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NOTES ON A SMALL COLLECTION OF HYDROIDS FROM JERSEY (CHANNEL ISLANDS)

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In the first months of 1941, whilst engaged with the study of Hydroids occurring along the coasts of the Netherlands, I received a small collection of Hydroids from Jersey for identification. These Hydroids, which were kindly sent to me by Mrs. W. S. S. van der Feen née van Benthem Jutting, curator at the Zoölogisch Museum at Amsterdam, had been collected by the late Mr. R. Oppenheim, a very studious amateur-naturalist, during a prolonged stay at Jersey from 1914-1918. Before his death Mr. Oppenheim placed a large number of fine drawings of Hydroids at my disposal, which were made during his stay at Jersey, where he had ample time and opportunities to study an extensive number of living Hydroids. Both drawings and Hydroids are now in the collections of the Zoölogisch Museum at Amsterdam; I wish to thank Mrs. W. S. S. van der Feen née van Benthem Jutting for the loan of this small collection.

Although the number of Hydroids in the collection from Jersey is small and the condition of the material generally bad, the drawings are very accurate and most species can be immediately recognized from the figures. Moreover, the drawings are accompanied by short notes on occurrence, presence of gonothecae, etc., which make them even more valuable. It seems desirable, therefore to publish a short report on this interesting collection.

The Hydroids of the Channel Islands are very badly known. Philbert (1935) published the results of short visits to the islands Lihou, Jethou,

Sark, Herm and Guernsey, during which trips Hydroids were collected; a second paper on Channel Islands Hydroids (Philbert, 1935a) was not available to me. The Hydroid fauna of the north-west coast of France is known slightly better; Billard (1912) published a list of species collected in the Roscoff region, the Hydroids of the same region were also treated by Bedot (1911, 1914) and Prenant & Teissier (1924); Philbert (1935b) published notes on Hydroids from the region of St. Malo; Billard (1902 1905) has listed the Hydroids from the Saint Vaast-La Hougue region, whilst Hydroids from the Pas de Calais region are mentioned by Bétencourt (1887, 1888, 1899). A general survey of the Hydroids of the Atlantic coast of France was published by Billard (1927), but I had no access to that paper.

List of the species.

Corynidae: *Coryne* spec.; *Coryne* cf. *eximia* Allm.; *Coryne pusilla* Gaertn.; *Coryne muscoides* (L.); *Tricyclusa singularis* (F. E. Schulze).

Pennariidae: *Eleutheria dichotoma* Quatrefages.

Tubulariidae: *Tubularia indivisa* L.; *Tubularia larynx* Ell. & Sol.

Clavidae: *Clava multicornis* (Forskål).

Bougainvilliidae: *Hydractinia echinata* (Flem.).

Eudendriidae: *Eudendrium arbuscula* Wright; *Eudendrium insigne* Hincks; *Eudendrium ramosum* (L.); *Eudendrium capillare* Ald.

Haleciidae: *Halecium lankesteri* (Bourne); *Halecium halecinum* (L.).

Plumulariidae: *Kirchenpaueria pinnata* (L.); *Plumularia setacea* (L.); *Plumularia halecioides* Ald.; *Nemertesia antennina* (L.); *Nemertesia ramosa* Lamx.

Aglaopheniidae: *Aglaophenia pluma* (L.) forma *helleri* Markt.

Lafoeidae: *Lafoea fruticosa* M. Sars forma *pocillum* Hincks.

Campanulinidae: *Campanularia lacerata* (Johnst.); *Calicella syringa* (L.).

Sertulariidae: *Sertularella polyzonias* (L.) forma *typica* Broch; *Sertularella mediterranea* Hartl.; *Sertularella gayi* Lamx.; *Diphasia rosacea* (L.); *Diphasia attenuata* (Hincks); *Abietinaria abietina* (L.); *Sertularia cupressina* L.; *Sertularia operculata* L.; *Sertularia distans* Lamx. var. *gracilis* Hass.; *Dynamena pumila* (L.); *Hydrallmania falcata* (L.).

Campanulariidae: *Campanularia johnstoni* Ald.; *Campanularia integra* MacGill.; *Campanularia hincksii* Ald.; *Campanularia volubilis* (L.); *Laomedea pelagica* (Van Breemen); *Laomedea longissima* (Pall.); *Laomedea dichotoma* (L.); *Laomedea geniculata* (L.); *Laomedea flexuosa* Ald.; *Laomedea angulata* Hincks; *Laomedea loveni* Allm.

The occurrence of the various species along the north-west coast of France has been listed in the table on pp. 135, 136.

Table showing the distribution of Hydroids along the north-west coasts of France and in the Plymouth region.

c, commonly found in the region; a, abundant in the whole region; r, occasionally found in the region; m, means that the medusa only has been recorded; J, indicates that the species has not been recorded from the Channel Islands by Philbert (1935), but that it is present in the collection from Jersey.

	Plymouth region (Marine Biological Association, 1931)	Roscoff region (Bedot, 1911, 1914; Billard, 1912; Prenant & Teissier, 1924)	Channel Islands (Philbert, 1935)	St. Malo region (Philbert, 1935b)	Saint Vaast-La Hougue region (Billard, 1902, 1905)	Pas de Calais (Bétencourt, 1887, 1888, 1899)
Coryne spec.			J			
Coryne sarsii (Loven)		c				c
Coryne eximia Allm.	c		c		c	c
Coryne pusilla Gaertn.			J	c	c	c
Coryne muscoides (L.)	c		c	c	c	
Tricyclusa singularis (F. E. Sch.)	c		J			
Eleutheria dichotoma Quatref.	rm		Jm		rm	
Tubularia indivisa L.	c	c	c	c	c	c
Tubularia larynx Ell. & Sol.	c	c	c	c	c	c
Clava multicornis Forskål	c	c	J	c	c	c
Hydractinia echinata (Flem.)	a	c	J	c	c	c
Eudendrium arbuscula Wright			J			
Eudendrium insigne Hincks			J			
Eudendrium ramosum (L.)	r	c	J	c	c	c
Eudendrium capillare Alder	c	c	J	c	c	c
Halecium lankesteri (Bourne)	c	c	J	c		
Halecium halecinum (L.)	c	c	J	c	c	c
Kirchenpaueria pinnata (L.)	c	c	c	c	c	c
Plumularia setacea (L.)	c	c	c	c	c	c
Plumularia halecioides Alder	r		J		c	c
Nemertesia antennina (L.)	c	c	J	c	c	c
Nemertesia ramosa Lamx.	c	c	J	c	c	c
Aglaophenia pluma f. *helleri* Markt.	r	c	c	c	c	c
Lafoea fruticosa f. *pocillum* Hincks			J			
Campanulina lacerata (Johnst.)	c	c	J	c		c
Calicella syringa (L.)	c	c	J	c	c	c
Sertularella polyzonias f. *typica* Broch	c	c	J		c	c
Sertularella mediterranea Hartl.			c	c		
Sertularella gayi Lamx.	c	c	J	r		r
Diphasia rosacea (L.)	c	c	J		c	c
Diphasia attenuata (Hincks)	c	c	c	c		r
Abietinaria abietina (L.)	c	c	J	c	c	c
Sertularia cupressina L.	c	c	J	c	c	c
Sertularia operculata L.	c	c	c	c	c	c

	Plymouth region (Marine Biological Association, 1931)	Roscoff region (Bedot, 1911, 1914; Billard, 1912; Prenant & Teissier, 1924)	Channel Islands (Philbert, 1935)	St. Malo region (Philbert, 1935b)	Saint Vaast-La Hougue region (Billard, 1902, 1905)	Pas de Calais (Bétencourt, 1887, 1888, 1899)
Sertularia distans var. *gracilis* Hass.		c	J	c		
Dynamena pumila (L.)	a	a	a	a	a	a
Hydrallmania falcata (L.)	c	c	J	c	c	c
Campanularia johnstoni Ald.	c	c	c	c	c	c
Campanularia integra MacGill.	c	c	c	c		
Campanularia hincksii Alder	c	c	J	r		r
Campanularia volubilis (L.)	c		J			
Laomedea pelagica (Van Breemen)	c		J		c	c
Laomedea longissima (Pall.)	c	c	J		c	c
Laomedea dichotoma (L.)	c	c	J	c	c	c
Laomedea geniculata (L.)	c	c	c	c	c	c
Laomedea flexuosa Alder	c	c	c	c	c	c
Laomedea angulata Hincks	c	c	J	c	c	c
Laomedea loveni Allman	c	c	J	c	c	c

Coryne spec.

Sterile specimens of a *Coryne* are figured by Mr. Oppenheim under the name of *Syncoryne decipiens*. The colonies, which were found on red Algae near Black Dive, are unbranched; the small hydranths, provided with 6-10 tentacles, are short-stalked. The pedicels are smooth, although the periderm of the hydrorhiza is occasionally wrinkled. *Coryne decipiens* is a rather doubtful species, which is sometimes considered as synonymous with *Coryne sarsii* (Loven, 1835). It generally occurs in aquaria in which the medusa *Sarsia tubulosa* (M. Sars) is kept alive, although it has also been found in the Bay of Kiel in the western part of the Baltic. Both *Coryne sarsii* and *C. decipiens* have been considered as the polyp-generation of *Sarsia tubulosa* by various authors. *Sarsia tubulosa* is comparatively common in the waters of the English Channel; off Plymouth it is found from March to November, with a minimum in August (cf. Russell, 1938). *Coryne sarsii* has previously been recorded from the Pas de Calais and Roscoff region.

The specimens figured by Mr. Oppenheim agree closely with Hincks' (1868, p. 56) description of *C. decipiens*. It is worth while to recall the old observation of F. E. Schulze (1873, p. 3) that the colonies and polyps of

Coryne sarsii cultivated in aquaria are slenderer and more delicate than the type usually met with under normal conditions and then resemble the colonies of *C. decipiens*. The various species hitherto brought to the polyp-genus *Coryne,* as well as their medusae, are badly in need of a critical revision (cf. Bedot, 1911). This revision, however, must be combined with culture-methods of the various polyps and medusae.

Coryne eximia Allman, 1859

Coryne eximia is represented by some sterile colonies, whilst the drawings of this species also show specimens without gonophores. Although both material and drawings resemble Allman's figure (1872, pl. 5) rather closely, the identification must be considered as doubtful. The hydrocauli are mainly characterized by the prominent rings at the base of the pedicels and on the periderm closely under each hydranth. *C. eximia* is a very common species along the north-west coast of France; the free medusae, large numbers of which are produced during summer and early autumn, are very common in the Channel waters from April to September; it is nearly absent, however, in August.

Coryne pusilla Gaertner, 1774

This species was figured by Mr. Oppenheim under various names (*Coryne pusilla, C. vermicularis* and *C. fruticosa*). The species is very common on large Algae all around the island. It is most plentyfully developed in early summer, the gonophores were mainly observed in May. *C. pusilla* is very common along the entire north-west coast of France, where it mainly occurs on *Fucus* and *Ascophyllum*. It seems to be absent from the Plymouth region, whilst Philbert (1935) does not mention the species from the above mentioned Channel Islands.

Coryne muscoides (Linnaeus, 1761)

A small colony of this species is present in the collection. The hydrocaulus is much and irregularly branched, the hydranths are mainly found on the secondary ramifications. The periderm is densely and regularly ringed and has a dark brown colour. The hydranths, which are about 1.5-2.0 mm long, have many gonophores distributed between the tentacles. Male and female gonophores are found on different hydranths of the same colony. The tentacles number about 15-20, they are not placed in whorls; four apical tentacles may sometimes form a more or less distinct whorl round the pro-

boscis. The species occurs in large numbers on large Algae along the entire coast; it is even more commonly distributed than *C. pusilla*. It is very common along the north-west coast of France (Roscoff, St. Malo, La Hougue Wimereux); Philbert (1935) records the species from the islands Lihou and Jethou, where it was found growing on rocks. It has also been found in the Plymouth area.

Tricyclusa singularis (F. E. Schulze) (figs. 1, 2)

Tiarella singularis Schulze, 1876, p. 403, pl. 29, pl. 30 figs. 1-3; Bedot, 1911, p. 209, pl. xi fig. 7; Prenant & Teissier, 1924, p. 26.
Tricyclusa singularis Stechow, 1919, p. 6.
Margelopsis stylostoma Hartlaub, 1903, p. 28, fig. 2; 1904, p. 100, fig. 1; 1907, pp. 89, 91, fig. 87.

Although the material of this species in the collection is generally bad, there is a large number of drawings and notes on living specimens, which were found in small quantities on the red Alga *Chondria dasyphylla*. The hydranths have 3 or 4 whorls of tentacles. The proboscis, composed of 3 lips, is surrounded by a whorl of 6 short tentacles, which each have an apical bud of nematocysts. There are 2 or 3 whorls of 6 tentacles each on the rest of the body of the hydranth, 1 or 2 whorls are placed in the region separating pedicel and hydranth, the other whorl is placed about halfway the basal and apical whorls. These tentacles usually have an apical bud of nematocysts and a second, more or less incomplete ring of nematocysts some distance beneath the apical bud. Some tentacles of the basal whorls, however, may have three accumulations of nematocysts. If two basal whorls of tentacles are present, they are alternatingly arranged, so that a single whorl of 12 tentacles seems to be present. The hydranth is placed on a short pedicel, generally slightly shorter than the body of the hydranth. The stalk is invested by a membranaceous sheath, which rather abruptly terminates below the basal tentacles. The asexual mode of reproduction was observed by Mr. Oppenheim. The buds are found in the region between the hydranth and the membranaceous sheath of the pedicel; usually each hydranth carries a single bud which is also covered by a transparent membrane. The young polyp, after having finished its development, remains invested by the sheath for some time. According to observations by Mr. Oppenheim, the number of tentacles of the young polyp, when it becomes free, is reduced, so that a whorl of 5 tentacles is found round the mouth, whilst the remaining whorls are composed of 5, 4, and 4 tentacles. The basal part of the young polyp has three distinct lips. The tentacles of the young polyp are very long and slender, they are used as arms when the

polyp moves amongst Algae, etc. After about 24 hours the basal portion of the polyp fixes itself on the substratum and the tentacles, the number of which is then complete, shorten suddenly (cf. Bedot, 1911, p. 210). The

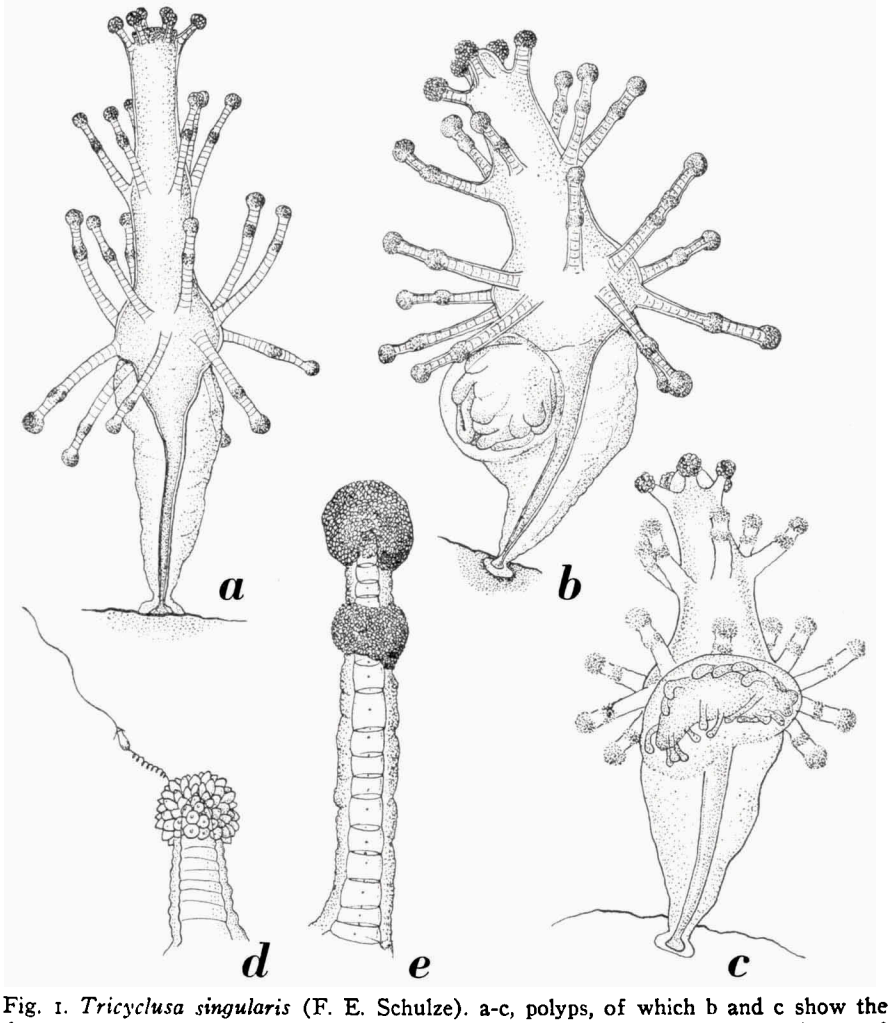

Fig. 1. *Tricyclusa singularis* (F. E. Schulze). a-c, polyps, of which b and c show the development of the buds; d, apical part of one of the oral tentacles; e, apical part of one of the tentacles placed on the body of the hydranth. a-c, × 25; d, e, × 100. (After a drawing by Mr. R. Oppenheim).

larva of *Tricyclusa singularis* was described by Hartlaub as *Margelopsis stylostoma*. The polyps have their optimal development in July.

The distribution of *Tricyclusa singularis* is restricted; the polyp has so far only been found near Triest (Schulze, 1876) in the Mediterranean Sea

and near Roscoff (Bedot, 1911; Prenant & Teissier, 1924). It is recorded here for the first time from the Channel Islands.

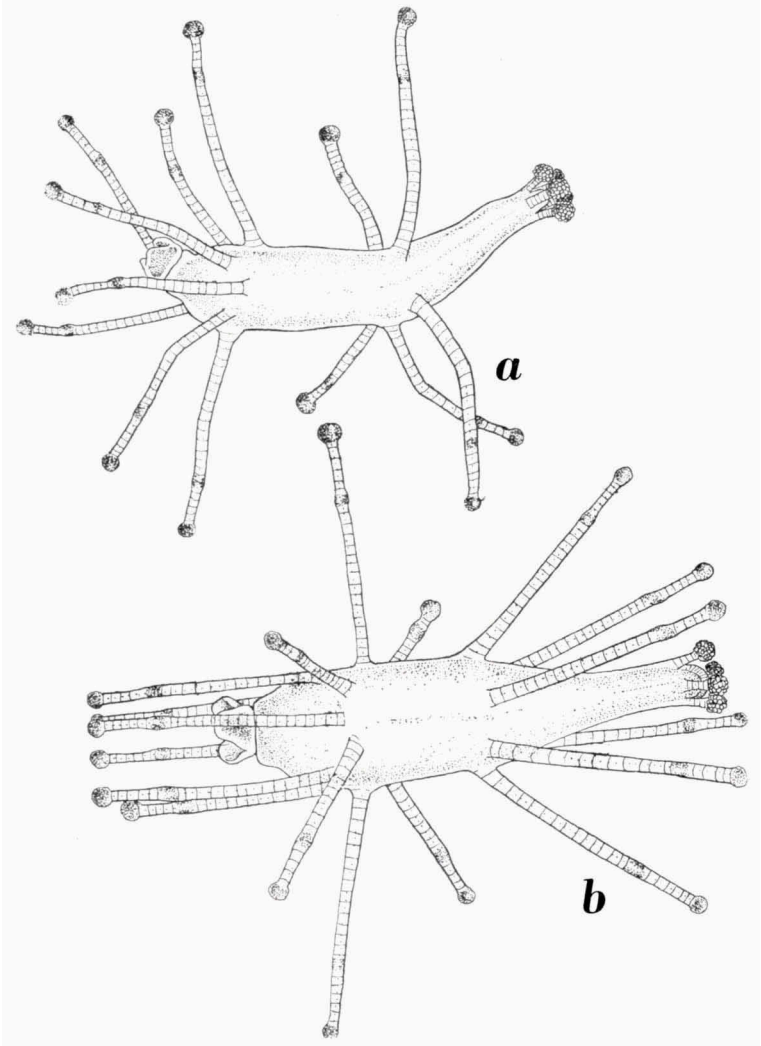

Fig. 2. *Tricyclusa singularis* (F. E. Schulze). a, young polyp just after its liberation; b, polyp, about 24 hours after its liberation. a, × 40; b, × 35. (After a drawing by Mr. R. Oppenheim).

Eleutheria dichotoma Quatrefages, 1842 (fig. 3)

The characteristic medusa of this remarkable species was observed and figured by Mr. Oppenheim, the hydroid (= *Clavatella prolifera* Hincks,

1861), was not observed. The medusae are provided with 6 slender, radiating arms which each have a red ocellus near the base. The apical part of each tentacle is divided into two short branches; one of these branches carries a complete bud of nematocysts, the other branch acts as a suctorial disk when the tentacles are used as arms during movements of the medusa amongst Algae, etc. The hemispherical umbrella has a yellow colour. The

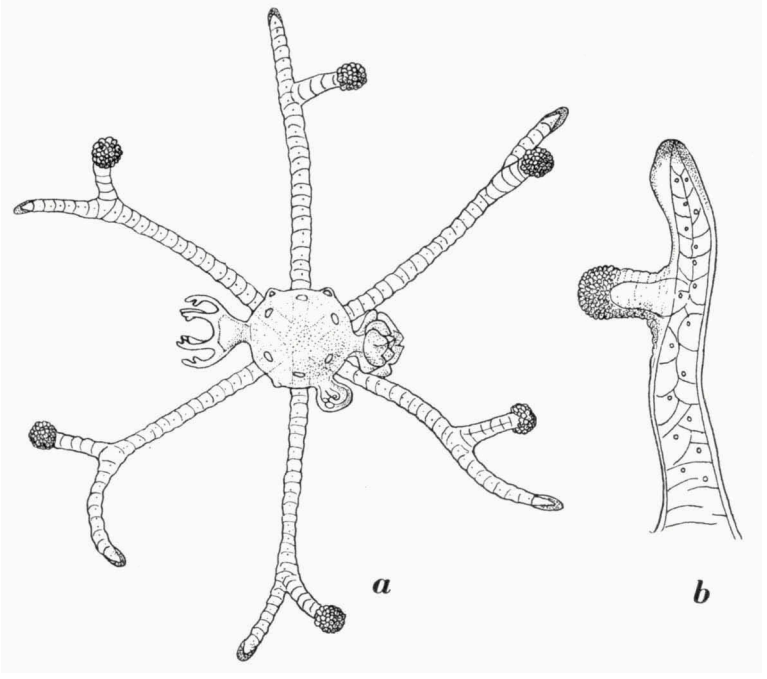

Fig. 3. *Eleutheria dichotoma* Quatrefages. a, medusa, which shows the buds on the exumbrella in various stages of development; b, apical portion of one of the tentacles. a, × 35; b, × 65. (After a drawing by Mr. R. Oppenheim).

asexual mode of reproduction of the medusae was also observed by Mr. Oppenheim. The buds, which develop into complete, new medusae, are found on the exumbrella between the tentacles. Their number varies from 1 to 3; they usually show various stages of development. The medusae are usually found in July. Along the north-west coast of France it has been recorded from the Saint Vaast-La Hougue region and from Roscoff; it has also been found near Concarneau (Weill, 1936). Off Plymouth the species has so far not been found in free condition, although the medusa has been found in large numbers in the tanks of the Marine Biological Laboratory.

Tubularia indivisa Linnaeus 1758

A small number of polyps of this species is present in the collection. *T. indivisa* was found in large numbers on the rhizoid of *Laminaria*'s along the entire coast, mainly in shallow places. It also occurred in caves along the north coast of the island, where, protected against the immediate action of the waves, it was found directly on the rocks. The about 4 cm high polyps have a vivid colour-pattern when alive. The body of the hydranth and the apical tentacles are orange-red, the colour deepens to pure red near the insertion of the basal tentacles, which are pink. The periderm of the hydrocaulus is yellow, but a number of violet longitudinal stripes are observed some distance below the separation between hydrocaulus and hydranth. The gonophores many of which are present in the early months of the year (January-March), are arranged in long clusters, hanging down between the tentacles. Their colour is milky-white, but the spadix is deep red; the female gonophores each have a distinct, finger-shaped processus near the base, which has a red colour. *T. indivisa* is found along the entire Atlantic coast of France, penetrating to the south along the coast of Portugal; it is also very common in the Plymouth area. Philbert (1935) has recorded the species from the isle of Sark, where it was mainly found in caves (Grottes du Gouliot).

Tubularia larynx Ellis & Solander, 1786

Colonies of this species, of which only a drawing is available, were found in a rock pool near Grosnez Point in the north of the island; it was recorded by Mr. Oppenheim as *Tubularia simplex*. This species is not so beautifully coloured as *T. indivisa*; the body of the hydranths is yellow with a faint tinge of red, the tentacles are milky-white. The gonophores are found in short clusters some distance above the basal whorl of tentacles; they are opaque-white with a faint red coloured spadix. Their optimum of development is slightly later than in *T. indivisa* (February-May). The distribution along the Atlantic coast of France is almost the same as that of the preceding species; it shows a marked preference for localities where it is sheltered from the violent action of the waves and the direct radiation of the daylight (caves, tidal- and rock pools). It was also found in the "Grottes du Gouliot" on the isle of Sark, covering the bottom of the cave with a dense carpet of polyps (Philbert, 1935, as *Tubularia humilis*).

Clava multicornis (Forskål, 1775)

This species, of which several drawings are present, is fairly common

along the coasts of Jersey; in the north it is mainly represented by the typical form (forma *genuina* Broch), occurring on stones and rocks; along the south coast it is represented by the forma *squamata* (Müller), which is found growing on *Fucus* and *Ascophyllum,* together with *Membranipora.* A drawing of some sterile specimens of *C. multicornis* is erroneously labelled *Syncoryne decipiens.* The number of tentacles varies between 16 and 20, they are irregularly distributed over the body of the hydranth. The gonophores are found in dense clusters at the base of the lowest tentacles; they are mainly found in June, although breeding seems to take place during the whole year with exception of the winter months. *Clava multicornis* is very common along the north-west coast of France; both forms are recorded from many different localities (Pas de Calais, region of Saint Vaast-la Hougue, St. Malo region, and Roscoff). It is also very common in the Plymouth area, but I have been unable to find records of its occurrence on the other Channel Islands.

Hydractinia echinata (Fleming, 1828)

This species, which is represented in the collection by some small fragments, is common off the coasts of the island, where it is mainly found on shells of Gastropoda inhabited by *Pagurus bernhardus* (L.). Blastostyles with each 2 to 6 gonophores are usually found in June; the female gonophores contain 8-10 eggs. *H. echinata* is of very common occurrence along the entire Atlantic coast of France, going as far south as Monte Gordo in Portugal (Nobre, 1937).

Eudendrium arbuscula Wright, 1859

A single colony of this species was discovered by Mr. Oppenheim in a cave (Cave Les Salines). It is characterized by the ring of nematocysts at the base of the white hydranths; the pedicels have a number of distinct rings at their base and are covered by dark coloured periderm. I have only seen a drawing of this species, no material has been preserved. *E. arbuscula* seems to be a rare species in the Channel waters; Weil (1934) recently recorded *E. arbuscula* from the Pas de Calais. I have been unable to trace other records of its occurrence along the French Atlantic coast or in the Plymouth area.

Eudendrium insigne Hincks, 1861

Colonies of this species were found attached to the rhizoids of *Laminaria*'s in St. Brelade's Bay, where it is comparatively common. The small colonies

are usually composed of about 5 hydranths. The periderm, which has a light brown, horny colour, is annulated throughout its entire length; the hydranths, which are comparatively large, have an orange-brown colour, the proboscis, however, is white. There are about 18-20 long, transparent tentacles arranged in a single whorl. The female gonophores, each of which contains a single egg, are placed in a whorl at the base of the hydranths; they have an orange-red spadix. The male gonophores do not possess the knob of nematocysts at the apex, which is usually met with in the male gonophores of the Eudendriidae; they are placed in a whorl of maximally 12 round normal or slightly obliterated hydranths. The place of attachment of the gonophores is sometimes separated from the rest of the hydranth by the annular constriction, which usually is very distinct in the male hydranths. According to Mr. Oppenheim's observations male and female gonophores are found on the hydranths of separate colonies. No specimens have been preserved. The gonophores are found in June. I have been unable to find other records of its occurrence in the English Channel.

Eudendrium ramosum (Linnaeus, 1758)

Colonies of this species, small fragments of which are present in the collection, were found on oysters from the French Channel coast. All colonies which came under observation are monosiphonical, male and female gonophores are found on greatly reduced hydranths. The male gonophores are composed of two nearly spherical chambers, the female gonophores contain a single, orange-red egg. The gonophores are found in the early months of the year (February, March), at the same time the planulae are found to escape. The development of the planula into the initial polyp takes about 14 days. *E. ramosum* is commonly distributed along the north-west coast of France; it has also been found in large quantities in the Plymouth area.

Eudendrium capillare Alder, 1856

Comparatively large colonies of this graceful species were found on *Chondria dasyphylla*. The monosiphonical colonies have a smooth periderm, the pedicels of the hydranths have some distinct rings at the base and below each hydranth. The hydranths are pinkish-white, the proboscis is milky-white, but the interior has a vivid orange colour. The tentacles, which are long and slender, are almost transparent; the periderm is brownish. The female gonophores contain a single egg, and are placed on completely reduced hydranths; they are mainly found in July. Besides a very accurate drawing, small colonies are present in the collection. *E. capillare* is very common

along the entire north-west coast of France; it has also been recorded from the Plymouth region, although in smaller numbers.

Halecium lankesteri (Bourne, 1890)

Mr. Oppenheim has figured, under the name of *Halecium pusillum,* specimens of a *Halecium,* which undoubtedly belong to the above mentioned species. Moreover, many 3-8 mm high colonies with numerous female gonothecae are present in his collection, so that the occurrence of this small *Halecium* seems beyond dispute. Bedot (1911) very accurately described specimens from the Roscoff area, so that a detailed description of the present specimens, which agree in nearly every detail with his account, is unnecessary. The hydrothecae contain large, 1.0 to 1.5 mm long, flask-shaped hydranths. There are 24 long tentacles arranged in a single whorl round the proboscis. The gonothecae originate from the apophysis or the hydrocaulus directly under a hydrotheca, sometimes springing directly from the theca. They are egg-shaped, with two lateral openings through which a complete pair of hydranths can be put out (cf. Broch, 1933). They contain three large eggs. The colonies are usually described as brown, but occasionally colonies of a green colour are mentioned. Both types were observed by Mr. Oppenheim; twice snow-white colonies were observed by him, differing from the normal type only by the slightly swollen hydranths. *H. lankesteri* was collected in St. Clement's Bay on *Chondria dasyphylla.* It has previously been recorded from the St. Malo region (Philbert, 1935b), from Roscoff (Bedot, 1911, 1914) and from the Plymouth area (Marine Biological Association, 1931). It has also been found along the French Mediterranean coast (Villefranche sur Mer, Stechow, 1919), in the Naples area (Stechow, 1923) and near Split in the Adriatic (Broch, 1933).

Halecium halecinum (Linnaeus, 1758)

Dead colonies of this species, which is only represented by some easily identifiable drawings, were found on oysters originating from the French Channel Coast. Male and female gonothecae are present; the female gonothecae contain two eggs and each have two almost apical, circular openings through which a pair of hydranths can be brought out. *H. halecinum* has been recorded along the entire north-west coast of France, although it has its main occurrence in the deeper water off the coast. It is not uncommon in deep water off Plymouth.

Kirchenpaueria pinnata (Linnaeus, 1758)

This species was found on Algae in St. Clement's Bay and near Black Dive, usually with many gonothecae. Young specimens only are present in the collection. The hydranths normally have 16 tentacles, although that number is extremely variable, so that as many as 24 occasionally are present. The shape of the gonothecae is very variable, so that almost smooth gonothecae have been found besides gonothecae provided with ribs or spines. *K. pinnata* is exceedingly common along the entire French Atlantic coast; Philbert (1935) records the species from the islands Lihou, Jethou and Sark, where it was found on Algae exposed to the direct action of waves and sun. Mr. Oppenheim labelled his specimens as *Plumularia similis* and *P. cchinulata.* The gonophores were observed in April.

Plumularia setacea (Linnaeus, 1758)

The collection contains small, up to 7 mm high colonies at the base of *Aglaophenia pluma* (L.), but additional specimens are mentioned from oysters from the French Channel coasts and from Algae. Both male and female gonothecae are present; the colonies are characterized by the almost transparent hydrocladia, whereas the hydrocaulus has a dark brown, sometimes almost black peridermal cover. The hydranths have 12-16 tentacles, the intermediate articles bear a single sarcotheca. In its distribution *P. setacea* resembles *Kirchenpaueria pinnata* very closely, although it is never found in such quantities as the latter species. Philbert (1935) records the species from the caves on the island of Sark (Grottes du Gouliot), it is also abundantly found in the Plymouth area. The gonophores were observed in February and again in September.

Plumularia halecioides Alder, 1859

According to Mr. Oppenheim's notes the species is abundantly found in St. Clement's Bay on *Fucus* and other Algae. The colonies sometimes reach a considerable length (up to 5 mm) and are usually profusely branched; gonophores, however, were not observed. Several large colonies are present in the collection; the hydranths have 16-20 tentacles. The colonies are usually more or less transparent, the body of the hydranth is faintly yellow. Although the species has been found along the entire north-west coast of France (Pas de Calais, region of Saint Vaast-la Hougue and Roscoff), it is much less common than the two preceding species. In the Plymouth area it seems to be rare.

Nemertesia antennina (Linnaeus, 1758)

This species is represented in the collection by two hydrocauli of ± 13 cm length. According to Mr. Oppenheim's observations it was found on oysters from the French Channel coasts and was occasionally cast ashore. The canaliculated hydrocaulus is composed of 18-20 tubes, visible through the light-brown coloured periderm as faint yellow stripes. The hydrocladia are arranged in verticils; each verticil is composed of 5 hydrocladia, which have hydrothecate and intermediate articles. The apophyses are comparatively long, increasing in length towards the top of the hydrocaulus and there slightly longer than the first hydrothecate article. Gonothecae were not observed. *Nemertesia antennina* is a common species in the deeper waters off the coasts of north-west France. It has also been found in the Plymouth region.

Nemertesia ramosa Lamouroux, 1816

A small fragment of this species, about 4 cm long, is present in the collection. According to Mr. Oppenheim it is found on oysters originating from the Channel coasts, once a fragment was washed ashore in St. Aubin's Bay. The hydrocladia of the present specimen, which are composed of hydrothecate articles only, are placed in verticils of 5; the apophyses are slightly shorter than the hydrothecate articles. Some gonothecae, which are in a bad condition, are found on the apophyses. As *N. antennina* the present species is comparatively common in deeper waters off the north-west coast of France although it is distinctly less abundant. It was also found in the Plymouth area, although in smaller numbers than the preceding species.

Aglaophenia pluma (Linnaeus, 1758) forma **helleri** Marktanner-Tourneretscher, 1890 (fig. 4a)

This species is abundantly found on *Halidrys siliquosa* along the entire coast of the island. It is represented by several well preserved colonies, which have a maximal length of 3 cm. Some colonies have as many as 4 corbulae, composed of 7 or 8 ribs. The margin of the hydrotheca has 4 pairs of lateral teeth of variable size and a conspicuous median, abcauline tooth. The living colonies have a vivid yellow colour; the corbulae are mainly found in April. *Aglaophenia pluma* is very commonly distributed along the north-west coast of France and along the British Channel coasts. It is, however, mainly represented by the typical form (forma *typica* Bedot 1919), although the forma *helleri* has been recorded from many localities along the Atlantic

coast of France. In the Plymouth area the forma *helleri* seems to be rare, it is only recorded from Eddystone Rock (Marine Biological Association, 1931). Philbert (1935) records this form from the island Lihou, where it was found on *Cystoseira fibrosa*; in the St. Malo region, however, the same form was found on *Halidrys siliquosa* (Philbert, 1935b).

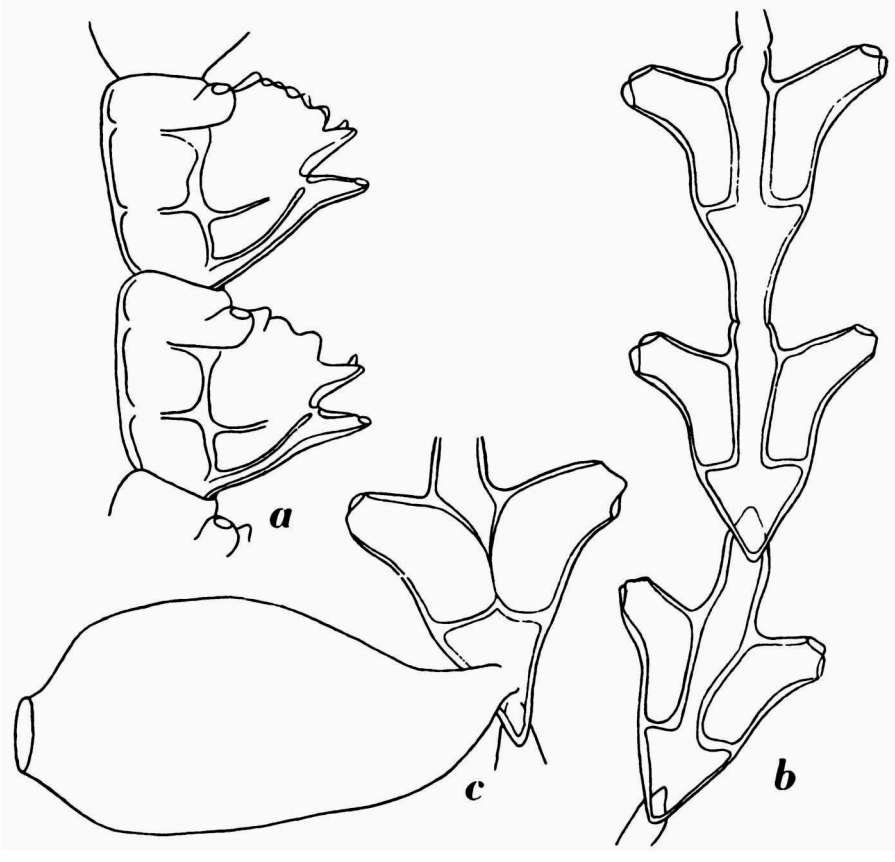

Fig. 4. a, *Aglaophenia pluma* (L.) forma *helleri* Marktanner. Two hydrothecae of a colony on *Halidrys siliquosa*. b, c, *Sertularia distans* (Lamx.) var. *gracilis* Hassall; b, part of a colony which shows the arrangement and the shape of the hydrothecae; c, gonotheca. × 75.

Lafoea fruticosa M. Sars, 1851 forma **pocillum** Hincks, 1868

No material of this minute form is present in the collection, but Mr. Oppenheim gives a very characteristic figure. According to his notes dead colonies were found on oysters from the French Channel coast; living colonies were occasionally met with in St. Clement's Bay. I have been

unable to trace records of the occurrence of this small form in other localities along the north-west coast of France, but the typical form is not uncommon in the Plymouth area (Marine Biological Association, 1931). Small colonies, which may belong to the present form, are recorded from south-west of Eddystone Rock (Crawshay, 1912).

Campanulina lacerata (Johnston, 1847)

Large colonies of this species were found on oysters from the French Channel coast and on *Hydrallmania falcata* in several localities round the island. Small, creeping colonies were found in the basin opposite Black Dive. No specimens are present in the collection. The hydranths, which in expanded condition may reach a considerable length, are almost transparent and have about 20 long and slender tentacles, densely set with rings of nematocysts. The hydrocauli and pedicels are ringed throughout their entire length; the closing apparatus of the hydrothecae is composed of 6-10 triangular plates. No gonothecae have been observed. *Campanulina lacerata* is very common on many species of Hydroida, Bryozoa and Alcyonaria along the entire Atlantic coast of France. In the Plymouth area it is very abundant.

Calicella syringa (Linnaeus, 1758)

Hundreds of hydrothecae of this species were observed on oysters from the French Channel coast and on *Hydrallmania falcata* from St. Clement's Bay; not a single gonotheca has been observed by Mr. Oppenheim. No material has been preserved. *C. syringa* is very common on Hydroida along the Atlantic coast of France and in the Plymouth region; it is occasionally met with on large Algae (*Laminaria*). The living colonies are almost transparent with a faint yellow tinge.

Sertularella polyzonias (Linnaeus, 1758) forma **typica** Broch, 1910

Two different species are figured by Mr. Oppenheim under the name of *Sertularella polyzonias*, viz., *S. polyzonias* and *S. mediterranea*; specimens of the latter species are present in the collection. *S. polyzonias* was cast ashore on several localities along the coast of Jersey, sometimes attached to *Flustra*. The polyps of the living colonies, which have a yellow-brown colour, have 20-24 tentacles round the proboscis. The hydrothecae have four low, marginal teeth; the operculum, composed of four flaps, is easily obliterated and can only been observed in good condition in young specimens.

The gonothecae of this species, which have 4 apical teeth, were found in July and August. The typical form of *S. polyzonias* is comparatively common along the north-west coast of France and in the Plymouth area. It is found in the tidal zone on roots of *Laminaria* and directly on the rocks, but it also penetrates into deeper water. It is easily confused with *S. mediterranea,* which is sometimes considered as a form of *S. polyzonias*; it differs mainly by the absence of teeth in the interior of the theca.

Sertularella mediterranea Hartlaub, 1901 (fig. 5)

This species has been figured by Mr. Oppenheim as *Sertularella polyzonias* and *S. gayi.* Several slightly branched hydrocauli of 2-3 cm length

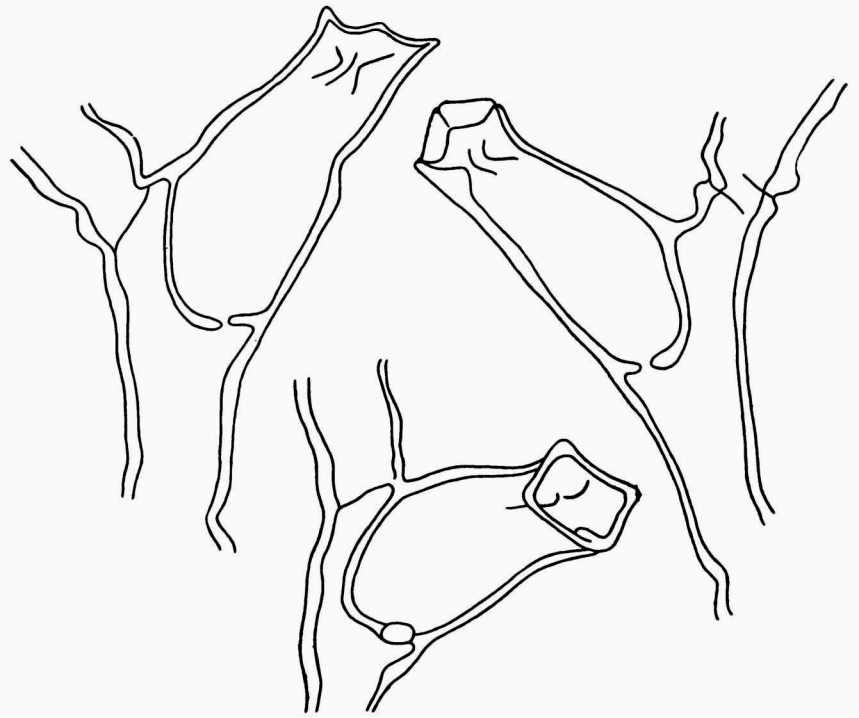

Fig. 5. *Sertularella mediterranea* Hartlaub. Hydrothecae from various colonies. × 60.

are present in the collection. As mentioned above it is mainly characterized by the presence of internal, thecal teeth; the general shape of the hydrothecae as well as the way of attachment to the hydrocaulus varies considerably. The length of the free adcauline part of the theca is ± 1.5 times as long as the fused part. The margin of the thecae has four distinct teeth, separated

by rounded incisions of variable depths. These teeth sometimes are very acute, in other thecae they are obtuse. Their length varies considerably; sometimes the abcauline tooth is distinctly longer than the remaining teeth, so that the opening of the theca is not perpendicular to the longitudinal axis. In other thecae all teeth have a nearly equal size, approaching the type also met with in *S. polyzonias,* the plane of the opening then usually is distinctly perpendicular to the longitudinal axis of the theca. The three internal thecal teeth are conspicuous, their length varies between $^1/_3$ and $^1/_4$ of the total length of the theca. Their place varies slightly, usually there is one abcauline internal tooth, corresponding with the abcauline marginal tooth, and two more or less lateral internal teeth, placed between the adcauline and lateral marginal teeth; differences of the type described here are not rare. They are placed some distance below the slightly thickened thecal border. The hydrocauli of all colonies are divided into internodes, separated by slightly oblique, distinct septa; each article bears a single hydrotheca, these thecae are alternatingly arranged in two not strictly opposite rows; the planes in which the thecae are placed make an angle of 120°-140°. The thecae are placed at an angle of ± 60° with the internode. Some young gonothecae, provided with only two apical teeth, are present. They are found on the internodes some distance under a theca.

Measurements

Total length of the theca (from base to extreme tip)	710-800 μ
Length of the fused part of the theca	310-370 μ
Length of the free adcauline part of the theca	460-560 μ
Maximal diameter of the theca	310-340 μ
Diameter of the opening of the theca	230-250 μ

Sertularella mediterranea is mainly a mediterranean species but its area of distribution seems to be much wider, as it has recently been recorded from the African coasts (Rio d'Oro, Leloup, 1937; Isipingo beach, South Africa, Eyre and Stephenson, 1938) and from French Indochina (Thuy Trien, Leloup, 1937a). Philbert (1935) records the species from the islands Lihou, Jethou, Sark and Herm, where it was abundantly found on Algae and directly on the rocks. No other records of its occurrence along the north-west coast of France are available, but it may have been confused with *Sertularella polyzonias.* On the island of Jersey *S. mediterranea* was found on *Laminaria* near Grosse Tête, St. Brelade's Bay.

Sertularella gayi (Lamouroux, 1821)

Small colonies of this species, which is only represented by a drawing, were found on *Flustra,* cast ashore along the beach. The colonies were

without gonothecae, but the hydrothecae have a very characteristic structure, so that the species is easily recognized. The thecae are provided with three or four annular constrictions, which are very distinct on the adcauline half of the thecae, but almost completely reduced on the abcauline part; in some hydrothecae only they have the character of rings. The thecal border, which is slightly thickened, has four marginal teeth of equal size, the whole of the thecal margin is slightly bent outwards. The colour of the colonies is yellowish brown. *Sertularella gayi* is comparatively common in the Roscoff and Plymouth regions; it has also been found in the St. Malo area and in the Pas de Calais, although in small numbers. No records from the other Channel Islands are available.

Diphasia rosacea (Linnaeus, 1758)

No specimens of this species are present in the collection, but I have seen an accurate drawing of a part of a colony with a female gonotheca. The almost transparent colonies are found in small numbers on other Hydroids along the coasts of Jersey; the gonothecae are found in June. Sterile specimens of *D. rosacea* may be easily confused with *D. attenuata,* in spite of distinct differences in the shape of the hydrothecae. Their areas of distribution coincide largely, although *D. rosacea* is very abundantly distributed in the northern part of the North Sea, where *D. attenuata* is sparingly represented. *D. rosacea* penetrates far to the south along the British and French Channel coasts; it has been recorded from the Pas de Calais, Saint Vaast-La Hougue, Roscoff and the Plymouth area, but never abundantly.

Diphasia attenuata (Hincks, 1866)

A number of well developed, ± 15 mm high colonies are present in the collection, besides drawings of parts of colonies with male gonothecae. The species was commonly found on other Hydroids along the coasts. The hydrocauli of the present specimens, which are slightly branched, rise from a hydrorhiza creeping on the hydrocaulus of *Hydrallmania.* The free end of several hydrocauli or sidebranches is produced into a more or less articulated, curved tendril. The hydrothecae show numerous cases of renovation; the distal portion of many thecae, by the constant renovations, is greatly lengthened and almost tubular. The operculum generally is distinctly visible; the hydranths have 16 tentacles. The colonies are almost transparent with a faint yellowish brown tinge. The young gonothecae are found in July. *Diphasia attenuata* is commonly distributed along the Atlantic coasts of

France, going as far south as Berlengas in Portugal (Nobre, 1937). It penetrates to the north along the French and British Channel coasts, so that it occurs rather frequently in the southern part of the North Sea. Philbert (1935) records the species from caves (Grotte du Gouliot) on the Channel island Sark.

Abietinaria abietina (Linnaeus, 1758)

A small colony of this species was cast ashore and figured by Mr. Oppenheim. *A. abietina,* a boreo-atlantic species with a very wide area of distribution, is very common along the entire Atlantic coast of France, while it penetrates as far south as Berlengas in Portugal (Nobre, 1937); along the British Channel coast it also occurs in considerable numbers. It is, however, chiefly an inhabitant of deeper water, where it is found on all kinds of fixed objects (stones, Lamellibranchia and Gastropoda).

Sertularia cupressina Linnaeus, 1758

Both types of colonies (forma *typica* Broch, 1928, and forma *argentea* Linnaeus, 1758) have been figured by Mr. Oppenheim; they were found on oysters from the Channel coasts. No representatives of either of the forms are present in the collection. The gonothecae were found in February and September; the hydranths have 16-20 tentacles. *S. cupressina* is common in deeper water along the Channel coasts; from the north-west coast of France the forma *argentea* has chiefly been recorded (St. Malo region, Philbert, 1935b; Luc sur Mer, Normandie, Tolmer, 1934; Roscoff, Teissier, 1933), but both forms certainly have the same abundance.

Mr. Oppenheim has figured, under the name of *Thuiaria tenuis,* two fragments of colonies which were washed ashore and very probably belong to the above mentioned species. I have, however, been unable to identify the drawings with certainty.

Sertularia operculata Linnaeus, 1758

Many colonies of this species, some fragments of which are present in the collection, were found along the coasts of Jersey, partly cast ashore, partly fixed on *Laminaria.* The colonies usually were richly covered with gonothecae of both sexes and reached a height of 25 cm. The living colonies are faintly yellowish and almost transparent, the polyps have 10-12 tentacles. According to Mr. Oppenheim's observations the female and male gonothecae differ in size; the male gonothecae are elongated and club-shaped, the female are egg-shaped and truncated at the top, where they are provided

with a distinct collar. *Sertularia operculata* is abundant along the north-west coast of France, it penetrates into the southern part of the North Sea, although it is never abundant there. In the Plymouth area it seems to be restricted to Eddystone Rock and Eddystone Buoy, it also occurs in Wembury Bay (Marine Biological Association, 1931). Philbert (1935) records the species from the island Jethou, where it was found on Algae.

Sertularia distans (Lamouroux, 1816) var. **gracilis** Hassall 1848
(figs. 4a, b)

This species is easily confused with *Dynamena pumila*; along the coasts of Jersey it shows a distinct preference for deeper water, where it is mainly found on Algae. It was also found on oysters from the Channel coasts. The collection contains several unbranched and slightly branched, ± 15 mm high colonies, rising from a creeping hydrorhiza fixed on *Halidrys siliquosa*. The slender hydrocaulus is broken up into articles, which are separated by very oblique joints. Each internode carries one or two pairs of hydrothecae. Usually the basal internode carries one pair, the remaining internodes two pairs of hydrothecae, which are separated by a considerable space. The length of that space is about the same as that of the thecae, sometimes slightly longer. The hydrothecae are not strictly opposite, but the planes in which they are arranged make an angle of about 120°-150°. The basal parts of the thecae are fused on the frontal side of the colony and separated by a part of the internode on the back. The fused part of the theca is slightly longer than the free part. The opening, which in many hydrothecae shows several renovations, is provided with two distinct lateral teeth. The gonothecae, which are found in May and June, are attached to the broadened part of the article closely under a theca. They are slightly smaller than those of *D. pumila*, but have almost the same shape. They have, however, a slightly longer, very narrow neck round the terminal opening and contain a single egg. *Sertularia distans* var. *gracilis* seems to be comparatively rare along the Channel coasts of France and Great Britain, it has been recorded from the St. Malo region (Philbert, 1935b), where it was found on *Hydrallmania falcata* and red Algae, and from Roscoff (Bedot, 1911). It has not been found in the Plymouth area.

Dynamena pumila (Linnaeus, 1758)

This species was found in large quantities on Algae along the entire coast of Jersey; it is one of the most common species there. Several ± 12 mm high, unbranched or slightly branched colonies on *Fucus vesiculosus* are

present in the collection. The living colonies have a yellow-brown colour, but are usually densely covered by detritus and diatoms; the hydranths have 18 tentacles. The gonophores are found from March to June; the female gonothecae have a large acrocyste, which can be put out through the opening at the top of the gonotheca and contains about 8 eggs. *Dynamena pumila* is exceedingly common along the entire British and French Channel coasts, penetrating far to the north and to the south. It has its chief occurrence in the litoral zone, although it is sometimes met with in deeper water.

Hydrallmania falcata (Linnaeus, 1758)

No representatives of this species are present in the collection, but I have seen a number of very accurate drawings of this species. According to Mr. Oppenheim's notes it was usually met with in large quantities on oysters from the French Channel coasts, although smaller colonies and fragments were occasionally found along the coasts, where they had been washed ashore. The colonies are usually covered by other Hydroids or by Bryozoa. The living colonies are silvery white with a faint brown tinge; the hydranths have ± 14 tentacles. The gonophores, which are present in the early months of the year and again in November, are often filled with parasites; the normal gonotheca contains three eggs. *Hydrallmania falcata* is very common in deep water along the north-west coast of France; it has also been recorded from the Plymouth area.

Campanularia johnstoni Alder, 1856

This species, together with *D. pumila,* is a very common form along the entire coast of Jersey, covering various objects, but usually found in large quantities on red Algae. Several colonies are present in the collection. Mr. Oppenheim draws attention to the enormous variability in this species, which has also been an object of study for Broch (1933). A form with comparatively thick periderm has been described from the Adriatic by Broch (l.c.) as forma *crassa*; Mr. Oppenheim also mentions specimens with thick periderm of the hydrothecae, but unfortunately these forms are not present in his collection and no figure has been given. Large specimens, in which the primary hydranth carries a secundary polyp on its stalk, whilst the gonothecae usually are also found on the pedicels, have been figured by Mr. Oppenheim under the name of *Campanularia gigantea.* The periderm of the pedicels of hydrothecae and gonothecae may be annulated throughout their entire length, or annulated parts alternate with smooth parts; at the base of the pedicel and under each theca a number of rings is always present.

The number of marginal teeth, as has also been observed by Broch (1933), is extremely variable. Mr. Oppenheim has figured very slender forms with as many as 17 marginal teeth, but the number usually varies between 10 and 14. The mature gonothecae usually are found in the early months of the year (February-June), the production of medusae reaches a maximum in May. At the time of their liberation the young medusa has only 4 marginal tentacles, but the number increases as development proceeds. *C. johnstoni* is very common along the Atlantic coasts of France and the British Channel coast. It penetrates far to the south (Rio d'Oro, Leloup, 1937) and has also been recorded from several other Channel Islands (Lihou and Jethou), where it was found on *Laminaria* and other Hydroids (Philbert, 1935). The medusa is present in the Plymouth plankton during the whole year; it has its maximum of occurrence, however, from March to October (Russell, 1938).

Campanularia integra MacGillivray, 1842

This species is very variable in the shape of the hydrothecae, so that colonies with slender hydrothecae and thin periderm (*C. integra*) are found beside colonies with short and clumsy hydrothecae with thick periderm (*C. caliculata* Hincks, 1853). Both types have been figured by Mr. Oppenheim and are present in the collection. According to his observations both types are not rare along the coasts of Jersey, the typical form with thin periderm is mainly found on *Chondria dasyphylla* around the entire island, whilst the form with thick periderm occurs on red Algae in St. Clement's Bay and near Black Dive. Philbert (1935, p. 29, fig. 6) has recently drawn attention to the asymmetrical development of the periderm of the hydrotheca of the form with thickened periderm, so that the same theca may appear as thick walled or thin walled when seen from different sides. I have been able to verify Philbert's observations, as the same phenomenon occurs in the hydrothecae of the Jersey material. The pedicels of the hydrothecae vary greatly in length, they may be as long as 8 mm. Their periderm is usually wrinkled, but smooth parts may alternate with more or less distinctly annulated parts. The living colonies are almost transparent or light milky-white; the gonophores have faint orange-brown tints. The hydranths have 24-30 tentacles. Many gonothecae are present in the material, they are found in the summer months (July-September). The gonothecae of both forms are found on the hydrorhiza, they are about 1.1 mm long and have a diameter varying between 230 and 300 μ. Those of the typical form usually are quite smooth, those of the form with thickened periderm may have a more or

less distinct spirally twisted furrow. They are placed on short stalks composed of 3 rings and contain 1-3 gonophores. *Campanularia integra* seems to be comparatively rare along the north-west coast of France, it has been recorded from the St. Malo region (Philbert, 1935b) and from Rame Head near Plymouth (Marine Biological Association, 1931). Philbert (1935) mentions specimens collected on red Algae on the islands of Lihou and Jethou; the reproductive stage was in full swing on August 24th, 1934.

Campanularia hincksii Alder, 1856

Small colonies of this species were occasionally found on other Hydroids along the coasts of Jersey and on oysters dredged from about 7 fathoms depth. Sterile specimens only have been found and no representatives are present in the collection. The hydrothecae have about 12 very characteristic teeth; they are placed on pedicels of variable length, composed of annulated and smooth parts. Under each theca there is a distinct, spherical joint. The living colonies are transparent, the hydranths have ± 20 tentacles. *Campanularia hincksii* is not very abundant in the Channel region. It does not seem to be rare off Plymouth and in the Roscoff region, but it was only once recorded from the St. Malo area (Philbert, 1935b) and it occurs very sparingly in the Pas de Calais. It also penetrates into the southern North Sea.

Campanularia volubilis (Linnaeus, 1758)

Once a small, sterile colony of this species was found on *Sertularia operculata*; it is still present in the collection. The cylindrical hydrothecae with their undulated margin are placed on ± 2 mm long stalks, composed of ringed and wrinkled parts; under each theca there is a spherical joint. *C. volubilis* seems to be very rare in Channel waters, I have been unable to trace records of its occurrence along the north-west coast of France. It has been found, however, in the Plymouth Sound (Marine Biolgical Association, 1931), where it seems to be abundant in several localities.

Laomedea pelagica (Van Breemen, 1905)

This species, which was sparingly found on red Algae and Bryozoa round the island, has been figured by Mr. Oppenheim as *Campanularia fusiformis* and *Gonothyraea gracilis*. The hydrothecae have 10-12 very acute marginal teeth; they are placed on stalks of variable length, composed of smooth and ringed parts. The hydranths have 14 tentacles. No gonothecae have been observed; the living colonies are fully transparent. *L. pelagica* occurs

in two forms, a fixed form (*Laomedea gracilis* M. Sars, 1851) and a pelagic form (*Campanularia pelagica* Van Breemen). The fixed form is not abundantly represented in the Channel waters; it has been found along the Pas de Calais coasts (Bétencourt, 1899), in the St. Vaast-La Hougue region (Billard, 1902, 1905) and off Eddystone near Plymouth (Marine Biological Association, 1931); the small, graceful colonies are easily overlooked. The pelagic form is distributed through the whole North Sea area.

Laomedea longissima (Pallas, 1766)

A dead colony of this species was found on the beach of St. Clement's Bay; no hydranths or gonothecae were present. No material has been preserved so that I have only examined a drawing of this form. The margin of the hydrotheca is provided with 14-16 flat teeth, which have the character of undulations of the margin of the theca. *L. longissima* is commonly distributed along the north-west coast of France, although it is restricted to deep water, where it is found on various fixed objects. It is also found in the Plymouth area.

Laomedea dichotoma (Linnaeus, 1758)

No specimens of this species are present in the collection, but there are several characteristic drawings. The forms figured by Mr. Oppenheim are characterized by the large number (± 20) of depressed marginal teeth, whereas specimens from the coastal waters of the Netherlands, of which I have studied many colonies, usually have 14-16 teeth. This gives the hydrothecae of the colonies from Jersey, mainly found on oysters from the Channel coasts and on *Hydrallmania falcata* from deep water round the island, a very graceful appearance. The colonies are 6-8 cm long; the hydrocauli are sometimes branched or bent in zigzag-fashion. The living colonies have a faint horny colour with a yellowish-brown hydrocaulus; the hydranths have 24 tentacles. No gonothecae have been observed. *L. dichotoma* is commonly distributed along the Atlantic coast of France, penetrating as far south as Rio d'Oro (Leloup, 1937); it has also been found abundantly in the Plymouth area. It is an inhabitant of the litoral zone, where it is found at moderate depths.

Laomedea geniculata (Linnaeus, 1758)

This species was found abundantly on *Laminaria* and other large Algae round the entire coast of Jersey; some badly preserved specimens are pre-

sent in the collection. The colonies usually are unbranched and maximally about 3 cm long. The joints of the hydrocaulus have a conspicuous periderm-al thickening and may have 1 or 2 basal rings. The hydrothecae are placed on short, entirely annulated stalks. The hydranths have 22-24 tentacles. Many gonothecae have been observed, and the development and liberation of the medusae have been studied. The young *Obelia* medusa has 24 tentacles at the time of liberation, but that number is doubled when the medusa is sexually mature. The gonophores have their optimal development in late summer and early autumn (July-October). The *Obelia* medusae, liberated by the three commonly distributed, medusae-producing species *L. longissima, L. dichotoma* and *L. geniculata* cannot be separated; they are common in the Channel plankton. Off Plymouth *Obelia* medusae are found in all months of the year (Russell, 1938), but they are very abundant from April till November. The polyp is very common along the Atlantic coasts of France and in the Plymouth area; it is generally found on *Laminaria,* although it also covers many other Algae and various objects. Philbert (1935) records the species from several Channel Islands: Jethou, Herm and Sark, on the last island it was found near the entrance of the caves (Grotte du Gouliot).

Laomedea flexuosa Alder, 1856

I have seen no representatives of this species in Mr. Oppenheim's collection, but a number of drawings is present. It was found in small numbers on Algae along the entire coast. The hydranths have 22-30 tentacles, which according to Mr. Oppenheim's observations, at their base are connected by a thin membrane. The living colonies have a faint, citrine-yellow colour. The gonothecae are usually found in the late summer months, but young gonothecae are present at a much earlier date. *L. flexuosa* is abundantly found on Algae along the north-west coast of France; it has also been recorded in large numbers from the Plymouth area. Philbert (1935) records the species from Herm and Sark, on the last island it was found in huge quantities on *Fucus* in and along the caves (Grotte du Gouliot).

Laomedea angulata Hincks, 1861

This species, of which both specimens and drawings are present, is found in large quantities on *Zostera* leaves and, according to Mr. Oppenheim's notes, sometimes on *Laminaria.* The colonies are 3-8 mm long and their apical portion often shows a ± 1.5 mm long prolongation on the top of the hydrocaulus (schizospore). The colonies fringe both margins of the leaves, rising from a comparatively thick hydrorhiza, to which also a large number

of gonothecae are attached. Small colonies, composed of 3-4 hydrothecae, are sometimes found rising from the connecting hydrorhiza filaments on the surface of the leaf. All gonothecae are mature, many are empty. They are placed on short, spirally coiled stalks and contain many gonophores, each of which produces a large mass of sperm, which in the preserved specimen has a yellow colour. No gonothecae are found on the hydrocauli. The living colonies are almost transparent with a faint yellow tinge; the hydranths have 20-24 tentacles. The colonies are only found during the summer months (June-September). The colonies present in Mr. Oppenheim's collection belong to the typical form (forma *typica* Broch, 1933), which differs from the forma *calceolifera* (Hincks, 1871) by the smaller hydrothecae. *Laomedea angulata* is very commonly distributed in *Zostera* fields along the north-west coasts of France and in the Plymouth region; it is occasionally found on Algae (*Laminaria, Dictyota dichotoma* and *Dasya coccinea,* Philbert, 1935b).

Laomedea loveni Allman, 1859

Large numbers of colonies of this species were found on *Fucus* in several localities round the island, sometimes at places where it was exposed to the full sun and inaccessible for seawater during the greater part of the day. Several ± 13 mm high colonies with mature and partly empty gonothecae are present in the collection. The colonies, which are slightly branched, rise from a creeping hydrorhiza fixed on *Fucus serratus*; the hydrothecae have 10-12 truncated marginal teeth. The gonothecae, present from early spring to late autumn, contain many gonophores; male and female gonophores are found on different colonies. The female gonophores have 4-5 eggs. The living colonies are almost transparent or faintly yellow, the hydrocaulus is yellowish-brown. The body of the hydranth is sometimes brown, which may be largely due to the presence of food in the gastric cavity. *L. loveni* is very common along the north-west coasts of France and in the Plymouth region, where it is mainly found on Algae, although it is also found on stones, woodwork, twigs, barnacles, shells, etc.

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