SOME BRYOZOA FROM THE BRAZILIAN COAST

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The present collection was for the most part dredged South of Victoria, Espirito Santo, in 35 m. A first selection of the same hauling is published in *Arquivos do Museu Nacional*, Rio de Janeiro (1949). Only the species not represented in the first material are mentioned here together with some, the new samples of which make supplementary notes possible. Six species from the littoral of Rio and São Paulo are added.

Mrs. Eveline du Bois-Reymond Marcus has drawn the figures and taken part in the morphological study.

LIST OF LOCALITIES AND SPECIES

South of Victoria, Espirito Santo (Lat. 20° 33'S., long. 40° 14'W.). 35 m.

_Pyripora audens_, n. sp.
_Pyrulella mesitis_, n. sp.
_Smittipora acutirostris_ (C. & B.).
_Steganoporella connexa_ Harm.
_Steganoporella transversalis_ C. & B.
_Steganoporella veletinae_, n. sp.
_Labioporella dipla_, n. sp.
_Micropora coriacea_ (Johnst.).
_Mollia elongata_ C. & B.
_Trypostega venusta_ (Norm.); vastly distributed in tropical and warmer temperate seas; already known from the coast of Espirito Santo (CANU & BASSLER, 1928a, p. 76), and Santos (MARCUS, 1938, p. 35).
_Coleopora corderoi_, n. sp.
_Utinga castanea_ (Bsk.).
_Ecochella longirostris_ Jull.; a Southern species, hitherto not recorded North of Santos, (MARCUS, 1937, p. 82).
_Escharoides martae_ Marc.
_Escharoides numma_ n. sp.

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Adeona violacea (Johnst.).
Adeona bipartita C. & B.
Hippaliosina imperfecta (C. & B.).
Mastigophora parviseta C. & B.
Holoporella carvalhoi Marc., hitherto only known from the littoral of São Paulo (Marcus 1939, p. 158).

Shallow water of the Ilha do Francês (Lat. 20° 54' 10" S., long 40° 45' W.).

Pedicellina mannoda Marc.; hitherto only known from the bay of Santos (Marcus 1937, p. 14).
Beania australis Bsk.; a Magellanic species formerly found in the bay of Santos (Marcus 1937, p. 63).
Euteleia clevinae Marc.; hitherto only known from the littoral of São Paulo (Marcus 1939, p. 33).
Siniopelta costazii (Aud.); vastly distributed, but from the American side of the Atlantic only recorded for Santos (Marcus 1937, p. 121) and Porto Rico (Osburn 1940, p. 461).
Aleyonidium polyum (Hass.); with exception of the Antarctic region world-wide distributed; from the Western tropical Atlantic only recorded for Santos (Marcus 1937, p. 125) and the West Indian region (Osburn 1947, p. 6).

Littoral of Rio de Janeiro.

Barentsia capitata Calv.
Beania intermedia (Heks.); vastly distributed in warmer waters and the Australian region; Santos (Marcus 1937, p. 61); Pernambuco id. 1939, p. 113); West-India (Osburn 1940, p. 398; 1947, p. 23).
Bugula flabellata (J. V. Thomsps.); widely distributed in the Atlantic; California; West-India (Osburn 1940, p. 391; 1947, p. 23); Santos (Marcus 1938, p. 27; Correa 1948).
Amathia distans Bsk.

Littoral of São Paulo, São Sebastião, 100 km. East of Santos.

Steganoporella transversalis C. & B.
Bugula carvalhoi, n. sp.

BARENTSIA CAPITATA Calv.

Figure 1

Barentsia capitata Calvet 1904, p. 59.
Barentsia capitata Calvet 1904a, p. 41. t. 3: f. 2.

Two small fragments of colonies creeping on Amathia distans Bsk. together with Pedicellina mannoda Marc. The individuals are
of small size, 0.83-1.22 mm. in length. The calyx is oblique, provided with 16-20 tentacles and occupies about one third (0.31-0.39 mm.) of the total length. The thin part of stalk is a little longer (0.31-0.525 mm.), and the muscular base a little shorter than one third (0.21-0.38 mm.). The thin portion of the stalk is 0.07 mm. in diameter, separated from the muscular base by a diaphragm, and covered with a thin, colourless cuticle without pores or spines. It has no secondary muscular joints. The annular folds of the distal part of the stalk described by Calvet are not developed in the present material.

The creeping stolon is composed of alternating segments, one with stalk and calyx (the fertile internodes of Calvet), and one barren segment (sterile internodes). This arrangement is typical of the Pedicellinidae (Hamer 1915, p. 31; Corn 1930, p. 17). Calvet says that the fertile segments of B. capitata bear several, at least 2 zoids; he evidently observed a region of the colony where buds were profusely developed and the barren intervening segments were not yet separated as they are in the definitive condition. As only the fertile segments can give rise to lateral branches of the stolon, there are frequently several developing individuals united around the base of an older one. The present colonies are not as densely ramiﬁed as the original ones, but the short and wide, soft stalk is so characteristic that the classiﬁcation seems quite probable.

Occurrence: Littoral of Rio de Janeiro.

Distribution: South Georgia, on Menipea patagonica Bsk.

Discussion of Barentsia capitata Calv. — As the individuals of the present material are smaller than those drawn by Calvet, that are 2-3 mm. long, and do not show the annulated distal part of the stalk, these differences must be discussed. The total length of the “Siwoga”-specimens of B. discereta varies between 1,584 and 3 mm. In B. laxa Kirkp. Mary Rock measured 9,867 mm. as maximum and 1,024 mm. as minimum total length (1948, p. 130). The original material of B. laxa Kirkpatrick (1890, p. 624) shows only traces (Hamer 1915, p. 33) of the numerous rings that are distinct in the “Siwoga”-material (i.e., t. 2: f. 11). The small size and the not annulated distal region of the stalk are not sufﬁcient for speciﬁc separation of the present specimens from B. capitata. Also the geographic question must be considered, if specimens from Rio de Janeiro are identiﬁed with a species found South of the Antarctic convergence (Hastings 1943, f. 59) and on a Chelostome that is not known farther North than the Magellanic region and the Patagonian shelf (ibid., p. 333). Species like Pedicellina kirsuta Jull. (Marcus 1941, p. 12), Aetea ligulata Bsk. (id. 1937, p. 30) and Exochella longirostris Jull. (ibid., p. 82), show similar but not so extremely different localities in their geographic distribution. I agree with Borg (1944, p. 15) “that when species from distant areas are identiﬁed with one another, reliable grounds for
this identification and figures of the species in question should be given". I think that these are presented; but in any case I have further compared the present material with all other species of the genus and indicated for each of them a character that differs from the present material.

*B. gracilis* (M. Sars 1835, p. 6) is a small species. It was described as having 20 tentacles, but the true number seems to be 12 (Coom 1936, p. 114) to 14 (Harmen 1915, p. 28). The stalk is only 0.03 mm. in diameter. *Pedicellina gracilis* var. nodosa Lomas (1886, p. 190), later considered as separate species of Aescopodaria and Gonypodaria, is a synonym of *B. gracilis* (Harmen, l. c.). Another synonym of *B. gracilis* is *Pedicellina belgica* Beneden (1845, p. 23).


*B. discreta* (Busk 1886, p. 29). The stalk is covered with a thick cuticle, the inner layer of which is perforated with numerous pores. *B. pulchriensis* (Oku 1890; see Harmer 1915, p. 29; Waters 1918, p. 42) is a synonym of *B. discreta*. The same probably holds true for *B. timida Vez- rill* (1900, p. 594) after Osburn (1914, p. 185); in his later papers Osburn (1940, p. 327; 1944, p. 9) gives this synonymy as certain.

*B. benedeni* (Foettiinger 1887, p. 301). Stalk with muscular joints and with lateral buds.

*B. major* Hincks (1888, p. 226). Calyx supported by a relatively long, fleshy stalk (pedicellum *Jullien & Calvet* 1903, p. 26), separated from the inner annulated main part, the pedicel (Hincks; pedicellum *Jullien & Calvet*, l. c.).

*B. australis* (Jullien 1888, p. 13). After Waters (1904, p. 99; 1905, p. 230) a synonym of *B. discreta* (Bak.)


*B. laxa* Kirkpatrick (1890, p. 624). The calyx-supporting part of the stalk is long, soft and extremely flexible (see Rogick 1948, f. 1, 12).

*B. ramosa* (Robertson 1900, p. 327). The stalk is jointed and bears lateral buds.


*B. stria* Jullien & Calvet (1903, p. 26). Has 12 tentacles and the calyx-bearing part of the stalk is half as long as the calyx.

*B. erenice* Jullien & Calvet (1903, p. 26). The stalk is brown, chitinous; the number of tentacles is 12.

*B. elongata* Jullien & Calvet (1903, p. 27). The thin, yellow stalk is annulated. After Calvet (1904a, p. 41) and Osburn (1933, p. 7) a synonym of *B. major* Heks.

*B. variabilis* Calvet (1904a, p. 40). As in *B. major* the calyx is supported by a long, fleshy stalk.

*B. geniculata* Harmen (1915, p. 33). Stalk interrupted by two or three muscular joints.

*B. pura* (O'Donoghue 1923, p. 148). Full grown stalks have a second muscular joint (musculum *Jullien & Calvet* 1903, p. 26) about half way along the stalk.
B. robusta O’Donoghue (1924, p. 21). A very large species: the muscular base of the stalk rounded at both ends, and 1 mm. or more in length. The stalk tapers distally, its narrowest region being just below the calyx.

B. kovalevskii (Nasonov 1926, p. 1). Stalk with muscular joints and lateral buds.

Pyripora audens, n. sp.

Figures 2-3

Several colonies incrusting foliaceous algae. The zoids are pure white in two zoaria that are younger than the others; in the older ones the inter-zooecial furrows are spotted with rust-coloured spots rather too regularly distributed for being patches of sediments. But as this colour also occurs in other species from the same dredging, it may be foreign matter. The zoids are 0.4-0.42 mm. in length and 0.2-0.25 mm. in breadth. They grow in single series. One or two new series may originate near the distal end of a zoid. They form an angle of about 60° with the main direction. There are small bridges between the series. The outlines of the zoids are rhombic. The distal half of the zoid is rounder and broader than the proximal one. The former is for the most part occupied by the proximally widened aperture; the latter is covered by the smooth gymnocoyst. The aperture shows a tuberculate descending cryptocoyst that is broadest proximally. From the inner surface of the cryptocoyst a short and branched process projects into the body-cavity and is partly seen in the opesia. The boundary between gymnocoyst and cryptocoyst is the highest point of the front-wall.

The border of the opercular valve is fortified by a semicircular brown selerite below which a vestibular arch appears. The proximal end of the zoid is occupied by a chitinous, not calcified belt that facilitates the flexibility of the colony on the algae. Each lateral wall has 2-3 open pores. Sometimes these remain unaltered, in other cases they form dwarf-zooecia without polypides (kenozooids), or common zoids or inter-zooecial bridges. One median and two lateral uncalcified areas of the basal wall are similar to those of Conopeum reticulum (Waters 1898, p. 679; Marcus 1938, p. 14).

Occurrence: Coast of Espirito Santo, 35 m.

Discussion of Pyripora audens. — The species of Pyripora described by P. H. MacGillivray (1885, pp. 23-24) were partially put in the synonymy of Electra (Levinsen 1906, p. 146). This synonymy refers probably to Pyripora ctenuloria (Jameson), that is Jameson’s species for MacGillivray, while it is Electra crustulenta (Pall.) for Levinsen. Don’s (1941, p. 55) applies fossaria Heke., because crustulenta has been used for a fossil species “imidlerid”, viz. in the interval of time between Pallas (1768)
and the re-validation of crustulenta by Borg (1931). Evidently Dorns thinks of Cellepora crustulenta Goldfuss (1827), later on Membranipora crustulenta (Levinson 1925, p. 346), better Floridina crustulenta (Canu & Bassler 1920, p. 220). As Eschara crustulenta Pall. comes under Electra, no modification is necessary for the erectaceous species. But even if both species were called Membranipora, it is clear that the newer one must be re-named, and fossaria continues a synonym of crustulenta as established by Borg (1931, p. 11).

It is an open question whether crustulenta and catenularia should be put in the same genus Electra Linn., as defined by Levinson (1909, p. 146) and Harmer (1926, p. 206). The single spine on the proximal side of the opesia mentioned by Harmer is generally missing in crustulenta and frequently in tenella (Heks.) and bellula (Heks.) that are certainly Electra. But on the other hand the cryptocoyst of the species of the "Pyripora-group of Membranipora" (Waters 1898, p. 664) is more developed than would correspond to Harmer's text "wanting or barely indicated", Therefore it is better to preserve Pyripora d'Orb., as Calvet (1931, p. 50) did.

From Canu & Bassler's diagnosis of Pyripora (1920, p. 78) must be suppressed: "operculum calcified" and "cells not continuous laterally". It is the operculum of Electra crustulenta (Pall.) that is calcified and not that of Pyripora catenularia (James.). The zooids of the latter are occasionally (Hincks 1880, t. 17: f. 2) and those of P. polita (Heks.) are usually aggregated (P. H. MacGillivray, l. c.). On the other hand a loose growth occurs in E. crustulenta var. arctica (Waters 1900, p. 59, t. 8: f. 3; Osburn 1933, t. 14: f. 4: under the name of catenularia).

Species with ovicells (Waters 1882, p. 262) do not belong to Pyripora. Therefore I can not unite the present species with the pleocene pedunculata Manz., although the material from Ceylon that Hincks (1880a, p. 377) called pedunculata is very similar. The globose, smooth and imperforate ovicells of Manzoni's tertiary species do not occur in that of Hincks. Thornely (1912, p. 143) however mentions ovicells in a recent species from the Inde that she called pedunculata Manz. It can not be judged whether her few zooecia are identical with Hincks' material, but it is not probable, because Hincks had a rich material without any ovicells. I agree with Canu (1911, p. 234) who separates pedunculata Manz., pedunculata Heks. and crassa (P. H. MacGillivray 1863, p. 130). As already Hincks (1891, p. 93) said, P. crassa differs by the thick projection from the lower margin of the aperture from pedunculata Heks. P. catenularia has an oval aperture, the length of which is twice the breadth, its cryptocoyst is narrower than that of undens and has not the inwardly directed process.

PYRULELLA MESETIS, n. sp.

Figure 4

A small colony without ovicells and with regular ovoid zooids that are 0.4-0.5 mm. long and 0.25 mm. broad. The aperture is surrounded by a slightly granular gymnocyast (g) provided with spi-
nes and an inner salient border on which the frontal membrane inserts. A narrow cryptocyst (γ) is developed on the lateral and proximal side of the opesia. There are two anterior spines at the distal end of the mural rim that flare outward. Proximally to these one spine on each side is erect and then 5-6 spines on each side and one proximal median bend over the opesia. A proximal gymnozyst (g) outside the mural rim is occasionally present.

Every zoid is connected to its neighbours by about 13 tubes between which spaces (p) are left open. Where many of these tubes meet they give rise to circular kenozoids (c) with a relatively broad cryptocyst. They are provided with spines (s) from which crackles pass to the inner cryptocystal border. None of these kenozoids are developed as avicularia in the present material.

The central area of the basal wall (b) is not calcified. Peg-like processes (d), several of which with short calcareous rooting processes (r), occur on the basal side of the colony. They are confined to the peripheral calcified zone of the zooecial basal wall and are frequent on the inter-zooecial tubes.

Occurrence: Coast of Espirito Santo, 35 mm.

Discussion of Pyrulella mesitis. — As the present fragment is without ovicells, the generic classification in Pyrulella Harmer (1926, p. 225) or Hineksina Norman (1903, p. 585) is not quite certain. As the genotype of Hineksina, Membranipora flustroides Hecks., has no gymnozyst, the present species should be placed in Pyrulella. Also the generic position of Hineksina periporosa Canu & Bassler (1928, p. 22) is not beyond all doubt, because its ovicell, although small, can not with certainty be recognized as endo-zooecial, as is that of H. flustroides (Levensen 1909, t. 1: f. 4a-4c). H. periporosa has also a short tubular gymnozyst proximal to the aperture that suits better to Pyrulella than to Hineksina. The measurements of periporosa are larger than those of mesitis, its kenozoids between the zooecia are pyriform and without spines; in t. 2: f. 9 they look like broken avicularia. After my opinion the "line of interjunetal pores" that surrounds the zooecia of periporosa is the same as the network of connecting tubes in P. sejuneta (P. H. MacGillivray 1891, p. 78), P. tubulata Hastings (1930, p. 709; Osburn 1947, p. 14), P. caribbea Osburn (1947, p. 15) and P. mesitis. Canu & Bassler describe these pores as covered by the ectocyst and think that they result from an incomplete caleification. Neither the observation nor the conclusion can be accepted. The tubes arise from the gymnozyst, and the foraminia between them, the so-called interjunetal pores, are open spaces without any tissue or cuticle over them.

The spines of P. mesitis resemble closely those of P. tubulata Hast. The only slight difference refers to the number of spines curved over the opesia that are 2-4 and sometimes a median one in tubulata. Also the measurements of tubulata and mesitis agree. But the frontal and basal surface of the two species differ. The small foraminia of tubulata are large spa-
ees in mesitis; the short and broad tubes of the former are long slender bridges in the latter. P. tubulata and its var. triangulata Silén (1941, p. 28) have interzooecial avicularia (heterozoids), not kenozoids. Spines on the connecting network do not occur in tubulata. The peg-like processes that attach the zoarium to the substratum are uniformly scattered over the back of tubulata. The calcification of the basal wall of tubulata is complete. The distribution of the processes of attachment in mesitis may possibly be due to a still incomplete calcification, with the progress of which the pegs might develop over the whole basal surface. In tubulata no trace of rootlets from the pegs was observed.

P. sejuncta (P. H. MacG.) and variety of Membranipora lineata (Waters 1889, p. 3), later on (id. 1898, p. 678) united with sejuncta, do not have the anterior pair of spines that occurs in tubulata and mesitis. P. sejuncta possesses avicularia, not kenozooecia. In P. caribbea Osb. zooecivules (kenozoids) and avicularia occur, but the zoids are smaller than those of mesitis and have 2-3 pairs of lateral spines projecting upward.

SMITTIPORA Jullien

Smittipora Jullien 1881, p. 284

As the genera Rectonychocella Canu & Bassler (1917, p. 25) and Velumella C. & B. (ibid., p. 26) still are used in the literature (Osburn 1940, p. 371; 1947, p. 17), their validity must be questioned once more. Smittipora was introduced for Vincularia abyssicola Smitt (1873, p. 6). As Jullien was not quite sure that the two figures of Smitt (t. 1: f. 60, 61) really belong to the same species, he confined (note on p. 285) the description of Smittipora to the material of fig. 60.

Besides Rectonychocella and Velumella Canu & Bassler introduced Diplophoeces (1917, p. 26), later (C. & B. 1928, p. 25) united with Velumella. The statement of their descriptions that “the retractor muscles of the polypide are attached in the median axis of the zoecium” and that this position of the retractor fibres affects the symmetry of the opesiiules has been criticized by Harmer (1926, pp. 215, 250).

Rectonychocella was introduced with the indication “the opesial indentations are symmetrical”. The genotype of Rectonychocella, Onychocella solida Nordgaard (1907, p. 8), however has no indentations (see p. 10 of Nordgaard’s description and t. 1: f. 1). In 1928 Canu & Bassler (p. 52) distinguish Rectonychocella from Velumella by the absence and presence respectively of opesial indentations. Finally (C. & B. 1929, p. 126) they speak of the genus Rectonychocella “which differs from Velumella only in its rarely visible indentations”.

With regard to the indentations there is no difference between the two figures of Smitt and that of Nordgaard; they are absent in all three figures and not mentioned in the descriptions. It is true that Smitt’s fig.
60 shows a sector of a colony that is covered by the ectocyst, but thereby it does not become "unrecognizable" (Bassler 1935, p. 202). If the specimen of fig. 60 had indentations, these would appear beneath the ectocyst. Maybe the drying up of the ectocyst has somewhat exaggerated the facets of the cryptocyst, but this does not diminish the value of fig. 60 as genotype of Smittipora. Even if this genus were "not established on sufficient characters" (Canu & Bassler 1928, p. 52), as indeed many descriptions of genera and species become insufficient in the course of some decades, the clear indication of a genotype by Jullien is quite sufficient to preserve the validity of his genus. Moreover Jullien's description mentions the membranous expansion on both sides of the rachis of the mandible, the only character that separates Onychocella and Smittipora with certainty. The more or less distinct opesional indentations furnish insecure characters for the classification of fossil specimens.

The characters, mural rim not separated (Rectonyccella) and distinct from the cryptocyst (Velumella), as well as avicularian opesia posteriorly denticulated (Rectonychocella) and entirely denticulated (Velumella), have been shown by Harmer (1916, p. 259) as useless for generic separation. Moreover Diplophyleos has been described with two characters of Rectonychocella, viz. "mural rim not separated from the cryptocyst" and avicularian opesia "with a denticulated poster". Notwithstanding the genus has been united with Velumella, evidently because the type, an early tertiary species (C. & B. 1917, p. 26), has deep indentations, almost true opesinal.

If these indentations remain the only difference between Rectonychocella and Velumella, the first genus becomes a synonym of Smittipora: "the apertural area has a trapezoidal form, with rounded distal end, broader in its proximal part, with rounded corners and the proximal margin concave" (Smit 1873, p. 7). With Harmer I think that Smith's figures refer to only one species. If not, that of fig. 60 must preserve the name abyssicola, not that of fig. 61 (C. & B. 1928, p. 53). The genotype selected by Jullien can not be placed at the top of a synonymic list of a species named americana.

The variation of the opesional indentations in a species as Velumella philippinensis C. & B. (1929, p. 129, t. 13: f. 1-3), where they are sometimes inexistent, in other zoids barely indicated and in still others well marked (they are described as very regular indentations), will warn everybody not to separate Rectonychocella and Velumella by this character. Both are clear synonyms of Smittipora.

If S. abyssicola has indeed a so little salient mural rim and a convex cryptocyst as is shown by Canu & Bassler (1928, t. 5: f. 2, 3, especially f. 2), the specific separation of S. levinseni C. & B. (1917) (= americana C. & B. 1928) seems to be advisable. The specimens from the India may be removed from my former synonymic list (Marcus 1941, p. 17) and placed under harmeriana C. & B. (1928). This separation is however provisory; in future Harmer's opinion (1926, pp. 259-260) that these species must be united may prove to be correct.
SMITIPORA ACUTIROSTRIS (C. & B.)

Figures 5-6

Velumella acutirostris Canu & Bassler 1928a, p. 64, t. 2: f. 4, 5.

The incrusting zooarium is white with dark-brown opercula and mandibles. The approximately hexagonal zooecia are distally more rounded, proximally more angulated and separated by yellow chitinous ridges. The length of the zoids in the present material is 0.6-0.65 mm., the breadth 0.45 mm. When covered by the ectocyst, the zooecia (t) appear flat, nearly without salient mural rim. The calcined zoids (c) show the oblique lateral parts of the cryptocyst and a slightly convex, granulated horizontal part, the latter with projecting distal border.

The opesia is 0.122 mm. high and 0.145 mm. broad in sterile zoids. In ovicelled ones these measurements are 0.125-0.134 and 0.146-0.16 mm. The depressor muscles insert over the middle of the opesiiules (opesiular indentations); these are more or less distinct and distally limited by slight projections of the cryptocyst. A prominent tubercle occurs on the distal wall, within the oral arch. This tubercle is smaller than that of S. harmeriana (Harmer 1926, t. 16:f. 10) and larger than that of S. cordiformis (ibid., f. 14, 15). As in the other species of the genus the operculum has no basal selerite but is uniformly chitinized and provided with a thick marginal selerite.

The ovicell is an inconspicuous inflation of the distal wall of the zoid with which its cavity is continuous. The trapezoid opesia of the fertile zooecium is larger than those of ordinary zoids.

The pentagonal or rhombic avicularia (onychoceellaria) are large with a rostrum, that is distinct in calcined specimens, and an elliptical opesia, the edge of which is dentiected all around. The mandible is long, its hollow rhachis is hooked at the point, thickened behind it, and toothed basally nearly along its whole length. The membranous expansions are very short and do not extend beyond the proximal fourth. The lower corners of the mandible are each attached to a chitinous tubercle. This seems to be formed by the ectocystal (cuticular) ridge of the avicularium and that of the adjacent zoid. Earlier observers of this structure are Waters (1885, p. 778, t. 14:f. 42), Nordgaard (1907, p. 11, t. 1:f. 3, k) and Harmer (1926, p. 258). The length of the mandible is 0.5-0.55 mm., that of the avicularian chamber up to 0.6 mm., its breadth up to 0.3 mm.

As the measurements of the present zoids and avicularia agree with those given by Canu & Bassler, and our specimens do not
differ from their sufficiently clear photograph, the identification of our material with *acutirostris* from the same region is nearly certain. The original description is not detailed.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: Coast of Bahia and of Espirito Santo, 49-128 m.

**Steganoporella connexa** Harmer

Figures 7-8


non *Steganoporella connexa* Osburn 1914, p. 196 (see Osburn 1940, p. 377: *Labioporella sinuosa*).

Since this very characteristic species was collected for the first time hundred years ago by the British frigate "Herald" on its circumnavigation of the globe (1848-1851) and described nearly fifty years ago, it has never been found again.

*St. connexa* is unique in the genus by the occurrence of only B-zoids in its colonies. Also the two closed opesiules on each side are noteworthy. The cryptocyst joins the distal wall, not the basal wall, and the post-oral shelf (mural rim of the lateral and proximal region) is strongly developed even proximally. The zoids are 1.225 mm. long and 0.77 mm. broad. The submarginal selerite of the operculum, on which the teeth are borne, begins as in the original material near the base of the operculum, but the number of the teeth is smaller (average number: 11). Four central teeth are strong, four lateral small, and the proximal ones minute. The breadth of the opercula with 0.513-0.61 mm. and the height with 0.37-0.4 mm. fall within the variation indicated by Harmer.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: Victoria Bank (John Adams' Bank), south of Abrolhos Islands, off coast of Espirito Santo.

**Steganoporella transversalis** C. & B.

Figures 9-10

*Steganoporella transversalis* Cann & Bassler 1928a, p. 68, t. 3: f. 1.

Colonies incrusting, with few B-zoids, in the proportion of one to 20 or more A-zoids. There are 3 B-zoids and 17 A-zoids on the photograph that accompanies the original description. With exception
of the opercula the breadth of the two types of zoids is the same, the length of the B-zoids is one third more than that of the A-zoids. Height of the B-opercula: 0.512-0.67 mm., breadth: 0.66-0.77 mm. Height of A-opercula: 0.21-0.3 mm., breadth: 0.46-0.6 mm. As Cann & Bassler include the opesiae in their measurements of the height of the opesiae, the measurements of the present zooecia agree well with those of the original material.

The cryptoecyst does not attain the basal but the distal wall. The median process of the cryptoecyst is little depressed. This small depression, the floor of the median process, is formed by the frontal wall, the roof of the polypide tube. The latter has approximately the same breadth in A- and B-zoids and reaches the distal wall of the zooecium in both. Lateral expansions similar to the wings of St. connexa, but smaller, are directed from the tube to the lateral walls in the A-zoids. The orifice of the tube is rectangular and opens obliquely upward. The oral shelf is broader in the B-zoids than in the A-zoids and smooth in both. The condyles are prominent.

The A-opercula are of the undifferentiated type with a bow-shaped selerite. The B-opercula have about 38 sub-marginal, knob-like teeth. The halves of the main selerite form an incomplete gree-arch, the oblique selerites are well developed and join the border at the beginning of the teeth. A moderately thick basal selerite is present.

Occurrence: Coast of Espírito Santo, 35 m.; littoral of São Paulo, 100 km. east of Santos.

Distribution: Coast of Espírito Santo, 128 m.

Steganoforella evelinæ, n. sp.

Figures 11-13

A fragment of a colony of about 6 mm. in diameter, encrusting a calcareous alga in a single layer. In comparison with other species of the genus the present one has small zoids, 0.7-0.8 mm. long and 0.45 mm. broad (A-zoids). The lateral and proximal margin of the zoids, the post-oral shelf, is not separated from the edge, that is the thin summit of the lateral walls, distinct in most other species. Proximally the post-oral shelf forms two blunt cones situated at the sides of the oral shelf of the subjacent zooecium. The horizontal cryptoecyst is sharply separated from the post-oral shelf and coarsely tubercular, not porous. It is not depressed before forming the median process. The transverse line of insertion of the edge of the cryptoecyst into the basal wall forms a right angle on every side of the polypide-tube. The cryptoecyst joins the basal wall between
its distal and middle third. The polypide-tube does not reach the distal wall. Its opening is nearly vertical, invisible in frontal view, as in other species, the cryptocyst of which descends vertically to the basal wall.

The opesial indentations (lateral or muscular recesses) are narrowed by a horizontal lamella of the cryptocyst that bears a number of sharp teeth on its inner side. The condyles are not well marked and do not serve for the origin of the hinge of the operculum. This is fastened within the membranous ectocyst. There is a small oral arch. The oral shelf surrounds the distal border of the operculum as a narrow rim. The operculum is small, 0.18 mm. broad and 0.146 mm. high. It is undifferentiated, with a broad main sclerite and thick occlusor tubercles. Basal and depressor (epithecal) sclerites are wanting.

B-zoids are rare, 6 appear in the present colony of about 200 A-zoids. Both types are of the same size, but the horizontal cryptocyst is shorter in the B-zoids and the oral shelf is longer, broader and higher. The insertion of the edge of the cryptocyst into the basal wall is farther proximal in the B-zoids and lies in the proximal half. The body-cavity contains mighty divaricator and occlusor muscles but no polypide. The condyles are strong and form the hinge for the operculum, the proximal corners of which are prolonged outwards. The height of the B-operculum is 0.3 mm., its breadth 0.366 mm. It has a basal sclerite and a very broad sub-marginal sclerite with basal refoements, that bears 5-9 very stout teeth.

Occurrence: Coast of Espirito Santo, 35 m.

Discussion of Steganoporella evelinae. — The species differs from all others in the genus by the absence of functional polypides in the B-zoids with enlarged opercula. St. mandibulata Harmer (1926, p. 279) has also zoids without polypides, but these are typical avicularia, much smaller than the autozoids. There are further and partly very important differences between St. evelinae and the other species of the genus, viz., the small A-opercula that lie in the membranous ectocyst, the broad post-oral shelf that is confluent with the edge, the toothed opesiaules, and the non-porous cryptocyst. The present collection also contains a Labioporella with polypide-bearing avicularia, L. dipla. Therefore I prefer to preserve the present species in Steganoporella and L. dipla in Labioporella, instead of introducing two new genera with one species each.

Harmer considers the B-zoids as avicularia (1900, p. 236; 1902, p. 320; 1926, pp. 180, 268). Sillén (1938, pp. 342-347) opposed to this opinion that in avicularia no polypides occur and the enlargement of the operculum is correlated with shortening of the cystid. Both phenomena can be observed in the B-zoids of St. evelinae. The shape of the main sclerite of the B-opercula of the new species does not show appro-
ximation to the cuspitate avicularian mandible form. It does not continue the series of inverted U (group I), inverted V (group II) to inverted Y (group III) established by Harmé (1900, pp. 242, 266; 1926, p. 269). The B-operculum of St. evelinae belongs to the first group, “the mandibles of which are not unlike the opercula” (l. c.). But I do not see an argument against Harmé’s theory in the shape of the sub-marginal sclerite of the B-operculum of St. evelinae. Beside St. mandibulata with triangular-cuspitate mandible other species with rounded-spatulate or broad tongue-shaped various avicularia may still be discovered. Avicularia with distally pointed and distally rounded mandibles occur in Labio-
parella, Thalamoporella and many other genera.

Important features of the B-zoids of St. evelinae, the suppression of the polypide and the increase of the oral shelf that corresponds to an avicularian rostrum, favour Harmé’s opinion.

**Labioparella dipla, n. sp.**

Figures 14-16

Colony inerusting; zoids oblong, rectangular or hexagonal. Polypide-tube nearly median, complete, fastened to the basal wall by a vertical connection on its whole length. Its basal margin is convex, the frontal one a little concave. The descending lamina of the cryptocyst joins the basal wall in a slightly angulate transverse line. The horizontal cryptocyst is granulated and pierced by scattered round pores. The post-oral shelf is covered with tubercles on both sides. It is narrower at the proximal side and passes into the oral shelf that is also narrow in most zoids. A prominent tubercle on the distal wall appears beneath the operculum. The latter has a marginal but no basal sclerite; it does not reach the oral (vestibular) arch.

The two bundles of depressors of the frontal membrane described in L. spatulata Harmé (1926, p. 284) originate in the bend of the lateral recesses and insert into the frontal membrane at different points. Farther outward another pair of muscles originates, the contraction of which opens the diaphragm. On the distal side of the lateral recesses the strong ocellus organs and their tendons insert into the marginal sclerite of the operculum.

The autozoids are 0.6 mm. long and 0.3-0.4 mm. broad; the breadth of the polypide-tube is 0.13 mm. The height of the opesia is 0.22 mm., its breadth 0.27 mm. The operculum is 0.14 mm. high and 0.17 mm. broad.

The large avicularia are rare, they are provided with a polypide as big as that of the autozoids and have a very broad oral arch. The post-oral shelf and the horizontal cryptocyst are similar to the corresponding structures of the autozooecia, but there are only gra-
nules on the cryptocyst, no pores. The descending cryptocyst joins
the basal wall in a straight line. The polype-tube passes through
a median hole of the cryptocyst and this hole is flanked by two dis-
tally prominent knobs on which the strong depressor muscles ori-
ginate. These function as divaricators of the mandible. The shape
of the latter is rounded-spatulate, widened distally and provided
with about 50 minute teeth on its free margin. It has a concave ba-
sal selerite; the two halves of its main selerite support only the
proximal half of the mandible, dying away distally.

The length of the avicularium is 0.85 mm.; the mandible is 0.34
mm. long and basally 0.122 mm. broad.

Occurrence: Coast of Espírito Santo, 35 m.

Discussion of Labioporella dipla. — As Silén (1941, p. 62) has
described a species of Siphonoporella with avicularia and without gymnoecyst,
the distinction between Labioporella and Siphonoporella becomes reduced
to the median (or sub-median) and the oblique position of the polypide-tube.
The operculum is membraniporine in both genera. The present species with
its polypide-bearing large avicularia approximates Labioporella to Stegae-
nporella, the B-zoids of which are similar to the avicularia of L. dipla. One
of Silén’s arguments against Hamer’s theory that the B-zoids of Stega-
noporella are avicularia is the regular reduction of the cystid in vicarious
avicularia. L. dipla however possesses avicularia, whose length surpasses
that of the autozoids.

Siphonoporella granulosa Canu & Bassler (1928, p. 68) and the present
species have similar measurements, and the length of the avicularia
(C. & B. call them B-zoids) is the same. Moreover S. granulosa occurs also
on the Brazilian coast (bay of Bahia; C. & B. 1928a, p. 69). As the polypi-
de-tube is eccentric and oblique in S. granulosa, I think that it is indeed
different from L. dipla. Besides Silén’s S. aviculifera also S. granulosa
and S. dumonti C. & B. (1928, p. 68) show that avicularia occur in Sipho-
noporella. The two American species even have a polypide-tube in their
B-zoocia, and thus are presumably provided with a functioning polypide.

L. dipla differs from all known species of Labioporella by the polypide-
bearing avicularia. A balsam slide of L. bursaria (P. H. MacO.) from Bun-
bury, S.W. Australia (R. Hartmeyer leg., Fig. 17) shows the shortening of
the post-oral shelf and the corresponding sub-opercular area (horizontal
cryptocyst and opesia) in the vicarious avicularium of this species. The di-
nution of the proximal region may be correlated with the loss of the polypi-
de. Perhaps the development of a polypide was obstructed by the strong
median cryptocystial knob on which the divaricators originate in L. bursa-
rria. This knob that is fastened to the basal wall only in the median line,
corresponds to the two knobs that flank the polypide-tube in L. dipla.

Of the 5 species described by Hamer (1926, pp. 281-287) L. bursaria
is the least distant from L. dipla. It has also tubercles proximally on the
cryptocyst of the autozoids (not constant; i.e., p. 285) and the unilateral
tube, that augments the difficulty of separating the genera Labioporella and
Siphonoporella. The beak and the mandible of L. adeliensis Livingstone (1928, p. 29) are sharply pointed. L. sinuosa Osburn (1940, p. 377) has no avicularia. The descending lamina of the cryptozyst of each side joins the basal wall without meeting that of the other side. L. altavillae Cipolla (1921, p. 59), a pliocene species without avicularia, has slightly narrower autozoocia than L. dipla and tubercles like L. bursaria in some zoids. Also in L. miocenica Canu & Bassler (1919; see 1923, p. 67) and L. elegans Sakakura (1935, p. 13), both with transverse opesia, no avicularia were found.

Micropora coriacea (Johnst.)

Figure 19

Harmer's proposition (1926, p. 307) to consider Flustra coriacea Johnston (1847, p. 349, t. 36: f. 8) as the first valid description of this well-known species was accepted by Bassler (1935, p. 148), and it seems indeed better not to use the older form Micropora coriacea (Esper 1806-16) any more. The fragment of M. coriacea in the first samples from the coast of Espirito Santo was dead, when collected, and without chitinous parts. Therefore we give a figure only now that a complete colony is available.

Strangely enough the species known for the West Indian region since 1873 (Smitt, p. 13) appears for the first time from Brazil in the present collection.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: With exception of the Arctic region the species has been found in all seas, also in the Antarctic realm, in shallow water and down to 823 m.

Mollia elongata C. & B.

Figure 18


The zoids are disposed like scales and are 0.5-061 mm. in length, 0.28-0.37 mm. in breadth. The height of the opesia is 0.15-0.16 mm., its breadth 0.13-0.16 mm. The measurements of the original material, especially those of the opesia are larger, but the proportions agree. Some details must be added to the original description, viz. the vestibular arch that appears beneath the operculum, the large cryptozyst that extends on both sides of the orifice, the depressor muscles passing through the opesia to their insertion into the fron-
tal membrane, the voluminous ovice!s that are immersed in the zoid above, and the calcareous papillae on the basal surface.

The generic name *Mollia* is used here in accordance with Canu & Bassler (1. c.), Norman (1909, p. 286) and Bassler (1935, p. 149). Waters (1925, p. 347) disagrees with this nomenclature. A comparison of the present species with the description and figures of the genotype (Smith 1873, p. 12; Waters 1879, p. 120; P. H. MacGillivray 1886, p. 70, t. 117: f. 9-10) makes it probable that both are congeneric.

Occurrence: Coast of Espirito Santo, 35 m.

Distribution: Coast of Bahia and of Espirito Santo, 49-128 m.

*Bugula carvalhoi*, n. sp.

Figures 20-21

Two white colonies, 10-15 mm. in height, growing on *Stegano-
porella transversalis* C. & B., to which they are fastened by rootlets. These surround the zoids at the base of the stem in so great a number that ancestrular details can not be distinguished. The zoaria are broad, fan-shaped and ramify immediately above their basis; the free growing-points are slightly curled inwards. The branches are biserial, rarely 2-3 triserial successions of zoids occur. The length of the zooecia is 0.4-0.45 mm., the breadth 0.15 mm. The aperture occupies the entire front-wall or nearly the whole. One stout, pointed spine, 0.1 mm. in length, projects frontally at the external and one on the internal distal angle. These 2 spines are very constant in sterile as well as in oveicelled zooecia. The outer limb of the forked proximal end of the zoid reaches the insertion of the avicularium, the inner one descends still farther. The type of the bifurcation is that of *B. scaphoides* Kirkp. (Harmer 1926, p. 433, f. 23-B, type 4). In several cases the zoid *F* is imperfect and therefore the bifurcation becomes irregular. There are 13-15 tentacles. Only one generation of larvae is developed in the two present colonies; the polypides do not regenerate after the hatching of the first larvae.

The length of the avicularia (0.18 mm.) exceeds the breadth of the zoids. They are strong and situated laterally in the distal half of the zooecia. The tip of the rostrum and mandible is bent; the peduncle originates on the under side of the avicularium between the articulation of the mandible and the posterior curvature of the head.

The ovice!s have no peduncle and are superposed to the zoid with the whole breadth of their proximal border. They are no more
than 0.1 mm. high, and only a narrow edge of the calcified ecto-oeso-
cium appears frontally, where the membranous vesicle closes the
ovicell. The growing embryo depresses this vesicle into the zoocelial
cavity down to the level of the insertion of the avicularium.

The species is named in honour of its collector, my friend Mr.
João de Paiva Carvalho.

Occurrence: Littoral of the state of São Paulo, 100 km. east
of Santos.

Discussion of Bugula carvalhoi. — B. flabellata (J.V.Thomps.) is si-
milar, but as a rule its branches are multiserial, its distal spines are more
numerous, its oviceils are high and have a peduncle. In B. flabellata even
the larva ready for hatching maintains its hyperstomial position (CONILL
1948, t. 8: f. 57-60).

The fragment of Bugula from the ilha das Palmas (MARCUS 1938, p.
28, t. 6: f. 13B) belongs probably to B. carvalhoi and not to B. flabellata.
Discussion this specimen I referred to the Floridian material of SMIT (1872,
p. 18, t. 5: f. 48-52) that also has only two distal spines and successive
of biserially disposed zoids. However it shows high oviceils with the cha-
acteristic peduncle of flabellata that is absent in the present species and in
the fragment from the ilha das Palmas.

Coleonora corderoi, n. sp.

Figures 23-25

The encrusting colony is composed of regular longitudinal se-
ries of very big zoids (length: 1.4-1.8 mm.; breadth: 0.7 mm.), most
of which are rectangular in shape, but may also be of more irregular
form at ramifications and where the substratum is uneven. To
the latter the zoarium is attached by calcareous tubules of the basal
wall. These are more numerous at the marginal portions of the ba-
sal wall than in the middle. On the limits the zoids are distinctly
bordered and areolated. Their ventricose frontal wall is granulated
and becomes tuberculated with the progress of calcification. Scatte-
red pores appear between the tubercles. The sculpture dies away
towards the distal region of the zoid where a smooth, tubular peris-
tome (peristome in the terminology of CANU & BASSLER 1927, p. 6)
rises. The orifice of the peristome (secondary orifice or peristomioce)
is round. An avicularium with a curved, euspidate mandible (length:
0.23 mm.) is fixed to the inner side of the peristome, where it lies
slightly beneath the border or farther down. The avicularium is
not present in all zoids. The orifice of the zoocarium (primary
orifice) can only sometimes be seen at the bottom of the peristome.
The operculum is 0.28-0.37 mm. broad. It has a convex basal border
and laterally produced proximal corners, is chitinized all around, and provided with two oblique selerites ("attachments") on the distal part of which the ocellus are fastened. The globose ocellus opens into the cavity of the peristome and reclines on to the front-wall of the following zoid. Its ecto-ooecium has the same sculpture as the zooeal frontal.

The species is named in honour of Professor Dr. Ergasto H. Cordero in recognition of his zoological work.

Occurrence: Coast of Espirito Santo, 36 m.

Discussion of Coleopora corderoi. — The genus Coleopora that belongs to the Petraliidae was introduced for a Miocene (Tortonian) species from the palaeontologically well-known Austrian (formerly Hungarian) locality Eisenstadt (Canu & Bassler 1924, p. 679). Its frontal is nearly smooth. Three years later (C. & B. 1927, p. 6) the genus was described with a recent species, C. verrucosa, from the Philippine region as type (C. & B. 1929, p. 267). The thick, crenulated orifice of the peristome and the tubes of the frontal distinguish C. verrucosa at once from C. corderoi. Less numerous, but still more salient tubes occur in C. americana from Porto Rico (Osburn 1940, p. 411). Also each of the frontal pores of C. erinacea C. & B. (1929, p. 268) is surrounded by a tubular "peristome". The zooids of C. seriata C. & B. (1929, p. 270) are disposed in bi- to multiserial branches and not provided with areolae. The species nearest to C. corderoi is C. granulosa C. & B. (1928, p. 82) from the Miocene of Panama. The zooids are separated by a very thin thread (not very thin in corderoi) and also other details of the sculpture are similar. But in C. granulosa the zooids are broader, and the peristome seems to be less salient and not smooth. After Canu & Bassler C. granulosa approaches C. minutipora C. & B. from the Philippines very closely. As this name does not occur in Coleopora, the comparison probably refers to C. seriata.

The absence of avicularia is expressly mentioned in the description of C. americana Osb., and in none of the other diagnoses the occurrence of avicularia is indicated. C. corderoi is evidently the first species of the genus with avicularia, that are frequent in other genera of the family.

UTINGA, n. g.

Petraliidae with not fenestrate zoarium, the operculum not especially thick, its poster with a concavity in the middle of the proximal border, that corresponds to a rounded lyrula of the orifice. Cardelles present; neither raised peristome nor suborbicular muero. One distal radicular chamber.

Type of the genus: Uttinga castanea (Bsk.).

The work that I consider as the fundament of the modern system of the Cheilostomata (Levinsen 1909, p. 350) united a great number of species from the older genera Lepralia, Mucronella and Petralia in the family Petraliidae
with the only genus Petralia. Canu & Bassler (1927, pp. 5-6) in the new genera Petraliella and Coleopora, the latter well known the high peristome. The type of Petraliella is Escharella bisinata (1873, p. 59), and therefore the genus is valid, although it was without separation from Petralia P. H. Mac Gillivray (1868, p. 141 in 1929 a distinguishing character between Petralia and Petralia published: ovicell closed (Petralia) and never closed (Petraliella) operculum. It is evidently a typographical error, that the ovicell of the new species of Petraliella described by Canu & Bassler, P. marginata, p. 80) is said to be closed by the operculum; on the next page (p. authors say that the operculum closes the ooeicum only when it securing the passage of the egg. As in the present species the operculum not shut the ovicell when it is completely closed, but is not always in this position in the preserved material, it is better to abandon character. Stach (1936, p. 335) includes only such species in the Petraliidae with a normal plane of the zooscleral aperture.

In Stach’s revision, the base of the present classification, Petralia and Petraliella C. & B. are exactly defined, and three other genera were sub-genera described. The new genus Utinga differs from Petraliella absence of the two large sinuses in the proximal rim of the aperture exception of Pachyleithonia nigra C. & B. (1930, p. 25), that has a poster but is quite different from Utinga in other respects. U. cast the only species of the Petraliidae with a central concavity of the posterior are however be said that the opercula have not yet been figured species.

**Key to the Genera of Petraliidae (mostly after Stach 1936, p. 3)**

1 With secondary orifice (peristome); the primary orifice (a closed by the operculum) hidden at the bottom of a tubular pe (peristome; Canu & Bassler, 1920, p. 56). Coleopora C. Primary orifice distinct in frontal view, no secondary orifice.

2 Operculum very thick, black; muscular attachments indistinguishable.

Pachyleithonia C.

Operculum more or less weakly chitinized, transparent, with a for the insertion of the ooeiculai on each side.

3 Zoarrium fenestrate.

Zoarrium not fenestrate.

4 With a suboral muero.

Without a suboral muero.

5 With a lyrula.

Without a lyrula.

6 Radicular chamber or chambers restricted to the distal end basal wall.

Mucropetraliella

Radicular chambers scattered over the whole basal wall.

Peripetraliella

Simpetraliella

Petralia P. H.
7 With a lyrula.
   Without a lyrula.

8 Proximal rim of the aperture indented by two large sinuses.
   *Petraia* 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.
   *Hippopetraia* Stach

Proximal rim of the aperture serrate.
   *Serripetraia* Stach

**Utinga castanea** (Bšk.)

Figures 26-29

*Macronella castanea*, Busk 1884, p. 157, t. 19 (*Hemeshara cast*.), f. 6-6 e.

*Lepralia castanea*, Waters 1888, p. 28, t. 3: f. 36-37.

*Petraia castanea*, Levensen 1909, pp. 350-351.

*Petraia castanea*, Waters 1913, p. 519.

*Petraia castanea*, Waters 1925a, p. 542.

The zoarium is flat, unilamellar. The slightly convex zoids are
disposed quincuncially, separated by thin but distinctly raised
borders, and rectangular or longitudinally hexagonal in shape. Their
length is 1.1-2.2 mm., the breadth 0.5-0.7 mm. Their lateral walls
communicate by multiporous rosette-plates. The frontal is a granular
trecomysiost with a slight marginal areolation. The coarse frontal pores
are connected by cracks that form the rhombic meshes of a
network. The basal wall of each zoid bears a single radicular chamber
at its distal end. The border of this pore-chamber (dieteilia) 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 mucedo lies
on the inner side of the low peristome and therefore corresponds to
a lyrula. A suborificial mucro is not developed. The horseshoe-sha-
ped operculum is rather well chitinized, the anter has a thick and
distally continuous marginal sclerite, the poster is broad and con-
cave in the middle of its proximal border.

The oviceill is voluminous, salient but flattened in the centre of
the frontal wall, that is provided with fine pores. The oviceell 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 oviscell. If the operculum lies horizontally opposed to the vestibulum, it leaves the ooeicum open. On one or both sides of the proximal border of the oviscell there is a small avicularia with a rounded mandible that is directed proximally.

The strong zoocellular 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 an of the operculum.

The polypides are bright brown; the number of tentacles is

As in Macropterygiella armata (Waters 1913, p. 519) and of species, the inner epithelium at the base of two tentacles in the middle of the abanal side is thickened.

Occurrence: Coast of Espírito Santo, 35 m.

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

Escharoides martae Marc.

Figure 30

The first description published in the Arq. Mus. Nac. Rio Janeiro (Marcus 1949) did not include the oviscells that only were found in the colonies selected now. The ooeicum is broader than high, provided with a few large areolae at the border, and a cuneate muco in the centre. The secondary orifice of the fertile zoid somewhat different from that of the sterile ones. One spine with bulbiform base rises on each side of the transverse orifice of the ristome. 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 0.61 mm. The zoecia, disposed in linear series and separated by smooth lines, arc strongly arcuated around the margin. The first wall is not completely even but has some slight gibbositys and shallow pits between them. The wall is raised in the middle, where an alveolus with a thin mandible directed downwards occurs in