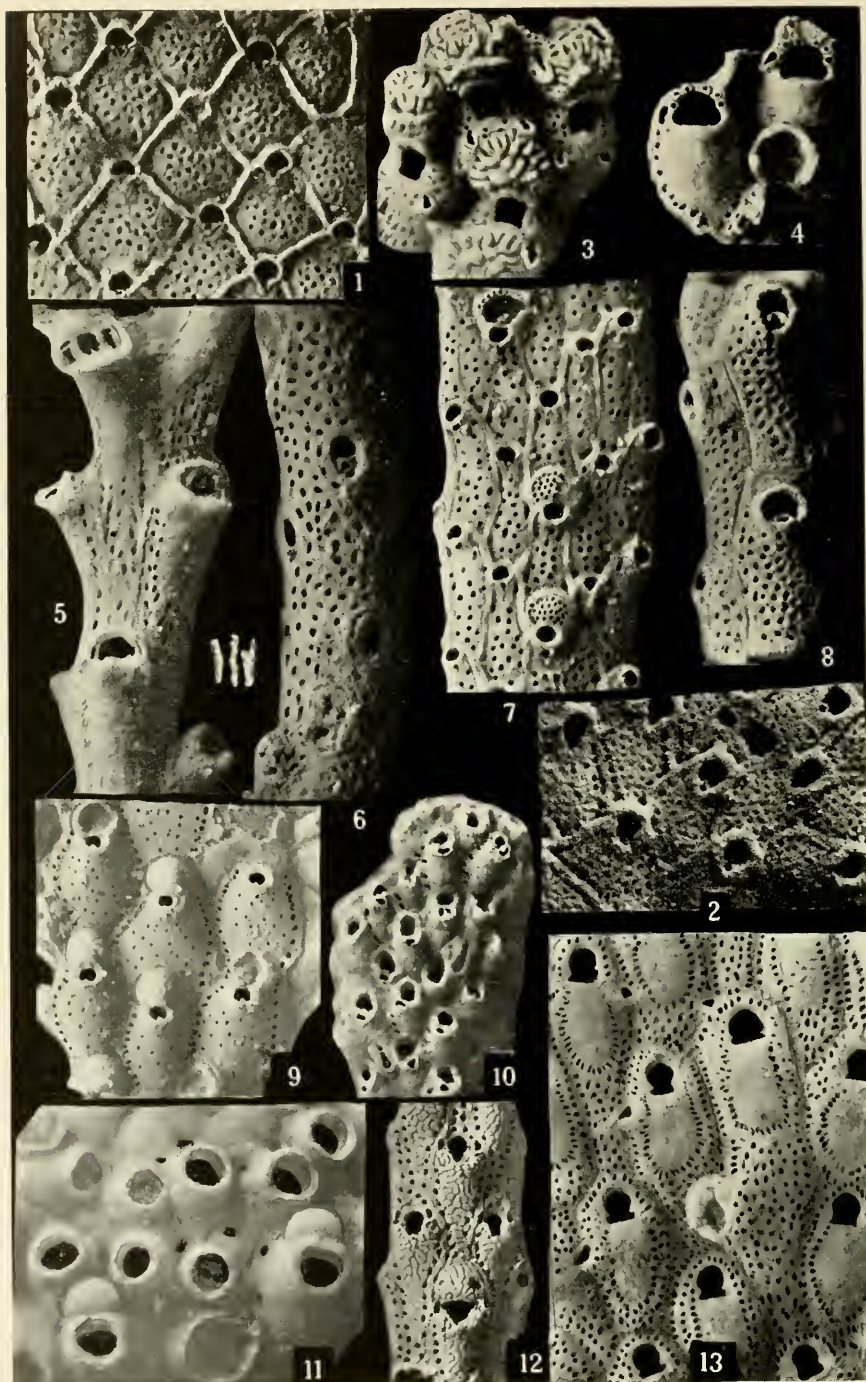
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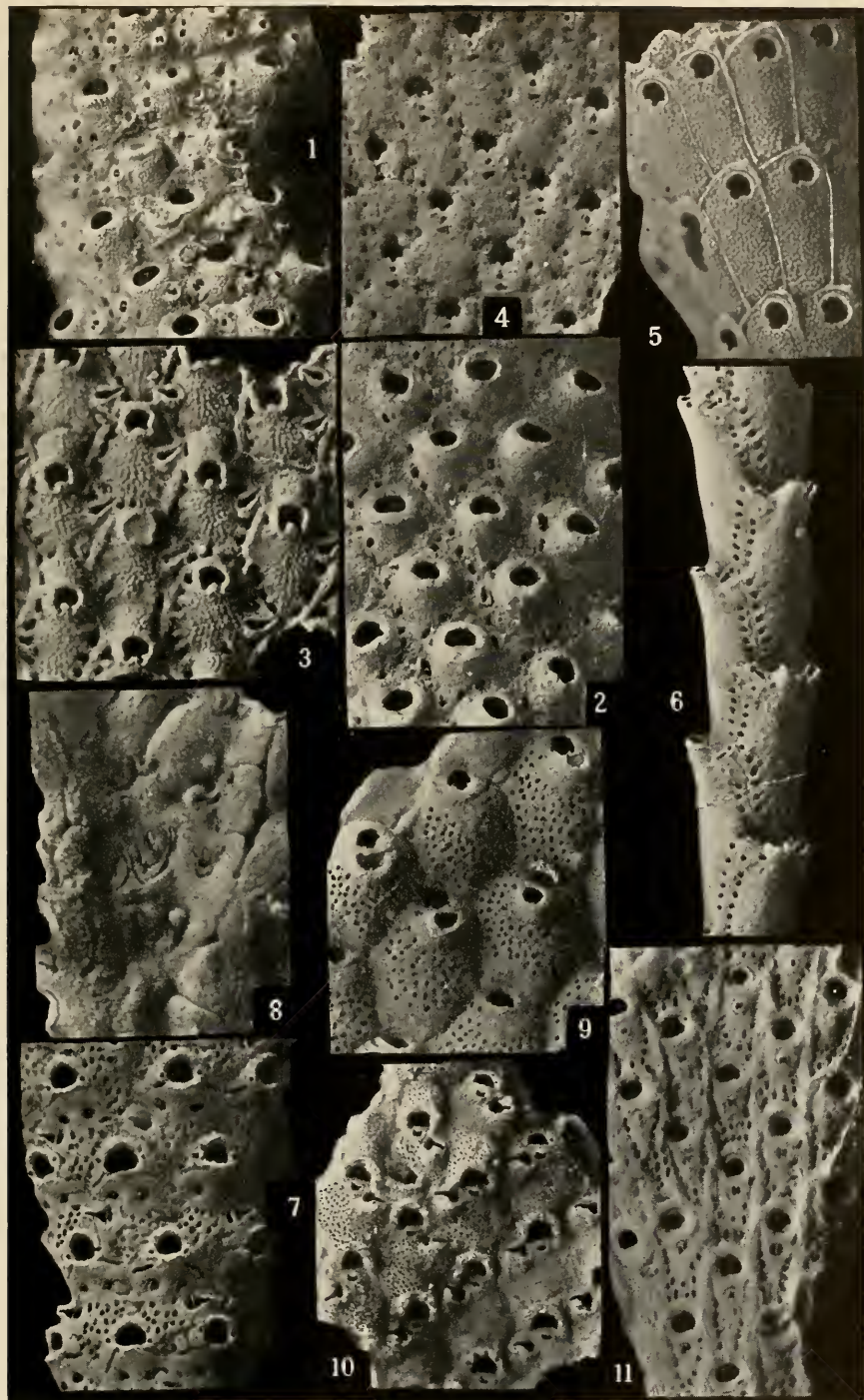
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TERTIARY CHEILOSTOME BRYOZOA FROM VICTORIA, AUSTRALIA

(For explanation, see page 52.)





TERTIARY CHEILOSTOME BRYOZOA FROM VICTORIA, AUSTRALIA

(For explanation, see page 53.)