7	With a lyrula.	8
	Without a lyrula.	9
8	Proximal rim of the aperture indented by two large sinuses.	*Petraliella* C. & B.
	Proximal rim of the aperture without sinuses on both sides of the lyrula.	*Utinga*, n. g.
9	Proximal rim of the aperture entire.	*Hippopetraliella* Stach
	Proximal rim of the aperture serrate.	*Serripetraliella* Stach

UTINGA CASTANEA (Bsk.)

Figures 26-29

Mucronella castanea, Busk 1884, p. 157, t. 19 (*Hemeschara cast.*), f. 6-6 c.
Lepralia castanea, Waters 1888, p. 28, t. 3: f. 36-37.
Petralia castanea, Levinsen 1909, pp. 350-351.
Petralia castanea, Waters 1913, p. 519.
Petralia castanea, Waters 1925a, p. 542.

The zoarium is flat, unilamellar. The slightly convex zoids are disposed quincunxially, separated by thin but distinctly raised borders, and rectangular or longitudinally hexagonal in shape. Their length is 1-1,2 mm., the breadth 0,5-0,7 mm. Their lateral walls communicate by multiporous rosette-plates. The frontal is a granular tremocyst with a slight marginal areolation. The coarse frontal pores are connected by crackles that form the rhombic mashes of a network. The basal wall of each zoid bears a single radicular chamber at its distal end. The border of this pore-chamber (dietella) is distinct but not raised.

The aperture is up to 0,28 mm. in height and 0,22 mm. broad. The coarctate shape of this orifice is due to the rounded and little projecting cardellae (hinge-teeth; HASTINGS 1932, p. 438) that lie outside the operculum. They are situated at a considerable distance (0,122 mm.) from the proximal border. The latter, the lower lip of BUSK's diagnosis, was described as bluntly mucronate. That is right, but it must be added that the broadly triangular tooth or mucro lies on the inner side of the low peristome and therefore corresponds to a lyrula. A suborificial mucro is not developed. The horseshoe-shaped operculum is rather well chitinized, the anter has a thick and distally continuous marginal sclerite, the poster is broad and concave in the middle of its proximal border.

The ovicell is volumous, salient but flattened in the centre of the frontal wall, that is provided with fine pores. The ovicell opens a little above the plane of the orifice of the zoid, but the not com-

pletely shut operculum may close both orifices, that of the zoid and that of the ovicell. If the operculum lies horizontally apposed to the vestibulum, it leaves the ooecium open. On one or both sides of the proximal border of the ovicell there is a small avicularium with a rounded mandible that is directed proximally.

The strong zooecial avicularia are directed distally on one or both sides of the zoid. They measure 0,37 mm. in length. The slender, cuspidate (0,32 mm. long) mandible attains the level of anter of the operculum.

The polypides are bright brown; the number of tentacles is 25. As in *Mucropetraliella armata* (WATERS 1913, p. 519) and other species, the inner epithelium at the base of two tentacles in the middle of the abanal side is thickened.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: Challenger Station 122, off coast of Alagoas, 640 m.; off Bahia, 18-37 m.

ESCHAROIDES MARTAE Marc.

Figure 30

The first description published in the Arq. Mus. Nac. Rio de Janeiro (MARCUS 1949) did not include the ovicells that only were found in the colonies selected now. The ooecium is broader than high, provided with a few large areolae at the border, and a cuspidate mucro in the centre. The secondary orifice of the fertile zoid is somewhat different from that of the sterile ones. One spine with bulbiform base rises on each side of the transverse orifice of the peristome. The latter has a median roundish notch in its proximal border.

SMITTINA NUMMA, n. sp.

Figures 31-33

Zoarium encrusting, unilamellar. Zoids not very uniform in shape, some rectangular or nearly quadratic in outline, others irregularly polygonal and even broader than long. The maximum length is 0,61 mm. The zooecia, disposed in linear series and separated by smooth lines, are strongly areolated around the margin. The frontwall is not completely even but has some sight gibbosities and shallow pits between them. The wall is raised in the middle, where an avicularium with a thin mandible directed downwards occurs in most

zoids. The shape of the mandible is nearly semicircular, it is 33 μ high and 43 μ broad; the tendons of the two occlusors insert in two points near the distal border of the mandible. The transverse bar that separates the rostrum from the sub-mandibular area of the avicularium is complete and smooth, without the proximally directed process of *S. acaroensis* Levinsen (1909, p. 342). There is a pore on each side of the avicularian chamber, approximately at the point where the transverse bar touches the wall. A capillary tube runs from this pore laterally and a little distally. It opens into the body-cavity near the lateral wall.

The orifice has a distally low and proximally raised peristome that sometimes conceals the strong hinge-teeth in frontal view, but is always so broadly channelled in the middle that the broad lyrula appears. The inge-teeth resemble those of *S. acaroensis*, they are striated and curved proximally. The distal border of the secondary orifice bears three spines. The operculum is of the common *Smittina*-type, weakly chitinized, the poster membranous but separated from the compensation-sac, the anter with a marginal sclerite. The occlusors are attached to this sclerite near the distal border.

The ovicell is globose; the ecto-ooecium is pierced by small, uniform, circular pores and limited or partly overgrown by an ooecial cover.

Occurrence: Coast of Espirito Santo, 35 m.

Discussion of *Smittina numma*. — The peculiar pore-canals of the present species are not isolated structures in the Cheilostomes. In the genus *Porella* that belongs to the Smittinidae, but also in all other species with marginal pores and suborificial median avicularium, LEVINSEN (1909, p. 31) observed two or four canals. These issue from the distal part of the avicularian chamber and connect it with the first or also with the second pair of superficial rosette-plates. The pore-canals of the Reteporidae (WATERS 1904, t. 6: f. 1i, explanation, p. 110; LEVINSEN 1909, p. 293, t. 10: f. 5c, t. 23: f. 1a; BUCHNER 1924, p. 173) connect the avicularian chamber with the surface or one avicularium with its neighbours.

S. numma must be compared with some other species of *Smittina* that have a small median avicularium with rounded mandible:

S. maunganuiensis (Waters 1906, p. 41) is a species with large pits over the whole surface of the zoids that are indistinct and fairly flat. In older individuals the avicularium is within the oral aperture. The lyrula is not readily seen.

S. acaroensis Levinsen (1909, p. 342) has a proximally directed tooth in the middle of the tranverse bar of the avicularium, and the sculpture of the zoids and ovicells differs from the corresponding structures of *S. numma*.

S. porosa Canu & Bassler (1928b, p. 43) is distinguished from the present species by a double row of areolae, a small lyrula and a minute mandible. CANU & BASSLER have described another *S. porosa* (1930a, p. 52), also with a double series of areolae, but much smaller and also otherwise quite different.

S. evelinae Marcus (1937, p. 109) is sufficiently separated from *S. numma* by the sculpture of the ovicell and the zoid, as well as by the position of the avicularium within the secondary orifice.

S. smittiella Osburn (1947, p. 37) has a denticulate or serrate and salient rostrum of the avicularium.

ADEONA VIOLACEA (Johnst.)

Figures 34-36

Lepralia violacea, Johnston 1847, p. 325, t. 57: f. 9.
Porina violacea, Smitt 1873, p. 30.
Porina plagiopora, Smitt 1873, p. 30, t. 6: f. 134-135.
Microporella violacea, Kirkpatrick 1890a, p. 504.
Adeona violacea, Osburn 1914, p. 199.
Adeona plagiopora, Canu & Bassler 1928, p. 126, t. 23: f. 4-5.
Adeona heckeli, Canu & Bassler 1928a, p. 93, t. 8: f. 5-6.
Adeona violacea, Marcus 1939, p. 147, t. 10: f. 18.
Adeona violacea, Osburn 1940, p. 445.
Adeona violacea, Osburn 1947, p. 38.

Until OSBURN (1914, l. c.) discovered that the somewhat larger size, the larger orifice as well as the larger and obliquely disposed avicularia of *Lepralia plagiopora* Busk (1859, p. 44, t. 4: f. 5) are variable characters and intergrade even in the same colony, *violacea* and *plagiopora* were considered as distinct species. In our first Brazilian material (Marcus 1939, t. 10: f. 18) we only had the typical *violacea*-zoids (Busk l. c., f. 3), but in the present collection both types are represented. The melanophores of *A. violacea* lie in the ectocyst that covers the calcareous wall, and as Fig. 35 (t) shows, in a certain correlation with the pores of the marginal areolation. The measurements of the present material are: length of zoids 0,4-0,6, average 0,5 mm.; breadth of zoids 0,28-0,4 mm. Height of the peristomial orifice 0,08-0,1 mm.; breadth 0,13-0,15 mm.

The above synonymy contains besides the original description only the references to material from the American Atlantic coast. CANU & BASSLER (1928a, l. c.; 1930, p. 66) use the name of a Miocene species (*heckeli*), the identity of which with *violacea,* specially with the *plagiopora*-form was already supposed by BUSK (1859, l. c.). As various sources of information (CARUS & ENGELMANN 1861, Bibl. Zool., v. 2, p. 1489; FRIEDL 1917, p. 239; HARMER 1926, p. 485) indicate, the work of REUSS in which *Cellepora heckeli*

was published has no priority over the second edition of the "History of British Zoophytes", the preface of which is dated April 6, 1847. REUSS delivered his work in the meeting of the "Friends of Natural Sciences-Vienna" on May 29, 1847, and he himself admitted (REUSS 1874, p. 163) the priority of JOHNSTON's name.

Occurrence: Coast of Espirito Santo. 35 m.

Distribution: Western Atlantic from the Bermudas to the littoral of São Paulo; Eastern Atlantic from England and Ireland to the Cape Verde Islands; Western Mediterranean and Adria. Indic and Western Pacific. Pacific Coast of America from Mazatlan to Colombia. In depths of 5-261 m.

ADEONA BIPARTITA C. & B.

Figures 37-39

Adeona bipartita Canu & Bassler 1928a, p. 94, t. 8, f. 2.

Zoarium encrusting, dark; zoids roundly hexagonal, quincunxially disposed and separated by deep furrows. The length of the zoids is 0,38-0,61 mm., average 0,56 mm.; the breadth 0,35 mm. Numerous melanophores occur in the whole ectocyst. Besides the marginal pores calcined specimens show others, that frequently form a row on either side of the median depression. The latter is occupied by the transverse-oval ascopore that lies proximally and the distally directed large avicularium.

The mandible is slender, about 0,2 mm. long and curved at its point. As in the preceding and other species of the genus the avicularium has no transverse bar (pivot), but the sub-mandibular area is bordered by a strongly chitinized half-ring. With the free ends of this the produced corners of the basal sclerite of the mandible articulate. The beak (rostrum, opercular or mandibular area) of the avicularium juts out over the proximal rim of the secondary orifice. This differs very much in shape from the larger, transverse, primary orifice and shows that the peristome in wide proximally and narrow distally.

The operculum is almost of the type of a narrow opercular valve, faintly chitinized on the distal and lateral borders, and wholly membranous proximally. The operculum is 0,2 mm. broad and 0,1 mm. high; the secondary orifice 0,11 mm. broad and 0.075 mm. high.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: Coast of Bahia, 49 m.

When open, the mandible lies over the ascopore. But in this position it does not diminish the entrance of water into the compensation-sac as CANU & BASSLER (l. c.) say: "le rôle hydrostatique de l'aviculaire est ici bien évident: aussi ne manque-t-il jamais". The function assumed by the authors has never been proved and is also extremely improbable. When the polypide is retracted, the sac collapses and no water can enter, even through a completely exposed ascopore. Some statements made by CANU & BASSLER with regard to the function of the avicularia were critically discussed by HARMER (1931, pp. 155, 159).

HIPPALIOSINA IMPERFECTA (C. & B.)

Figure 40

Gephyrophora imperfecta Canu & Bassler 1928a, p. 86, t. 7, f. 1.

In my first paper (MARCUS 1949) on the material from the coast of Espirito Santo I already transferred *G. imperfecta* to the genus *Hippaliosina* Canu 1918, the type of which is *Escharella rostrigera* Smitt (1873, p. 57). The gonozoids present in the newly selected colonies prove that this classification was correct. The gonozoids are broader than the sterile zoids and their orifice is larger in transverse direction. Both characters appear also in the two gonozoids of *H. rostrigera* drawn by SMITT's artist (1873, t. 10: f. 204-205). The genotype of *Gephyrophora* Busk (1884, p. 167) has no gonozoids but concealed endozooecial ovicells of unusual, elongate form (WATERS 1888, p. 29; LEVINSEN 1909, p. 300) that are very different from the present gonozoids. The peristome and its peristomial pore are further characters that distinguish *Gephyrophora* from *Hippaliosina*.

By the inclusion of species with hyperstomial ovicells and without peristome and peristomial pore CANU & BASSLER (1920, p. 521) turned *Gephyrophora* a heterogeneous group. While WATERS' tertiary Australian and New Zealandian *Lepralia rostrigera* Smitt (1885a, p. 298; 1887, p. 61) are at least *Hippaliosina*, perhaps even SMITT's species, the *Gephyrophora rostrigera* Waters of CANU & BASSLER (1929, p. 278) is neither a *Gephyrophora* nor a *Hippaliosina*, nor the fossil species of WATERS that they mention as synonym.

Only the rounded (*rostrigera*) and angulated (*imperfecta*) poster of the operculum and the correspondingly different orifices separate the two species. *H. rostrigera* is known from the Pacific (HASTINGS 1930, p. 729) and Atlantic tropical America (OSBURN 1914, p. 211; 1940, p. 449; CANU & BASSLER 1928, p. 130) South to Fernando Noronha (KIRKPATRICK 1890a, p. 504). As *Lepralia depressa* var. *rostrigera* it was related from East Africa (ORTMANN 1892, p. 670). *H. depressa* (BUSK 1854, p. 75) has short, almost orbicular avicularia and I agree with OSBURN (1914, p. 211) that it should be maintained separated from *rostrigera* and *imperfecta*.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution (of *imperfecta* only): Bay of Bahia.

MASTIGOPHORA PARVISETA C. & B.

Figure 41

Mastigophora parviseta Canu & Bassler 1928a, p. 98, t. 9: f. 8-9.

Small, encrusting zoaria. The zooecia are broadly hexagonal, 0,5-0,7 mm. in length and 0,4-0,5 mm. in breadth; they are irregularly disposed and separated by distinct furrows. The ventricose frontal wall is provided with sparse and small pores. The orifice is 0,14 mm. high, 0,1 mm. broad, and surrounded by a proximally wide, distally narrower peristome. The proximal widening encloses the central sinus of the straight inferior margin of the orifice. This sinus was originally described as a triangle with the point upward, that is distal. Although somewhat schematized this character serves if the species is compared with *M. dutertrei* (Aud.) (HINCKS 1880, p. 279), where the point of the triangular notch is directed downward. The lateral and distal borders of the peristome bear seven spines and at each side of the orifice lies a vibraculoid avicularium with a setiform, slender mandible 0,24 mm. long. The operculum is yellow and well chitinized; a vestibular arch appears below it. The present material is small and therefore the difference between the operculum and orifice of fertile and sterile zoids could not be examined thoroughly. But is seems less marked than in *M. porosa* (Smitt).

The ovicell is very small, globose, recumbent and partially immersed in the following zoid; it has no pores.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: Same region, 128 m.

AMATHIA DISTANS Bsk.

Figure 42

In a former paper (1937, p. 134) I united *A. distans* with *A. brasiliensis* Bsk. (BUSK 1886, p. 33, t. 7: f. 1-1c: *distans;* ibid., p. 34, t. 7: f. 2-2c: *brasiliensis*). HARMER (1915, p. 70) maintained the two species separated, because the stems of *brasiliensis*, a more robust species, are about twice as broad as those of *distans*. HASTINGS (1927, p. 349) has seen the type-specimens of *brasiliensis* and found them similar with her Suez Canal-material and with HARMER's description of *distans*. The dimensions of the stem and the colour and thickness of the cuticle vary after HASTINGS' opinion with age and other circumstances. As OSBURN (1940, pp. 339-340) readily distinguishes *distans* and *brasiliensis*, and therefore does not agree with my synonymy, the question must be once more discussed in a universally understood language.

BUSK distinguished the two species by the following characters: ramification dichotomous (*distans, di*), irregular (*brasiliensis, bra*); stem rigid, thick-walled, 0,15 mm. in diameter (*di*), white and delicate, 0,3 mm. thick (*bra*); spiral of zoids in the upper half of the internode (*di*), in younger internodes in the upper part, in older ones occupying nearly the entire length of the internode (*bra*); zoids up to 0,5 mm. long and up to 0,15 mm. in diameter, their neck (the kamptoderm) short, conical (*di*), up to 0,6 mm. and 0,1 mm., neck long and slender (*bra*).

The type of the union of the zoids is not clearly differenced in BUSK's descriptions, because in *distans* they are "distinct or not closely connate" and in *brasiliensis* "very distinct". Two other characters are more important, the filamentous growth and the great distance between the spiral coils in *distans* that resembles *lendigera* (L.) and the tendency of the branches in *brasiliensis* to terminate in two long jointed tags, usually barren, but sometimes giving off one or two scattered, isolated zoids.

The present material has a stolon 0,1-0,123 mm. thick (more *di* than *bra*); the zoids are 0,3-0,35 mm. long (more *di* than *bra*); the distal free portion is about 0,1 mm. or less; the coil of zoids occupies one half or a little more of the internode, the stolon is transparent, light yellow in colour. The branches do not terminate in jointed tags (against *bra*) and the aspect of the colony is similar to that of *lendigera,* as figured by HINCKS (1880, t. 74: f. 7-9), and as in *distans.*

OSBURN (l. c.) separates *distans* and *brasiliensis* by the following characters: Diameter of stem 0,06-0,12 mm. (*di*), 0,18-0,3 mm. (*bra*). Zoids closely connate except at the tip (*di*), only slightly connate and quite free from each other toward the distal end (*bra*). This important character can be deduced from BUSK's figures (t. 7: f. 1b, 1c; 2a,2b), but those of HASTINGS (1927, f. 88A, B) show the zoids more connate in older spirals than in younger ones. HASTINGS (l. c., p. 348) informs, that the type-specimens of *brasiliensis* have shorter and broader free zooecial ends than her material, and this observation makes OSBURN's specific separation according to the more or less connate tip of the zoids less secure. As mentioned, BUSK's text referred only vaguely to this character. After OSBURN the stolon is more rigid in *distans* than in most species of the genus, and moderately stiff in *brasiliensis.* The internodium of *distans* is free of zooecia for often considerably more than the proximal half, while the zoids of *brasiliensis* sometimes occupy most of the internode, but usually only one half to two thirds of the length. The zooecia of *distans* form an elongate spiral that sometimes completely surrounds the internode, those of *brasiliensis* sometimes make a complete turn of the stem, but usually are much shorter. In HASTINGS' material compared with the type of *brasilensis* "the distal half of the internode bears a spiral..., which winds once round the stem".

The present small material does not furnish new facts for the synonymic question discussed here. Much more important is my rich material from the bay of Santos. In these colonies the diameter of the stem varies from 0,07 mm. (BUSK, *distans* 0,15) to 0,35 mm. (BUSK, *brasiliensis* 0,3); the stem is thick and rigid in old basal parts of the colonies, thin and membranous in the young ones. The long barren ends of *brasiliensis* that are rare in BUSK's material (HASTINGS, l. c., p. 349) are described as un-

common but present in my Portuguese text (MARCUS 1937, p. 134), as well as the cross-connections (HASTINGS, l. c.). Spirals of 10-12 pairs of zoids that surround the distal half of the stem completely and others of 8-10 forming an incomplete turn occur in the same colony. Many of the zoids are more connate than in HARMER's *distans* (three fifths or less) and HASTINGS' *brasiliensis* (two fifths), but in some zooecia one third or more of the length is free. Branching is principally dichotomus (*distans*) and the zoids are 0,4-0,5 mm. in length and 0,1-0,14 in diameter (*distans*).

Maybe we have not yet found typical *brasiliensis*, but it seems more probable that *distans* and *brasiliensis* can not be separated.

Occurrence: Littoral of Rio de Janeiro.

Distribution: American Atlantic coasts, from Delaware Bay to Paraná (South of São Paulo), Brazil; Cape Verde Islands; Mediterranean; Suez Canal; Red Sea; Indic; Australia, N. S. Wales and probably Victoria; Japan; California. From the uppermost littoral to 55 m.

LITERATURE CITED

ANDERSSON, K. A. 1902, Bryozoen während der schwedischen Expeditionen... gesammelt. Zool. Jahrb. Syst., v. 16, pp. 537-560, t. 30. Jena. BASSLER, R. S. 1935, Bryozoa. Fossilium Catalogus, I. Animalia, pars. 67, pp. 1-229. Hague (W. JUNK). BENEDEN, P. J. VAN 1845, Recherches sur l'anatomie ... des Bryozoaires qui habitent la côte d'Ostende. Nouv. Mém. Acad. Roy., v. 19, 31 pp., t. 1-2. Bruxelles. BORG, F. 1931, On some species of Membranipora. Ark. Zool., v. 22 A, no. 4, pp. 1-35, t. 1-3. Stockholm. 1944, The Stenolaematous Bryozoa. Zool. Res. Swed. Antarct. Exped. 1901-03, v. 3, no. 5, pp. 1-276, t. 1-16. Stockholm. BUCHNER, P. 1924, Studien über den Polymorphismus der Bryozoen. I. Anatomische... Untersuchungen an japanischen Reteporiden. Zool. Jahrb. Syst., v. 48, pp. 155-216, t. 15-17. Jena. BUSK, G. 1854, Catalogue of Marine Polyzoa in the Collection of the British Museum. Cheilostomata II., pp. I-VIII, 55-120, t. 65-124. London. 1859, A Monograph of the Fossil Polyzoa of the Crag. Public. Palaentographical Society. XIV + 136 pp. 22 t. London. 1884, Report on the Polyzoa collected by H.M.S. Challenger, etc. Part I. The Cheilostomata. Rep. Voy. Challenger, v. 10, pars 30, pp. I-XXIV + 1-216, t. 1-36. London. 1886, Report on the Polyzoa, etc. Part II. The Cyclostomata etc. Ibid., v. 17, pars 50, pp. I-VIII + 1-47, t. 1-10. London. CALVET, L. 1904, Diagnoses de quelques espèces de Bryozoaires nouvelles, etc. Bull. Soc. zool. France, v. 29, pp. 50-59. Paris. 1904a, Bryozoen. Hamburger Magalhaensische Sammelreise, v. 3, pp. 1-45, t. 1-3. Hamburg (L. Friedrichsen & Co.). 1931, Rés. Camp. Scient. Monaco, fasc. 83 (Bryozoaires), pp. 1-152, t. 1-2. Monaco (Imprimerie de Monaco). CANU, F. 1911, Iconographie des Bryozoaires fossiles de l'Argentine (2). An. Mus. Buenos Aires, v. 21 (ser. 3, v. 14), pp. 215-291, t. 1-12. Buenos Aires. 1918, Hippaliosina un nouveau genre de Bryozoaires. Bull. Soc. Géol. France, sér. 4, v. 18, pp. 88-94. Pa-

ris. CANU, F. & BASSLER, R. S. 1917, A Synopsis of American early tertiary Cheilostome Bryozoa. Smithson. Inst. U.S. Nat. Mus., Bull. 96, pp. 1-87, t. 1-6. Washington, D. C. 1920, North American early tertiary Bryozoa. Ibid., Bull. 106, XX+879 pp., 162 t. Wastington, D. C. 1923, North American later tertiary and quaternary Bryozoa. Ibid., Bull. 125, VII+302 pp., 47 t. Washington, D. C. 1924, Contribution à l'étude des Bryozoaires d'Autriche et de Hongrie. Bull. Soc. géol. France, sér. 4, v. 24, pp. 672-690, t. 23-24. Paris. 1927, Classification of the Cheilostomatous Bryozoa. Pr. U. S. Nat. Mus., v. 69, art. 14, pp. 1-42, t. 1. Washington, D. C. 1928, Fossil and recent Bryozoa of the Gulf of Mexico region. Ibid., v. 72, art. 14, pp. 1-199, t. 1-34. Washington, D. C. 1928a, Bryozoaires du Brésil. Bull. Soc. Sci. Seine & Oise, sér. 2, v. 9, no. 5, pp. 58-119, t. 1-9. Thiers. 1928b, Les Bryozoaires du Maroc et de Mauritanie (2). Mém. Soc. Sci. Nat., no. 18, pp. 1-85, t. 1-12. Rabat, Paris, Londres. 1929, Bryozoa of the Philippine region. Smithson. Inst., U. S. Nat. Mus., Bull. 100, v. 9, XI+685 pp., 94 t. Washington, D. C. 1930, The Bryozoan fauna of the Galapagos islands. Pr. U. S. Nat. Mus., v. 76, art. 13, pp. 1-78, t. 1-14. Wasington, D. C. 1930a, Bryozoaires marins de Tunisie. Station Océanogr. Salammbô. Ann. no. 5, pp. 1-91, t. 1-13. Paris. CIPOLLA, F. 1921, I Briozoi pliocenici di Altavilla etc. Giorn. Soc. Sci. Nat. Econ. Palermo, v. 32 (1918-1920), pp. 1-185, t. 1-8. Palermo. CORI, C. I. 1930, Kamptozoa (Entoprocta). G. Grimpe, Tierwelt der Nord- & Ostsee, pars 4a, pp. 1-68 Leipzig (Akadem. Verlagsges). 1936, Kamptozoa. Bronn, Kl. & Ordn. Tierreichs, v. 4, 2. Abtlg., Buch 4, pp. 1-119. Leipzig (Akadem. Verlagsges.). CORREA, DIVA DINIZ 1948, A Embriologia de Bugula flabellata (J. V. Thomps.). Bol. Fac. Fil. Ci. Letr. Univ. S. Paulo, Zoologia no. 13, pp. 7-71, t. 1-8. São Paulo. DONS, C. 1941, Norges strandfauna XXV, Bryozoer 4. Kongel. Norske Vidensk. Selsk. Forh., v. 14, no. 15, pp. 55-58. Oslo. EHLERS, E. 1890, Zur Kenntnis der Pedicellineen. Abhandl. physik. Klasse Ges. Wiss. Göttingen, v. 36, pp. 1-200, t. 1-5. Göttingen. FOETTINGER, A. 1887, Sur l'anatomie des Pedicellines de la côte d'Ostende. Arch. Biol., v. 7, fasc. 1 (1886), pp. 299-329, t. 10. Gand (Gent). FRIEDL, H. 1917, Bryozoen der Adria. Zool. Anz., v. 49, pp. 225-240 (20. XI. 1917), pp. 268-280 (26. II. 1918). Leipzig. HARMER, S. F. 1900, A revision of the genus Steganoporella. Qu. Journ. micr. Sci., n. ser., v. 43, pp. 225-297, t. 12-13. London. 1902, On the Morphology of the Cheilostomata. Qu. Journ. micr. Sci., n. ser., v. 46, pp. 263-350. London. 1915, The Polyzoa of the Siboga Expedition. Part I. Entoprocta, etc. Siboga-Exp., pars 28a, VI+180 pp., 12 t. Leiden. 1926, The Polyzoa of the Siboga Expedition. Part II. Cheislotomata Anasca. Ibid., pars 28b, pp. I-VIII, 181-501, t. 13-34. Leiden. 1931, Recent work on Polyzoa. Pr. Linn. Soc. London (Presid. Address 1931), Sess. 143 (1930-31), v. 8, pp. 113-168. London. HASTINGS, A. B. 1927, Report on the Polyzoa. Zool. Res. Cambridge Exp. Suez Canal 1924. Transact. Zool. Soc., v. 22, pp. 331-354. London. 1930, Cheilostomatous Polyzoa from the vicinity of the Panama canal, etc. Proc. Zool. Soc., 1929, pp. 697-740, t. 1-17 (February 13, 1930). London. 1932, The Polyzoa with a note on an associated Hydroid. Brit. Mus. Nat. Hist. Great Barrier Reef Exped.

1928-29, Scient. Rep., v. 4, pp. 399-458, t. 1. London. 1943, Polyzoa (Bryozoa) I. Discovery Rep., v. 22, pp. 301-510, t. 5-13. Cambridge. HINCKS, Th. 1880, A History of British marine Polyzoa. Vol 1, Text, CXLI+601 pp. Vol. 2, Plates, t. 1-83. London. 1880a, Contributions towards a general history of the marine Polyzoa. Ann. Mag. Nat. Hist., ser. 5, v. 6, pp. 69-92, t. 9-11, pp. 376-384, t. 16-17. London. 1880b, On new Hydroida and Polyzoa from Barents Sea. Ann. Mag. Nat. Hist., ser. 5. v. 6, pp. 277-286, t. 15. London. 1888, The Polyzoa of the St. Lawrence, etc. Ann. Mag. Nat. Hist., ser. 6, v. 1, pp. 214-227, t. 14-15. London. 1891, Contributions towards a general history of the marine Polyzoa. Appendix. Ann. Mag. Nat. Hist., ser. 6, v. 8, pp. 86-93. London. JOHNSTON, G. 1847, A History of British Zoophytes. Ed. 2, v. 1, XVI+488 pp. V. 2, t. 1-74. London. JULLIEN, J. 1881. Note sur une nouvelle division des Bryozoaires Cheilostomiens. Bull. Soc. zool. France, v. 6, pp. 271-285. Paris. 1888, Bryozoaires. Miss. scient. Cap Horn, v. 6, pp. 1-92, t. 1-15. Paris. JULLIEN, J. & CALVET, L. 1903, Bryozoaires provenant des campagnes de l'Hirondelle. Rés. Camp. scient. Monaco, v. 23, pp. 1-188, t. 1-18. Monaco. KIRKPATRICK, R. 1890, Reports on the zoological collections made in Torres Straits, etc. Proc. R. Dublin Soc., n. ser., v. 6, pp. 603-626, t. 14-17. Dublin. 1890a, Polyzoa. N. H. Ridley, Notes on the Zoology of Fernando Noronha. Journ. Linn. Soc. London, v. 20, pp. 504-506. London. LEVINSEN, G. M. R. 1909, Morphological and systematic studies on the Cheilostomatous Bryozoa. VII+431 pp., t. 1-24, VIa-VIc. Copenhagen (Nationale Forfatteres Forlag). 1925, Undersögelser over Bryozoerne i den Danske Kridtformation. Kgl. Danske Vidensk. Selsk. Skrifter, Naturvidensk. & Mathem. Afd., 8. Raekke, v. 7, pp. 281-445, t. 1-8. Copenhagen (Andr. Fred. Höst & Sön). LIVINGSTONE, A. A. 1928, The Bryozoa. Supplem. Rep. Australasian Antarct. Exped. Sci. Rep., ser. C. Zool. & Bot., v. 9, pp. 1-93, t. 1-7. Sydney. LOMAS, J. 1886, Report on the Polyzoa of the L.M.B.C. district. Proc. Lit. Phil. Soc. Liverpool, v. 40, Appendix, pp. 161-200, t. 3. Liverpool. MACGILLIVRAY, P. H. 1868, Descriptions of some new genera and species of Australian Polyzoa, etc. Transact. Proc. R. Soc. Victoria, v. 9, pp. 126-148. Melbourne. 1885, Polyzoa. F. McCoy's Prodromus of the Zoology of Victoria, v. 2, dec. 11, pp. 17-36, t. 105-108. Melbourne & London. 1886, Polyzoa. Ibid., dec. 12, pp. 63-73, t. 116-118. Melbourne & London. 1891, Descriptions of new or little known Polyzoa. Proc. R. Soc. Victoria, v. 3 (n. ser.), pp. 78-83, t. 9-10. Melbourne. MARCUS, E. 1937, Bryozoarios marinhos brasileiros I. Bol. Fac. Fil. Ci. Letr. Univ. S. Paulo, Zoologia no. 1, pp. 3-224, t. 1-29. São Paulo. 1938, Bryozoarios marinhos brasileiros II. Ibid. Zologia no. 2, pp. 1-137, t. 1-29. São Paulo. 1939, Briozoarios marinhos brasileiros III. Ibid., Zoologia no. 3, pp. 111-353, t. 5-31. São Paulo. 1941, Sôbre Bryozoa do Brasil. Ibid., Zoologia no. 5, pp. 3-208, t. 1-18. São Paulo. 1949, Notas sôbre Briozoos marinhos brasileiros. Arq. Mus. Nac. Rio de Janeiro [in print]. NASSONOV, N. 1926, Arthropodaria kovalevskii n. sp. und die Regeneration ihrer Organe. Arb. zool. Laborat. Ak. Wiss. U.S.S.R., ser. 2, v. 1, no. 5, pp. 1-38, t. 1. Leningrad. NORDGAARD, O. 1907, Bryozoen von dem norwegischen Fischereidampfer "Michael Sars", etc. Bergens Mus.

Aarb., 1907, no. 2, pp. 1-22, t. 1. Bergen. NORMAN, A. M. 1903, Notes on the Natural History of East Finmark. Ann. Mag. Nat. Hist., serv. 7, v. 11, pp. 567-598, t. 13. London. 1909, The Polyzoa of Madeira and neighbouring islands. Journ. Linn. Soc. London, v. 30, pp. 275-314, t. 33-42. London. O'DONOGHUE, C. H. & ELSIE O'DONOGHUE 1923, A preliminary list of Bryozoa from the Vancouver Island region. Contr. Canad. Biol. Fish., n. ser., v.1, pp. 143-201, t. 1-4. Toronto. O'DONOGHUE, C. H. 1924, The Bryozoa collected by the S.S. "Pickle". Fish. Mar. Biol. Surv. (Union of South Africa) Rep. no. 3 (1922), Spec. Rep. no. 10, pp. 1-63, t. 1-4. Cape Town. ORTMANN, A. E. 1892, Die Korrallenriffe von Dar-es-Salaam. Zool. Jahrb. Syst., v. 6, pp. 631-670, t. 29. Jena. OSBURN, R. C. 1914, The Bryozoa of the Tortugas Islands, Florida. Publ. Carnegie Inst. Washington, no. 182, pp. 181-222. Washington, D.C. 1933, Bryozoa of the Mount Desert region. Biol. Survey Mt. Desert Reg. (Wistar Inst. Anat. Biol.), pp. 1-97, t. 1-15. Philadelphia, Pa. 1940, Bryozoa of Porto Rico, with a résumé of the West Indian Bryozoan fauna. Scient. Survey Porto Rico & Virgin Isl., v. 16, pp. 321-486, t. 1-9. New York (Published by the Academy). 1944, A Survey of the Bryozoa of Chesapeake Bay. Dept. of Res. & Educat. State of Maryland, Publ. no. 63, pp. 1-55 (Chesap. Biol. Laborat. Solomons Isl., Md.). 1947, Bryozoa of the Allan Hancock Atlantic Expedition. All. Hanc. Atlant. Exped. Rep. no. 5, pp. 1-66, t. 1-6. Los Angeles (The University of Southern California Press). REUSS, A. E. 1874, Die fossilen Bryozoen des oesterreichisch-ungarischen Miocäns. I. Denkschr. Akad. Wiss., v. 35, 1. Abthlg., pp. 141-190, t. 1-12. Wien. ROBERTSON, A. 1900, Studies in Pacific Coast Entoprocta. Proc. Calif. Acad. Sci., ser. 3 (Zool.), v. 2, pp. 323-348, t. 16. San Francisco. ROGICK, M. D. 1948, Studies on marine Bryozoa. II. Barentsia laxa Kirkp. Biol. Bull., v. 94, pp. 128-142, t. 1-4. Lancaster, Pa. SAKAKURA, K. 1935, Pliocene and Pleistocene Bryozoa from the Bôsô Peninsula. 1. Bryozoa from the Dizôdô Beds. Journ. Fac. Sci. Imp. Univ. Tokyo, sect. 2, Geol., v. 4, pp. 1-48, t. 1-7. Tokyo. SARS, M. 1835, Beskrivelser og Iagtagelser over nogle maerkelige... Dyr, etc. 81, pp., 15 t. Bergen. SILÉN, L. 1938, Zur Kenntnis des Polymorphismus der Bryozoen. Die Avicularien der Cheilostomata Anasca. Zool. Bidr. Uppsala, v. 17, pp. 149-366, t. 1-18. Uppsala. 1941, Cheilostomata Anasca (Bryozoa) collected by Prof. Dr. Sixten Bock's Exped., etc. Ark. Zool., v. 33A, no. 12, pp. 1-130, t. 1-9. Stockholm. SMITT, F. A. 1872, Floridan Bryozoa collected by Count L. F. de Pourtalès. Part I. Svenska Akad. Handl., v. 10, no. 11, pp. 1-20, t. 1-5. Stockholm. 1873, Floridan Bryozoa, etc. Part II. Ibid., v. 11, no. 4, pp. 1-83, t. 1-13. Stockholm. STACH, L. W. 1936, Studies on recent Petraliidae. Rec. Austral. Mus., v. 19, pp. 355-379. Sydney. THORNELY, L. R. 1912, The Percy Sladen Trust Exped., etc. Marine Polyzoa of the Indian Ocean, etc. Transact. Linn. Soc. London, ser. 2, v. 15, pp. 137-157, t. 8. London. VERRILL, A. E. 1900, Additions to the Tunicata and Molluscoidea of the Bermudas. Transact. Connect. Acad., v. 10, part II, Bryozoa, pp. 592-594, figs. 5-6, t. 70: f. 4. New Haven, Conn. WATERS, A. W. 1879, On the Bryozoa of the Bay of Naples. Ann. Mag. Nat. Hist., ser. 5, v. 3, pp. 28-43, t. 8-11, pp. 114-126, t. 12-15, pp. 192-202, 267-281, t. 23-24. London. 1882, On fossil

Chilostomatous Bryozoa from Mount Gambier, South Australia. Quart. Journ. Geol. Sci., v. 38, pp. 257-276, t. 7-9. London. 1885, On the use of the Avicularian Mandible in the determination of the Chilostomatous Bryozoa. Journ. R. micr. Soc., ser. 2, v. 5, pp. 774-779, t. 14. London. 1885a, Chilostomatous Bryozoa from Aldinga and the River-Murray Cliffs, S. Australia. Quart. Journ. Geol. Soc., v. 41, pp. 279-310, t. 7. London. 1887, On Tertiary Chilostomatous Bryozoa. Quart. Journ. Geol. Soc., v. 43, pp. 40-72, t. 6-8. London. 1888, Supplementary Report on the Polyzoa collected by H.M.S. Challenger, etc. Rep. Voy. Challenger, v. 31, pars 79, pp. 1-41, t. 1-3. London. 1889, Bryozoa from New South Wales, North Australia, etc. Ann. Mag. Nat. Hist., ser. 6, v. 4, pp. 1-24, t. 1-3. London.

1898, Observations on Membraniporidae. Journ. Linn. Soc. London, v. 26, pp. 654-693, t. 47-49. London. 1900, Bryozoa from Franz Josef Land, etc. Chilostomata. Journ. Linn. Soc. London, v. 28, pp. 43-105, t. 7-12. London. 1904, Résult. Voy. Belgica (Expéd. Antarct. Belge), Bryozoa, pp. 1-114, t. 1-9. Anvers. 1905, Bryozoa from near Cape Horn. Journ. Linn. Soc. London, v. 29, pp. 230-251, t. 28-29. London. 1906, Bryozoa from Chatmham Island and d'Urville Island, New Zealand, etc. Ann. Mag. Nat. Hist., ser. 7, v. 17, pp. 12-23, t. 1. London. 1913, The Marine Fauna of British East Africa and Zanzibar, etc. Bryozoa-Cheilostomata. Proc. Zool. Soc. London, 1913, pp. 458-537, t. 64-73. London. 1918, Some Collections of the Littoral Marine Fauna of the Cape Verde Islands, etc. Bryozoa. Journ. Linn. Soc., v. 34, pp. 1-45, t. 1-4. London. 1925, Ancestrulae of Cheilostomatous Bryozoa. Part 2. Ann. Mag. Nat. Hist., ser. 9, v. 15, pp. 341-352, t. 21-22. London. 1925a, Ancestrulae of Cheilostomatous Bryozoa. Part 3, Schizoporella, etc. Ann. Mag. Nat. Hist., ser. 9, v. 16, pp. 529-545, t. 48-49. London.

Imprenta "EL SIGLO ILUSTRADO"
Montevideo, 5 de Julio de 1949

Plate I

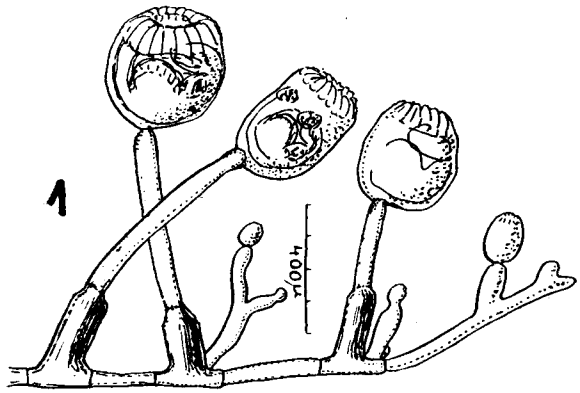
1. *Barentsia capitata* Calv.

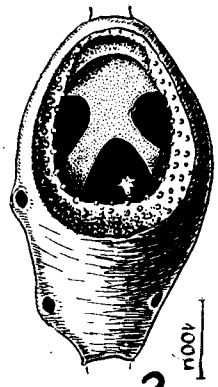
2. & 3. *Pyripora audens,* n. sp.

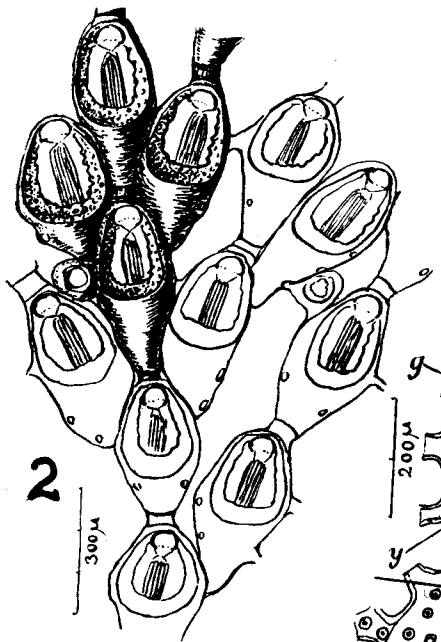
2. Zoids with inter-serial bridges and dwarf-zooecia.
3. Calcined zoid with interrupted basal wall and cryptocystal process.

4. *Pyrulella mesitis,* n. sp.

Zoids and connecting network seen from frontal (above) and basal side (below). b, basal wall. c, kenozoid. d, peg-like process. g, gymnocyst. p, inter-tubular spaces. r, rooting process. s, spine of kenozoid. y, cryptocyst.


1
100µ


100µ
3


2
300µ

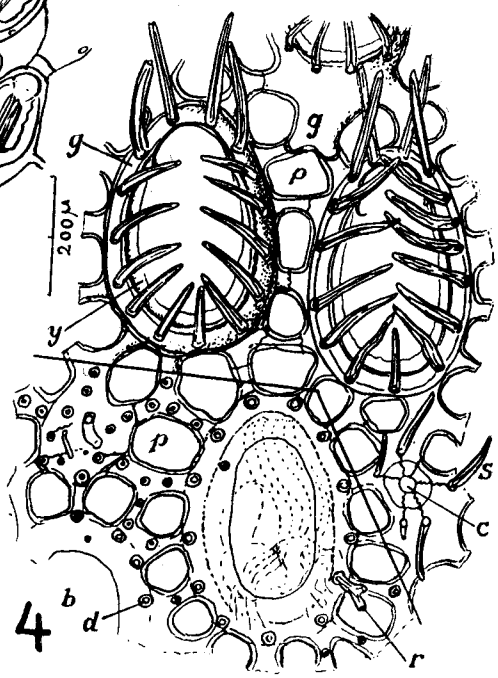

g
g
p
200µ
y
p
s
c
4
b
d
r

Plate II

5. & 6. *Smittipora acutirostris* (C. & B.).

5. Zoids and avicularia, the upper zoid ovicelled. c, calcined. t, with ectocyst. y, cryptocyst.
6. Mandible.

7. & 8. *Steganoporella connexa* Harm.

7. Three zoids, one calcined (c), and two (t) with ectocyst.
8. Operculum.

9. & 10. *Steganoporella transversalis* C. & B.

9. Two A-zoids and one B-zoid. c, calcined. t, with ectocyst.
10. Opercula of A- and B-zoid.

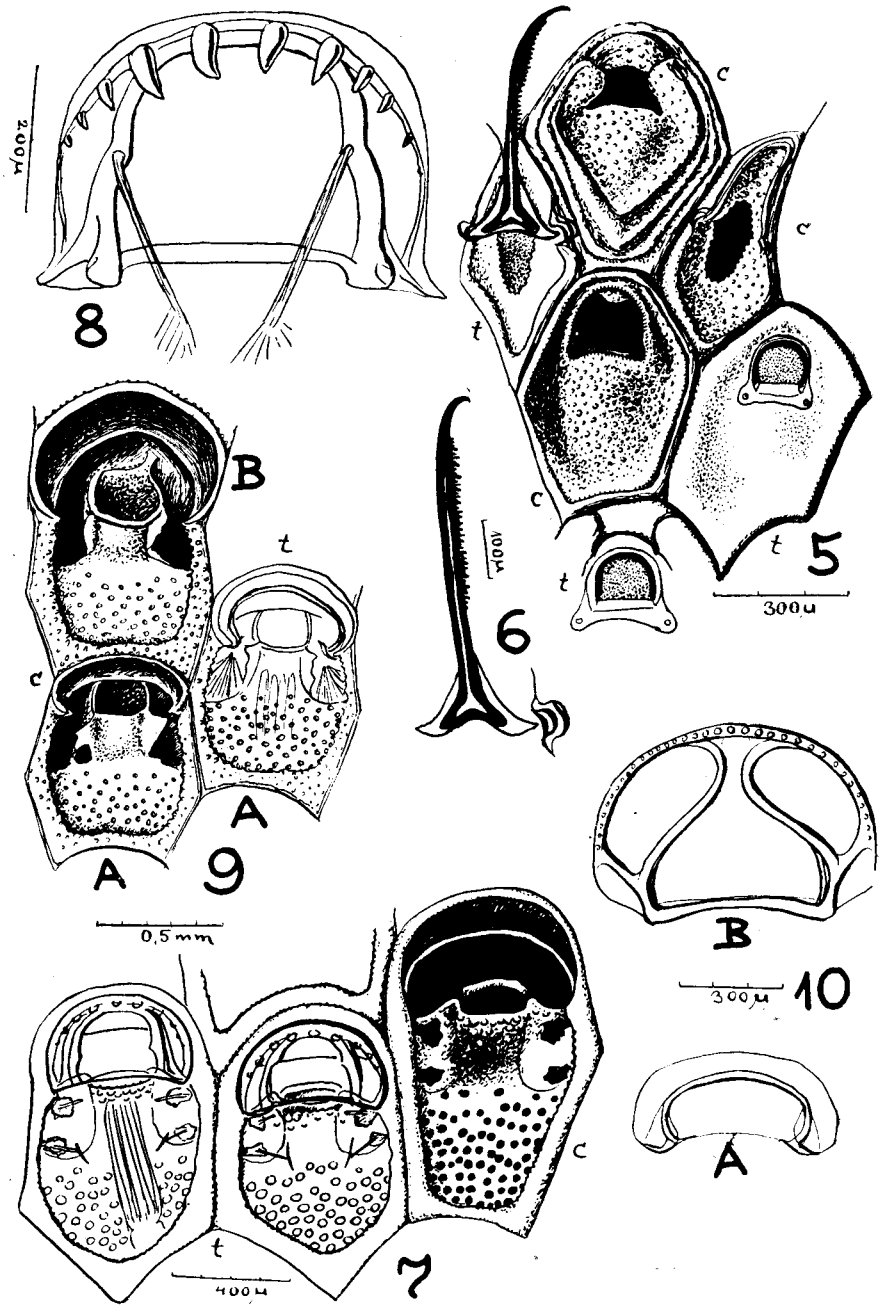

200µ
8
c
c
t
5
300µ
B
t
c
A
A
9
100µ
6
t
0,5 mm
B
300µ
10
A
c
t
400µ
7

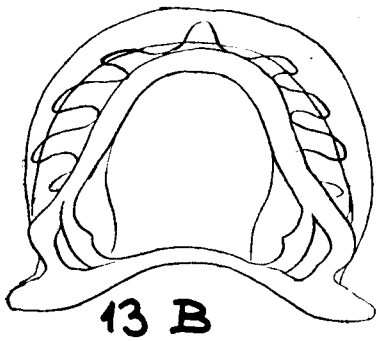
Plate III

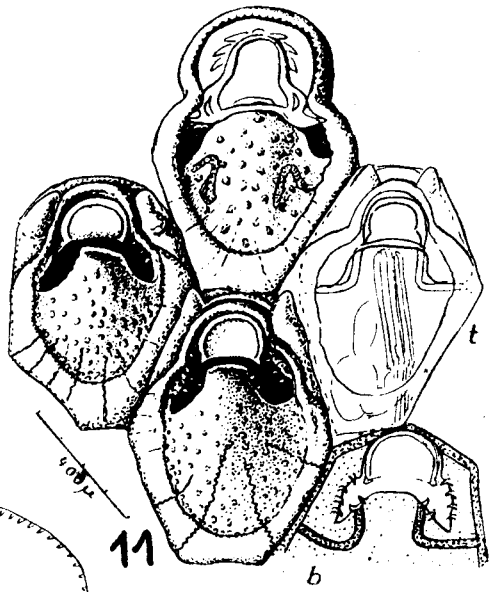
11. to 13. *Steganoporella evelinae*, n. sp.

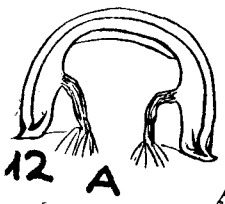
11. B-zoid and three A-zoids, one (t) with polypide; distal part of a fourth A-zoid (b) in basal view.
12. Operculum of A-zoid.
13. Operculum of B-zoid.

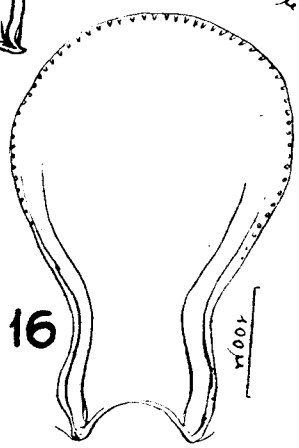
14. to 16. *Labioporella dipla*, n. sp.

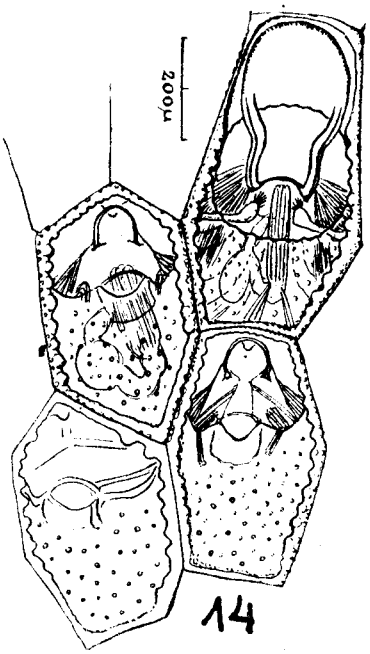
14. Zoids and avicularium. One zoid with only calcareous parts.
15. Basal view.
16. Mandible.


13 B
200μ


t
b
11


12 A


16
400μ


200μ
14

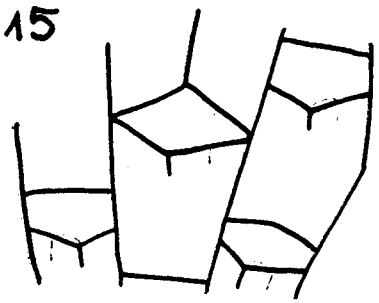

15

Plate IV

17. *Labioporella bursaria* (P. H. MacG.), from Bunbury, S.-W. Australia.

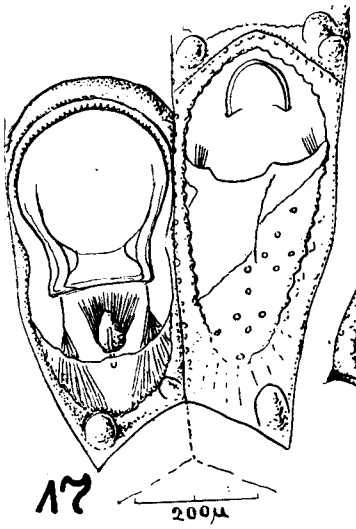
18. *Mollia elongata* C. & B.

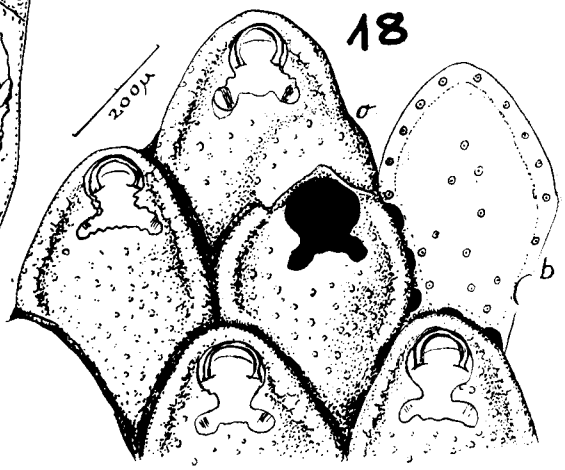
Zoids with depressor muscles in the opesiules; the zoid with ovicell (o) without frontal membrane; one zoid in basal view (b).

19. *Micropora coriacea* (Johnst.)

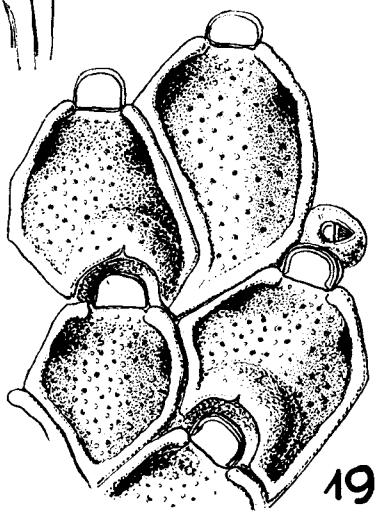
20. & 21. *Bugula carvalhoi,* n. sp.

20. Ovicell with young embryo.
21. Bifurcation, basal view.


17
200µ


18
200µ
σ
b


20
100µ


19

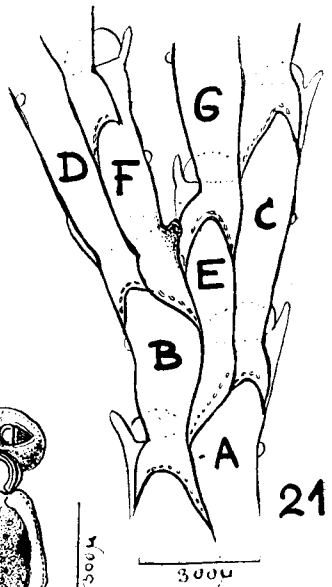

G
D
F
C
E
B
A
21
300µ
300µ

Plate V

22. *Bugula carvalhoi,* n. sp.

23. to 25. *Coleopora corderoi,* n. sp.

23. Four zoids, two with avicularia, and one ovicell.
24. Operculum.
25. Mandible.

26. to 29. *Utinga castanea* (Bsk.)

26. Zoids with avicularia, and ovicell with avicularia.
27. Basal view with radicular chambers and radicle.
28. Operculum.
29. Mandible.

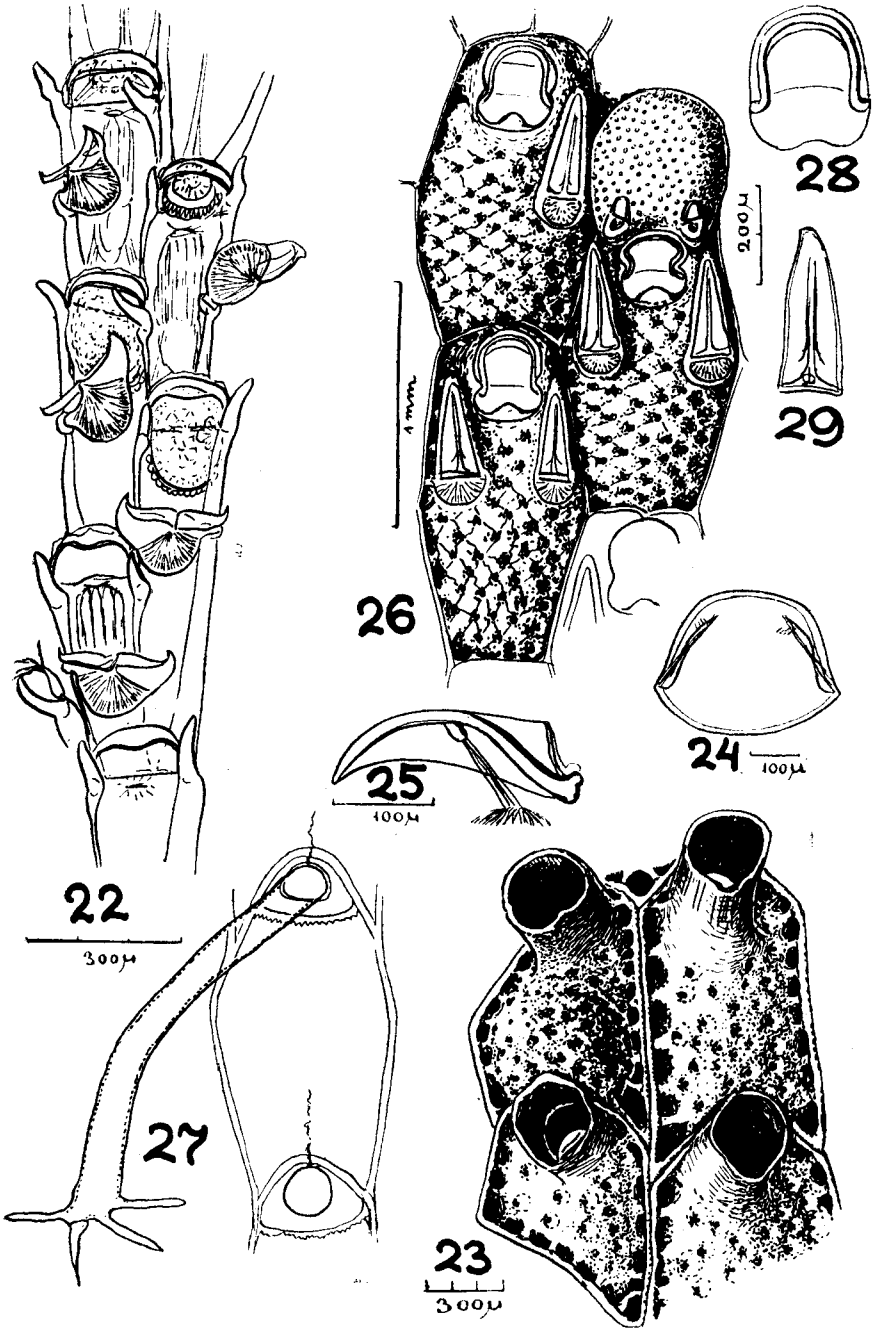

22
300μ
23
300μ
24
100μ
25
100μ
26
1 mm
27
28
200μ
29

Plate VI

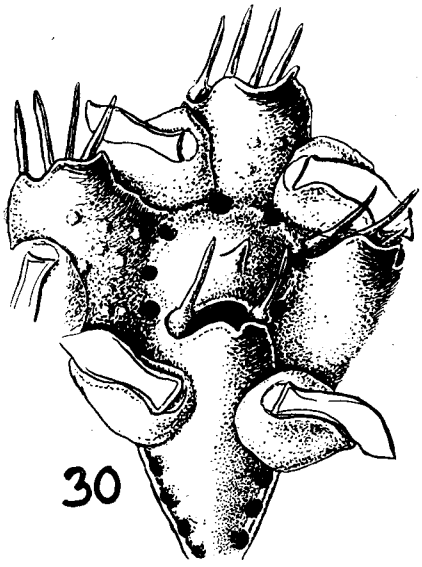
30. *Escharoides martae* Marc., with ovicell.

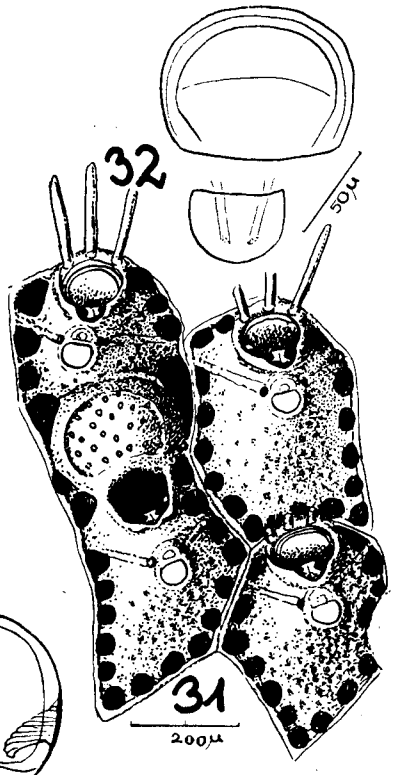
31. to 33. *Smittia numma,* n. sp.

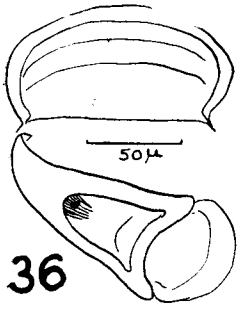
31. Zoids with avicularia and ovicell.
32. Operculum and mandible.
33. Orifice with operculum, hinge-teeth and lyrula.

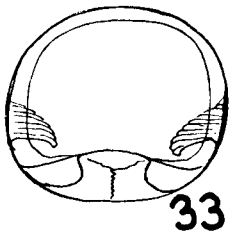
34. to 36. *Adeona violacea* (Johnst.)

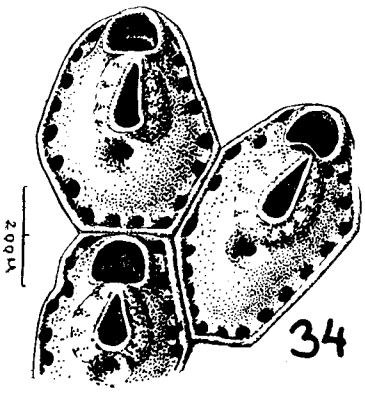
34. Three calcined zoids.
35. One zoid calcined (c), and one with its tissues (t), of the *plagiopora*-form.
36. Operculum and mandible.


30


32
50µ
31
200µ


50µ
36


33


200µ
34

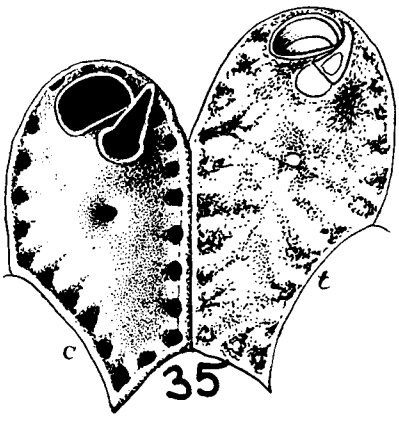

t
c
35

Plate VII

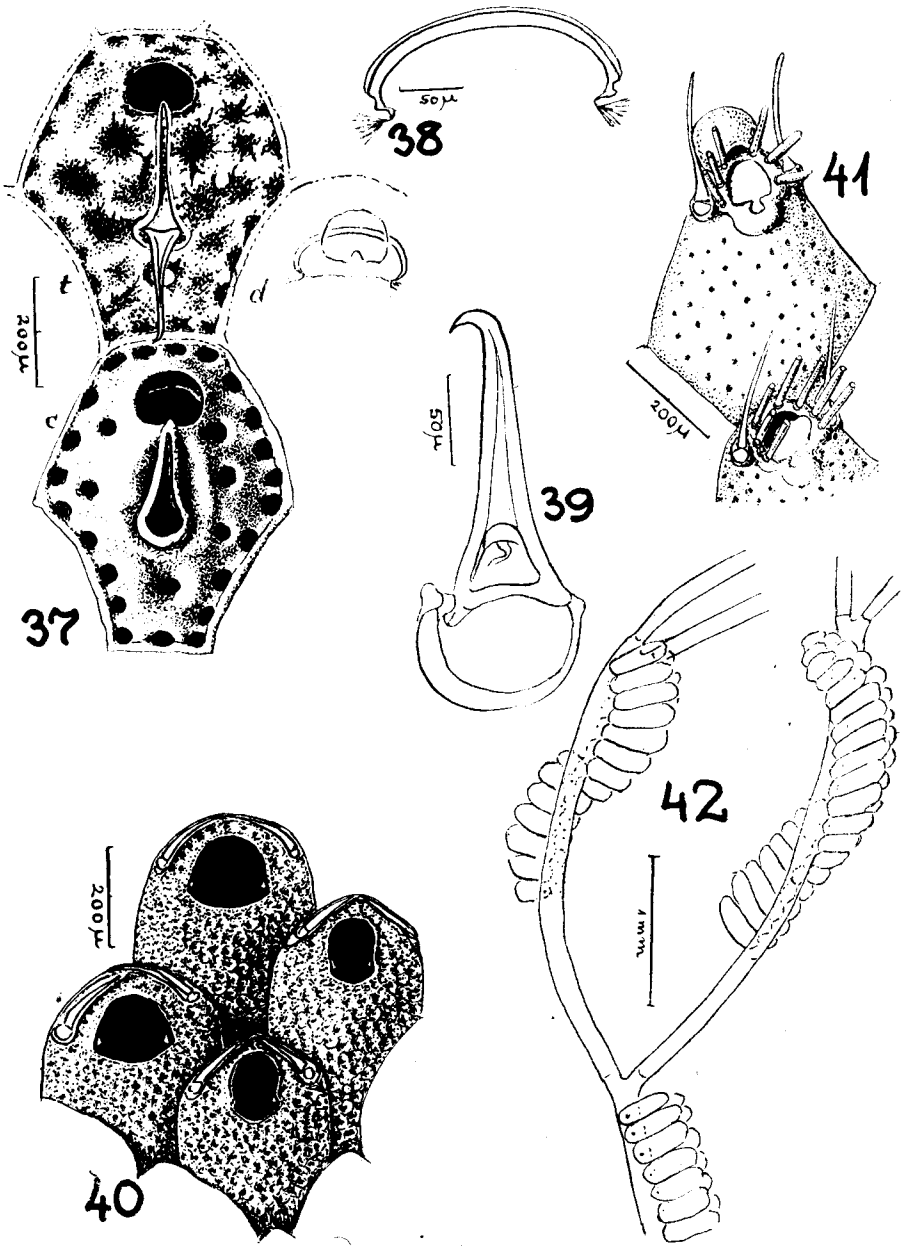
37. to 39. *Adeona bipartita* C. & B.

37. One calcined zoid (c), one with its tissues (t), and the decalcified orifice of a third (d).
38. Operculum.
39. Mandible and chitinous sub-mandibular area.

40. *Hippaliosina imperfecta* (C. & B.), with two gonozoids.

41. *Mastigophora parviseta* C. & B.

42. *Amathia distans* Bsk.


37
t
d
c
200µ
38
50µ
39
1/25
41
200µ
42
1 mm
40
200µ