A REVISION OF THE NOMENCLATURE OF THE FAMILY NEPHTHEIDAE (OCTOCORALLIA: ALCYONACEA)

II. THE BOREAL GENERA *GERSEMIA, DUVA, DRIFA* AND *PSEUDODRIFA* (n. g.)[1]

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With Plate XI and 6 Text-figures

As formerly mentioned (UTINOMI, 1951), the nomenclatorial history of the northern Nephtheidae has been quite confused. The first number of the northern Nephtheidae is RATHKE's *Gorgonia florida* (now known as *Duva florida*) which has been assigned to various genera such as *Nephthya, Eunephthya, Gersemia, Duva, Paraspongodes* and *Capnella.*

In 1869, VERRILL established a new genus *Eunephthya* to accomodate a southern form *Nephthya thyrsoides* VERRILL (1865) taken from the Cape of good Hope, South Africa, together with a northern form *Eunephthya glomerata* (LÜTKEN MS.) taken from Greenland. Apparently, the principal source of confusion between later workers has been the superficial resemblances between the two species living in northern and southern waters, without considering the earliest invalid designation, although VERRILL himself confirmed the former species as the type of *Eunephthya* many years later (VERRILL, 1922, p. 29). Unfortunately, VERRILL's *Eunephthya* is a synonym of *Capnella* which GRAY (1869, Feb.) created for a tropical form *Alcyonium imbricatum* QUOY & GAIMARD only a month before VERRILL's, so that it cannot be used at present (UTINOMI, 1960, p. 28).

In 1878, MARENZELLER established another new genus *Gersemia* for two retractile northern nephtheids. Some years later, the Scandinavian zoologists KOREN & DANIELSSEN (1883) and DANIELSSEN (1887) created a number of nephtheid genera (*Duva, Voeringia, Drifa, Nannodendron, Fulla, Gersemiopsis, Barathrobius, Sarakka, Krystallofanes* and *Organidus*). Most of these genera have been rejected by later systematists. Among them, however, only the genus *Gersemia* of MARENZELLER, as well as *Eunephthya* of VERRILL, has been accepted by KÜKENTHAL (1903–07) and later systematists.

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A comprehensive revision of the northern Nephtheidae was firist undertaken by KÜKENTHAL (1903–07). Unfortunately, he misinterpretted the early type designation of *Eunephthya* of VERRILL and applied the genus name *Eunephthya* to almost all the northern species like *E. glomerata,* with less-spiculated canal-walls. His classification has been generally accepted without question in later years.

MOLANDER and JUNGERSEN, both in 1915, who published the results of their studies on this group, largely agreed with KÜKENTHAL in nomenclature, though did not agree as to the synonyms of some species. VERRILL (1922) first retained two generic names *Duva* and *Drifa* among the genera erected by KOREN and DANIELSSEN.

In the latest revision, however, MADSEN (1944) adopted the generic name *Capnella* instead of *Eunephthya* for the northern Nephtheidae with non-retractile anthocodiae, following the proposal of BROCH (1939).

I am extremely grateful to Dr. Frederick M. BAYER of the United States National Museum for supplying the material studied in conjunction with this note. Thanks are due Dr. Hjalmar BROCH and Dr. F. Jensennius MADSEN for helpful informations on the northern Nephtheidae.

Gersemia fruticosa (M. SARS)

(Text-fig. 1; Pl. XI, figs. 1–3)

Material Examined:—A) Three specimens from off Nontucket Shoal, 39°49′00″ N., 68°28′30″ W. ("Albatross" Station 2043), 1467 fms. July 30, 1883.

B) Three specimens from SW of Martha's Vineyard, 39°15′30″ N., 71°25′00″ W. ("Albatross" Station 2562), 1434 fms. August 11, 1885.

Description:—The specimens herein examined consist of a dendritic polyparium, carrying a number of large extended polyps on branches and a cylindrical sterile stalk with a membranous disc encrusting a bulk of blackish gray silt in a mound- or bottle-like appearance. The three specimens of the material A measure in length as follows:

Polyparium	3.6 cm	4.5 cm	6 cm
Stalk	3.5 cm	2.5 cm	3 cm

The color of the colonies yellowish gray.

The polyps, mostly fully expanded, are uniformly large, typically developed, cyclindrical in shape, as measuring about 2–5 mm in length and about 1.5 mm in diameter.

The anthocodiae are provided with eight converging double rows of slender spicules. In the anthosteles, nowever, similar slender spicules are transversely arranged. The tentacles, when the polyp is extended, may reach more than 1 mm

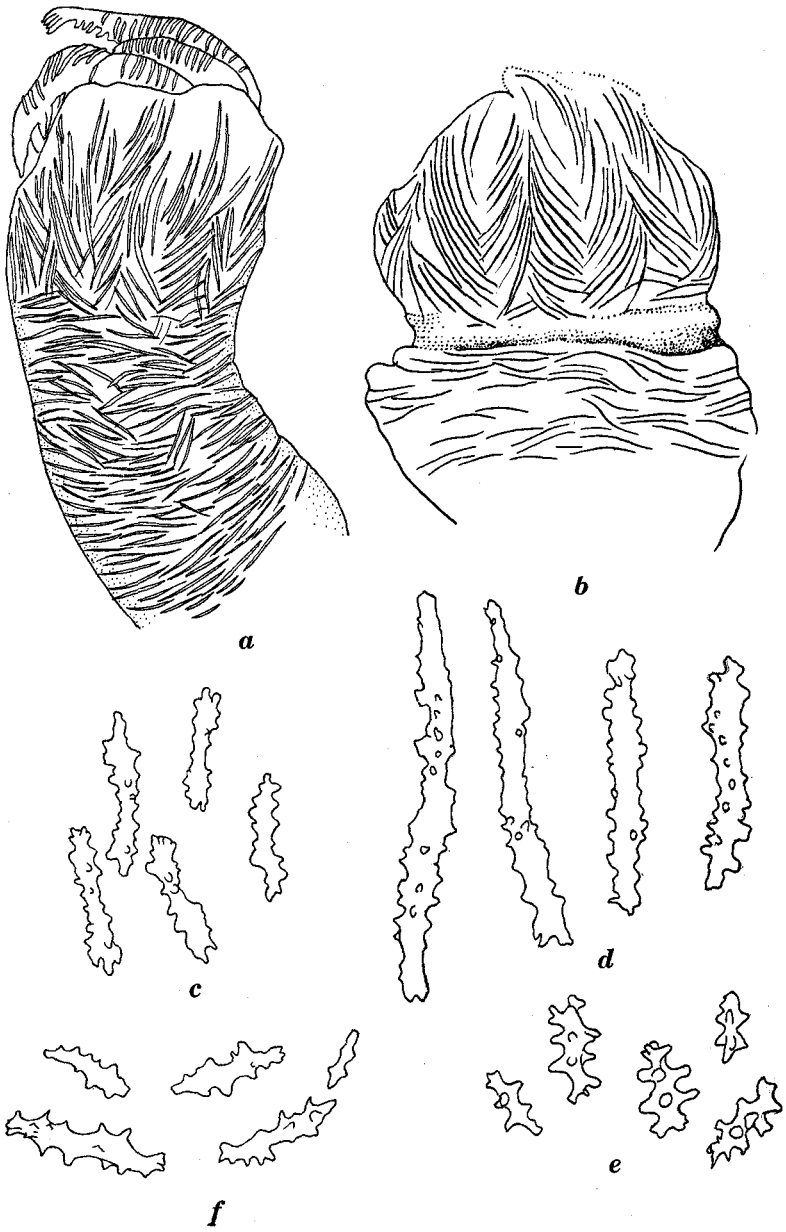


Fig. 1. *Gersemia fruticosa* (M. SARS).
a, Fully extended polyp, showing the arrangement of spicules; *b*, contracted polyp; *c*, tentacle spicules; *d*, anthocodial spicules; *e*, cortical spicules of sterile stalk; *f*, coenenchymal spicules of canal-walls.
[*a–b*, ×20; *c–f*, ×130]

long and bear many small spicules arranged transversely on the aboral side. The number of pinnules varies greatly.

On the stem and branches there are many small spinose rods. In the canal-walls, slightly longer rods are very scarcely set.

Measurements of Spicules (in mm) :—

Anthocodiae and anthosteles: Slender spindles, scarcely spinose—0.2×0.026; 0.25×0.023; 0.3×0.05; 0.35×0.05

Tentacles: Flattened rods, less spinose—0.12×0.026; 0.17×0.03

Cortex of stem and branches: Spinose rods or rollers—0.09×0.05; 0.12×0.05

Coenenchyma of stem: Spinose rods—0.12×0.05; 0.14×0.035; 0.17×0.05; 0.18×0.05

Type Locality :—Off coast of Norway.

Distribution :—Circumpolar, 0– about 1500 fms.

Gersemia rubiformis (EHRENBERG)

(Text-figs. 2–3; Pl. XI, figs. 4–6)

Material Examined :—A) One specimen from off Cape Cod, Massachusetts, 42°06.5′ N., 70°18′ W., Race Point Light S. 45° E. 4.7 miles ("Speedwell" Station 307), 31 fms. August 25, 1879.

B) Two specimens from Eluitkak Pass, Elson Lagoon, Point Barrow, Alaska (G. E. MACGINITIE collected). August 6, 1948.

Description :—An old specimen of the material A is a whitish colony attached to a broken shell, measuring about 7 cm in length and about 4 cm across. Two fresh specimens of the material B are pink-colored soft colonies having a developed stem with a broad base, 2 cm across and short branches carrying numerous almost retracted polyps placed mostly around the rounded tip of branches. In the latter specimens the polyps are always yellowish, while the cortex of branches and stem are wholly or partly pink in color.

In an extended condition, the branches measure up to 3 cm in height and clavate in shape and terminally thick and bi- or tri-branched. Branches placed more basally are generally shorter and scarcely subdivided. The sterile basal part is generally brownish in color, grooved longitudinally and much corrugated.

The polyps, wholly retractile, are generally smaller than those of the preceding *fruticosa*, about 1.2 mm long and 0.6 mm wide. The tentacles, when extended, are about 0.9 mm long and bear 8–10 pairs of short pinnules.

The spiculation in the polyps and stem is not well developed, comparing with *G. fruticosa*. The spicules in the anthocodiae are few in number, and in some specimens they are only found at the base of the tentacles. The anthostelar part is generally without spicules, although it may happen that in the case of the most powerfully armed anthocodiae, the spicules are found in small numbers only just below the anthocodial part, but they are never disposed so continually down to the base as in *G. fruticosa*.

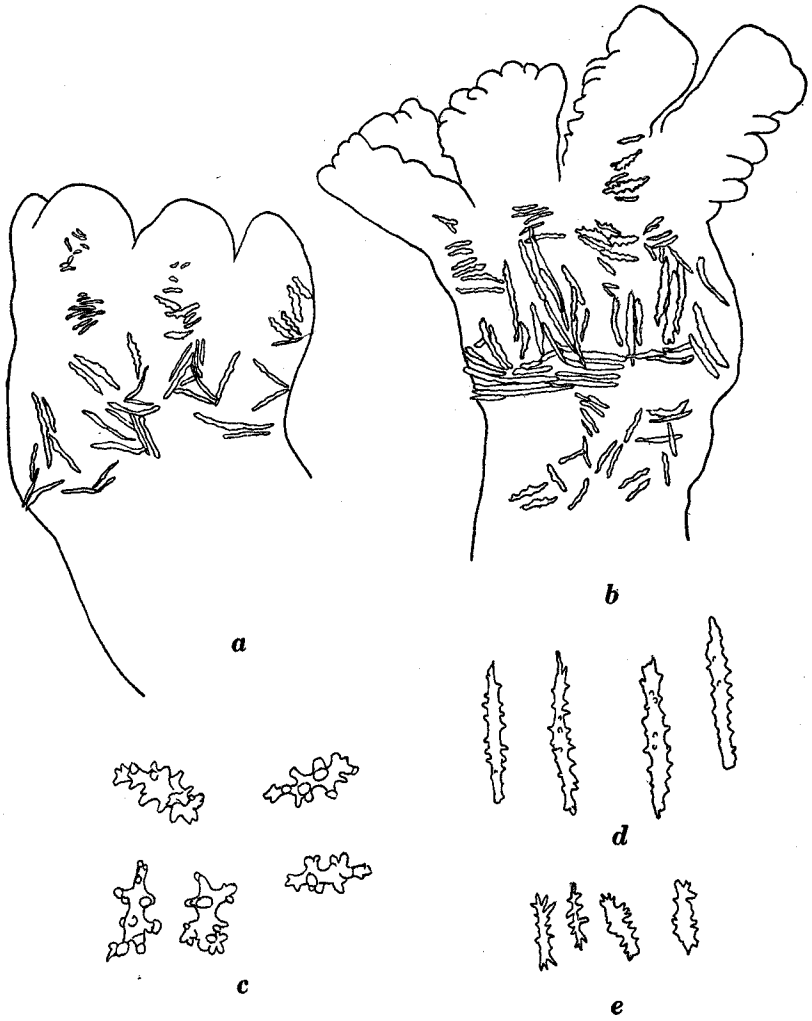


Fig. 2. *Gersemia rubiformis* (EHRENBERG) from off Cape Cod.
a-b, Partly extended polyps, showing the arrangement of spiculus; *c*, cortical spicules of sterile stalk; *d*, anthocodial spicules; *e*, tentacle spicules.
〔*a-b*, ×50; *c-e*, ×130〕

In the cortex of the branches and stalk there are pink-colored or colorless small spicules in small numbers. In the coenenchyma, however, the spicules are quite absent.

Measurements of Spicules (in mm) :—

Anthocodiae: Slender spindles—0.176×0.017

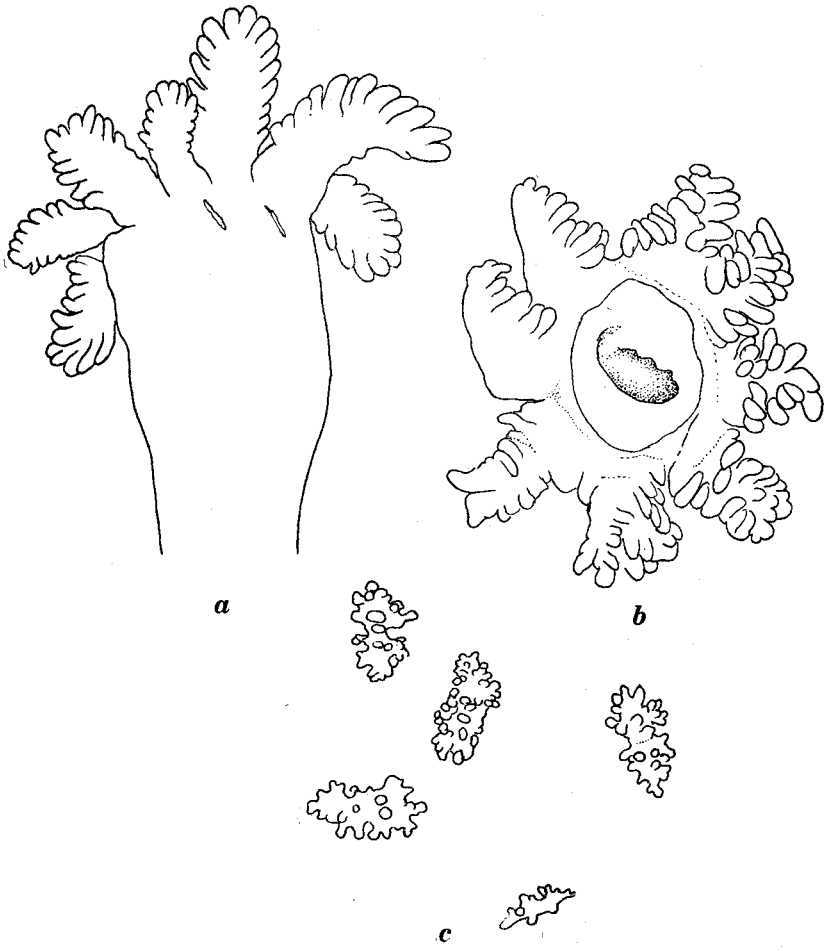


Fig. 3. *Gersemia rubiformis* (EHRENBERG) from Alaska.
a, Fully expanded polyp, side view; *b*, the same, upper view; *c*, cortical spicules of lobes. (*a-b*, ×42; *c*, ×130)

Tentacles: Spinose flattened rods—0.07×0.017; 0.12×0.019

Stalk cortex: Warty rods or rollers, often capstan-like—0.07×0.05; 0.12×0.035

Type locality:—"E mari septentrionalis".

Distribution:—Circumpolar, 0- more than 400 m in depth, usually shallow water between 50–200 m, according to BROCH (1956).

Remarks on the Genus *Gersemia* MARENZELLER

The genus *Gersemia* was first created by MARENZELLER (1878) for two species *G. loricata* and *G. florida* (=*G. fruticosa*). A number of genera established by DANIELSSEN (1887), such as *Voeringia, Fulla, Nannodendron, Barathrobius, Sarakka, Krystallophanes* and *Organidus* are probably synonyms of the genus *Gersemia*. Further comment on this genus may be unnecessary here.

Emended Generic Diagnosis :—Nephtheids of dendritic growth. Polyps retractile, crowded on branches or branchlets, armed with eight converging double rows of spindle-like spicules symmetrically arranged in anthocodiae and those transversely arranged in anthosteles. Cortex of stem and branches armed with a few numbers of mostly rods or rollers. Coenenchyma less- or non-spiculated. Mostly living in boreal waters.

Previously Known Species and Their Probable Synonymy :—

1. *Gersemia loricata* MARENZELLER (Type of the genus)

Gersemia loricata MARENZELLER, 1878, p. 377, pl. 3, fig. 3.

2. *Gersemia fruticosa* (SARS)

Alcyonium fruticosum M. SARS, 1860, p. 140.
Alcyonium fruticosum KOREN & DANIELSSEN, 1877, p. 81, pl. 3, figs. 8-11.
Gersemia florida MARENZELLER, 1878, p. 375, pl. 3, fig. 2 (not *Gorgonia florida* RATHKE, 1806)
Gersemia longiflora NERRILL, 1883, p. 44, pl. 3, figs. 6-6b; VERRILL, 1885, pp. 513, 533, pl. 2, fig. 13; VERRILL, 1922, p. 48, fig. 13 (type), pl. 14, figs. 3-3a (variety).
Voeringia fruticosa + *V. mirabilis* + *V. abyssicola* + *V. polaris* + *V. pygmaea* + *V. dryopsis* + *Fulla schiertzi* + *Barathrobius digitatus* + *B. palmatus* + *Nidalia arctica* + *Krystallofanes polaris* + *Organidus nordenskjördi* DANIELSSEN, 1887.
Paraspongodes fruticosa MAY, 1898, p. 388, pl. 23, figs. 1-1c; MAY, 1900b, pp. 3, 10 & 11.
Eunephthya fruticosa KÜKENTHAL, 1906a, p. 25, pl. 1, fig. 5; etc.
Gersemia fruticosa MOLANDER, 1915, p. 60, pl. 1, fig. 9; etc.
Gersemia fructicosa (sic) DEICHMANN, 1931, p. 64, pl. 1, fig. 6; pl. 4, figs. 14-20.
Gersemia rubiformis (part) MADSEN, 1944, p. 26; MADSEN, 1948, p. 4.
Gersemia rubiformis fruticosa BROCH, 1956, p. 9.

3. *Gersemia rubiformis* (EHRENBERG)

Lobularia rubiformis EHRENBERG, 1834, p. 282.
?*Halcyonium carneum* AGASSIZ, 1850, p. 200. (after VERRILL)
Alcyonium rubiforme VERRILL, 1864, p. 4.
Alcyonium carneum VERRILL, 1864, p. 39.
Nannodendron elegans DANIELSSEN, 1887, p. 69, pl. 7, figs. 45-47; pl. 8, figs. 1-76.
Paraspongodes rubra MAY, 1898, p. 393, fig. 3.
Alcyonium rubiforme + *Paraspongodes rubra* + *P. globosa* MAY, 1900b, p. 400.
Eunephthya rubiformis KÜKENTHAL, 1906a, p. 21, pl. 1, figs. 1 & 4; KÜKENTHAL, 1907, p. 331.
?*Lithophytum roseum* NUTTING, 1912, p. 14, pl. 1, figs. 3-3a; pl. 17, fig. 3 (from Okhotsk Sea).
Alcyonium gracillimum NUTTING, 1912, p.21 (from Okhotsk Sea) (not KÜKENTHAL, 1906).
Gersemia rubiformis MOLANDER, 1915, p. 51, pl. 1, fig. 7; MOLANDER, 1918, p. 4.

Gersemia carnea VERRILL, 1922, p. 22, pl. 4, figs. 1-3; pl. 11, fig. 1.
Gersemia rubiformis VERRILL, 1922, pp. 4 & 48, pl. 1, figs. 1-1f; pl. 2, figs. 1-4a; pl. 17A, fig. 1.
Eunephthya rubiformis DEICHMANN, 1936, p. 63, pl. 4, figs. 21-25.
Gersemia rubiformis BROCH, 1935, p. 17.
Gersemia rubiformis (part) MADSEN, 1944, p. 26; MADSEN, 1948,
Gersemia rubiformis rubiformis BROCH, 1956, p. 7.

4. *Cersemia clavata* (DANIELSSEN)
Voeringia clavata DANIELSSEN, 1887, p. 29.
Voeringia capitata DANIELSSEN, 1887, p. 32.
Paraspongodes glacialis MAY, 1898, p. 390.
Paraspongodes griegi MAY, 1900b, p. 395.

5. *Gersemia crassa* (DANIELSSEN)
Sarakka crassa DANIELSSEN, 1887, p. 113 (Type of *Sarakka*).

6. *Gersemia danielsseni* (STUDER)
Voeringia danielsseni STUDER, 1891, p. 552.
Paraspongodes danielsseni STUDER, 1901, p. 31.

7. *Gersemia uvaeformis* (MAY)
Paraspongodes uvaeformis MAY, 1900b, p. 395.

8. *Gersemia marenzelleri* KÜKENTHAL
Gersemia marenzelleri KÜKENTHAL, 1906c, p. 64, pl. 3, fig. 15, textfigs. 45-46.

Duva florida (RATHKE)

(Text-fig. 4; Pl. XI, fig. 7)

Material Examined:—One specimen from off Grand Banks, 42°55′30″ N., 50°51′00″ W. ("Albatross" Station 2429), 471 fms. June 23, 1885.

Description:—The specimen is 12 cm in length of which 3.5 cm belongs to the sterile stalk. The color of the colony is dark brown, probably because of old material.

The sterile stalk is very thick and expanded towards the base, where it is about 4 cm across. Its surface is apparently quite smooth.

The branches are numerous and show great ramification. These are quite umbellate, bearing cushon-like clusters of small polyps at their tips. Each polyp is cylindrical in shape, about 2 mm long and 0.6-0.7 mm wide and not retractile.

The armature is weak, the spicules are arranged in eight double rows from the base of the tentacles down to the bottom of the polyps, not differentiated between the head and stalk. The tentacles are long, with up to 15 pairs of filiform pinnules and devoid of spicules.

The cortex of the branches is apparently naked, while the cortex of the stalk contains small spicules, though their density is much variable in places. The canal-walls are without spicules.

Measurements of Spicules (in mm) :—

Polyps: Flattened spinous rods bluntly ended—0.16×0.05; 0.18×0.056; 0.2×0.05; 0.23×0.05; 0.3×0.05

Stalk cortex: Tiny tuberculate rods or rollers, rarely crosses—0.11×0.028; 0.11×0.056; 0.12×0.056

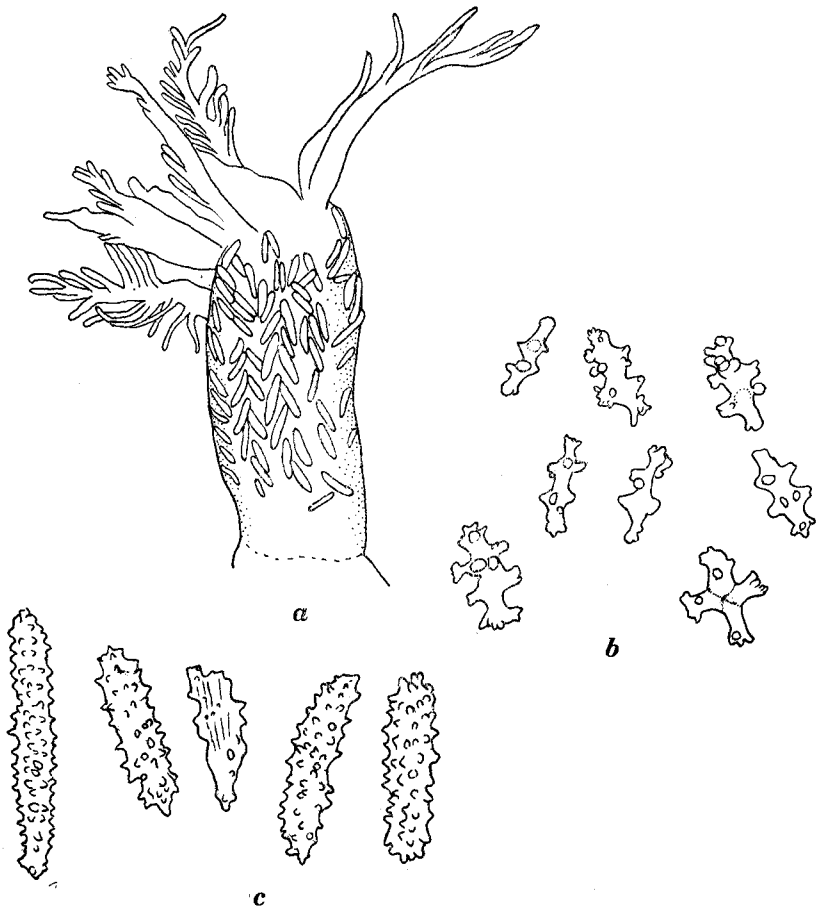


Fig. 4. *Duva florida* (RATHKE).
a, Fully extended polyp; *b*, cortical spicules of sterile stalk; *c*, anthocodial spicules. [*a*, ×27; *b*–*c*, ×130]

Type Locality :—Off the west coast of Norway.

Distribution :—Circumpolar; according to DEICHMANN, this (if synonymous with *Duva multiflora*) is usually at depths of 110–300 fms. off the coast of New England, North America, while according to MADSEN in the Norwegian seas mainly found at depths greater than about 200 m.

Remarks on the Genus *Duva* KOREN & DANIELSSEN

The genus *Duva*, created by KOREN and DANIELSSEN (1883) for a single species *Duva rosea* from Norwegian seas, was lumped by KÜKENTHAL (1896, p. 131) into his instituted elastic genus *Paraspongodes* together with DANIELSSEN's *Voeringia*, *Fulla*, *Barathrobius*, *Gersemiopsis*, *Drifa* and MARENZELLER's *Gersemia*, and MAY (1898, 1900 a, b) followed his procedure. KÜKENTHAL (1903–07) later abandoned this *Paraspongodes* and erroneously adopted VERRILL's *Eunephthya* except for *Gersemia* for all the northern Nephtheidae.

Lately VERRILL (1922, p. 34) revived the earliest available name *Duva* for only the type species *Duva rosea* KOREN and DANIELSSEN and synonymized it with his earlier described *Alcyonium multiflorum*. This *Duva* undoubtedly corresponds with KÜKENTHAL's group "Eunephthya Umbellatae", though not adopted by either MOLANDER or MADSEN, and seems to be generically valid, showing in many respects an intermediate condition between *Gersemia* and *Drifa*. From the former genus it differs in having weakly developed coenenchyma and non-retractile polyps with simple weak armature. From *Drifa* it differs especially in having cylindrical polyps somewhat contractile. Regarding the synonyms here suggested I am not confident at present.

Emended Generic Diagnosis:—Nephtheids of upright growth, umbellate or subumbellate. Polyps somewhat contractile, but not retractile, cylindrical in shape, rather weakly armed with eight coverging double rows of rods symmetrically disposed continually from anthocodiae to anthostele, blending downwards. Spicules of polyps mostly tuberculate or spinose rods. Cortex of stem naked or weakly armed with small rods, rollers, spindles or capstans, variable between species.

Previously Known Species and Their Probable Synonymy:—

The synonyms given here are only provisional and their decision will be possible by re-examining the type specimens or more corresponding specimens, if available.

1. *Duva florida* (RATHKE)

Gorgonia florida RATHKE, 1806, in: O. F. MÜLLER's "Zoologica Danica", p. 20, pl. 137. (Not seen.)
Duva florida KOREN & DANIELSSEN, 1883, p. 5, pl. 2, figs. 13–21.
Eunephthya rosea var. *umbellata* KÜKENTHAL, 1906a, p. 26, text-fig. F, pl. 1, figs. 3 & 6.
Eunephthya rosea var. *umbellata*+*E. florida* KÜKENTHAL, 1907, pp. 364, 374.
Eunephthya rosea var. *umbellata*+*E. florida* MOLANDER, 1915, p. 82, pl. 2, figs. 16 & 23.
Eunephthya rosea var. *umbellata* THOMSON, 1927, p. 15.
Eunephthya florida DEICHMANN, 1936, p. 62.
Capnella florida MADSEN, 1944, p. 30, fig. 21; MADSEN, 1948, p. 12.

2. ?*Duva multiflora* (VERRILL)

Alcyonium multiflorum VERRILL, 1879, p. 200.

Duva rosea KOREN & DANIELSSEN, 1883, p. 1, pl. 1, figs. 1-10; pl. 2, figs. 1-12 (Type of the genus).

?*Duva pellucida*+*D. pulchra* KOREN & DANIELSSEN, 1887, pp. 3-5, pl. 3, figs. 1-24.

?*Duva arborescens* + *D. aurantiaca* + *D. frigida* + *D. glacialis* + *D. spitzbergensis* + *D. violacea* + *D. flava* + *D. cinerea* DANIELSSEN, 1887, pp. 37, 41, 43, 46, 49, 52, 54, 56.

?*Eunephthya rosea* + *E. spitzbergensis* MOLANDER, 1915, pp. 79, 83.

Duva multiflora VERRILL, 1922, p. 35, text-fig. 6 (type), pl. 4, fig. 7; pl. 15, fig. 7.

3. *Duva bicolor* (UTINOMI)

Eunephthya bicolor UTINOMI, 1951, p. 35, text-fig. 5, pl. 1.

Drifa glomerata (VERRILL)

(Text-fig. 5; Pl. XI, fig. 8)

Material Examined:—One small specimen from about 9 miles off Nova Scotia, Chebucto Head Light ("Speedwell" Station 118), 53 fms. September 24, 1877.

Description:—The specimen herein examined is a small colony, measuring the polyparium 22 mm in length, 17 mm in width and the stalk 5 mm in length and 6 mm in diameter. According to VERRILL, however, it sometimes becomes larger, up to 5 inches high.

The colony is brownish in color. The trunk is stout, apparently naked at the base and the polyparium consists of multiramified branchlets covered with close clusters of 3 to 6 roundish, clavate polyps.

The individual polyps are non-retractile, generally bent inward and clavate in form, measuring about 1.5-2.1 mm long and 0.85-0.95 mm wide.

The polyp armature consists of a coat closely packed with spinous clubs longitudinally at the distal part which pass downwards into spindles transversly bending from the dorsal side. These anthocodial spicules are generally asymmetrically developed, becoming larger toward the dorsal side.

In the cortex of the stem and branches, small tuberculate spindles are closely distributed. In the canal-walls, similar spicules are sparsely set.

Measurements of Spicules (in mm):—

Distal end of anthocodiae: Spinous clubs—0.23×0.07; 0.25×0.09; 0.28×0.1

Lower part of anthocodiae: Spinous spindles, narrower at lower end—0.16×0.05; 0.2×0.05; 0.25×0.07

Anthosteles: Spinous spindles—0.16×0.05; 0.25×0.07; 0.3×0.06; 0.3×0.08

Tentacles: Curved flattened rods—0.07×0.009; 0.09×0.018

Cortex of stem and branches: Tuberculate rods or rollers—0.09×0.05; 0.12×0.07; 0.14×0.09

Canal-walls of stem: Tuberculate rods or rollers—0.1×0.05; 0.14×0.09

Type Locality:—Greenland.

Distribution:—Circumpolar, but hitherto not recorded from the Subarctic region of the North Pacific.

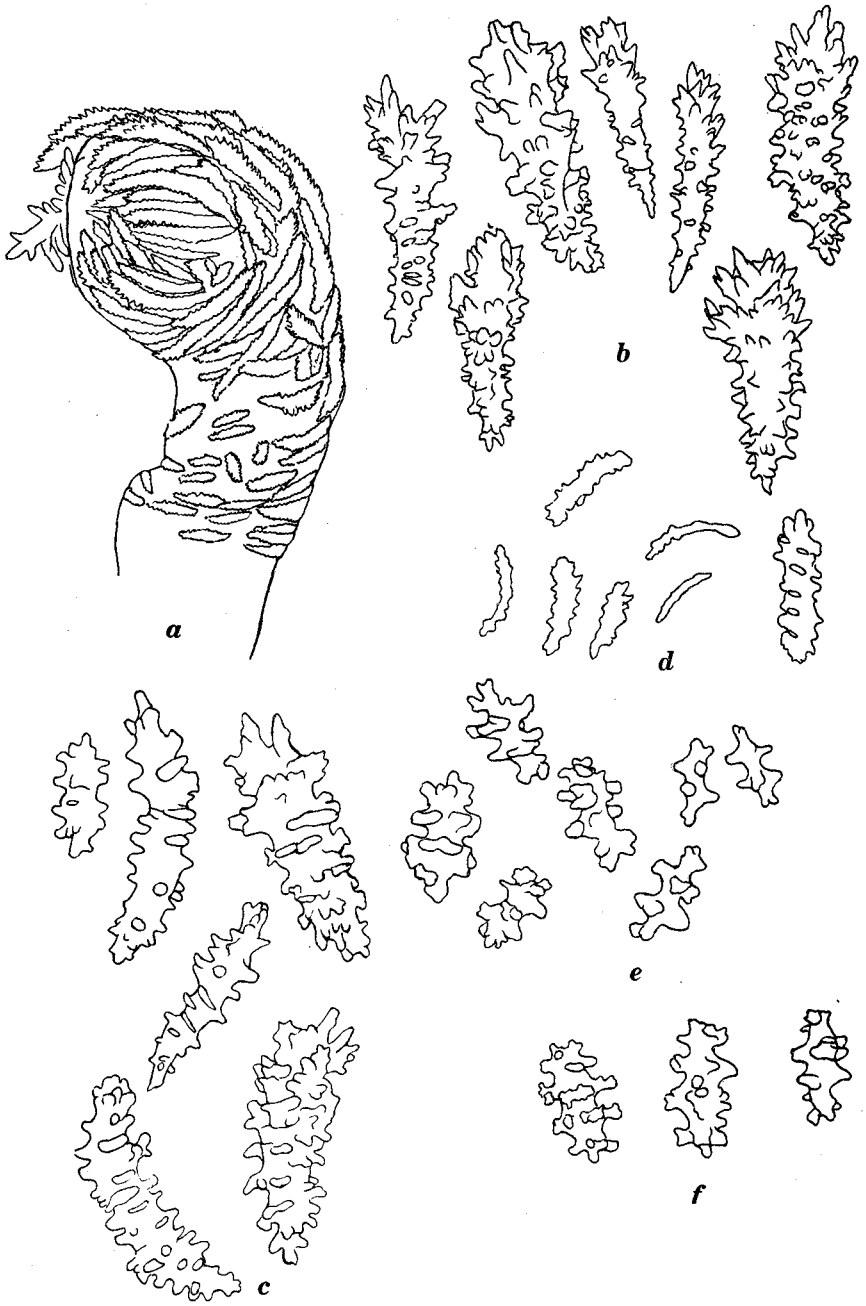


Fig. 5. *Drifa glomerata* (VERRILL).
a, Polyp, side view; *b*, anthocodial spicules; *c*, anthostelar spicules; *d*. tentacle spicules; *e*, cortical spicules of sterlle stalk; *f*, coenenchymal spicules of sterile stalk. [*a*, ×33; *b-f*, ×130]

Remarks on the Genus *Drifa* DANIELSSEN

As commented by VERRILL (1922, pp. 30–33), he at first treated the northern species *D. glomerata* from Greenland under the same genus as *Eunephthya thyrsoides* VERRILL from South Africa. Later on he separated himself it from the genus *Eunephthya* (properly *Capnella*) and assigned to *Drifa*, a genus created by DANIELSSEN (1887) for two northern nephtheids (*D. hyalina* and *D. islandica*), and synonymized its type species *D. hyalina* with his *Eunephthya glomerata*.

In general appearance, the genus *Capnella* (=*Eunephthya*) in tropical or warm temperate seas seems to be closely related to the northern forms now referable to the genus *Drifa*, but it can be differentiated from the latter in having much spiculated coenenchyma and asymmetrically developed foliate spicules (cf. BROCH, 1939, p. 14; UTINOMI, 1960, p. 30). Another genus *Gersemiopsis* of DANIELSSEN (type *G. arctica*) may be a synonym of *Drifa*.

Emended Generic Diagnosis:—Nephtheids of dendritic growth form. Stem thick, erect, leathery. Branches closely beset with non-retractile polyps everywhere. Polyps clavate, incurved and armed with clubs longitudinally, though not converging in eight double rows in anthocodiae and passing obliquely or transversely in anthosteles. Canal-walls with few number of spicules. Occurring mostly in the Arctic and North Atlantic seas.

Previously Known Species and Their Probable Synonymy:—

1. *Drifa glomerata* (VERRILL)

Nephthya glomerata VERRILL, 1869a, p. 284; VERRILL, 1869b, p. 97.
Ammothea luetkeni MARENZELLER, 1878, p. 372, pl. 3, fig. 1.
Alcyonium lütkeni VERRILL, 1879, p. 200.
Drifa hyalina DANIELSSEN, 1887, p. 59, pl. 7, figs. 1–44 (Type of the genus).
Drifa islandica + *Nephthya flavescens* + *Nephthya rosea* + *N. polaris* + *Gersemiopsis arctica* DANIELSSEN, 1887, pp. 65, 81, 87, 92, 99.
Eunephthya glomerata KÜKENTHAL, 1906b, p. 78; etc.
Paraspongodes luetkeni + *P. sarsi* MAY, 1900b, p. 399.
Eunephthya glomerata + *E. flavescens* MOLANDER, 1915, pp. 72, 74, pl. 2, figs. 17 & 19.
Drifa glomerata VERRILL, 1922, pp. 31, 46, pl. 5, figs. 2–2a; pl. 14, figs. 2–2b; pl. 15, figs. 1–5; pl. 17A, figs. 2–3.
Eunephthya glomerata DEICHMANN, 1936, p. 61.
Capnella glomerata MADSEN, 1944, pp. 29–30, fig. 22; MADSEN, 1948, pp. 9–12; BROCH, 1956, p. 4 (distribution map).

2. ?*Drifa antarctica* (KÜKENTHAL)

Paraspongodes antarctica KÜKENTHAL, 1902, p. 300.
Eunephthya antarctica KÜKENTHAL, 1906b, p. 75, pl. 3, figs. 14–15; pl. 12, figs. 69–78.

Pseudodrifa nigra (POURTALÈS)

(Text-fig. 6; Pl. XI, figs. 9–10)

Material Examined:—Three specimens from off Georgia, 30°44′00″ N., 79°26′00″ W. ("Albatross" Station 2415), 440 fms. April 1, 1885.

Description:—Each of the above three specimens consist of two main stems arising from a broad basal expansion which clings a bit of dead coral block. The color of the colonies is sepia-brown with paler whitish ridges on the polyps. The stalk and basal membrane are only brownish. They measure as follows:

Length	17 mm	25 mm	30 mm
Width	17	25	35
Length of stalk	8	10	10

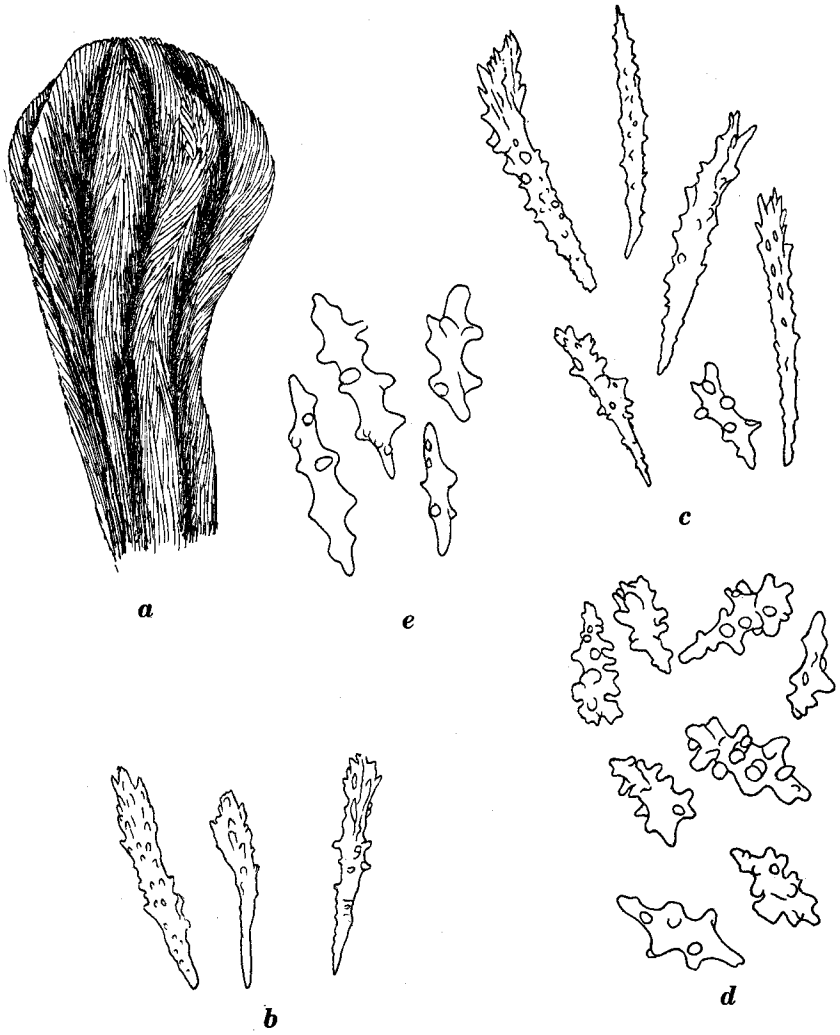


Fig. 6. *Pseudodrifa nigra* (POURTALÈS).
a, Polyp, side view; *b*, tentacle spicules; *c*, polypal spicules; *d*, cortical spicules; *e*, coenenchymal spicules. [*a*, ×20; *b–d*, ×130]

The broad, short stem radially gives off several short branches which carry a number of large polyps at their ends.

The polyps are about 3 mm long, 1.5 mm wide distally and apparently pear-shaped. They are not retractile and bear long stalk, exceeding the terminal head.

The polyps are always provided with eight sharply defined longitudinal ridges continually from the tip to the base, which are filled with innumerable spicules placed in chevrons. These eight ridges continue over the back of the tentacles where similar spinous spicules are disposed longitudinally. These spicules are mostly slender thorny clubs sharply pointed at their lower ends. Spicules between the ridges, not attaining the peak of ridges, are generally slender spindles pointed at both ends.

The cortex of the stem contains small tuberculate rollers or clubs with rounded warts. In the coenenchyma there are rods with a few rounded warts which may be derived from the outer rollers. These coenenchymal spicules are rather numerous in comparison with *Drifa glomerata*, though never abundant.

Measurements of Spicules (in mm) :—

Polyps: Slender spinous clubs or spindles—0.26×0.05; 0.28×0.035; 0.3×0.035; 0.33×0.035

Tentacles: Slender spinous clubs—0.14×0.035; 0.22×0.035; 0.25×0.035

Cortex of stem: Tuberculate rollers or clubs—0.1×0.035; 0.12×0.04; 0.14×0.05

Coenenchyma of stem: Weakly tuberculated rods—0.12×0.035; 0.15×0.05; 0.21×0.05; 0.23×0.04

Type Locality:—Off Sand Key, Florida, 120 fms. (POURTALÈS Gulfstream Explor.).

Remarks on the Genus *Pseudodrifa* (n. g.)

The species *nigra* herein described was originally assigned to *Nephthya* by POURTALÈS (1868, p. 130), but later has been treated as a member of the genus *Eunephthya*. Apparently the polypal spicules resemble somwhat those of *Drifa glomerata*, but the mode of their arrangement in the polyps and tentacles is quite unique. Likewise, the growth form of the colonies and the shape of the polyps are greatly different. The coenenchyma is moderately spiculated, as noticed by MOLANDER and STUDER for the other related species (*racemosa* and *groenlandica*). Furthermore, the native places of the species *nigra* is the Atlantic coast of North America from Florida to Georgia where lies in the subtropical area, apart from the native places of *Drifa glomerata* and its related species.

Therefore I dare create a new genus *Pseudodrifa* for these Northwestern Atlantic species, designating the so-called *Eunephthya nigra* (POURTALÈS) as the type species.

New Generic Diagnosis:—Nephtheids of low shrubby growth form with short

sterile stalk and poypiferous short twigs. Polyps non-retractile, large, clavate in form and with well defined eight longitudinal ridges closely packed with club-like slender spicules continually. Spicules not scarce in coenenchyma. Occurring in the Northwestern Atlantic, from Florida to Greenland.

Previously Known Species and Their Probable Synonymy :—

1. *Pseudodrifa nigra* (POURTALÈS) (Type of the genus)

Nephthya nigra POURTALÈS, 1868, p. 130.
Eunephthya nigra VERRILL, 1883, p. 44.
Paraspongodes nigra MAY, 1900a, p. 148.
Eunephthya nigra KÜKENTHAL, 1906b, p. 77; KÜKENTHAL, 1907, p. 350; DEICHMANN, 1936, p. 60, pl. 1, fig. 7; pl. 4, figs. 5–13; pl. 27, figs. 1–2.

2. *Pseudodrifa racemosa* (STUDER)

Eunephthya racemosa STUDER, 1891, p. 551; STUDER, 1901, p. 33, pl. 4, figs. 1–2.
Paraspongodes racemosa MAY, 1900a, p. 148.
Eunephthya racemosa KÜKENTHAL, 1906b, p. 79; KÜKENTHAL, 1907, p. 359.
Drifa racemosa VERRILL, 1922, p. 34, pl. 14, fig. 4 (fig. 3 mentioned in text is an error).

3. *Pseudodrifa groenlandica* (MOLANDER)

Eunephthya groenlandica MOLANDER, 1915, p. 78, text-fig. 13C, pl. 2, fig. 18.
Capnella glomerata f. *groenlandica* MADSEN, 1944, p. 30, figs. 22r–x.

REFERENCES

BROCH, Hj. 1928. Alcyonarians, with a systematic-biogeographical discussion of the northern *Eunephthya*-species. Norw. North Polar Exped. "Maud" 1918–1925, Sci. Res., vol. 5, no. 7. Bergen.

——— 1935. Oktokorallen des nördlichsten Pazifischen Ozeans und ihre Beziehungen zur Atlantischen Fauna. Abhandl. utgitt av Det Norske Videnskaps-Akad. Oslo, I. Matem.-Naturvid. Kl. 1935, no. 1, pp. 1–53.

——— 1939. Some South African shallow water octactinians. Kgl. Fysiogr. Sällsk. i Lund Förhandl., vol. 9, no. 6, pp. 48–79.

——— 1956. Oktokorallen. Russischer Expeditionen im Polarmeer während der Jahr 1929–1935. Ibid., 1956, no. 4, pp. 1–18.

DANIELSSEN, D. C. 1887. Alcyonida. The Norwegian North-Atlantic Expedition 1876–1878, Zoology. viii+169 pp., 23 pls. Christiania.

DEICHMANN, E. 1936. The Alcyonaria of the western part of the Atlantic Ocean. Mem. Mus. Comp. Zoöl. Harvard, vol. 53, pp. 1–317, pls. 1–37.

EHRENBERG, C. G. 1834. Die Corallentiere des rothen Meeres. Kgl. Akad. Wiss. Berlin.

JUNGERSEN, H. F. E. 1915. Alcyonaria, Antipatharia og Madreporaria. Consp. Fauna Groenl. Medd. om Grönland, vol. 23. (Not seen.)

KÜKENTHAL, W. 1896. Alcyonaceen von Ternate. Nephthyidae und Siphonogorgiidae Kölliker. Abh. Senckenb. Naturf. Ges. Frankfurt, vol. 23, no. 1, pp. 79–144, pls. 5–8.

——— 1903. Versuch einer Revision der Alcyonarien. III. Die Familie der Nephthyiden. 1 Theil. Zool. Jahrb., Abt. Syst., vol. 19, no. 1, pp. 99–172, pls. 7–9.

——— 1902. Diagnosen neuer Alcyonarien aus der Ausbeute der deutschen Tiefsee-Expedition. Zool. Anz., vol. 25, pp. 299–303.

——— 1906a. Die Alcyonaceen. Zool. ... Ergeb. nach der Bäreninsel und Westspitzbergen, auf S. M. S. "Olga", II Teil: VII. Wiss. Meeresunt. Biol. Anstalt Helgoland, N. F., vol. 8, Abt. Helgoland, pp. 21–30, pl. 1.

——— 1906b. Alcyonacea. Wiss. Ergebn. deut. Tiefsee-Exped. "Valdivia" 1898–1899, vol. 13, lief. 1, pp. 1–111, pls. 1–12. Jena.

KÜKENTHAL, W. 1906c. Japanische Alcyonaceen. [Beiträge zur Naturgeschichte Ostasiens, heraugegeb. von Dr. F. Doflein.] Abhandl. K. Bayer. Akad. Wiss. II. Kl., Suppl. Bd. 1, Abt. 1, pp. 1-86, pls. 1-5. München.

——— 1907. Versuch einer Revision der Alcyonarien. II. Die Familie der Nephthyiden. 3 Teil. Die Gattungen *Eunephthya* Verrill und *Gersemia* Marenzeller. Zool. Jahrb., Abt. Syst., vol. 24, pt. 5, pp. 329-390.

KOREN, J. & DANIELSSEN, D. C. 1877. Fauna littoralis Norvegiae, Hefte 3. 163 pp., 16 pls. Bergen.

——— & ——— 1883. Nye Alcyonider, Gorgonider og Pennatulider tilhrende Norges Fauna. Bergen Museums Skrifter, No. 2. xvi+38 pp., 13 pls. Bergen.

MADSEN, F. J. 1944. Octocorallia (Stolonifera-Telestacea-Xeniidea-Alcyonacea-Gorgonacea). Danish Ingolf-Exped., vol. 5, no. 13, pp. 1-65, pl. 1. Copenhagen.

——— 1948. The zoology of East Greenland. Octocorallia. Medd. Grønland. Octocorallia. Medd. Grønland, vol. 22, no. 2, pp. 1-22.

MARENZELLER, E. von. 1878. Die coelenteraten, Echinodermen und Würmer der K. K. oesterr.-Ungarischen Nordpol-Expedition. Denkschr. Akad. Wiss. Wien, Math.-natl. Cl., vol. 35, pp. 372-379, pl. 3.

MAY, W. 1898. Alcyonaceen von Ost-Spitzbergen, nach der Ausbeute der Herren Prof. Dr. W. Kükenthal und Dr. A. Walther im Jahre 1889. Zool. Jahrb., Abt. Syst., vol. 11, pp. 385-405, pls. 1-5.

——— 1900a. Beiträge zur Systematik und Chorologie der Alcyonaceen. Jena. Zeitschr. Naturw., vol. 33 for 1899 (N. F. vol. 26), pp. 1-180, pls. 1-5.

——— 1900b. Die arktische und subantarktische Alcyonaceen Fauna. Fauna Arctica, vol. 1, lief. 3, pp. 381-408.

MOLANDER, A. R. 1915. Northern and Arktic invertebrates in the collection of the Swedish State Museum. VII. Alcyonacea. Kgl. Svenska Vetensk. Akad. Handl., vol. 51, no. 11, pp. 1-94, pls. 1-3.

——— 1918. Zoologische Ergebnisse der Schwedische Expedition nach Spitzbergen 1908. Teil II-9. Die Alcyonaceen von Eisfjords. Kgl. Vetenskapsakad. Handl., vol. 54, no. 9, pp. 1-19.

NUTTING, C. C. 1912. Descriptions of the Alcyonaria collected by the U. S. Fisheries Steamer "Albatross", mainly in Japanese waters, during 1906. Proc. U. S. Natl. Mus., vol. 43, no. 1923, pp. 1-104, pls. 1-21.

POURTALÈS, L. F. de 1868. Contributions to the fauna of the Gulf Stream at great depths. Bull. Mus. Comp. Zoöl. Harvard, vol. 1, no. 7, pp. 121-143.

SARS, M. 1860. Bemaerkninger over norske Coelenterater. Forhandl. Videnskabsselskabet i Christiania, 1860. (Not Seen.)

STUDER, L. S. 1891. Note preliminaire sur les Alcyonaires provennant des campagnes du yacht l'Hirondelle 1886, 1887, 1888. Part 2. Alcyonacea et Pennatulacea. Mém. Soc. Zool. Franç., vol. 4, pt. 2, pp. 86-95.

——— 1901. Alcyonaires provennant des campagnes de l'Hirondelle (1886-1888). Rés. Camp. Sci. Albert I de Monaco, fasc. 20, pp. 1-64, pls. 1-11. Monaco.

THOMSON, J. A. 1910. Note on *Eunephthya glomerata*, Verrill, from the Faroe Channel. Proc. Phys. Soc. Edinburgh, vol. 18, pp. 98-99. (Not seen.)

——— 1927. Alcyonaires provenant des campagnes scientifiques du Prince Albert I de Monaco. Rés. Camp. Sci. Albert I de Monaco, fasc. 73, pp. 1-77, pls. 1-6. Monaco.

UTINOMI, H. 1951. *Eunephthya* from middle Japan. Publ. Seto Mar. Biol. Lab., vol. 2, no. 1, pp. 27-40, pl. 1.

——— 1960. A revision of the nomenclature of the family Nephtheidae (Octocorallia: Alcyonacca). I. The genera *Capnella*, *Scleronephthya* and *Chondronephthya* (n. g.). Ibid., vol. 8, no. 1, pp. 27-40.

VERRILL, A. E. 1864. Revision of the polyps of the eastern coast of the United States. Mem. Boston Soc. Nat. Hist., 1866–1869 (vol. 1), pp. 1–45, pl. 1.

——— 1865. Synopsis of the polyps and corals of the North Pacific Exploring Expedition, under Commandore C. Ringold and Captain John Rodgers, U. S. N., from 1853 to 1856. With descriptions of some additional species from the west coast of North America. Part II, Alcyonaria. Proc. Essex Inst., vol. 4, no. 10, pp. 181–196, pls. 5–6.

——— 1869a. Critical remarks on halcyonoid polyps. No. 3. Amer. J. Sci. Arts, Ser. 2, vol. 47, pp. 282–286.

——— 1869b. Synopsis of the polyps and corals of the North Pacific Exploring Expedition. Additions and corrections. Proc. Essex Inst., vol. 6, pp. 41–48.

——— 1879. Notice of recent additions of marine Invertebrata, of the northeastern coast of America, with descriptions of new genera and species and critical remarks on others. Part I. Proc. U. S. Natl. Mus., vol. 3, pp. 165–205.

——— 1883, Reports on the results of dredging under the supervision of Alexander Agassiz on the east coast of the United States during the summer of 1880, by the U. S. Coast Survey Steamer "Blake", Commander J. R. Bartlett. U. S. N. commanding. Report on the Anthozoa and some additional species dredged by the "Blake" in 1877–1879 and by U. S. Fish Commission Steamer "Fish Hawk", in 1880–1882. Bull. Mus. Comp. Zoöl. Harvard, vol. 11, no. 1, pp. 1–72, 8 pls.

——— 1885. Results of the explorations made by the steamer "Albatross", off the northern coast of the United States in 1883. Ann. Rept. U. S. Comm. Fish. & Fisheries, 11, pp. 503–699, 44 pls.

——— 1922. Report of the Canadian Arctic Expedition 1913–18. vol. 8, part G: Alcyonaria and Actinaria. 49 pp., 18 pls. Ottawa.

EXPLANATION OF PLATE XI

Figs. 1–3. *Gersemia fruticosa* (M. SARS) from off Nontucket Shoal ("Albatross" Station 2043), 1467 fms. Slightly less than natural size.

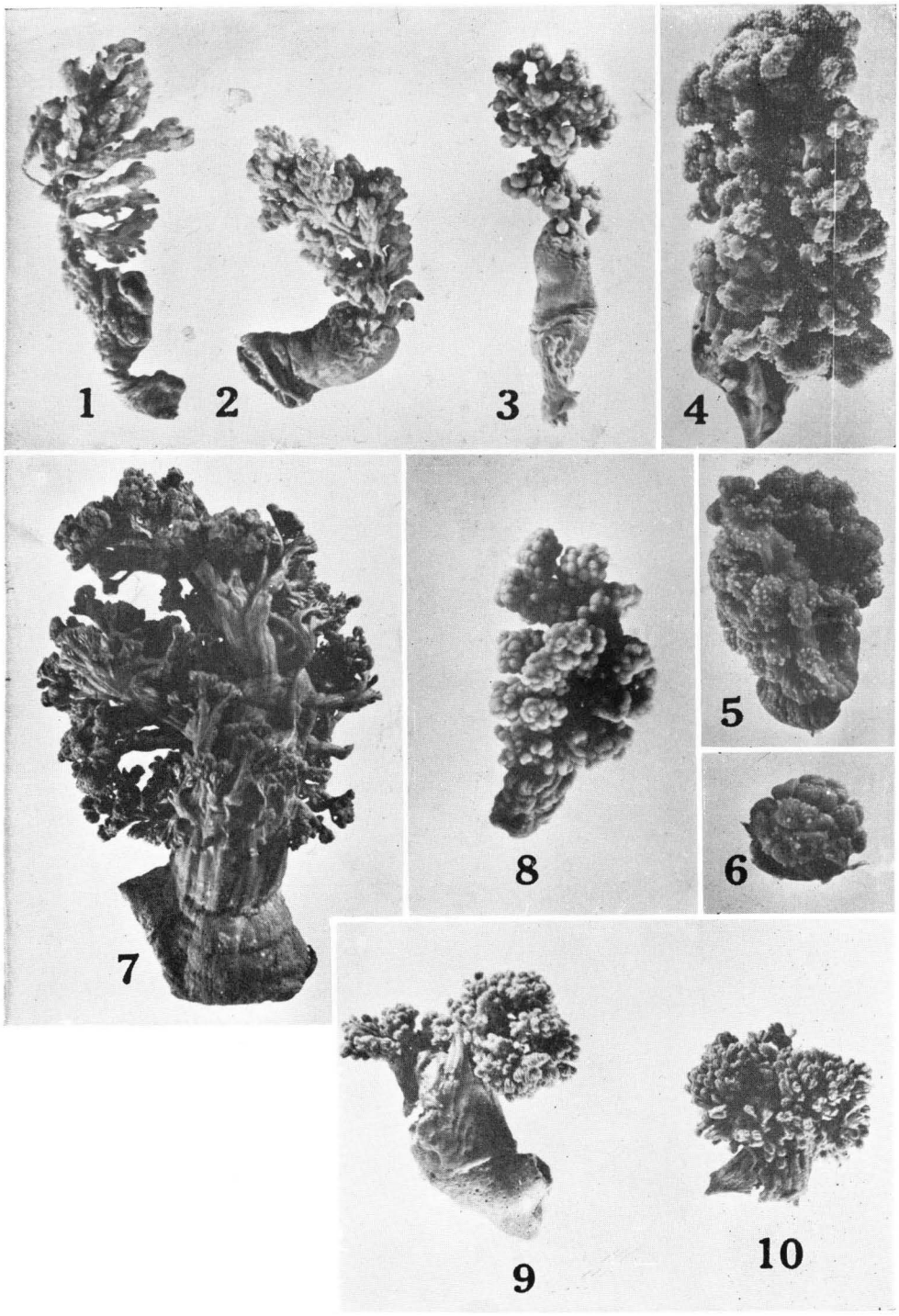
Fig. 4. *Gersemia rubiformis* (EHRENBERG) from off Cape Cod, Massachusetts, ("Speedwell" Station 307), 31 fms. Slightly less than natural size.

Figs. 5–6. *Gersemia rubiformis* (EHRENBERG) from Elaitkak Pass, Elson Lagoon, Point Barrow, Alaska (G. E. MACGINITIE coll.). Approximately ×4/5.

Fig. 7. *Duva florida* (RATHKE) from off Grand Banks ("Albatross" Station 2429), 471 fms. Approximately ×2/3.

Fig. 8. *Drifa glomerata* (VERRILL) from off Nova Scotia, Chebucto Light ("Speedwell" Station 118), 53 fms. Approximately ×2.

Figs. 9–10. *Pseudodrifa nigra* (POURTALÈS) from off Georgia ("Albatross" Station 2415), 440 fms. Slightly more than natural size.



H. UTINOMI: A REVISION OF NOMENCLATURE OF THE NEPHTHEIDAE, II.