OBSERVATIONS ON THE TYPE-MATERIAL OF SOME GENERA AND SPECIES OF POLYZOA

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1. INTRODUCTION

In this paper I have gathered together the results of the examination of the type-specimens of a number of species.

2. CHALLENGER COLLECTION

The two main sets of Challenger Polyzoa (received by the Museum in 1887 and 1899, see Hastings, 1943 : 304) have been supplemented by further material from the Busk Collection, received in 1943 (registration 1944.1.8.1–406), among which

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some figured, and otherwise informative, specimens have been found. There is also a series of preparations of chitinous parts, made by Busk from Challenger specimens, received by the Museum in 1882. All these collections include syntypes of Busk's Challenger species.

3. SOME TYPE-SPECIMENS

It has seemed best to arrange these notes, on the examination of sundry type-specimens, alphabetically according to the names under which the species were originally described. An indication of the present generic attribution of each species is given.

Bifaxaria corrugata Busk and *B. papillata* Busk

(Text-fig. 1A, B, C)

Harmer's elucidation of the Challenger Report. Harmer (1957 : 868) elucidated Busk's confusion between *Bifaxaria corrugata* and *B. papillata*, both of which (pp. 867, 868) he referred to *Sclerodomus* Levinsen. Harmer did not see Busk's drawings (published or unpublished), nor his copy of the Challenger Report. They have yielded evidence, in Busk's hand-writing, confirming Harmer's conclusions. The details are filed in the British Museum (Nat. Hist.).

Harmer's conclusions may be summarized thus: Busk's pl. XIII, figs. 4, 4a, described as *B. papillata*, represent *B. corrugata*[1]; and his pl. XXIV, fig. 6, described as *B. corrugata*, represents *B. papillata*; the attributions of pl. XIII, figs. 3, 3a to *B. corrugata* and pl. XXIV, figs. 4 A–D to *B. papillata* are correct. *B. corrugata* was obtained solely at St. 122, and *B. papillata* solely at St. 196.

With only four exceptions (pl. XIII, fig. 4, one zoarium, and pl. XXIV, figs. 4B, 4C and 6, see below) all the figured specimens are definitely recognizable by their detailed agreement with the figures. Harmer's identification of these specimens agrees with Busk's original labelling. In the subsequent confusion Busk altered the name on one slide (1887.12.9.379A changed from *B. corrugata* to *B. papillata*, presumably because the specimen is shown in pl. XIII, fig. 4, left hand figure, under that name). Kirkpatrick (MS. Catalogue) accepted this, and added a label to the slide. These are the alterations mentioned by Harmer.

To sum up, the specimens are mounted on three slides, and are figured as follows:
1887.12.9.377, *B. corrugata*, St. 122.

Left hand zoarium is represented in pl. XIII, fig. 3 (nat. size), and fig. 4a.

Right hand zoarium is represented in pl. XIII, fig. 4, right-hand figure (nat. size).[2]
1887.12.9.379A, *B. corrugata*, St. 122, is represented in pl. XIII, fig. 4, left-hand figure (nat. size), and fig. 3a.

[1] He should have excluded one of the three zoaria in fig. 4 from *B. corrugata* (see below).

[2] It will be noticed that the figures of the zoaria are mostly placed with magnified figures of the same species, but not always with those of the same specimen. The original drawings of the zoaria were (with one exception) not on the same cards as the magnified drawings, which perhaps led to the errors in arranging them on the plate. None of the original drawings of zoaria have been preserved; even the one on the same card as other drawings was cut out, and a note made beside the hole.

1887.12.9.379, *B. papillata*, St. 196, is represented in pl. XXIV, figs. 4A and 4D. Figs. 4B, 4C and 6 (pl. XXIV) show no peculiarities by which the figured zooecia can be recognized, but they closely agree with the zooecia of comparable age in this specimen.

The pieces mounted on this slide (1887.12.9.379) are evidently parts of one colony, which appears to have been the central zoarium of three figured in pl. XIII, fig. 4 ; but I have not proof of this. The presence of secondary branches does, however, support the conclusion that this drawing represents *B. papillata* (see footnote 1 on p. 58).

Lectotypes :

a. *B. corrugata.* Harmer's choice (1957 : 868) of the specimen 1887.12.9.379A as " type ", in his list of specimens, and " type-specimen " in the text, constitutes a valid choice of lectotype.

b. *B. papillata.* I have said above that the fragments on the slide 1887.12.9.379 are evidently parts of one colony. If this could be proved the whole slide would be holotype by monotypy. In the absence of proof, I have chosen as lectotype the lower (larger) of the two pieces figured in pl. XXIV, fig. 4A.

Systematic position. The frontal wall of *Sclerodomus corrugatus* and *S. papillatus* is arched over a frontal membrane with a membraniporine operculum. The wall is thus of the nature of a frontal shield, and these species belong to the Ascophora imperfecta of Harmer (1957 : 645, 651).

I am not confident that Harmer was right in referring these two species to *Sclerodomus*, the type-species of which, *S. denticulatus* (Busk), was well described by Levinsen (1909 : 302). Levinsen (p. 304) examined a small fragment of Busk's material of *Bifaxaria corrugata* and had " no doubt that this species belongs not only to another genus but even to another family than *Sclerodomus denticulatus* ". I have not seen Levinsen's fragment, but it evidently came from an old part of the zoarium and may in some ways have misled Levinsen, as also did Waters's description of the ovicell (1888 : 15)—" formed by a swelling of the superjacent zooecia ". Both species have normal ovicells (cf. Harmer, 1957 : 869). Nevertheless, there are differences (e.g. the absence of an avicularian cross-bar, which is sometimes thought to be important).

Comparison of the species. *S. papillatus* and *S. corrugatus* differ markedly in the details of their primary frontal walls (Text-fig. 1A, C). In both there is a median longitudinal line (" keel ") which is a little more thickly calcified (cf. Harmer, 1957 : 866). In *S. papillatus* this line runs up into a prominent, mucro-like lip (Text-fig. 1C), except in fertile zooecia where the edge of the frontal shield is transverse (Harmer, pl. LVII, fig. 16 as *S. corrugatus*, see below). In *S. corrugatus* the longitudinal line is less pronounced. The edge of the shield is more or less transverse (Text-fig. 1A), or slightly prominent, in the non-fertile zooecia, and in the fertile zooecia it forms a broad rounded lip (Busk, pl. XIII, fig. 3a). In *S. papillatus* the pores are peripheral, arranged in one or two series. Sutures or cracks run outward from the median line, most of them ending in a pore. In *S. corrugatus* the pores are central, arranged on

each side of the median line in several longitudinal series, and there are no sutures or cracks. Laterally there are longitudinal ridges, and the extension and thickening of this ridged calcification forms the striated thickening which gradually obliterates the original frontal wall and transforms the appearance of the older parts of the colony by enveloping the branches. The pores are continued upwards as oblique tubes in this thickening, the oblique transection of the tubes and the wall giving the appearance of oval or elongate pores (Text-fig. 1A). In *S. papillatus* it is the develop-

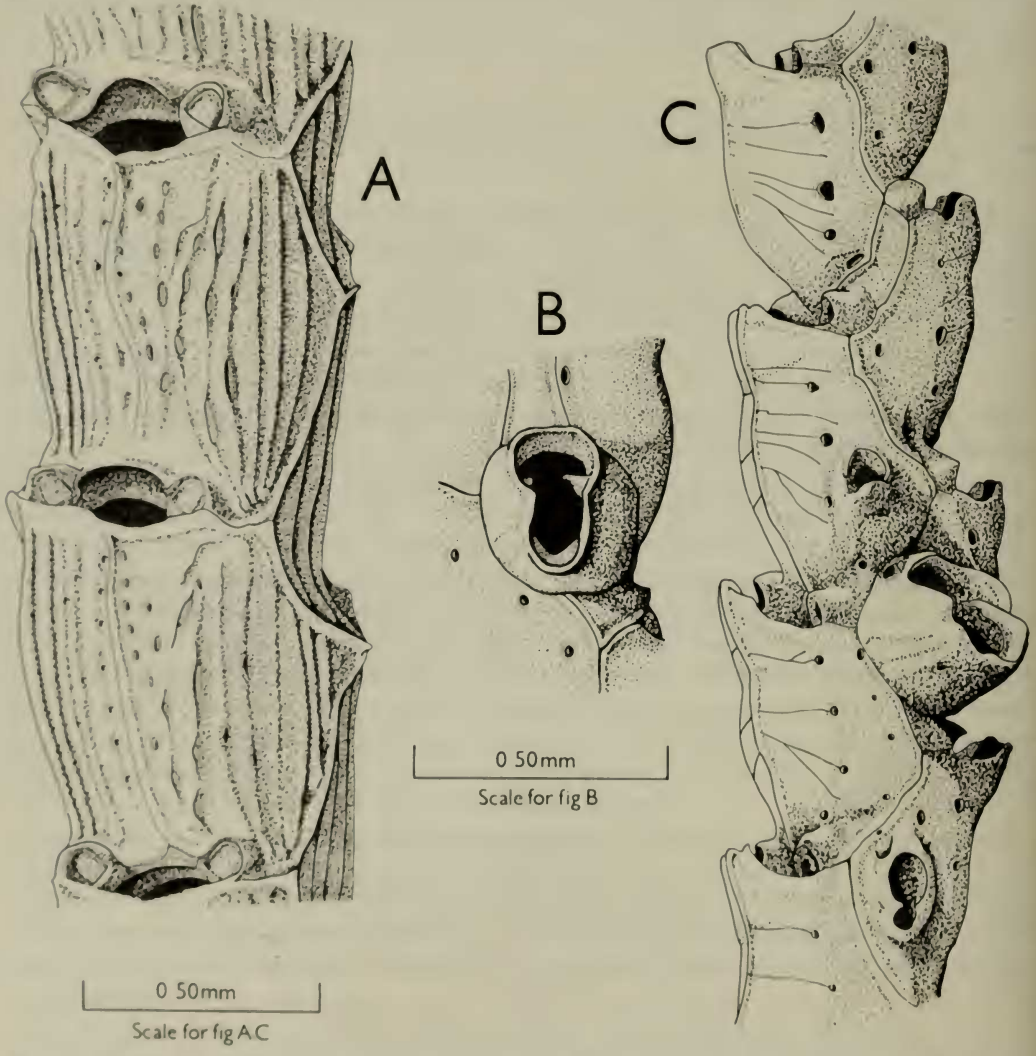

FIG. 1 *Sclerodomus corrugatus* and *S. papillatus*. Zooecia near the growing point for comparison of their characters before obliteration of the primary walls by secondary developments. A, *S. corrugatus*, 1887.12.9.379A, lectotype. B, C, *S. papillatus*, 1964.2.2.4, Siboga collection, specimen 583A[1]. B, is the large avicularium which is seen obliquely in C.

ment of a covering of avicularia which leads to marked differences in the appearance of the branches at different stages. The youngest branches are slender with almost hyaline, glistening zooecia, in which the lateral frontal-pores and the fine sutures can quite readily be seen. As they get older they become opaque, and the covering of avicularia begins to develop down each side of the branch. The oldest branches are covered with a mosaic of these avicularia, which makes them considerably thicker than the younger branches; and a large avicularium is frequently developed at the bifurcations (but not in the axils). The first avicularia to appear are single lateral ones on each side of each zooecium, forming a zig-zag series down each side of the branch. An occasional one of these is enlarged. In fig. 1C the first lateral avicularia have appeared, the youngest zooecia still being without them. One is large (figs. 1B and C) and the most proximal is not fully developed.

Identity of the Siboga material. The difference in age of the specimens probably accounts for the rather surprising fact that, having correctly elucidated Busk's work on these two species, Harmer (1957, p. 869) was in doubt as to the identity of the Siboga species, and finally placed it in *S. corrugatus*. The Siboga specimens agree perfectly with *S. papillatus*, and differ from *S. corrugatus*, in the shape of the zooecia and peristome, the distribution of the pores, the presence of a lateral avicularium on each zooecium and of enlarged ones beside some of the ovicells, the presence of secondary branches, and the covering of the older parts by avicularia. This covering was not described by Busk, but its earlier stages are present on the proximal part of the main axis of the Challenger specimen of *S. papillatus*. Busk's pl. XXIV, fig. D resembles Harmer's pl. LVII, fig. 10 with remarkable closeness. Only the large lateral avicularium is absent in the Siboga figure, but these are present in the Siboga material.

The apparent differences between the Siboga material and the type-specimen of *S. papillatus* lie wholly in their age. The type-specimen consists almost entirely of branches in the younger phases, the most proximal having reached the phase with a zig-zag line of avicularia, and no older phases being represented. The greater part of the Siboga material is in the oldest phase, and there are only few young branches. It therefore looks decidedly stouter than the type-specimen, and different in surface sculpture, etc.; but if branches in the same phase are compared the agreement in all characters, including dimensions, is found to be exact[1], except for the absence of enlarged avicularia at the bifurcations in the Challenger specimen. As they only appear in the older, thicker parts of the Siboga material, the difference in the age of the material probably also accounts for this.

Station 122, type-locality of *S. corrugatus*, is off Brazil, and Station 196, type-locality of *S. papillatus*, is off Celebes. Thus the geographical probabilities also support my conclusion that the Siboga material belongs to *S. papillatus*.

The synonymies of the two species given by Harmer (pp. 867, 868) are, as already indicated, correct; but the one to be applied to the Siboga specimens is that given for *Sclerodomus papillatus* (p. 868).

[1] Miss Cook (in litt.), " I have made several sets of measurements and the agreement is quite startling. ' Exact ' is certainly the right word ".

Flustra octodon Busk

Flustra octodon Busk, 1852 : 49, pl. LVI, fig. 4, pl. LVIII, fig. 5.
Hincksinoflustra octodon Bobin & Prenant, 1961 : 167 (as *Flustra octodon*), 169, 170, text-fig. 4I–IV.
Hincksina (*Flustra*) *octodon* (Busk) Gautier, 1962 : 51. (*Hincksinoflustra* in text. Synonymy.)

Distribution. Coast of Spain (probably Mediterranean) ; Mediterranean ; Atlantic coast of Morocco.

Lectotype, chosen here : 1899.7.1.112B.

Paralectotypes. 1899.7.1.5789. 1963.3.12.1 (previously unregistered).

Locality of the type-material. This material consists of two spirit specimens, figured by Busk (1852, pl. LVI, fig. 4 ; left-hand figure, 1899.7.1.5789 ; right hand figure, 1899.7.1.112B), a slide from which pl. LVIII, fig. 5 was drawn (1963.3.12.1), and two preparations made in comparatively recent years from 112B. All these specimens came from M'Andrew's Spanish collection, and the locality published by Busk is " Coast of Spain, M'Andrew ".

The question arises as to whether the specimens came from the Atlantic or the Mediterranean side of the peninsula. Busk (1852, 1854) published descriptions of M'Andrew's Polyzoa as follows : from the " Coast of Spain ", *Alysidium lafontii* (p. 14), *Scrupocellaria macandrei* (p. 24) and *Flustra octodon* (p. 49) ; from the " Bay of Gibraltar ", *Membranipora rossellii* (p. 59), *M. calpensis* (p. 60), *Lepralia violacea* (p. 69), *L. spinifera* (p. 70) ; from the " Mediterranean ", *Lepralia linearis* (p. 71), *Eschara foliacea* (p. 89).

The slide of *A. lafontii* (1899.7.1.3752) has labels superimposed on the old ones, as was Busk's custom[1]. The original label reads " Coast of Spain ", the newer one " Mediterranean ". The original drawings of *S. macandrei* (pl. XXIV, fig. 1), and *F. octodon* (pl. LVIII, fig. 5) are both inscribed " Mediterranean ".

Conversely, three of the four slides of the two species recorded as from the Mediterranean, are labelled " Coast of Spain ". The four slides are : *L. linearis*, S. Coast of Spain, 72–128 fms., 1899.7.1.2330 ; Mediterranean, 1899.7.1.2319. *E. foliacea*, Coast of Spain, 1899.7.1.1417 ; S. Coast of Spain, 1899.7.1.1412.

There is thus evidence that suggests that all the M'Andrew Spanish material described by Busk in the British Museum Catalogue came from the Mediterranean side of the peninsula.

The locality given on the specimen of *Flustra octodon*, illustrated in pl. LVI, fig. 4 (right-hand specimen), is " Between Vigo Bay and Tunis ". Unless this is an error, it must be a generalization covering the area visited by M'Andrew, and would not be incompatible with a Mediterranean origin for the specimen.

Flustra octodon is the type-species of *Hincksinoflustra* Bobin & Prenant (1961).

[1] His specimens were relabelled, sometimes more than once, in accordance with changes in the style of label in use in his collection ; for further details see Hastings, MS. note in Busk Register, British Museum (Natural History).

Lepralia melolontha Landsborough

Lepralia nitida, branched in a fine dendritic manner, Johnston, 1847 : 319.
Lepralia nitida, specimen *d.*, "*Lep. nitida* var.", Gray, 1848 : 121.
Lepralia melolontha Busk ; Landsborough, 1852 : 319, pl. XVIII, fig. 70 ; Busk, 1854 : 79, pl. LXXXV, fig. 3.
Membraniporella melolontha Busk Hincks, 1880*a* : 202, pl. XXVII, figs. 9, 10.
Aspidelectra melolontha Levinsen, 1909 : 160.
Aspidelectra melolontha Busk : Marcus, 1940 : 199, text-fig. 103.

Distribution. This species is only known from localities of more or less reduced salinity bordering the North Sea. The distribution given by Marcus is Denmark (one locality, Horns Rev[1]) ; Heligoland ; Belgium ; southern England [eastern England would be more correct].

Lectotype, chosen here : 1854.11.15.140, British Museum Catalogue Coll. Thames Estuary, Lieut. Thomas.

Paralectotypes. 1899.7.1.1363, Busk Coll. Thames Estuary, Lieut. Thomas. 1899.7.1.1364, Busk Coll. Thames Estuary.

Other material. River Roach, Essex (Dr. Baird, 1865.6.28.1) ; River Roach (Norman Coll., 1911.10.1.741 part, 1919.6.24.25, 25a, 26) ; Goodwin Sands, Kent (G. Merritt, 1884.5.10.1) ; Kirkwall, Orkney (Johnston Coll., Gray 121d, 1847.9.16.130) ; Locality ? (Hincks Coll., 1899.5.1.727.)

Remarks. The first published account of this species is by Landsborough. He gave credit to Busk for the discovery of the species, and published a description and drawings supplied by Mrs. Gatty, who had recognized it independently (see Busk). Busk has hitherto been named as the authority for the species, but strictly Landsborough's name should be given. Under these slightly confused circumstances it seems desirable to choose a lectotype.

The Busk material in the Museum consists of three slides from the Thames Estuary material mentioned by Landsborough. These are syntypes, and, in the absence of any of the material figured by Mrs. Gatty, I have chosen one of them as lectotype. The material from Bawdsey, figured by Busk (1854), is not in the Museum, but would not be a syntype.

Hincks (p. 203, footnote) thought that Mrs. Gatty (in Landsborough) was right in identifying Johnston's dendritic variety of *Lepralia nitida* from Kirkwall, Orkney Islands, with this species. Marcus (p. 201) noted the Orkney record as being uncertain but not improbable. It is confirmed by Johnston's specimen (1847.9.16.130, Kirkwall). This consists of several small colonies of *L. melolontha* on pieces of *Mytilus* shell. They are growing with *Electra monostachys* (Busk) and *Conopeum reticulum* (Linn.), an association which suggests a brackish-water habitat. The same three species are, for example, found together from the River Roach, Essex (Norman Coll., 1911.10.1.481 and 483), where one shell in particular shows all three intermingled as in the Orkney specimen.

One of the Johnston colonies of *L. melolontha* has its membraniporine ancestrula

[1] Horns Rev, a shoal to the west of Jutland.

intact. It has formed a pair of distal zooecia, each of which has budded a further pair. Only the left-hand zooecium of each of these two pairs has budded, and from these buds the two arms of the colony fan out and diverge—see also Hincks (fig. 10) and Marcus (text-fig. 103) which both show fan-shaped branches starting from a single zooecium.

L. melolontha is the type species, by monotypy, of *Aspidelectra* Levinsen (1909).

Lepralia multidentata Thornely

Lepralia multidentata Thornely, 1905 : 120, pl. [unnumbered], fig. 9.
Hippoporella multidentata (Thornely) Harmer, 1957 : 1099, pl. LXXIII, figs. 9–12.
Lepralia purpurea Thornely, 1905 : 120, pl. [unnumbered], fig. 13.

Distribution. Ceylon ; India ; Sulu Archipelago.

Lectotype, of *L. multidentata*, chosen here : 1906.12.3.4. Ceylon.

Paralectotype, of *L. multidentata* : Cambridge Museum, Feb. 22, 1906.9. Ceylon.

Holotype, of *L. purpurea*, the only specimen : 1906.12.3.6. Ceylon.

Remarks. Under this species Harmer listed three specimens from the Thornely Collection in the British Museum. They are the one chosen here as lectotype, and two (not named by Thornely) which he had himself found, accompanying specimens of other species in the Thornely collection.[1] The Cambridge specimen was named by Thornely and is a syntype.

Harmer recognized *Lepralia purpurea* Thornely as a synonym of *L. multidentata*, but did not list the specimen.

Lunulites owenii Gray

Lunulites owenii Gray, 1828 : 8, pl. III, fig. 15.
Cupuladria owenii (Gray) Cook, 1965 : 213, pl. 2, figs. 3A, B, text-fig. 2C. (Synonymy.)

Distribution. *Recent*, West Africa. *Pliocene*, South Carolina ; Florida. *Miocene*, North Carolina ; Florida. (Teste Cook).

Lectotype, chosen here : 1899.7.1.4879, W. Africa.

The slide 1899.7.1.4879, which forms part of the Busk Collection, is labelled " B.M.. J. E. Gray ", indicating that Busk received the specimen from the British Museum. It is the only representative of Gray's material of this species now in the Museum and Kirkpatrick (MS. Catalogue) accepted it as the type-specimen. It is the specimen figured by Busk (1854, pl. CXV, fig. 3).

Remarks. *Cupuladria owenii* is discussed by Cook.

[1] Their numbers, incorporating numbers in Harmer's lists, are :
1936.12.30.41A with *Cleidochasma protrusum* 1936.12.30.41D. Ceylon. See Harmer, 1957 : 1040.
1936.12.30.117B on *Celleporaria columnaris* 1936.12.30.117A. India. See Harmer, 1957 : 677.

Membranipora amplectens Hincks

Membranipora amplectens Hincks, 1881*a* : 129, pl. III, fig. 7.
Electra amplectens (Hincks sp.) MacGillivray, 1889 : 322, pl. CLXXXVII, figs. 14, 14*a*; Levinsen, 1909 : 66, 146, 147, pl. IX, figs. 1a, b.
Membranipora amplectens sp. n. [*sic*] Hincks, 1892 : 332. (Named as " type of a new genus ". Introduction of *Heterooecium* follows.)
Membranipora amplectens (*Heterooecium*) Hincks : Waters, 1898 : 671.
Heterooecium amplectens Hincks : Harmer, 1902 : 284.

Distribution. Australia.

Lectotype, chosen here : 1899.5.1.702, Hincks Coll. W. Australia.

Paralectotype : 1899.5.1.703, Hincks Coll. W. Australia.

Other Material. Australia (1897.5.1.497, 498, mounted by Jelly) ; Australia (Vine Coll., 1934.10.20.85, 91) ; Port Phillip Heads, Victoria (Bracebridge Wilson Coll., 1888.11.14.117, 283).

All the specimens listed are growing on algae.

Remarks. *M. amplectens* is the type-species, by original designation, of *Heterooecium* Hincks (1892 : 332).

Membranipora crassimarginata var. *erecta* Busk

Membranipora crassimarginata var. *erecta* Busk, 1884 : 63, pl. XIV, fig. 3.
Acanthodesia perfragilis (MacGillivray) Hastings, 1945 : 98. (Synonymy.)

Distribution. Australia.

Lectotype, chosen here : 1944.1.8.160. Challenger St. 162, Bass Strait.

Paralectotypes. 1887.12.9.309. Challenger, St. 162, Bass Strait.

The other paratypes are all marked with the dubious locality, St. 151, Heard Island (see below). They are : 1887.12.9.310, 311 ; 1899.7.1.1004, 1005 ; 1944.1.8.161–164.

Remarks. Harmer (1926 : 224) accepted a specimen from St. 162, Bass Strait, 1887.12.9.309, as the original of Busk's figure (1884, pl. XIV, fig. 3). The actual figured specimen (1944.1.8.160) had not been deposited in the British Museum at that time. It likewise comes from St. 162 and is recognizable by its detailed agreement with the figure. It was found in the supplementary Busk Collection, received by the Museum in 1943 (see section 2, above). It is chosen here as lectotype.

There is evidence (Hastings, paper in preparation) that Busk's record of Australian species (including this one) from Heard Island (Busk, 1884 : X, those species[1] from St. 151 marked D) may have been due to an error in sorting before the collections were sent to specialists. *M. crassimarginata* var. *erecta* is synonymous with *Acanthodesia perfragilis* (MacG.), see Hastings (1945).

[1] *Salicornaria clavata* to be excepted. The Heard Island species is distinct from the Australian, see below.

Membranipora hexagona Busk

Membranipora hexagona Busk, 1856 : 308, pl. XII, fig. 4 ; Hincks, 1880*a* : 143, pl. 18, fig. 7 (after Busk) ; 1881*a* : 6, pl. IV, fig. 6.

Holotype, the only specimen : 1899.7.1.1083. Devon, Miss Cutler.

Remarks. *Membranipora hexagona* has remained an enigma. Hincks (1880*a* : 143), for example, remarked that he knew " nothing of *M. hexagona* but what may be gathered from the brief description and figure in the ' Zoophytology ' ". He reproduced part of Busk's figure. Subsequently (1881*b* : pl. IV, fig. 6) he figured a specimen lent to him (see 1881*a* : 6) by Busk, presumably the holotype.

Examination of the holotype shows that it is not membraniporine, and that Busk based the name on a mutilated specimen of a species with a calcareous frontal-shield. This shield has been completely broken away in most of the zooecia, and even the lateral walls are somewhat abraded, sometimes exposing the cavities of pore-chambers. On a concave part of the substratum, a few zooecia have been less worn. In these the lateral walls stand higher and in two zooecia small parts of the broken frontal-shield project at the margins of the aperture. The floor of a hyperstomial ovicell also remains. The frontal membranes (which were below the frontal shields) have adhered to the floors of the zooecia, and remained intact, and with them the opercula. The opercula are widely open as in Busk's and Hincks's figures. It is thus clear that *M. hexagona* was based on a misconception.

Supposed material of *M. hexagona* has been recorded from various localities :

Busk himself gave *Flustra coriacea* Johnston (not Esper) as a synonym of *M. hexagona*. *F. coriacea* was recorded by Johnston (1847 : 348, pl. LVI, fig. 8) from specimens from Sana Island, Fowey and the Isle of Man. Busk listed all three localities in the distribution of *M. hexagona*, but Hincks considered that only the specimen[1] from the Isle of Man (collected by Forbes, whose description was used by Johnston) should be identified with Busk's species. This was the first supposed record of *M. hexagona* from the Isle of Man. Two subsequent records were included in the first edition of the Fauna List (Moore, 1937 : 199). The specimens are not available and their identity cannot be surmised.

Smitt (1867 : 371) tentatively included *M. hexagona* in the synonymy of *Membranipora pilosa* forma *membranacea* (Müll.). The latter is a synonym of *Electra crustulenta* (Pallas), and Smitt evidently misinterpreted Busk's figure as showing the calcified opercula characteristic of that species.

Calvet (1896 : 253) identified material from 180 m. in the Gulf of Gascony as *M. hexagona*. There is no clue to its true identity.

Cipolla (1921 : 204) recorded Pliocene fossils from Sicily as *Membranipora exagona*

[1] No other evidence has, however, been produced for thinking that Johnston confused two species under *Flustra coriacea*. It appears that only the Sana Island specimens came to the British Museum in the Johnston Collection, for they alone are listed by Gray (1848 : 115), and no others have been traced in the collection. These specimens belong to *Micropora coriacea* as generally understood, and include the specimen chosen by Brown (1952 : 126) as lectotype of *Flustra coriacea* Johnston not Esper. The existence of a second British species of true *Micropora* (*M. normani* see below) does not affect this question of whether Johnston may have confused a *Membraniporine* species with *M. coriacea*.

[*sic*] and quoted earlier uses of the name by Fischer (1870) and Neviani (1896 and 1900).

Bassindale (1940 : 194) included Busk's original record in his list of Polyzoa of the Severn Estuary. He noted (p. 197) that a later record from that region (Purchon, 1937 : 329 as *M. hexagonia* [*sic*]) was based on specimens of *Alcyonidium polyoum* (Hassall), one of which I have seen.

Cellepora hexagona von Hagenow (1839) was referred to *Membranipora* by Voigt (1959 : 29, see also Berthelsen, 1962 : 51), and thus became a senior homonym of *M. hexagona* Busk.

Membranipora pilosa var. ***multispinata*** Hincks

Membranipora pilosa var. *multispinata* Hincks, 1882 : 117, pl. V, fig. 6.
Membranipora multispinata Hincks, 1892 : 334 ; 1895 : iii footnote ; Waters, 1924 : 607, 608, pl. XIX, fig. 9 (as *multispina* on p. 607, and as *multispinosa* in expl. pl.).

DISTRIBUTION. Western Australia.

LECTOTYPE, chosen here : 1899.5.1.700, Hincks Coll., mounted by Jelly. W. Australia.

OTHER MATERIAL. 1897.5.1.491, specimen figured by Waters ; 1897.5.1.492. Both from W. Australia and mounted by Jelly. There is no evidence as to whether Hincks saw these two specimens which, being closely similar to the lectotype and also mounted by Jelly, may be parts of the original material. Waters's figure of 1897.5.1.491 is not quite accurate as regards the arrangement of the zooecia in the region which appears to be ancestrular.

REMARKS. There is little to add to Hincks's description. The walls are extremely delicate, glistening and transparent. As described by Hincks, there are five long, more or less stout, socketed spines on each zooecium. They are pointed and may be very long and curved. It appears that the opesia does not extend to the distal end of the zooecium and that the paired spines, described by Hincks as " near the bottom ", are in fact in the distal corners. In addition there may be one to three small, almost thread-like spines, similarly socketed, on the lateral gymnocyst alongside, but at a distance from, the opesia.

The proximal gymnocyst may have a few bright spots, either scattered or arranged in one or two transverse rows near the proximal end. These are the bases of tiny, sharp, thorn-like spines projecting from the inner surface of the transparent wall.

Waters considered that the " articulated " spines distinguished this species from *Electra* and related it to the " *M. corbula* group ". He probably had particularly in mind the series of incurved marginal spines which differ, as he said, from those of *E. pilosa*. The erect spines seem to be remarkably like those seen in some forms of *E. pilosa* and *E. verticillata*, and both the erect and the incurved spines resemble those of *E. monostachys* (Busk), see for example the figure given by Marcus (1950 : 8, text-fig. 1, as *Membranipora* (*E.*) *hastingsae*[1]). *E. multispinata* differs from *E.*

[1] Examination of type-material has shown that *E. monostachys* is a senior synonym of *E. hastingsae* (Marcus), not a junior synonym of *E. crustulenta* as supposed by Marcus (1950).

monostachys in its additional gymnocystal spines, its internal spinules, its dimensions, fragile texture and transparency; but to me they seem clearly to be congeneric.

Membraniporella agassizii Smitt

Membraniporella agassizii Smitt, 1873 : 11, pl. V, figs. 103–106; Levinsen, 1909 : 17; Hastings, 1964 : 258, 262.

Holotype, the only specimen: Riksmuseum, Stockholm, 262. Off Cojima, Cuba, 450 fms., March 1869, Pourtalès.

This is recognizably the zoarium figured by Smitt.

Remarks. Each kenozooecium has a small round opesia, closed by a membrane, as shown in Smitt's figure.

At two points an autozooecium has been budded in the kenozooecial crust. In one instance it lies in a plane parallel to the surface of the branch and forms part of the crust. The other one projects at right angles to the parent branch, and, together with some kenozooecia, appears to form the base of an incipient branch.

The changes with age in the zoaria of Polyzoa, particularly in the erect zoaria of some Ascophora, are well-known and may be very marked. Some striking examples in Cretaceous species have been discussed by Voigt (1960) and Wiesemann (1963). In *Membraniporella agassizii* the secondary layer is built up of both kenozooecia and avicularia. In *Sclerodomus papillatus* (see above under *Bifaxaria*) it is mostly, perhaps entirely, made up of a profusion of avicularia. In *Sclerodomus corrugatus* (above) and *Foveolaria elliptica* Busk (Hastings MS.) the original surface is obliterated by massive calcification, with characteristic texture—striated in the one species, perhaps best described as "fibrous-looking" in the other.

No other generic placing has been proposed for *M. agassizii*. The zooecial characters are those of *Membraniporella* and the taxonomic significance of the multiplication of avicularia and kenozooecia is still unknown (cf. Hastings, 1964 : 258).

Menipea fuegensis Busk

Menipea fuegensis Busk, 1852 : 21, pl. XIX, figs. 1–3.

Menipea patagonica Busk (part), 1852 : pl. XXIII, fig. 1 (not p. 22, pl. XXV, figs. 1–3, pl. XXVII, figs. 1, 2).

Tricellaria aculeata (d'Orbigny); Hastings 1943 : 356. (Synonymy and distribution.)

Distribution. Widely distributed in sub-Antarctic waters.

Lectotype, chosen here: 1854.11.15.262. Falkland Islands. H. [Hooker].

Remarks. Busk recorded this species from Tierra del Fuego (Darwin) and the Falkland Islands (Hooker), but the only type-material in the British Museum is the one specimen now chosen as lectotype. This specimen was mounted and labelled by Busk as *Menipea fuegensis*, and sent to the Museum as part of the "British Museum Catalogue Collection", for which see Hastings (1943 : 304). As noted by Hastings (1943 : 359) the ancestrula and first few zooecia of the type were figured

by Busk (pl. XXIII, fig. 1), but, by some curious error, under the name *Menipea patagonica*. There is no evidence as to the locality of the material figured in pl. XIX.

Menipea fuegensis Busk is a junior synonym of *Tricellaria aculeata* (d'Orb.).

Micropora normani Levinsen

Micropora sp. Levinsen, 1902 : 7 (footnote).
Micropora normani Levinsen, 1909 : 162, pl. VIII, figs. 3a, 3b (*M. coriacea* on plate, *M. normani* in explanation of plate).
Micropora coriacea Hincks (part) 1880*a* : 174 (specimens with avicularia).

Distribution. Southern and western coasts of Great Britain and Ireland from Hastings to Shetland ; west coast of Spain.

Neotype, chosen here : 1911.10.1.623, Norman Coll. Antrim.

Levinsen stated that he had only seen " a little fragment " of this species, and had lost it. A neotype is therefore needed. The specimen chosen was labelled by Norman as " *Micropora* n sp [*sic*] with avicularia, see Levinsen ". It clearly shows the characters of Levinsen's species, including those of the ovicell.

Other material. Hastings, Sussex, type-locality (1897.5.1.597 mounted by Jelly) ; Antrim, neotype-locality (Hincks Coll., 1899.5.1.737, slide bearing three specimens of *Micropora*, of which two (on shell) are *M. normani* ; Norman Coll., 1911.10.1.744) ; Liverpool Bay (Thornely Coll., 1936.12.30.349 B) ; Guernsey (Norman Coll., 1965.1.2.1 and 1919.6.25.82) ; West coast of Spain (1872.2.3.146).

Remarks. In addition to the differences noted by Levinsen (presence of avicularia, the characters of the ovicell, " calcified " opercula) these specimens have smaller zooecia and ovicells than are seen in British specimens of typical *M. coriacea*[1], and the pores in the cryptocyst are few and irregularly scattered. Levinsen's figure shows this latter character. Hincks included specimens with avicularia in *M. coriacea* and, except for its more numerous and evenly distributed pores, his fig. 7 (pl. XXIII) appears to represent *M. normani*. His slide 1899.5.1.737 is evidently one of the comparative mounts that he made of British forms[2] and this supports the conclusion that Hincks's specimens with avicularia represented *M. normani*.

I have not confirmed that the opercula are calcified, but they are whitish and evenly granular, in contrast to the clear, brown, chitinous opercula of *M. coriacea*. The avicularia are sporadic in their distribution, but a few are present in every colony which shows the other characteristics. The granulation of the cryptocyst is a distinctive feature, being fine and close and very even. That of *M. coriacea* is somewhat coarser and less close, and, over the greater part appears less regular owing to interruption by the more numerous pores.

The differences in dimensions and number of pores are evident to direct examination. Sample measurements and counts made by Miss Cook, as a trial, support these observations. They are based on a total of 30 zooecia and 16 ovicells from 4 colonies

[1] *M. coriacea* Johnston not Esper, see footnote above under *Membranipora hexagona*.
[2] See Hastings (forthcoming paper on *Hippothoa*).

of *M. coriacea* from 4 different British localities ; and 40 zooecia and 20 ovicells from 5 colonies of *M. normani* from 3 different British localities. Many more would be needed to obtain statistically reliable figures.

Measurements of zooecia and ovicells. *M. coriacea :* Lz 0·40–0·70 mm., average 0·50 mm. lz 0·30–0·48 mm., average 0·39 mm. Lov 0·18–0·25 mm., average 0·22 mm. lov 0·24–0·32 mm., average 0·28 mm. *M. normani* : Lz 0·30–0·47 mm., average 0·39 mm. lz 0·21–0·40 mm., average 0·32 mm. Lov 0·12–0·17 mm., average 0·15 mm. lov 0·15–0·26 mm., average 0·21 mm.

Number of cryptocystal pores. *M. coriacea* : 30–60, average 45. *M. normani* : 12–15, average 20.

On the evidence available to me, *M. normani* is distinct from *M. coriacea*. The two are easily recognizable and there is no intergrading.

Species of *Micropora* with avicularia from (a) Port Phillip, Victoria (Bracebridge Wilson Collection) and (b) Madeira (Norman Collection) and the Mediterranean (Busk Collection) have been identified with *M. coriacea*, but it seems likely that both species are distinct from both *M. coriacea* and *M. normani*. *M. coriacea* s. lat. needs full revision.

To sum up, *M. normani* differs from British *M. coriacea* s. str. in the presence of avicularia, the smaller zooecia, the smaller number of cryptocystal pores, the whitish, granular opercula and the absence of the ridge (sometimes umbonate) on the ovicell which may, however, have a small umbo.

The distribution of *M. normani* is Armorican (see Lagaaij, 1952 : 11), extending from Spain to the western and south-western shores of the British Isles.

Characters of the genus *Micropora*. *M. coriacea* is the type-species of *Micropora* Gray (1848 : 115), see Brown (1952 : 125). If it is confirmed that British *M. coriacea* s. str. is without avicularia, generic definitions, e.g. those of Brown (1952) and Bassler (1953), will have to be emended by adding the words " when present " to the characterization of the avicularia.

Brown (1952 : 126) noted that the avicularia in *Micropora* are not adventitious, as described by Harmer, but are what we now term interzooecial. This can be seen in the neotype and other specimens of *M. normani*.

The ovicells of both *M. coriacea* and *M. normani* are not endozooecial (as stated by Levinsen, 1909 : 162), but recumbent.[1] This can be observed by examining the growing edge of the colony where the complete ovicell projects at the distal end of the fertile zooecium before the distal and distal-lateral zooecia appear. As these zooecia develop the ovicell becomes surrounded by them and thus imbedded in the zoarium.

Spines are usually stated to be absent in *Micropora*, but a single specimen of a species (undescribed?) from Algeria (1869.10.6.6) has, on many zooecia, a pair of stout distal spines, rather widely set (being about opposite to the proximal corners of the distal zooecium). More rarely there is one median distal spine.

[1] The term *recumbent* was introduced by Canu & Bassler (1917 : 66), see Brown (1954 : 244, footnote).

Salicornaria clavata Busk

Salicornaria clavata Busk (part), 1884 : 88, pl. XII, figs. 8, 8c, text-fig. 5 (not figs. 8a, b, St. 162 Bass Strait = *C. australis*).
Cellaria australis MacGillivray Waters (part), 1888 : 16, pl. 11, figs. 1–4.
Cellaria clavata (Busk) Hastings, 1947 : 236.

Distribution. S. Indian Ocean.

Lectotype, chosen here : 1887.12.9.395 part. Challenger St. 151, Heard Island.

Paralectotypes. 1887.12.9.391, 396 ; 1899.7.1.1545 ; 1934.2.16.34. St. 149D, Kerguelen. 1882.7.29.75 ; 1887.12.9.389 ; 1899.7.1.1550 ; 1934.2.16.35. St. 151, Heard Island. 1887.12.9.390, 393 ; 1899.7.1.1551. Prince Edward Island.

Other material. St. 149D (1963.2.12.200) ; St. 151 (1963.2.12.243). Both specimens received from Dundee Museum. No evidence as to whether named by Busk.

Remarks. Waters accepted Busk's treatment of the Australian and South Indian Ocean forms as one species, and used the earlier name *Cellaria australis* MacGillivray. Hastings distinguished *Cellaria clavata* (Busk) from *C. australis*[1] but did not choose a lectotype. A colony from St. 151 is now chosen, this being the station from which Busk's figured material of this species was obtained.

The colony from St. 149D (1887.12.9.396) is large, has a mass of anchoring rootlets forming a short stalk, and very numerous branches which, in its dry state, are close together and more or less parallel to each other,[2] as if growing vertically. The rootlets attaching the lateral branches to the parent branches are brittle in their dry state, and many branches have fallen off, but the remaining colony is 93 mm. tall and 42 mm. × 35 mm. at its thickest point. The longest branch (broken at the tip) measures 78 mm. The average diameter of the branches is 2 mm.

The figures of the chitinous parts given by both Busk and Waters represent true *C. clavata*. The opercula of *C. australis* differ from those of *C. clavata* in their less conspicuous " foramina ", which are not visible at all focal levels, and in the absence of the granulations shown in Busk's and Waters's figures. In *C. australis* the opercula are very slightly shorter and distinctly narrower. Miss Cook has measured chitinous parts mounted by Busk (the figures being necessarily based on rather few measurements) :

C. australis, 1899.7.1.1546. Lo 0·08–0·09 mm., average 0·085 mm. lo 0·09–0·105 mm., average 0·10 mm.

C. clavata, 1899.7.1.1545. Lo 0·085–0·10 mm., average 0·095 mm. lo 0·13–0·16 mm., average 0·15 mm.

C. clavata, 1882.7.29.75. Lo 0·12–0·14 mm., average 0·13 mm. lo 0·12–0·14 mm., average 0·13 mm.

[1] They differ in areolation and jointing, and in the presence of cryptocyst ridges in *C. clavata*.
[2] The flexibility of the rootlet attachment of the lateral branches, before drying, has made this possible.

The third of these preparations, in which the opercula are as long as wide, was made from a fertile branch and has remarkably large embryos throughout.

The mandibles of *C. australis* are considerably wider than those of *C. clavata*, being wider than the operculum :

C. clavata, 1 mand. 0·10–0·11 mm., average 0·105 mm.
C. australis, 1 mand. 0·14–0·17 mm., average 0·155 mm.

The specimens of *C. clavata* from Prince Edward Island differ in their longer zooecia and in the areolation of the fertile zones (Hastings, 1947 : 237). The opercula, measured from those mounted by Busk, resemble those of *C. clavata* from the other stations in width, but are shorter :

1899.7.1.1551. Lo 0·09–0·11 mm., average 0·10 mm. lo 0·11–0·13 mm., average 0·115 mm.

The width of the mandibles is the same as for those from the other stations quoted above.

Siphonoporella nodosa Hincks

Siphonoporella nodosa Hincks, 1880*b* : 90, pl. XI, fig. 10 ; Harmer, 1900 : 231 ; Levinsen, 1909 : 170, pl. VI, figs. 2a, b.

Distribution. Australia.

Lectotype, chosen here : Specimen figured by Hincks, E.C. Jelly Collection, Manchester Museum. Australia.

Paralectotype. 1899.5.1.685, Hincks Coll., mounted by Jelly. Australia.

Other material. Australia (Bracebridge Wilson Coll., 1897.5.1.582, mounted by Jelly, but not known to have been examined by Hincks) ; Western Australia (E. Lempriere Coll., 1948.3.12.2, on *Metamastophora plana*).

Remarks. The figured zooecia are recognizable in the Manchester Museum specimen, and I have therefore chosen it as lectotype. Levinsen figured a specimen resembling the lectotype in having a well developed gymnocyst with usually more than 2 nodules.

In the British Museum specimens the gymnocyst of nearly all the zooecia is much narrower, usually with only 2 nodules, one in each proximal corner. In the paired daughter-zooecia, at the bifurcation of the series, one or both the inner[1] nodules is reduced or absent. In each Jelly specimen there are, however, a few zooecia with a wider gymnocyst and more numerous, more irregular nodules, and these are more frequent in 1948.3.12.2. In the latter specimen the zooecia with narrow gymnocyst often have a small median nodule in addition to the two in the corners.

The most recent comments on *Siphonoporella* have been made by Silén (1941 : 62) and Cook (1964 : 57). References to some earlier work are to be found in both these papers. Canu & Bassler (1929 : 149) described a species from the Philippines. *S. nodosa* is the type-species of the genus.

[1] i.e. the nodule in the corner next to the other zooecium of the pair.

4. THE GENUS *HIPPOPLEURIFERA* AND SOME OF ITS SPECIES

Hippopleurifera Canu & Bassler

Hippopleurifera Canu & Bassler, July 1925 : 679. (*Hippopleurifera biauriculata* Reuss, 1847 [*sic*] listed, with full reference.)
Hippopleurifera Canu *nov.* Canu & Lecointre, 1925 : 9 (Genus only, listed.)
Hippofleurifera [*sic*] Milne-Edwards, 1836 ; Canu, 1926 : 764. (*H. sedgwicki* Milne-Edwards, 1836 listed.)
Hippopleurifera new genus Canu & Bassler, 1927 : 7. (Defined, with *Eschara sedgwicki* Milne-Edwards designated as type.)
Hippopleurifera Canu & Bassler, 1927 ; Canu & Bassler, 1929 : 326. (Same definition and type as in 1927.)
Hippopleurifera nov. Canu & Lecointre, 1930 : 86. (Same definition, in French, and type as in Canu & Bassler, 1927.)
Hippopleurifera Canu & Bassler, 1927 : Bassler, 1935 : 127. (Listed with a reference to Canu & Bassler, 1929, and with *E. sedgwicki* as type.)
Hippopleurifera Canu ; Hastings, 1949 : 524. (Discussed with *E. sedgwicki* as type.)
Hippopleurifera Canu & Lecointre, 1925 ; Vigneaux, 1949 : 96. (Same French definition and type as Canu & Lecointre, 1930.)
Hippopleurifera Canu & Bassler, 1925 ; Lagaaij, 1952 : 92. (Revised diagnosis with *Eschara biauriculata* Reuss named as type by monotypy.)
Hippopleurifera Canu, 1927 ; Bassler, 1953 : G 196. (Brief definition with *E. sedgwicki* as type.)
Hippopleurifera Canu & Bassler, 1924 ; Buge, 1957 : 265. (Redefined with *E. biauriculata* as type.)
Hippopleurifera Brown, 1958 : 65. (Footnote on priority of *E. biauriculata* as type-species.)

Type-species. It appears that the use of the name *Hippopleurifera* by Canu & Bassler in 1925 was a valid generic introduction, and that Lagaaij and Buge were right in taking *Eschara biauriculata* Reuss as the type by monotypy. It is therefore important to ascertain the characters of Reuss's species.

Hippopleurifera biauriculata (Reuss)

(Plate 1, figs. 1–3).

Eschara biauriculata Reuss (part), 1848 : 66, pl. VIII, fig. 15 ; Manzoni, 1877 : 11, pl. IX, fig. 29.
Hippopleurifera biauriculata Reuss Canu & Bassler, 1925 : 679. (Listed.)

Distribution. *Miocene*, Austria and Hungary. (Leithakalk at Eisenstadt, Mörbisch and Kroisbach bei Oedenburg, see bed no. 6, Reuss p. 4).

Lectotype, chosen here : 1859.L.748, Mineralien-Kabinet of Naturhistorisches Museum, Vienna. Bryozoen Sand, Eisenstadt. Specimen figured by Manzoni.

Examination of syntypes. The syntype material, kindly lent by the Naturhistorisches Museum, Vienna, consists of two small, escharan fragments, together in one tube, with an original label. They belong to distinct species. One of them (Pl. 1, figs. 4, 5) is referable to *Hippopleurifera sedgwicki* (Milne-Edwards, see below). The other (Pl. 1, figs. 1–3) is evidently the form figured by Reuss, as it shows the

" biauriculate " character. This specimen is now chosen as the lectotype of *Eschara biauriculata*.

Comparison with my Pl. 1, fig. 1 will show that the detailed agreement (zooecium by zooecium, and ovicell by ovicell) leaves no possible doubt that the lectotype specimen is represented (in mirror image) in Manzoni's figure. There are some points for criticism in his figure : (1) the scattered pores on the marginal zooecium are shown as arranged in regular rows, (2) the areola-like pores round the ovicell are exaggerated, and the frontal sculpture omitted, (3) although some variation in the size of the avicularia is shown, their shape is not satisfactorily represented.

Description of lectotype (Pl. 1, figs. 1–3). *Specimen* a bilaminar fragment (5·0 mm. × 3·1 mm.) including part of edge of frond. Zooecia alike on both flat surfaces and continuous over marginal surface.

Zooecia with median, suboral mucro and porous frontal wall, pores separated by smooth bars. Peripheral pores round, grading into a few oblique groove-like pores which converge on mucro (evidently a porous pleurocyst.)

Spines absent.

Orifice round with a very slight demarcation of a large anter and a small poster.

Avicularia one on each side of orifice, either both small (as in Reuss's figure) or one enlarged. Small avicularia on rim of orifice directed outwards with bluntly pointed rostrum. Large avicularia lying beside orifice and directed distally, mostly, but not all, on fertile zooecia, rostrum spatulate with straight or (in the largest avicularia) concave sides, proximal end of avicularium raised.

Ovicells hyperstomial, their secondary covering continuous with pleurocyst of distal zooecium. Secondary cover with two large fossae, or with irregular smaller pits and protuberances (see two ovicells side by side in Pl. 1, figs. 1 and 3).

Remarks. *H. biauriculata* (Pl. 1, figs. 1–3) has more in common with *H. pulchra* Manzoni (see Hastings, 1949, pl. XII, fig. 2) than with *H. sedgwicki* (see Pl. 1, figs. 4, 5, and Hastings, 1949, pl. XII, fig. 1). It resembles *H. pulchra* in the greater extent of the porous pleurocyst (*H. sedgwicki* usually having a small area without pores behind the orifice) ; in the less pronounced division of the orifice into anter and poster ; and in the details of the secondary calcification of the ovicell.

H. biauriculata differs from *H. pulchra* in the smoothness of the frontal wall between the pores, which are larger ; and in the shape and position of the avicularia. In *H. pulchra* the granulations and projections on the areas between the pores are the noticeable feature of the frontal wall. Spines, which are absent in the small specimen of *H. biauriculata*, are conspicuous in both the other species. The three species appear to be congeneric.

A phase with two fossae is also seen in the ovicells of most of the American Early Tertiary species referred to *Hippomenella* by Canu & Bassler (1920 : 379 *et seq.*). Brown (1949 : 517) rejected these species from *Hippomenella*. Hastings (1949 : 525) transferred some of them to *Hippopleurifera*, and Brown (1958 : 65) placed some in *Trigonopora* which also has fossae.

Hippopleurifera pulchra (Manzoni)

Cellepora pulcra [*sic*] Manzoni (Michelotti MS.), 1870 : 336, 338, pl. IV, fig. 20.
Hippodiplosia granulosa Canu, 1916 : 327, pl. III, figs. 7, 8.
Lepralia soulieri Calv.; Waters, 1926 : 429. (Development of pleurocyst.)
Not *Mucronella soulieri* Calvet ; O'Donoghue & de Watteville, 1939 : 28. (Record only.)
Hippopleurifera pulchra (Manzoni) Hastings, 1949 : 521, pls. XII, figs. 2–4, XIII, figs. 1, 1a, 2, 2a (Synonymy) ; Gautier, 1962 : 189.
Hippopleurifera granulosa Canu ; Vigneaux, 1949 : 97. (Record only.)

Distribution. *Recent*, Mediterranean. *Miocene*, Italy ; Sicily ; Austria ; France.

Remarks. *Hippodiplosia granulosa* Canu is clearly recognizable, from Canu's figure, as a synonym of *Hippopleurifera pulchra*. It is one of the two genosyntypes of *Hippodiplosia* Canu (1916 : 326). As Hastings (1930 : 724) chose the other genosyntype as genolectotype, the status of *Hippodiplosia* is not affected by this synonymy.

The specimen from Alexandria (1963.8.2.27), recorded by O'Donoghue & de Watteville as *Mucronella soulieri*, is referable to *Schizoporella errata* (Waters), for which see Gautier (1962 : 149).

Hippopleurifera sedgwicki (Milne-Edwards)

(Pl. 1, figs. 4, 5)

Eschara sedgwicki Milne-Edwards, 1836 : 330 (sep. p. 10), pl. 10, figs. 5, 5a.
Eschara biauriculata Reuss (part), 1848 : 66. (Not pl. VIII, fig. 15.)
Hippopleurifera sedgwicki (Milne-Edwards) ; Buge, 1957 : 265. (Synonymy.)

Distribution. *Pliocene*, Europe and North Africa (see Buge). *Miocene*, Austria.

Remarks. The paralectotype of *Eschara biauriculata*, referred above to *Hippopleurifera sedgwicki*, is from Eisenstadt, and extends the known range of *H. sedgwicki*, both geologically and geographically.

Buge redescribed this species.

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6. SUMMARY

Examination of type-material of a number of species has yielded information on their taxonomic status, distribution, structure, etc. The type-species of the genus *Hippopleurifera* is included, and one of the Siboga species of *Sclerodomus* is reconsidered. *Membranipora hexagona* Busk was based on a single, mutilated specimen of an unidentifiable, non-membraniporine species.

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PLATE 1

Figs. 1–3. *Hippopleurifera biauriculata* (Reuss).

Figs. 1, 2. The two faces of the bilaminar lectotype. Fig. 1. The face figured by Manzoni, showing the edge of the frond (left) and stages in the secondary calcification of the ovicells.

Fig. 3. Part of fig. 1 enlarged, showing two biauriculate fertile zooecia, and two with one of the avicularia large and spatulate ; variation in older, secondarily calcified ovicells ; and parts of the outwardly facing zooecia at the edge of the frond.

Figs. 4, 5. *Hippopleurifera sedgwicki* (Milne-Edwards). The two faces of the bilaminar paralectotype of *H. biauriculata* (Reuss.).

Figs. 1, 2, 4, 5. × 16. Fig. 3. × 36.