

## Order TRACHYMEDUSAE

Hydromedusae with umbrella margin entire and not divided into lobes; with thickened marginal nematocyst ring; with radial canals; with gonads usually confined to radial canals; with solid marginal tentacles, or with both solid and hollow tentacles, situated on the margin of the umbrella; with sensory clubs with endodermal axis which may be free or enclosed.

### Family GERYONIIDAE

Trachymedusae with stomach with peduncle; with four or six radial canals; with centripetal canals; with flattened leaf-shaped gonads on radial canals; with marginal tentacles of two kinds, hollow and solid; with marginal sensory clubs enclosed in mesogloea.

#### Genus *Geryonia* Péron & Lesueur 1809

Geryoniidae with six radial canals and six gonads.

Type-species: *G. proboscidalis* (Forskål).

ESCHSCHOLTZ 1829, p. 86: *Geryonia* HAECKEL 1879, pp. 293, 294, 296, 297: as *Geryones*, *Geryonia*, *Carmaris* and *Carmarina*. MAYER 1910, p. 424.

#### *Geryonia proboscidalis* (Forskål 1775)

35–80 mm wide, almost hemispherical, jelly moderately thick; stomach small, on long conical peduncle; mouth with six simple lips; up to seven centripetal canals in each space between the six radial canals; gonads heart-shaped, very broad above; six long, hollow perradial tentacles with nematocyst rings, and six small, solid interradial tentacles with adaxial nematocyst clusters; 12 statocysts.

FORSKÅL 1775, p. 108, Pl. 36, fig. 1: as *Medusa proboscidalis* n.sp. PÉRON & LESUEUR 1809, p. 329: *Geryonia hexaphylla* n.g., n.sp. ESCHSCHOLTZ 1829, p. 88: *Geryonia proboscidalis*. MAYER 1910, p. 425, Pl. 53, figs. 1–3, Pl. 54, fig. 10, text-fig. 282: synonyms; (Mediterranean and tropical parts of Atlantic, Indian and Pacific oceans). VANHÖFFEN 1912, p. 373: central Indian Ocean; S.E. of Ascension, tropical Atlantic. BIGELOW 1913, p. 56: E. of Kiushiu Island, Japan. NEPPI & STIASNY 1913b, p. 81: Trieste, Adriatic Sea. BIGELOW 1915b, p. 316: off Delaware Bay, New England, U.S.A. BROWNE 1916a, p. 199: Indian Ocean: N.W. of Chagos; Chagos Archipelago; Mauritius. BIGELOW 1918, p. 390: Straits of Florida. BIGELOW 1919, p. 325: Philippines. NEPPI 1919, p. 123, fig. 7: abnormal specimen; Naples, Italy. NEPPI 1920b, p. 90, fig. 4: abnormal specimen; Naples. SCHMIDT 1920, pp. 456–72, Pl. 13: as *Carmarina hastata* HAECKEL; histology. ALVARADO 1923a, pp. 167–73, fig. 1: as *C. hastata*; histology. ALVARADO 1923b,

p. 34, Pl. 7: as *C. hastata*; histology. FOERSTER 1923, p. 267. KRAMP 1924, p. 34, fig. 29: morphological remarks; Mediterranean. RANSON 1925b, p. 382: near Tunis, N. Africa. SLONIMSKY 1926, p. 926: as *C. hastata*; French Mediterranean coast. WEILL 1926b, p. 1357, fig. 1a, b: as *C. hastata*; nematocysts. UCHIDA 1928b, p. 83, fig. 4: Japan. BROCH 1929, p. 522, fig. 30. WEILL 1935c, p. 65, fig. IV A: as *C. hastata*; parasitism. DAWYDOFF 1936, p. 469: Indochina. RANSON 1936b, p. 191: between Canary Islands and Azores. THIEL 1936b, p. 53, map: southern Atlantic. BIGELOW 1938, p. 127: Bermudas. UCHIDA 1938a, p. 147: Amakusa, Japan. VERESS 1938, pp. 153-70: as *Carmarina*; movements. UCHIDA 1947b, p. 340: Japan. KRAMP 1948b, p. 14: near Canary Islands. MOORE 1949, p. 8: Bermudas. BERRILL 1950, p. 296, fig. 1 G-H: development, report. VANNUCCI 1951b, pp. 107, 112, 114: Brazil. KRAMP 1953, p. 301: N.E. Australia. CHIU 1954b, p. 55: as *G. hastata* and *proboscidalis*. BLACKBURN 1955, p. 413: S.E. Australian waters. KRAMP 1955a, p. 275: S. of Canary Islands; off Liberia. KRAMP 1957a, pp. 62, 125: S.E. of and E. of Africa; off east coast of Brazil. VANNUCCI 1957d, pp. 73, 93, 99, 102: Brazil. YAMAZI 1958, p. 137: Tanabe Bay, Japan. KRAMP 1959a, pp. 60, 192, 242, 244, 249, fig. 292: Atlantic; Mediterranean (new records); diagnosis; distribution.

### Genus *Liriope* Lesson 1843

Geryoniidae with four radial canals and four gonads.

Type-species: *L. tetraphylla* (Chamisso & Eysenhardt)

LESSON 1843, p. 332: *Liriope* n.g. HAECKEL 1879, pp. 286, 288, 292: as *Liriantha*, *Liriope*, *Glossoconus* and *Glossocodon*. MAYER 1910, p. 410. BIGELOW 1913, p. 54. BROWNE 1916a, p. 197. BROCH 1929, p. 515: key to the species *L. exigua*, *tetraphylla*, *conirostris*, *catharinensis* and *scutigera*. RANSON 1936b, p. 188: *L. exigua*, *eurybia* and *tetraphylla*. THIEL 1936b, p. 45: *L. tetraphylla* the only species. BIGELOW 1938, p. 126: discussion. RANSON 1949, p. 131: discussion.

### *Liriope tetraphylla* (Chamisso & Eysenhardt 1821)

10-30 mm wide, almost hemispherical, jelly thick; stomach small, on peduncle of varying length; mouth with four simple lips; radial canals broad; 1-3 (or more) centripetal canals in each quadrant; gonads of very variable shape and size; four long, hollow perradial tentacles with nematocyst rings, and four small, solid interradial tentacles with adaxial nematocyst clusters; eight statocysts.

CHAMISSO & EYSENHARDT 1821, p. 357, Pl. 27, fig. 2: as *Geryonia tetraphylla* n.sp. LESSON 1843, p. 332: as *Liriope cerasiformis* n.g., n.sp. GEGENBAUR 1856, p. 257: *L. tetraphylla* and as *L. exigua* and *rosacea*; p. 257, Pl. 8, fig. 17: as *L. mucronata* n.sp. McCRADY 1857, p. 208: as *L. scutigera* n.sp.; Carolina, U.S.A. MÜLLER 1859a, pp. 310, 316, Pl. 11: as *L. catharinensis* n.sp.; coast of Brazil. HAECKEL 1864, pp. 329, 462, Pl. 12, figs. 11-25: as *L. eurybia* n.sp.; Mediterranean. HAECKEL 1879, p. 291: as *L. conirostris* n.sp.; east coast of U.S.A.; p. 292: as *Glossoconus canariensis* n.sp.; Canary Islands; p. 293: as *Glossocodon agaricus* n.sp.; New Zealand; p. 293, Pl. 18, fig. 5: as *Glossocodon lütkenii* n.sp.; Azores. GOETTE 1886, p. 833: as *Glossonia haeckelii* n.sp.; East Africa. MAAS 1893, p. 36, Pl. 3, figs. 4-7: as *L. distanogona* n.sp.; Atlantic; p. 37, Pl. 2, figs. 8, 10, Pl. 4, figs. 1, 2: as *L. minima*; tropical Atlantic; p. 38, Pl. 2, fig. 4: as *L. hyperbolica*; Florida. BIGELOW 1904, p. 258, Pl. 5, figs. 17,

18: as *L. indica* n.sp.; Indian Ocean. MAYER 1910, p. 413, Pl. 52, figs. 2-4, Pl. 53, fig. 4, text-figs. 263-6; as *L. exigua*; warmer parts of Atlantic; Mediterranean; p. 414, text-fig. 267: as *L. exigua* var. *mucronata*; Mediterranean; p. 416, text-fig. 268: as *L. hyperbolica*; p. 417, Pl. 52, fig. 1, text-figs. 269, 270: as *L. rosacea*; Brazil; Florida; Malay Archipelago; p. 418, Pl. 53, fig. 4, text-figs. 273, 273a; *L. tetraphylla*: Pacific and Indian Oceans; p. 418: as *L. agaricus* and *canariensis*; p. 418, text-fig. 272: as *L. lütkenii*; p. 419, Pl. 51, fig. 2: as *L. conirostris*; p. 420, Pl. 51, figs. 3, 4, text-figs. 274, 275: as *L. eurybia*; p. 420, text-fig. 276: as *L. distanogona*; p. 421, Pl. 50, figs. 1-6, text-fig. 277: as *L. catharinensis*; Brazil; West Indies; southern New England; p. 421: as *L. indica* and *haeckelii*; p. 421, Pl. 50, figs. 7-10, Pl. 51, fig. 1, text-figs. 278, 280: as *L. scutigera*; Bahamas; east coast of U.S.A.; p. 424, text-fig. 281: as *L. minima*; p. 497: as *L. rosacea* and *haeckeli*. NEPPI 1912, p. 731: as *L. eurybia*; Adriatic Sea. VANHÖFFEN 1912, p. 373: Atlantic Ocean; Cape Verde Islands; Port Natal, S.E. Africa. BIGELOW 1913, p. 55: Japan. NEPPI & STIASNY 1913b, p. 80: as *L. eurybia*; Trieste. VANHÖFFEN 1913a, p. 428: Tortugas, Florida. VANHÖFFEN 1913b, p. 28: Gibraltar; Brazil; west coast of S. America; Galapagos Islands; Honolulu to Philippines; Hong Kong, China. BIGELOW 1914b, p. 21: as *L. scutigera*; Newport; *L. tetraphylla*; east coast of U.S.A. BIGELOW 1915b, p. 316: as *L. scutigera*; Newport, east coast of U.S.A. MAYER 1915a, p. 160: as *L. rosacea*; Torres Strait, Australia. BROWNE 1916a, p. 198: Indian Ocean: Chagos Archipelago; Saya de Malha Banks; Cargados Carajos; Mauritius; Farquhar group; between Providence Island and Alphonse Islands; Alphonse Islands; Amirante Islands. BIGELOW 1917, p. 306: *L. tetraphylla* and as *L. scutigera*; off Georges Bank, east coast of U.S.A. BIGELOW 1918, p. 389: *L. tetraphylla*; Straits of Florida; as *?L. scutigera*; Straits of Florida; N. of Bahama Bank. PELL 1918, pp. 22, 30, fig. 5: as *L. eurybia*; Adriatic Sea. BIGELOW 1919, p. 325: Philippines. BIGELOW 1922, p. 159: *L. tetraphylla* and as *L. scutigera*; off Chesapeake Bay, east coast of U.S.A. FOERSTER 1923, p. 267: *L. tetraphylla*; Pacific coast of California and Central America; as *L. indica* and *rosacea*. KRAMP 1924, p. 30, fig. 25: as *L. exigua*; western Mediterranean; p. 31, fig. 27, map: as *L. eurybia*; Bay of Cadiz, Spain; Mediterranean; biology; p. 31, fig. 26: as *L. mucronata*; western Mediterranean. RANSON 1925a, p. 90: *L. tetraphylla*; S.W. of Portugal; p. 90: as *L. rosacea*; N.W. and W. of Madeira; p. 90: as *L. exigua*; N.W. of Madeira; p. 91: as *L. minima*; N.W. of Madeira; p. 91: as *L. mucronata*; N.W. of Madeira. RANSON 1925b, p. 382: as *L. eurybia*, *mucronata* and *exigua*; off coast of Portugal, off Atlantic coast of Morocco and Mediterranean Sea with adjacent Atlantic Ocean. BIGELOW 1926, p. 54: as *L. scutigera*; off Gulf of Maine, U.S.A. FISH 1926, p. 124: as *L. scutigera*; Woods Hole, east coast of U.S.A. RANSON 1926, p. 301, fig.: as *L. scutigera*; English Channel. WEILL 1926b, p. 1358, fig. 3: as *L. eurybia*; nematocysts. UCHIDA 1927b, p. 225: Japan. UCHIDA 1928b, p. 82, fig. 3: Japan. BROCH 1929, p. 516, fig. 25: as *L. exigua*; p. 518, fig. 26: *L. tetraphylla*; p. 519, fig. 27: as *L. conirostris*; p. 520, fig. 28: as *L. catharinensis*; p. 521, fig. 29: as *L. scutigera*; distribution. COWLES 1930, p. 331: as *L. scutigera*; Chesapeake Bay, east coast of U.S.A. MAR. BIOL. ASS. 1931, p. 83: as *L. exigua*; Plymouth. MENON 1931, p. 503: Madras, India. CANDEIAS 1932, p. 4, Pl. 1, figs. 2-4: as *L. cerasiformis*; Portugal. MENON 1932, p. 28: Madras, India. RUSSELL 1933, tab. I: Plymouth. LELE & GAI 1935, p. 97: Bombay, India. RUSSELL 1935b, pp. 317, 318: as *L. exigua*; English Channel. THIEL 1935b: southern Atlantic. DAWYDOFF 1936, p. 469: Indochina. RANSON 1936b, p. 189: as *L. exigua*; round the Azores; p. 190, map: *L. tetraphylla*; tropical and southern Atlantic; p. 190: as *L. eurybia*; off Portugal; Bay of Biscay; Spanish Mediterranean coast. THIEL 1936b, p. 45, map: all other species of *Liriope* synonymous with *L. tetraphylla*; tropical and

southern Atlantic. LING 1937, p. 360, figs. 15-18: Chekiang coast, China. BIGELOW 1938, p. 127: Bermudas. PELL 1938, p. 927: as *L. eurybia*; Adriatic Sea. RUSSELL 1938b, pp. 413, 416, 417, 419, 437: as *L. exigua*; Plymouth. UCHIDA 1938a, p. 147: Japan. UCHIDA 1938b, p. 43: Japan. BIGELOW & SEARS 1939, p. 366: as *L. scutigera*; off Chesapeake Bay, east coast of U.S.A. RUSSELL 1939a, p. 181: '*L. tetraphylla* (= *exigua*).' BIGELOW 1940, p. 302: Pacific coast of Panama. CARVALHO 1941, p. 105, Pl. figs. 1-3: coast of Brazil near São Paulo. MENON 1945, p. 41: Trivandrum coast, India. KRAMP 1947, p. 32: as *L. eurybia*; northern Atlantic to about 50° N. UCHIDA 1947a, p. 314: Palao Islands; Sulu Sea; China Sea. UCHIDA 1947b, p. 340: Japan. BABNIK 1948, p. 44, fig. 9: variation in shape of gonads; Adriatic Sea; pp. 70, 71: biology. KRAMP 1948, p. 10: as *L. exigua*; between Canary Islands and Cape Verde Islands; p. 14: as *L. eurybia*; Cadiz Bay; N.W. Africa; S.W. of the Azores. MOORE 1949, p. 9: Bermudas. RANSON 1949, pp. 132, 133: *L. tetraphylla*; as *L. exigua*, considered a valid species; tropical Atlantic. BERRILL 1950, p. 296: as *L. scutigera*; development. ROSSI 1950, p. 27: as *L. eurybia*; Golfo di Rapallo, Italy. NAIR 1951, p. 70: Trivandrum coast, India. VANNUCCI, 1951a, p. 91, Pl. 3, fig. 24: Brazil. VANNUCCI 1951b, pp. 111, 115, 117: Brazil. DEEVY 1952b, pp. 150, 151: as *Liriope* sp.; Block Island Sound, Conn., U.S.A. BAL & PRADHAN 1952, p. 76: Bombay, India. BLACKBURN 1953, p. 414: S.E. Australian waters. GEORGE 1953, p. 82: Calicut, southern India. KRAMP 1953, p. 301: N.E. Australia. RUSSELL 1953, p. 419, Pl. 24, fig. 2, text-figs. 275-82: English Channel. CHIU 1954a, pp. 41, 46, Pl. 4, fig. 17: Amoy, China. CHIU 1954b, pp. 51, 52, 55: China. CHU & CUTRESS 1954, p. 9: as *Liriope* sp.; cause of dermatitis; Hawaii. LUBET 1954, p. 213: as *Liriope*; Arcachon, France. BERNARD 1955b, p. 13: Bay of Algier, Morocco. HURE 1955, pp. 6, 7: as *L. eurybia*; Adriatic Sea. KRAMP 1955a, p. 275: W. coast of Africa between Canary Islands and Angola; p. 308, 309: = *L. cerasus* and *Glossoconus canariensis* Haeckel from Canary Islands; = several species of *Liriope*, Maas 1893 from N.W. Africa; p. 310: = *L. exigua* Kramp 1948. KRAMP 1955b, p. 159: by Haeckel 1879 determined as *L. rosacea*, *crucifera* n.sp., and *Glossocodon lütkeni* n.g., n.sp. KRAMP 1956a, p. 4: eastern tropical Pacific. ALVARIÑO 1957a, p. 15: western Mediterranean. ALVARIÑO 1957b, p. 24: Atlantic coast of Spain and Portugal. KRAMP 1957a, pp. 63, 110 ff., 125: W. of Cape of Good Hope; tropical west coast of Africa; from Cape Verde Islands along east coast of S. America to Buenos Aires; E. Africa from Mozambique to Somaliland; coast of Peru; N.E. of South Sandwich Islands. VANNUCCI 1957d, pp. 70, 93, 96, 97, 98, 99, 101, 102, figs. 18, 19 (map and diagram); Brazil. KRAMP 1958a, p. 125: Villefranche, Mediterranean. KRAMP 1958b, p. 368: the Nicobars; Mergui Archipelago; Orissa coast; Vizagapatam, India. GANAPATI & NAGABHUSHANAM 1958, p. 93: Vizagapatam coast, India. UCHIDA 1958, p. 164: Sado, Japan. YAMAZI 1958, p. 137: Tanabe Bay, Japan. KRAMP 1959a, pp. 58, 193, 242-6, 250, 252, fig. 293: Atlantic; Mediterranean (new records); diagnosis; distribution. KRAMP 1959b, p. 11: West Africa.

### Family PTYCHOGASTRIIDAE

Trachymedusae with marginal tentacles grouped into more or less well defined clusters; some tentacles with adhesive disks; with eight radial canals; stomach eight-lobed, with eight mesenterial partitions; gonads on the sides of the eight stomach lobes or on radial canals adjacent to stomach lobes; with free sensory clubs. (See below, *Tesserogastria*.)

Genus *Ptychogastria* Allman 1878

With the characters of the family.

Type-species: *P. polaris* Allman.

ALLMAN 1878, p. 290: *Ptychogastria* n.g. HAECKEL 1879, pp. 265, 266, 267: as *Pectyllis* n.g., *Pectis* n.g. and *Pectanthis* n.g.

*Ptychogastria antarctica* (Haeckel 1879)

Doubtful species, probably not belonging to *Ptychogastria*.

HAECKEL 1879, p. 266: as *Pectis antarctica* n.sp.; Kerguelen Island, Antarctic. HAECKEL 1881, p. 15, Pls. 5, 6, text-figs. 1-20: as *Pectis antarctica*. MAAS 1906c, p. 493: belongs to *Ptychogastria*. MAYER 1910, p. 375: *Ptychogastria antarctica*. THIEL 1932b, p. 478. KRAMP 1947, p. 5: probably not belonging to *Ptychogastria*. KRAMP 1957a, p. 46: the type-specimen in British Museum is mutilated, probably no *Ptychogastria*.

*Ptychogastria asteroides* (Haeckel 1879)

4-5 mm wide, flatter than a hemisphere, with fairly thin jelly and a small, sharply pointed, apical projection; exumbrella with 16 radiating ridges; eight egg-shaped gonads on proximal 1/3 of radial canals adjacent to stomach; 16 isolated tentacles and 16 clusters of tentacles (? hollow) most of them with adhesive organs; 16 statocysts.

HAECKEL 1879, p. 267: as *Pectanthis asteroides* n.sp.; Pola, Adriatic Sea. HAECKEL 1881, p. 20, Pls. 7, 8: as *Pectanthis asteroides*; Straits of Gibraltar. MAAS 1906c, p. 492: *Ptychogastria asteroides*. MAYER 1910, p. 374. THIEL 1932b, p. 478. KRAMP 1947, p. 5: remarks. PICARD 1955a, p. 68: occasionally found at Villefranche-sur-Mer, Mediterranean coast of France. KRAMP 1957a, p. 46. KRAMP 1959a, pp. 180, 205, 223, 226: diagnosis; distribution.

*Ptychogastria polaris* Allman 1878

18-22 mm wide, hemispherical or somewhat conical, exumbrella with 16 radiating ridges; velum very wide; stomach about half as long as bell cavity, eight-rayed above, mouth with four lips; 16 separated gonads along the sides of the eight stomach lobes; about 48 clusters of solid tentacles (in adult), each cluster with three filiform tentacles and numerous tentacles with adhesive organs; 16 statocysts.

ALLMAN 1878, p. 290, three text-figs.: *Ptychogastria polaris* n.g., n.sp. HAECKEL 1879, p. 266: as *Pectyllis arctica* n.sp.; Halifax, Nova Scotia; west coast of Greenland. HAECKEL 1881, p. 11, Pls. 3, 4: as *Pectyllis arctica*. MAYER 1910, p. 372, text-fig. 212: *Ptychogastria polaris*; (Spitzbergen; north of Norway and Russia). VAN HÖFFEN 1912, p. 386, Pl. 25, fig. 6, text-fig. 20: as *Ptychogastria opposita* n.sp.; Gauss Station, Antarctic. BIGELOW 1913, p. 41: Bering Sea. KRAMP 1914, p. 427: west and east coast of Greenland. FOERSTER 1923, p. 264: report of Bigelow. KRAMP & DAMAS 1925, p. 316: Norway. TANASIĆUK 1927, p. 362: Barents Sea.

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BROCH 1929, p. 491, fig. 6a, b: distribution. RUNNSTRÖM 1932, p. 30: Hjelte- and Herdlafjord, Norway. THIEL 1932a, p. 151. THIEL 1932b, pp. 444 ff.: distribution in Arctic. BERNSTEIN 1934, pp. 9, 25: Kara Sea. YASHNOV 1939, p. 112: Kara Sea; Laptev Sea. DUNBAR 1942, p. 74: Lake Harbour in Hudson Strait. KRAMP 1942, p. 69: west coast of Greenland. KRAMP 1943, p. 6: east coast of Greenland. KRAMP 1947, p. 4, Pl. 1, figs. 1-4, Pl. 6, figs. 1, 2, map: distribution; p. 5: as *P. opposita*. YASHNOV 1948, p. 73, Pl. 21, fig. 1a, b: north of U.S.S.R. VIBE 1950, p. 103: N.W. Greenland. REES 1953a, p. 8: Herdlafjord, Norway. CHIU 1954b, p. 56. KRAMP 1955b, p. 158: by Haeckel 1879 determined as *Pectyllis arctica*. NAUMOV 1956b, p. 38. KRAMP 1957a, pp. 45, 98, 99: *P. opposita* = *P. polaris*; South Shetland Islands, Antarctic. KRAMP 1959a, pp. 180, 205, 208-11, 215, 221, 264, 268, 269, fig. 260: diagnosis; distribution.

### Genus *Tesserogastria* Beyer 1959

Ptychogastriidae with great number of solid tentacles inserted at varying distances from the velum; manubrium simple, without peduncle, mesenteries, or pouches; with eight gonads attached along the manubrium.

Type-species: *T. musculosa* Beyer 1959.

#### *Tesserogastria musculosa* Beyer 1959

About 2 mm wide and high, bell-shaped, jelly rather thin with slightly thickened apex; up to about 300 tentacles inserted at three to five different levels, not in clusters; velum extremely broad and strong; ring canal broad, no centripetal canals; velum and subumbrella with strong tissue of muscle fibres; stomach extending somewhat beyond bell margin; neither external nor internal septa; gonads arranged in four pairs on both sides of the four edges of the stomach.

BEYER 1959, pp. 121-42, Pls. 1, 2: *Tesserogastria musculosa* n.g., n.sp.; Oslofjord, Norway; bottom-living, in soft bottom.

## Family PETASIDAE

Trachymedusae with four radial canals; with well developed manubrium; marginal tentacles not in clusters, solid, with a terminal, club-shaped knob of nematocysts; with free sensory clubs.

### Genus *Petasiella* Uchida 1947

Petasidae with marginal tentacles arising asymmetrically, at unequal intervals.

Type-species: *P. asymmetrica* Uchida.

UCHIDA 1947a, p. 310: *Petasiella* n.g.

#### *Petasiella asymmetrica* Uchida 1947

Up to 1 mm wide, bell-shaped, jelly moderately thick; stomach small,

flask-shaped; gonads small, globular, at distal points of the four radial canals; up to 28 tentacles, irregularly placed, with terminal cluster of nematocysts; four statocysts.

UCHIDA 1947a, p. 311, text-figs. 10, 11: *Petasella asymmetrica* n.g., n.sp.; Palau Islands, central Pacific. KRAMP 1959c, p. 256: Nicobar Islands; Malacca; Philippines; Bali.

### Genus *Petasus* Haeckel 1879

Petasidae with marginal tentacles regularly arranged, at equal intervals.

Type-species: *P. atavus* Haeckel.

HAECKEL 1879, pp. 247-50, 637: as *Petasus* n.g., *Dipetasus* n.g., *Petasata* n.g. and *Petachnum* n.g. MAYER 1910, p. 362: unites all these genera into one, *Petasus*.

#### *Petasus atavus* Haeckel 1879

1 mm wide and high; gonads spindle-shaped or band-shaped, along greater part of radial canals; four tentacles; four statocysts.

HAECKEL 1879, p. 248, Pl. 18, fig. 1: *Petasus atavus* n.g., n.sp.; Smyrna, Asia Minor; p. 248: as *P. tetraneura* n.sp.; Canary Islands, W. of Africa. MAYER 1910, p. 361, text-fig. 205: as ' *P. atavus*' . KRAMP 1955a, p. 307: report of Haeckel, *P. tetraneura* = *P. atavus*. KRAMP 1959a, pp. 181, 242, 244, 247, 250, fig. 261: diagnosis; distribution.

#### *Petasus digonimus* (Haeckel 1879)

1 mm wide and high; two gonads on middle 1/3 of two opposite radial canals; two tentacles; four statocysts. Doubtful species.

HAECKEL 1879, p. 249, Pl. 18, fig. 2: as *Dipetasus digonimus* n.g., n.sp.; Kerguelan Island, Antarctic. MAYER 1910, p. 361, text-fig. 204: as ' *Dipetasus digonimus*' .

#### *Petasus euope* (Haeckel 1879)

10 mm wide, 5 mm high; gonads spherical or spindle-shaped; eight tentacles; eight statocysts. Doubtful species.

HAECKEL 1879, p. 249, Pl. 18, fig. 3: as *Petasata euope* n.g., n.sp.; Red Sea; p. 637: as *Petasata rabbeana*; south of Madagascar. MAYER 1910, p. 361, text-fig. 206: ' *Petasata euope*' probably young of *P. rabbeana*.

#### *Petasus tiaropsis* (Haeckel 1879)

10 mm wide, 3 mm high; gonads extending along 2/3 of the radial canals; more than 100 tentacles densely crowded; eight statocysts. Doubtful species.

HAECKEL 1879, p. 250: as *Petachnum tiaropsis* n.g., n.sp.; China Sea. MAYER 1910, p. 361.

### Family HALICREATIDAE

Trachymedusae with wide, circular stomach; with broad radial canals; with numerous marginal tentacles of different sizes, but all structurally alike and

arranged in a single series; each tentacle divisible into a soft, flexible proximal and a stiff, spine-like distal region; with free sensory clubs; with neither peduncle nor proboscis.

### Genus *Botrynema* Browne 1908

Halicreatidae with eight radial canals; with 16 groups of tentacles (two groups containing many tentacles in a single row in each octant) and eight solitary perradial tentacles.

Type-species: *B. brucei* Browne.

BROWNE 1908, p. 239: *Botrynema* n.g. MAYER 1910, p. 394. KRAMP 1942, p. 73: discussion of the genus.

#### *Botrynema brucei* Browne 1908

Up to about 25 mm wide; the apical jelly is very thick and terminates in a distinct and sharply defined knob; stomach wide, circular and short; gonads oval, on proximal or central halves of radial canals; 11–12 tentacles in each of the 16 groups; usually three statocysts in each interradial space and 1–2 on either side of the solitary perradial tentacles.

?VANHÖFFEN 1902, p. 70, Pl. 9, fig. 3: as *Halcreas glabrum* n.sp.; off west coast of Africa and in central Indian Ocean. BROWNE 1908, p. 239, Pl. 1, figs. 8, 9, Pl. 2, fig. 1: *Botrynema brucei* n.g., n.sp.; Cape Horn, S. America. MAYER 1910, p. 392: as *H. glabrum*; p. 395, text-fig. 248A: as *B. brucei*. VANHÖFFEN 1912, p. 382, Pl. 25, fig. 5, text-figs. 18, 19: Antarctic Sea. BIGELOW 1913, p. 53, Pl. 4, figs. 1–4: as *B. ellinorae*; Bering Sea. FOERSTER 1923, p. 266: as *B. ellinorae* (report of Bigelow). THIEL 1932b, p. 477. RANSON 1936b, p. 167: *H. glabrum* a distinct species; Azores. THIEL 1936b, p. 34: *H. glabrum* and *rotundatum* = *papillosum*. BIGELOW 1938, p. 121: ? as *H. glabrum*; Bermudas; p. 124: discussion. KRAMP 1942, p. 77: *H. glabrum* probably = *B. brucei*, but Vanhöffen's description insufficient; Davis Strait. KRAMP 1947, p. 11, Pl. 1, fig. 9, Pl. 2, fig. 3, Pl. 6, fig. 4: (map): northern Atlantic. KRAMP 1948b, p. 6: northern Atlantic. YASHNOV 1952, p. 95: off Kamchatka. RUSSELL 1953, p. 459, Pl. 27, fig. 1, text-figs. 303, 304: west of Ireland. BLACKBURN 1955, p. 420: S. E. Australia. NAUMOV 1956b, p. 38. KRAMP 1957a, pp. 46, 50, 100, 126, text-fig. 17, map: Cape of Good Hope; Indian Ocean; Weddell Sea; pp. 46, 47, 50, 51: synonyms *Halcreas glabrum* and *rotundatum*. PETERSEN 1957, p. 44: N. Atlantic. KRAMP 1959a, pp. 44, 183, 253, 254, 256, 259, 261, 263, 273, fig. 267: Bay of Biscay; off west coast of Africa; near Bermudas and Bahamas; diagnosis; distribution. MOHR 1959: distribution.

#### *Botrynema ellinorae* (Hartlaub 1909)

Up to 25 mm wide, evenly rounded without an apical knob; higher than a hemisphere, jelly moderately thick; in all other regards similar to *B. brucei*.

HARTLAUB 1909c, p. 468, Pl. 76, figs. 3, 4, 6: as *Alloionema ellinorae* n.g., n.sp.; east of Greenland. KRAMP 1914, p. 428: as *A. ellinorae*, report of Hartlaub. BROCH 1929, p. 510, fig. 20: *Botrynema ellinorae*. THIEL 1932a, p. 154. THIEL 1932b,

pp. 445 ff.: distribution in Arctic. KRAMP 1942, p. 77: Baffin Bay; distinct from *B. brucei*. KRAMP 1947, p. 11, map. KRAMP 1959a, pp. 184, 253, 254, 262, 272, fig. 268; diagnosis; distribution. MOHR 1959: Arctic distribution.

### Genus *Halicreas* Fewkes 1882

Halicreatidae with eight radial canals; with a continuous row of tentacles; with perradial gelatinous papillae on the exumbrella.

Type-species: *H. minimum* Fewkes.

FEWKES 1882b, p. 306: *Halicreas* n.g. MAYER 1910, p. 390: *Halicreas*, incl. *Haliscera* Vanhöffen.

#### *Halicreas minimum* Fewkes 1882

30–40 mm wide, thick, disk-like, with a small, conical apical projection of varying size; eight clusters of gelatinous papillae above margin; mouth a wide, circular opening. Eight broad, band-like radial canals and a broad ring canal; gonads flattened, extending along almost entire length of canals; tentacles very numerous, up to 640; 3–4 statocysts in each octant.

FEWKES 1882b, p. 306: *Halicreas minimum* n.g., n.sp.; off New England, east coast of U.S.A. VANHÖFFEN 1902, p. 68, Pl. 9, figs. 7, 8, Pl. 11, fig. 30: as *H. papillosum* n.sp.; tropical Atlantic and Indian oceans. BIGELOW 1909a, p. 138, Pl. 3, fig. 3, Pl. 33, figs. 8, 9, Pl. 34, figs. 1–3, 5, 8, 10, 11: as *H. papillosum*; eastern tropical Pacific. MAYER 1910, p. 391, text-figs. 242, 243: as *H. papillosum*; (New England; tropical parts of Atlantic, Indian and eastern Pacific oceans; Malay Archipelago). VANHÖFFEN 1912, p. 378: as *H. papillosum*; in the deep of the tropical Atlantic. BIGELOW 1913, p. 52: as *H. papillosum*; Bering Sea; S.E. coast of Kamchatka; Sea of Okhotsk; Suruga Gulf. BROWNE 1916a, p. 195: as *H. papillosum*; Farquhar Archipelago and Amirante Islands, north of Madagascar. BIGELOW 1919, p. 324: as *H. papillosum*; Philippines. KRAMP 1920b, p. 5: as *H. papillosum*; northern Atlantic. FOERSTER 1923, p. 266: as *H. papillosum*. BIGELOW 1926, p. 67: as *H. papillosum*; Gulf of Maine, east coast of U.S.A. UCHIDA 1928b, p. 81: as *H. papillosum*; Japan. BROCH 1929, p. 508, text-fig. 18: as *H. papillosum*; distribution. THIEL 1932a, p. 153: as *H. papillosum*. THIEL 1932b, pp. 445 ff.: as *H. papillosum*; distribution. THIEL 1935b: as *H. papillosum*, =*rotundatum* and *glabrum*; South Atlantic. RANSON 1936b, p. 164: as *H. papillosum*; description; Atlantic coast of Europe to Bay of Biscay in the north; Azores; S.W. of Nova Scotia. THIEL 1936b, p. 34, text-fig. 6: as *H. papillosum*, =*rotundatum* and *glabrum*; southern Atlantic. BIGELOW 1938, p. 122: *H. minimum*; Bermudas, vertical distribution. BIGELOW 1940, p. 302: eastern tropical Pacific. KRAMP 1942, p. 70: Davis Strait. KRAMP 1947, p. 7, Pl. 6, fig. 3, map: northern Atlantic. UCHIDA 1947b, p. 339: Japan. KRAMP 1948a, p. 7: N.W. of South Georgia, Antarctic. KRAMP 1948b, p. 4, map: central Atlantic. FRASER 1950, p. 93: as *H. rotundatum*; W. of Scotland. VANNUCCI 1951b, pp. 107, 112, 115, 117: Brazil. KRAMP 1953, p. 299: Great Barrier Reef, Australia. RUSSELL 1953, p. 452, text-figs. 299–300: W. of Ireland. BLACKBURN 1955, p. 419: S.E. Australian waters. FRASER 1955, pp. 9, 12: as *Halicreas* spp.; British Isles. KRAMP 1955a, p. 271: W. Africa: off Liberia; off Angola; Gulf of Guinea. NAUMOV 1956b, p. 38. KRAMP 1957a, pp. 46, 47, 100, 110 ff., 126: Atlantic; Antarctic area; east coast of Africa; pp. 46, 51: synonym: *H. papillosum*. KRAMP

1957b, pp. 157, 162: Antarctic Sea. PETERSEN 1957, p. 44: N. Atlantic. KRAMP 1958b, p. 368: west of Ceylon. KRAMP 1959a, pp. 41, 181, 253–6, 260, 261, fig. 262: Atlantic; diagnosis; distribution.

### Genus *Haliscera* Vanhöffen 1902

Halicreatidae with eight radial canals; with a continuous row of tentacles; without papillae on exumbrella.

Type-species: *H. conica* Vanhöffen.

VANHÖFFEN 1902, p. 68: *Haliscera* n.g. MAYER 1910, p. 390: *Halicereas*, incl. *Haliscera*. RANSON 1936b, pp. 168–71: discussion. KRAMP 1947, pp. 6, 7, 10: discussion of species.

#### *Haliscera alba* Vanhöffen 1902

35 mm wide, almost hemispherical, evenly rounded; gonads lancet-shaped, along proximal 2/3 of radial canals; 8–12 tentacles and three statocysts in each octant. An obsolete species.

VANHÖFFEN 1902, p. 71, Pl. 9, fig. 5: *Haliscera alba* n.sp.; S.W. of Africa. MAYER 1910, p. 393, text-fig. 247: as *Halicereas alba*. THIEL 1935b: as *Haliscera album*, incl. *racovitzae* and *conica*. THIEL 1936b, p. 37, map: as *Halicereas album*. BIGELOW 1938, p. 121: uncertain species. KRAMP 1947, pp. 6, 7, 10. KRAMP 1948b, p. 6. KRAMP 1957a, p. 46: obsolete species.

#### *Haliscera bigelowi* Kramp 1947

15–17 mm wide, 9–10 mm high, almost hemispherical, with very thick hemispherical apex and thin jelly in marginal region; gonads broadly oval, about 2/5 of the length of radial canals, slightly nearer to stomach than to bell margin; about 12 tentacles and three statocysts in each octant; the thickenings of the nematocyst tissue around the bases of the tentacles are less pronounced than in *H. conica*.

BIGELOW 1909a, p. 142, Pl. 3, figs. 1, 2, Pl. 33, figs. 6, 11, Pl. 34, fig. 9: as *Homoeonema alba*; eastern tropical Pacific. MAYER 1910, p. 393: as *Halicereas alba* in part. KRAMP 1947, p. 8, Pl. 1, figs. 5–8, Pl. 2, figs. 1, 2, map: *Haliscera bigelowi* n.sp., ? = *Homoeonema alba* Bigelow 1909, non Vanhöffen; northern Atlantic. KRAMP 1948b, p. 6: northern Atlantic. RUSSELL 1953, p. 456, Pl. 24, fig. 2, text-figs. 301, 302. KRAMP 1957a, p. 48. PETERSEN 1957, p. 41: ?*H. bigelowi*; northern Atlantic. KRAMP 1959a, pp. 43, 182, 253, 254, 256, 259, 263, 272, fig. 264: off west coast of Africa; diagnosis; distribution.

#### *Haliscera conica* Vanhöffen 1902

Up to 18 mm wide, with a thick, bluntly conical apical projection; gonads oval, on middle portion of the eight broad radial canals; 8–9 tentacles and two statocysts in each octant, the base of each tentacle surrounded by a broad thickening of the marginal nematocyst tissue.

VANHÖFFEN 1902, p. 72, Pl. 9, fig. 6, Pl. 11, fig. 33: *Haliscera conica* n.g., n.sp.; Indian Ocean. MAYER 1910, p. 394, text-fig. 248: as *Halicreas conica*. VANHÖFFEN 1912, p. 381: Gauss Station, Antarctic. KRAMP 1924, p. 29: as *Homoeonema conica*; Mediterranean. BROCH 1929, p. 509, text-fig. 19: as *Halicreas (Haliscera) conica*. RANSON 1936b, p. 171: between Canary Islands and the Azores. THIEL 1936b, p. 37: as *Halicreas album*, incl. *racovitzae* and *conica*. BIGELOW 1938, p. 121: as *Halicreas conicum*, incl. *racovitzae*; discussion. KRAMP 1942, p. 76: uncertain species. KRAMP 1947, p. 6. KRAMP 1948a, p. 6: south of South Orkney Islands; N.W. of South Georgia. BLACKBURN 1955, p. 419: S.E. Australian waters. KRAMP 1957a, pp. 46, 47, 48, 100, 110 ff., 126, text-fig. 17, map: variation; Cape of Good Hope; Gulf of Guinea; S.W. of Cape Verde Islands; Graham Land, Antarctic; from S. Georgia to southern point of S. America. KRAMP 1957b, pp. 158, 162: Antarctic Sea. KRAMP 1959a, pp. 182, 253, 255, 256, 261, 262, fig. 263: diagnosis; distribution.

#### *Haliscera racovitzae* (Maas 1906)

8 mm wide, 4 mm high, almost hemispherical, moderately thick jelly, flaccid, apex evenly rounded; stomach a truncated cone; gonads along proximal 1/2 to 2/5 of the radial canals, close to the stomach; six tentacles and two statocysts in each octant.

MAAS 1906b, p. 10, Pl. 1, figs. 3, 4, Pl. 2, fig. 13: as *Homoeonema racovitzae* n.sp.; Bellingshausen Sea, Antarctic. MAYER 1910, p. 393, text-fig. 246: *Halicreas racovitzae*; Antarctic. non VANHÖFFEN 1912, p. 382, Pl. 2, fig. 4, text-fig. 17: South Atlantic off Cape Agulhas. THIEL 1931, p. 328: as *Halicreas racovitzae*; Weddell Sea. THIEL 1935b: as *Halicreas album*, incl. *racovitzae* and *conica*; southern Atlantic. THIEL 1936b, p. 37, map. BIGELOW 1938, p. 121: = *Halicreas conicum*, discussion. KRAMP 1947, p. 6: *Haliscera racovitzae*. KRAMP 1957a, pp. 46, 47, 48, 49, 99, 126: E. of South Georgia. KRAMP 1959a, pp. 183, 253, 261, 262, fig. 265: diagnosis; distribution.

#### Genus *Halitrepes* Bigelow 1909

Halicreatidae with several (16 or more) radial canals; with a continuous row of tentacles; without papillae on exumbrella.

Type-species: *H. maasi* Bigelow.

BIGELOW 1909a, p. 145: *Halitrepes* n.g.

#### *Halitrepes maasi* Bigelow 1909

Up to about 100 mm wide, low, rounded, jelly fairly thin, soft and flaccid; stomach circular; 16–30 broad, ribbon-like radial canals, some of which may be bifurcated; shape of gonads unknown; 100–300 tentacles; number of statocysts unknown.

BIGELOW 1909a, p. 146, Pl. 33, figs. 1–5, 7, 10, Pl. 45, fig. 13: *Halitrepes maasi* n.g., n.sp.; off coast of Peru. MAYER 1910, p. 394. VANHÖFFEN 1912, p. 384: as *H. valdiviae* n.sp.; tropical Atlantic and Indian oceans; southern Atlantic Ocean. BIGELOW 1938, p. 125: as *H. valdiviae*; morphological remarks; Bermudas. KRAMP 1947, p. 6: as *H. maasi* and *valdiviae*. KRAMP 1948a, p. 7, text-fig. 1: as *H. medius*.

n.sp. and *valdiviae*; N.W. of South Georgia; p. 8: comparison between *H. maasi*, *valdiviae* and *medius*. BLACKBURN 1955, p. 420: as *H. valdiviae*; Tasmania. KRAMP 1957a, pp. 46, 51, 52, 100, 104, 126, text-fig. 19, map: variation; off S.W. Africa; east coast of Africa; S. of Australia; New Zealand; between New Zealand and S. America; p. 52: synonyms: *H. valdiviae* and *medius*. KRAMP 1958b, p. 368: S.W. of Ceylon. KRAMP 1959a, pp. 44, 183, 253, 256, 259, 260, 261, fig. 266: off west coast of Africa; West Indies; diagnosis; distribution.

### Family RHOPALONEMATIDAE

Trachymedusae with narrow stomach with or without peduncle; with usually eight, rarely more, radial canals; without centripetal canals; with gonads on radial canals; with marginal tentacles evenly distributed, sometimes of two kinds, each tentacle of uniform structure throughout; with free, rarely enclosed, marginal sensory clubs.

#### Genus *Aglantha* Haeckel 1879

Rhopalonematidae with a long and slender gastric peduncle; with eight pendent, sausage-shaped gonads on the subumbrellar portions of the eight radial canals; with numerous tentacles all alike; with free, club-shaped marginal statocysts.

Type-species: *A. digitale* (O. F. Müller).

HAECKEL 1879, pp. 271, 276: *Aglantha* and *Agliscre* n.g. MAYER 1910, p. 401. BIGELOW 1913, p. 43: discussion of species.

#### *Aglantha digitale* (O. F. Müller 1776)

10–40 mm high, about half as wide as high, thimble-shaped, with a small conical apical projection, lateral walls thin, subumbrellar muscles strong; peduncle slender, almost as long as bell cavity; stomach small; mouth with four small, simple lips; gonads long, close to base of peduncle; 80 or more tentacles; eight statocysts; local varieties differ in size and colour.

O. F. MÜLLER 1776, p. 233: as *Medusa digitale* n.sp. PÉRON & LESUEUR 1809, p. 352: as *Melicerta digitale*. ESCHSCHOLTZ 1829, p. 95: as *Eirene digitale*. FORBES 1848, p. 34, Pl. 1, fig. 2: as *Circe rosea* n.sp. A. AGASSIZ 1865, p. 57, text-figs. 81–6: as *Trachynema digitale*. HAECKEL 1879, p. 272, Pl. 16, figs. 5, 6: *Aglantha digitalis* n.g. MAYER 1910, p. 402, Pl. 49, figs. 2, 2': *A. digitale*; Atlantic north of 40° N.; northern Pacific. BIGELOW 1913, p. 43: discussion; N.W. Pacific. KRAMP 1913a, p. 269: *A. digitalis*; W. Greenland. KRAMP 1913b, p. 527: *A. digitalis*. LE DANOIS 1913b, p. 27, text-figs. 11–17: development; S.W. of Ireland; near Jan Mayen and between Jan Mayen and Iceland, Norwegian Sea. LE DANOIS 1913c pp. 352, 354: *A. digitalis*. LE DANOIS 1913d, p. 314: English Channel; Bay of Biscay; Faroes; Jan Mayen, Norwegian Sea. BIGELOW 1914b, p. 20: New England, east coast of U.S.A. KRAMP 1914, p. 428: *A. digitalis*; W. and E. Greenland. LE DANOIS 1914, p. 488: *A. digitalis*. BIGELOW 1915b, pp. 269,

314, 316: discussion of *A. rosea* and *digitale*; between Nova Scotia and Cape May, east coast of U.S.A. KRAMP 1915, pp. 8, 20: *A. digitalis*; Great Belt and Kattegat, Denmark. BIGELOW 1917, pp. 303-5: from Cape Cod to Halifax, east coast of U.S.A. BIGELOW 1918, p. 388: near Chesapeake Bay. BIGELOW 1920, pp. 10, 17: Alaska; Ungava, Labrador. KRAMP 1920b, p. 5: *A. digitalis*; northern Atlantic. SVERDRUP 1921, p. 26, Pl. 3, fig. 14: as *Aglaura hemistoma* var. 'laterna'; p. 27, Pl. 4, fig. 16: *A. digitalis*; Kristianiafjord, Norway. BIGELOW 1922, p. 134: Gulf of Maine, east coast of U.S.A. LEBOUR 1922, p. 664: food. FOERSTER 1923, p. 265: Pacific coast of America; p. 266: as *A. digitale* var. *intermedia*; Pacific coast of Central and South America. JESPERSEN 1923, p. 109: *A. digitalis*; Bay of Disko to Cape York, W. Greenland. PEACOCK 1923, p. 95: Cullercoats, England. COY 1924, p. 56: as *A. digitale* var. *rosea*; Cullercoats. KRAMP 1924, p. 29, text-fig. 24: Bay of Biscay; S.W. of Ireland. PEACOCK 1924, p. 60: as *A. digitale* var. *rosea*; remarks; Cullercoats, England. KRAMP & DAMAS 1925, p. 318: Norway. RUSSELL 1925, p. 786: as *A. rosea*; Plymouth. UCHIDA 1925b, p. 97: Oshoro, northern Japan. BIGELOW 1926, pp. 38, 40, 48, 50, 352, map: Gulf of Maine, U.S.A. FISH 1926, p. 124: as *A. digitalis*; p. 125: as *A. conica*; Woods Hole, east coast of U.S.A. KRAMP 1927, p. 149, map: Denmark. RUSSELL 1927, p. 573: as *A. rosea*; Plymouth. UCHIDA 1927b, p. 225: Asamushi, Japan. UCHIDA 1928b, p. 79: as *A. digitalis*, belongs to family Trachynematidae, subfamily Aglaurinae; Japan. BROCH 1929, p. 512, text-figs. 22, 23: distribution. COWLES 1930, p. 331: Chesapeake Bay, east coast of U.S.A. SANDERSON 1930, p. 229: as *A. rosea*; Northumberland coast, England. UCHIDA 1930, p. 335: as *A. digitalis*; Misaki, Japan. WATSON 1930, p. 236: as *A. rosea*; Northumberland coast, England. MAR. BIOL. ASS. 1931, p. 83: as *A. rosea*; Plymouth. SAVAGE 1931, pp. 21, 30, 76: east coast of England. RUNNSTRÖM 1932, p. 31: as *A. digitale* var. *rosea* and *typica*; Norway. THIEL 1932a, p. 154. THIEL 1932b, pp. 445 ff.: distribution in Arctic. KRAMP 1933b, p. 16: E. Greenland. RUSSELL 1933, p. 76, tab. I: as *A. rosea*; Plymouth. UCHIDA 1933a, p. 132, text-fig. 8: S.W. of Kamchatka. BERNSTEIN 1934, pp. 9, 26: Kara Sea, north of Siberia. WULFF, BÜCHMANN & KÜNNE 1934, p. 334: as *A. digitalis*; North Sea. KÜNNE 1935, p. 65: as *A. digitalis*; Bay of Kiel, western part of Baltic Sea. RUSSELL 1935a, p. 27: biology. RUSSELL 1935b, pp. 314, 315, 318: as *A. rosea*; English Channel. HARDY 1936, p. 401: N. of Spitzbergen. RANSON 1936b, p. 177, Pl. 2, figs. 18-20: discussion of species and varieties; as *A. digitale* forma *typica*: Bay of Biscay; the Azores; Capo de Finisterre, N.W. Spain; between the Azores and America; as *A. digitale* forma *rosea*: off Capo de Finisterre; the Azores. FROST 1937, p. 26: as *A. digitalis*; Newfoundland. KRAMP 1937b, p. 130, text-fig. 59a, b: Denmark. KÜNNE 1937a, pp. 139, 147, 151-62: as *A. digitalis* *rosea*; North Sea. KÜNNE 1937b, p. 6: Baltic Sea. RUSSELL 1938b, pp. 413, 416, 417, 419, 433, 437: as *A. rosea*; Plymouth. UCHIDA 1938b, p. 43: Mutsu Bay, Japan. UCHIDA 1938c, p. 54: Onagawa Bay, Japan. BIGELOW & SEARS 1939, p. 362, map: from Cape Cod to Chesapeake Bay, east coast of U.S.A. KRAMP 1939a, p. 16: Iceland. RUSSELL 1939a, pp. 177, 179, 188: North Sea. YASHNOV 1939, pp. 112, 114: Kara Sea and Chukotski Sea, north of U.S.S.R. RUSSELL 1940a, p. 517: nematocysts. UCHIDA 1940a, p. 292: Akkeshi Bay, Japan. DUNBAR 1942, p. 74: eastern arctic Canada. KRAMP 1942, pp. 81-97: discussion of races; biology; W. Greenland. KRAMP 1943, p. 7: E. Greenland. KRAMP 1947, p. 27, map: literature since 1910; northern Atlantic. UCHIDA 1947b, p. 337: Japan. KRAMP 1948b, p. 12: northern Atlantic. YASHNOV 1948, p. 74, Pl. 21, fig. 4: Barents Sea to Chukotsky Sea; Bering Sea; Sea of Okhotsk. FRASER 1949a, p. 27: Scotland to Faroes. FRASER 1949b, p. 66: as *A. digitale* var. *rosea*; northern North Sea. FRASER & SAVILLE 1949a, p. 30: as

*A. digitalis*; Faroe Channel. FRASER & SAVILLE 1949b, p. 61: as *A. digitalis*; Scotland. FRASER 1950, p. 93: as *Aglantha*; northern North Sea. KÄNDLER 1950, p. 68: as *A. digitalis*; Fehmarnbelt, western Baltic Sea. VIBE 1950, p. 103: N.W. Greenland. DEEVEY 1952b, pp. 150, 151: Block Island Sound, Conn., U.S.A. FRASER 1952b, p. 104: as *Aglantha*; northern North Sea. KIELHORN 1952, p. 239: central Labrador Sea. KÜNNE 1952, pp. 4, 13, 22: as *A. digitalis rosea*; S.E. North Sea. YASHNOV 1952, p. 96: off Kamchatka. REES 1953a, p. 8: Herdlefjord, Norway. RUSSELL 1953, p. 447, Pl. 26, figs. 1-10, text-figs. 297, 298: as *A. digitale* var. *rosea*; round the British Isles. CHIU 1954b, p. 56. ? BERNHARD 1955b, p. 13: as *A. digitalis*; Morocco. KRAMP 1955b, p. 158. MACGINITIE 1955, pp. 42, 107, 119: breeding season; Point Barrow, Alaska. WIBORG 1955, p. 52, map: Norwegian Sea. BOGOROV 1956, p. 310: *A. digitalis*; Barents Sea. NAUMOV 1956b, p. 38. PETERSEN 1957, p. 42: N. Atlantic. UCHIDA 1958, p. 164: Sado, Japan. FRASER 1959, pp. 23, 30: Faroe-Shetland Channel; southern Iceland. GRAINGER 1959, pp. 471, 496: Iglooik, arctic Canada. KRAMP 1959a, pp. 56, 191, 242, 243, 246, 247, 250, 253, 254, 256, 262, fig. 289: east of the Azores; Bay of Biscay; diagnosis; distribution.

### *Aglantha elata* (Haeckel 1879)

10-12 mm high, narrow, peduncle about half as long as bell cavity; stomach small; gonads issuing from about the middle of subumbrellar portions of radial canals; 40-48 tentacles; 16 statocysts.

HAECKEL 1879, pp. 276, 277, Pl. 16, fig. 2: as *Aglyscra elata* and *Aglantha elongata*. MAAS 1893, p. 26: as *Aglyscra elata*; W. Africa. MAYER 1910, p. 404; text-fig. 255: as *Aglantha elongata*; (Cape of Good Hope, South Africa; coast of Guinea, West Africa). BROCH 1929, p. 514, text-fig. 24: as *Aglantha elongata*; distribution. BLACKBURN 1955, p. 418: as *Aglantha elongata*, which is retained as a valid species; S.E. Australian waters. KRAMP 1955a, p. 306: doubtful if *Circe anais* Lesson 1843 and *C. elongata* Lesson 1843 from African waters = *Aglyscra elata* Haeckel; p. 309: *Aglantha elata* = *Aglyscra elata* Maas 1893 from W. Africa. KRAMP 1959a, pp. 191, 253, 256, 263, fig. 290: diagnosis; distribution.

### *Aglantha ignea* Vanhoffen 1902

14 mm high, 7 mm wide; no peduncle, stomach half as long as bell cavity, four simple lips; gonads along middle half of the eight radial canals not pendent(!); eight large and 24 small tentacles; statocysts? Systematic position doubtful.

VANHÖFFEN 1902, p. 76, Pl. 9, fig. 10: as *Aglyscra ignea* n.sp.; tropical Indian Ocean. MAYER 1910, p. 405, text-fig. 256: *Aglantha ignea*. RANSON 1932b, p. 16: doubtful if *A. ignea* belongs to Aglauridae. RANSON 1936b, p. 176: *A. ignea* does not belong to Aglauridae, but possibly to Trachynemidae.

### *Aglantha intermedia* Bigelow 1909

15 mm high, 14 mm wide, with a small, conical apical projection; peduncle about half as long as bell cavity; stomach elongated; gonads long, sausage-

shaped, close to base of peduncle; the radial canals on the peduncle are not straight but S-shaped and arranged in four pairs; 80–90 tentacles.

BIGELOW 1909a, p. 122, Pl. 29, figs. 4–10: as *Aglantha digitale* var. *intermedia* nov. var.; eastern tropical Pacific. MAYER 1910, p. 404: as *A. digitale* var. *intermedia*.

### Genus *Aglaura* Péron & Lesueur 1809

Rhopalonematidae with a slender gastric peduncle; with eight sausage-shaped gonads on the peduncle, not on the subumbrella; with numerous tentacles all alike; with free, club-shaped marginal statocysts.

Type-species: *A. hemistoma* Péron & Lesueur.

PÉRON & LESUEUR 1809, p. 351: *Aglaura* n.g. HAECKEL 1879, p. 274. MAYER 1910, p. 397. VANHÖFFEN 1913b, p. 26: discussion; synonyms: *Aglantha* and *Aglisra*. UCHIDA 1928b, p. 78: belongs to family Trachynematidae, subfamily Aglaurinae.

### *Aglaura hemistoma* Péron & Lesueur 1809

4–6 mm high, 3–4 mm wide, with flat apex, jelly very thin; peduncle somewhat shorter than bell cavity; stomach small, mouth with four small, simple lips; gonads on the peduncle near stomach; 48–85 tentacles; eight statocysts.

PÉRON & LESUEUR 1809, p. 351: *Aglaura hemistoma* n.g., n.sp. HAECKEL 1879, p. 275, Pl. 16, figs. 3, 4. MAYER 1910, p. 398, Pl. 46, figs. 4, 5, Pl. 49, figs. 3–7, Pl. 50, fig. 11, text-figs. 250, 251: *A. hemistoma*, incl. *A. peronii* Leuckart 1856 and *A. ciliata* Perkins 1906; surface water in all warmer seas; p. 400, text-fig. 252: as *A. hemistoma* var. ‘*nausicaa*’ Haeckel 1879; p. 400: as *A. hemistoma* var. ‘*prismatica*’ Maas 1897; p. 400, text-fig. 253: as *A. hemistoma* var. ‘*laterna*’ Maas 1893; p. 401: as *A. hemistoma* var. ‘*octagona*’ Bigelow 1904; p. 404: as *Aglantha globuligera* Haeckel 1879. NEPPI 1912, p. 731: Adriatic Sea. VANHÖFFEN 1912, p. 374: Indian Ocean south to Réunion and Durban; Atlantic. VANHÖFFEN 1913a, p. 427: *A. hemistoma*; p. 428: as *A. elongata*; Tortugas, Florida. VANHÖFFEN 1913b, p. 28: *A. hemistoma*; between Panama and Galapagos Islands; Hong Kong, China; p. 28: as *A. elongata*; off Peru. BIGELOW 1913, p. 42: Japan. NEPPI & STIASNY 1913b, p. 80: Trieste, Adriatic Sea. BIGELOW 1914b, p. 20: Gulf Stream, New England. BIGELOW 1915b, p. 316: off Delaware Bay, east coast of U.S.A. MAYER 1915a, p. 160: Torres Strait, Australia. BROWNE 1916a, p. 196: =*A. prismatica* Maas 1897 and *A. octagona* Bigelow 1904; Indian Ocean: north of Chagos Archipelago, off Mauritius, N. of Saya de Malha Bank, Farquhar Islands, Alphonse Islands and Amirante Islands. BIGELOW 1917, p. 306: off Georges Bank, east coast of U.S.A. BIGELOW 1918, p. 387: between Chesapeake Bay and Bermudas. PELL 1918, pp. 22, 30: Adriatic Sea. BIGELOW 1922, p. 157: off Chesapeake Bay, east coast of U.S.A. ANSELMI 1923, p. 69: as *Aglaura*; Mediterranean. FOERSTER 1923, p. 265. RANSON 1925b, p. 382: Tunis. BIGELOW 1926, p. 54: Gulf of Maine, east coast of U.S.A. UCHIDA 1928b, p. 78, text-fig. 2: Japan. BROCH 1929, p. 511, text-fig. 21: *A. hemistoma*; p. 514, text-fig. 24: distribution. CANDEIAS 1930, p. 49: Portugal. CANDEIAS 1932, p. 6: Portugal. RANSON 1932b, pp. 14, 16: *Aglantha globuligera* belongs to *Aglaura*. LELE & GAE 1935, p. 95: Bombay, India. RUSSELL 1935b, p. 315. THIEL 1935b: southern Atlantic. DAWYDOFF 1936, p. 469: as *Aglaura*; Indochina. RANSON 1936b, p. 184: synonyms: *A. prismatica* Maas and *octagona* Bigelow; *Aglantha*

*globuligera* belongs to *Aglaura*; many localities. THIEL 1936b, p. 39, map: = *A. elongata* Vanhöffen 1913a, b and Broch 1929; Atlantic. PELL 1938, p. 927: Adriatic Sea. UCHIDA 1940a, p. 292: Japan. UCHIDA 1947a, p. 313: Palau Islands, central Pacific. UCHIDA 1947b, p. 337: Japan. BABNIK 1948, pp. 43, 70: remarks; Adriatic Sea. MOORE 1949, pp. 8, 91: Bermudas; 'Gulf Stream'. RANSON 1949, p. 130: Senegal, W. Africa. BERRILL 1950, p. 295, text-fig. 1, i-n: development. NAIR 1951, p. 69: Trivandrum coast, India. VANNUCCI 1951b, pp. 113, 114, 117: Brazil. BAL & PRADHAN 1952, p. 76: Bombay, India. KRAMP 1953, p. 300: N.E. Australia. CHIU 1954b, pp. 51, 52, 55: China. BLACKBURN 1955, p. 417: S.E. Australian waters. HURE 1955, p. 7: Adriatic Sea. KRAMP 1955a, p. 274: Canary Islands; Gulf of Guinea; off Angola, W. Africa; pp. 308, 309: = *Aglantha globulifera* and *Aglaura laterna* Haeckel from Canary Islands. KRAMP 1956a, p. 4: from coast of Colombia, S. America, to Marquesas Islands. KRAMP 1957a, pp. 62, 125: from Cape Verde Islands to Cape of Good Hope. VANNUCCI 1957d, pp. 76, 93, 96, 97, 99, 102, figs. 20, 21 (map and diagram); Brazil. KRAMP 1958a, p. 125: Villefranche, Mediterranean. GANAPATI & NAGABHUSHANAM 1958, p. 93: Vizagapatam coast, India. YAMAZI 1958, p. 137: Tanabe Bay, Japan. KRAMP 1959a, pp. 57, 192, 242, 243, 246, 249, fig. 291: off west coast of Africa; West Indies; diagnosis; distribution.

### Genus *Amphogona* Browne 1905

Rhopalonematidae with a short, conical gastric peduncle; exumbrella smooth; with ellipsoidal or sac-shaped, pendent gonads on the eight radial canals; gonads usually of unequal size; with tentacles all alike not densely crowded; with free, club-shaped marginal statocysts.

Type-species: *A. apsteini* (Vanhöffen).

BROWNE 1905a, pp. 724, 739: *Amphogona* n.g. MAYER 1910, p. 405.

### *Amphogona apicata* Kramp 1957

Up to 7 mm wide and 8 mm high, with thin walls and a bluntly conical apical projection; stomach small, tubular; four short simple lips; gonads sac-shaped, pendent, near middle points of radial canals; about 64 tentacles; statocysts unknown.

KRAMP 1957a, p. 59, Pl. 5, fig. 7: *Amphogona apicata* n.sp.; southern Atlantic; Mozambique Channel. KRAMP 1959a, pp. 54, 188, 253, 256, 259, 261, 263, fig. 281: Canary Islands; off S.W. Africa; diagnosis; distribution.

### *Amphogona apsteini* (Vanhöffen 1902)

4–6 mm wide, lower than a hemisphere, with thin jelly; stomach small; four short simple lips; gonads ellipsoidal, near ring canal, of unequal size, occasionally four males and four females in the same individual; 50–70 tentacles; 16–24 statocysts.

VANHÖFFEN 1902, p. 65, Pl. 10, fig. 18, Pl. 11, fig. 28: as *Pantachogon apsteini* n.sp.; Sumatra. BROWNE 1905a, p. 740, Pl. 54, fig. 5, Pl. 56, fig. 1, Pl. 57, figs. 10-15: *Amphogona apsteini* n.g.; Maldives Islands, Indian Ocean. MAYER 1910, p. 405, text-fig. 257: (Pacific coast of Mexico). BROWNE 1916a, p. 197: N. of Chagos Archipelago, Cargados Carajos and Farquhar Islands, all localities in the Indian Ocean. BROWNE 1916b, p. 152: Okhamandal, N.W. India. FOERSTER 1923, p. 266: reference to Bigelow 1909. UCHIDA 1928b, p. 79: belongs to family Trachynematidae, subfamily Aglaurinae; Japan. UCHIDA 1947a, p. 313: Palau Islands, central Pacific Ocean. KRAMP 1953, p. 300: N.E. Australia. KRAMP 1955a, p. 274: Gulf of Guinea. KRAMP 1956a, pp. 3, 4: N. of the Galapagos Islands. KRAMP 1957a, p. 60. KRAMP 1959a, pp. 188, 242, 249, 250, 251, fig. 280; diagnosis; distribution.

### *Amphogona pusilla* Hartlaub 1909

1.5 mm wide, nearly hemispherical, with thin jelly; stomach small; four simple lips; gonads spherical on the radial canals, leaving 1/4 of the length of radial canal near ring canal free; 16 tentacles; statocysts unknown.

HARTLAUB 1909b, p. 462, Pl. 21, fig. 27: *Amphogona pusilla* n.sp.; Djibuti, East Africa. MAYER 1910, p. 497. KRAMP 1957a, p. 60.

### Genus *Arctapodema* Dall 1907

Rhopalonematidae without a gastric peduncle; with gonads on radial canals adjacent to stomach; with eight narrow radial canals; with numerous tentacles, all alike, in a single row; with free club-shaped marginal statocysts.

Type-species: *A. ampla* (Vanhöffen).

VANHÖFFEN 1902, p. 65: as *Homoeonema*. MAAS 1906b, p. 5: as *Isonema* n.g. DALL 1907, p. 660: *Arctapodema* nom. nov.; *Isonema* preoccupied for a mollusc. MAYER 1910, p. 387: as *Homoeonema* in part. RANSON 1936b, p. 156: discussion. KRAMP 1957a, p. 55: revision of species.

### *Arctapodema ampla* (Vanhöffen 1902)

Up to 15 mm wide, somewhat flatter than a hemisphere, thin jelly, thicker at apex; stomach short, urn-shaped, with eight radial lobes; four simple lips; eight swollen gonads adjacent to the gastral lobes; the gonads may be of unequal size, and some of them may be radially divided into two halves; small additional gonads may also appear in pairs on the radial canals at a short distance from the gastral lobes; about 100 tentacles; 4-8 marginal statocysts.

VANHÖFFEN 1902, p. 65, Pl. 10, fig. 21, Pl. 11, figs. 24, 26, 27: as *Homoeonema amplum* n.sp.; South Atlantic. MAAS 1906b, p. 5, Pl. 1, figs. 1, 2, 7, Pl. 2, figs. 8, 12, Pl. 3, figs. 14, 20: as *Isonema amplum* n.g.; Antarctic waters. DALL 1907, p. 660: *Arctapodema amplum*. MAYER 1910, p. 387, text-figs. 236, 237: as *H. amplum*. VANHÖFFEN 1912, p. 374, text-figs. 4-7: as *I. amplum*; Gauss Station, Antarctic. BIGELOW 1913, p. 44: belongs to *Pantachogon*. THIEL 1931, p. 324: as *H. amplum*; Weddell Sea, Antarctic. THIEL 1935b, p. 37: =*H. platygonon* Browne 1903, non Maas 1893. RANSON 1936b, pp. 156, 157, Pl. 2, fig. 17: description and discussion;

off Algiers, N. Africa. THIEL 1936b, p. 26: =*H. platygonon* Browne 1903, non Maas 1893. PELL 1938, p. 926: as *Isonema najadis* n.sp.; Adriatic Sea. KRAMP 1955a, p. 273: off Liberia, W. Africa. KRAMP 1957a, pp. 55, 56, 99, 126, Pl. 5, fig. 4, text-fig. 9, map: *A. tetragonum* (Vanh. 1912) probably =*A. amplum*; N. and S. Georgia; Graham Land, Antarctic: p. 55: *A. najadis* =*A. amplum*. KRAMP 1959a, pp. 188, 253, 255, 256, 261, 262, fig. 279: diagnosis; distribution.

#### *Arctapodema antarctica* (Vanhöffen 1912)

Up to 16 mm wide, hemispherical, fairly thin jelly; stomach tubular; four interradial gonads encircling base of stomach but interrupted in the four perradial corners; no gonads on the radial canals; about 120 tentacles; statocysts unknown; stomach red in adult.

VANHÖFFEN 1912, p. 375, text-figs. 8, 9: as *Isonema antarcticum* n.sp.; Gauss Station, Antarctic. RANSON 1936b, p. 157: *Arctapodema antarcticum*; is temporarily retained. THIEL 1936b, p. 26: =*Homoeonema platygonon* Browne. KRAMP 1957a, pp. 55, 56, 58, 99, 100, 126, text-fig. 9, map: Antarctic; between S. Africa and Australia; W. of South Sandwich Islands; near Shag Rocks, S.W. Atlantic. KRAMP 1959a, pp. 187, 253, 261, 262, fig. 277: diagnosis; distribution.

#### *Arctapodema australis* (Vanhöffen 1912)

Up to 23 mm wide and 14 mm high, thin jelly; stomach short and broad, with 16 radial folds; four lips; eight gonads globular or club-shaped, pendent, on the radial canals near base of stomach; about 112 tentacles; statocysts unknown; stomach violet, canals and tentacles wine-red, gonads yellow.

VANHÖFFEN 1912, p. 376, text-figs. 10, 11: as *Isonema australe* n.sp.; Gauss Station. RANSON 1936b, p. 157: *Arctapodema australe*; is temporarily retained. THIEL 1936b, p. 26: =*Homoeonema platygonon* Browne. KRAMP 1957a, pp. 55, 56, 58, 99, 100, 126, Pl. 5, figs. 5, 6, text-fig. 9, map: between S. Africa and Australia. KRAMP 1959a, p. 187, fig. 278: diagnosis; distribution.

#### *Arctapodema macrogaster* (Vanhöffen 1902)

7 mm wide; stomach fairly large, four lips; eight spherical gonads adjacent to stomach; 84 tentacles; 32 statocysts. Possibly =*A. australis*.

VANHÖFFEN 1902, p. 66, Pl. 10, fig. 22: as *Homoeonema macrogaster* n.sp.; southern Indian Ocean. MAYER 1910, p. 388, text-fig. 238: as *H. macrogaster*. BIGELOW 1913, p. 44: belongs to *Pantachogon*. THIEL 1935b, p. 37: =*H. platygonon* Browne. RANSON 1936b, p. 157: *Arctapodema macrogaster*, temporarily retained. THIEL 1936b, p. 26: =*H. platygonon*. KRAMP 1957a, p. 55.

#### *Arctapodema tetragonia* (Vanhöffen 1912)

12 mm wide; stomach short, four short lips; four gonads, kidney-shaped, on walls of stomach adjacent to subumbrella; about 112 tentacles; statocysts? Probably =*A. ampla*.

VANHÖFFEN 1912, p. 377, text-figs. 12-15: as *Isonema tetragonum* n.sp.; equatorial Atlantic. RANSON 1936b, p. 157: *Arctapodema tetragonum*, temporarily retained. THIEL 1936b, p. 26: =*Homoeonema platygonon* Browne. KRAMP 1957a, pp. 55, 56, 58: probably identical with *A. plumum*.

### Genus *Colobonema* Vanhöffen 1902 \*

Rhopalonematidae without a gastric peduncle; with the apical outlines of the subumbrellar muscular fields forming a star-shaped figure; with elongated gonads extending along the eight radial canals; with tentacles all of one kind, developing in succession; with free, club-shaped marginal statocysts.

Type-species: *C. sericeum* Vanhöffen.

VANHÖFFEN 1902, p. 56: *Colobonema* n.g. MAYER 1910, p. 383: as *Homoeonema* in part. KRAMP 1947, p. 18: diagnosis of the genus.

#### *Colobonema sericeum* Vanhöffen 1902

Up to 45 mm wide and 35 mm high; bell-shaped, slightly conical, with fairly thin jelly and without an apical projection; stomach more or less elongated, tubular; four small lips; gonads linear, straight, extending along greater part of radial canals; 32 tentacles, the adradial tentacles developed before the interradial; statocysts probably alternating with the tentacles; velum broad.

VANHÖFFEN 1902, p. 57, Pl. 9, fig. 1, Pl. 12, figs. 39-42: *Colobonema sericeum* n.g., n.sp.; W. coast of Africa. MAAS 1905, p. 53, Pl. 10, figs. 62-5: as *C. typicum*. MAYER 1910, p. 385, text-fig. 231: as *Homoeonema typicum* Maas 1897 in part. VANHÖFFEN 1912, p. 372: *C. sericeum*, non =*H. typicum*; southern Atlantic; central Atlantic; N.W. of Cape Verde Islands. KRAMP 1920b, p. 5: northern Atlantic. KRAMP 1924, p. 28: comparison with *C. typicum*; S.W. of Ireland. BROCH 1929, p. 500, text-fig. 12: as *Homoeonema* (*Colobonema*) *sericeum*; (Atlantic and Pacific, intermediate water). RANSON 1936b, p. 152, Pl. 2, figs. 14, 15: discussion; temperate Atlantic. BIGELOW 1938, p. 117: as *C. typicum*. BIGELOW 1940, p. 302: as *C. typicum*; Panama. KRAMP 1947, p. 18, map: northern Atlantic. UCHIDA 1947b, p. 337: as *C. typicum*; Japan. KRAMP 1948b, p. 9, map: northern Atlantic. RUSSELL 1953, pp. 436, 440, Pl. 25, fig. 1, text-figs. 287-9: *C. typicum* Maas 1905 =*C. sericeum*; W. of Ireland. BLACKBURN 1955, p. 416: S.E. Australian waters. KRAMP 1955a, p. 273: off Angola; off Liberia, W. Africa. KRAMP 1957a, pp. 54, 100, 104, 110 ff., 126, text-fig. 19, map: between Africa and S. America; from South Africa to Australia; Mozambique Channel. PETERSEN 1957, p. 44: N. Atlantic. NICOL 1958, p. 716: Bay of Biscay. KRAMP 1958b, pp. 159, 162: Indian Ocean. KRAMP 1959a, pp. 52, 186, 253, 256, 259, fig. 275: Bay of Biscay; Atlantic Ocean; Gulf of Panama; diagnosis; distribution.

#### *Colobonema typicum* (Maas 1897, non 1905)

20 mm wide, 12 mm high, jelly thin, but rigid; stomach short, urn-shaped, four small lips; gonads along distal half of radial canals; about 40 tentacles; statocysts? (The description incomplete, partly based on a figure.)

\* For an additional species, see Addenda, p. 445.

MAAS 1897, p. 22, Pl. 3, figs. 1-3: as *Homoeonema typicum* n.sp.; Pacific coast of Central America. MAYER 1910, p. 385: as *H. typicum* in part. BIGELOW 1913, p. 46: *Colbonema typicum*; Japan. BIGELOW 1919, p. 322: Philippines. FOERSTER 1923, p. 265. KRAMP 1924, p. 28: different from *C. sericeum*. UCHIDA 1928b, p. 81: as *H. typicum*, belongs to subfamily Halicreasinae; report of Bigelow 1913. BIGELOW 1938, p. 117: *C. typicum* = *sericeum*, morphological remarks; Bermudas. BIGELOW 1940, p. 302: Pacific coast of Panama. KRAMP 1947, p. 19: *C. typicum* Maas 1897 (non 1905) different from *C. sericeum*. RUSSELL 1953, pp. 436, 440: *C. typicum* Maas 1905 = *C. sericeum*, *C. typicum* Maas 1897 non = *sericeum* and is retained as a doubtful species.

### Genus *Crossota* Vanhöffen 1902

Rhopalonematidae with or without a short gastric peduncle; with numerous meridional furrows on the exumbrella; with eight or more radial canals; with pendent, sausage-shaped gonads on the radial canals; with numerous densely crowded tentacles all alike; with free, club-shaped marginal statocysts.

Type-species: *C. brunnea* Vanhöffen.

VANHÖFFEN 1902, p. 72: *Crossota* n.g. MAYER 1910, p. 395. BIGELOW 1913, p. 47: discussion. UCHIDA 1928b, p. 80: belongs to Aglaurinae. BROCH 1929, p. 505: key for determination of the species: *C. brunnea*, *norvegica*, *alba*, *pedunculata* and *rufobrunnea*. RANSON 1936b, p. 160: discussion. THIEL 1936b, pp. 20 ff.: discussion. BIGELOW 1938, p. 118: discussion. KRAMP 1947, p. 21: discussion; morphological remarks. KRAMP 1959a, p. 273: geographical speciation.

### *Crossota alba* Bigelow 1913

Up to 42 mm wide and 28 mm high; no peduncle; stomach tubular, narrow, with eight sharp longitudinal ridges separated by eight broad, flat furrows; four small lips; gonads on the eight radial canals somewhat nearer to ring canal than to stomach; up to 190 tentacles; number of statocysts unknown; stomach dark chocolate-brown, almost black, oral lips white, umbrella colourless.

BIGELOW 1913, p. 149, Pl. 3, figs. 9-12: *Crossota alba* n.sp.; northern Japan. UCHIDA 1928b, p. 80: belongs to subfamily Aglaurinae; report of Bigelow. THIEL 1936b, p. 20: synonym of *C. brunnea*. KRAMP 1947, p. 22: *C. alba* a valid species. UCHIDA 1947b, p. 339: *C. alba*?; Japan. NAUMOV 1956b, pp. 38, 40. KRAMP 1957a, pp. 61, 99, 105, 126: tropical Atlantic. NICOL 1958, p. 715: Bay of Biscay. KRAMP 1959a, pp. 56, 191, 252, 256, 263, 273, fig. 288: Bay of Biscay; off west coast of Africa; diagnosis; distribution.

### *Crossota brunnea* Vanhöffen 1902

Up to about 30 mm wide and 22 mm high; without a gastric peduncle; stomach bottle-shaped, short, with eight large, deep longitudinal fissures and above them eight similar small invaginations; mouth with four small lips; eight radial canals; gonads on the radial canals near base of stomach; 600 or more tentacles very densely crowded; number of statocysts unknown. Colour of umbrella brown.

VANHÖFFEN 1902, p. 73, Pl. 9, figs. 11–13, Pl. 12, figs. 34–8, 43–7: *Crossota brunnea* n.g., n.sp.; Atlantic, Pacific and Indian oceans. BIGELOW 1909a, p. 135, Pl. 2, fig. 7, Pl. 45, fig. 9: eastern Pacific south of Equator. MAYER 1910, p. 396, text-fig. 249. VANHÖFFEN 1912, p. 385: N.W. of Gauss Station, Antarctic. THIEL 1932b, p. 477. THIEL 1936b, p. 20, map: synonyms: *C. alba* Bigelow 1913 and Uchida 1928; *C. brunnea* var. *norvegica* Bigelow 1913 and *C. norvegica* Kramp 1920, Thiel 1932, Broch 1929 (non Vanhöffen 1902); southern Atlantic. KRAMP 1947, p. 21. UCHIDA 1947b, p. 338: Japan (first record north of Equator). KRAMP 1948a, p. 10: N.W. of South Georgia, southern Atlantic. VANNUCCI 1951b, p. 106: Brazil. KRAMP 1957a, pp. 61, 62, 100, 110 ff., 126, text-fig. 17 (map): antarctic sections of all oceans; S. Atlantic; E. Indian Ocean. KRAMP 1958b, pp. 159, 162: Indian Ocean and Antarctic Sea. KRAMP 1959a, pp. 55, 190, 253, 256, 259, 261, 263, 273, fig. 285: off Sierra Leone, W. Africa; diagnosis; distribution.

#### *Crossota norvegica* Vanhöffen 1902

20 mm wide, 18 mm high; without a gastric peduncle; stomach bottle-shaped, with irregular longitudinal ridges and invaginations; 5–7 upturned lips; 10–14 radial canals; gonads on the radial canals near base of stomach; about 275 tentacles; statocysts unknown; colour of umbrella a deep reddish-brown.

VANHÖFFEN 1902, p. 75: *Crossota norvegica* n.sp.; off coast of Norway. MAYER 1910, p. 396: *C. 'norvegica'*; probably identical with *C. brunnea*. KRAMP & DAMAS 1925, p. 317: new description; criticism of Vanhöffen; Norwegian Sea (Vanhöffen's original specimens). BROCH 1929, p. 507: *C. norvegica*, incl. *C. brunnea* var. *norvegica* Bigelow 1913 and *C. norvegica* Kramp 1920. THIEL 1932a, p. 153: incl. *C. brunnea* var. *norvegica* Bigelow 1913. THIEL 1932b, pp. 444 ff., in part: distribution. THIEL 1936b, p. 22: does not belong to *Crossota*. KRAMP 1947, pp. 22, 26, Pl. 4, figs. 5, 6: Norwegian Sea; N.E. of Iceland. KRAMP 1959a, pp. 191, 253, 254, 261, 263, 273, fig. 287: diagnosis; distribution.

#### *Crossota pedunculata* Bigelow 1913

25 mm wide; stomach flask-shaped, on a short cylindrical peduncle; eight radial canals; gonads during growth gradually displaced from 1/3 to 2/3 meridional distance from base of stomach; up to 640 or more tentacles; statocysts unknown; colour of umbrella reddish-brown.

BIGELOW 1913, p. 51, Pl. 3, fig. 13: *C. pedunculata* n.sp.; near mouth of Columbia River, Pacific coast of U.S.A. FOERSTER 1923, p. 265. THIEL 1936b, p. 22: probably belongs to *Aglantha*. KRAMP 1947, p. 22: *C. pedunculata* a valid species. KRAMP 1959a, pp. 263, 273.

#### *Crossota rufobrunnea* (Kramp 1913)

Up to 15 mm wide and 10 mm high; without a gastric peduncle; stomach bottle-shaped, short, with eight large, deep longitudinal fissures and above them eight similar small invaginations; mouth with four small, out-turned lips; eight radial canals; gonads on the radial canals near base of stomach; about 200–250 tentacles; number of statocysts unknown; umbrella, stomach and tentacles deep reddish-brown.

BIGELOW 1913, p. 48: as *C. brunnea* var. *norvegica*; N.W. Pacific. KRAMP 1913a, p. 273, text-figs. 1, 2: as *Aglantha rufobrunnea* n.sp.; Davis Strait. KRAMP 1914, p. 433: as *A. rufobrunnea*; Davis Strait. KRAMP 1920b, p. 5: as *C. norvegica*; northern Atlantic. KRAMP & DAMAS 1925, p. 317: *Crossota rufobrunnea*. BROCH 1929, p. 506; text-fig. 17. THIEL 1932a, p. 153. THIEL 1932b, pp. 444 ff.: distribution. RANSON 1936b, p. 162: Bay of Biscay. THIEL 1936b, p. 22: does not belong to *Crossota*. ?BIGELOW 1938, p. 119: ?*C. brunnea*; morphological remarks; Bermudas. KRAMP 1942, p. 79: to *Crossota*; Davis Strait. KRAMP 1947, p. 22, Pl. 2, figs. 9, 10, Pl. 3, figs. 1-8, Pl. 4, figs. 1-4, Pl. 6, fig. 5, text-figs. 9a-e, 10a, b, map: morphology; northern Atlantic. UCHIDA 1947b, p. 338: Japan. KRAMP 1948b, p. 12: northern Atlantic from S. of Azores to W. of Scotland, map. YASHNOV 1952, p. 95: off Kamchatka. RUSSELL 1953, p. 444, text-figs. 293-6. CHIU 1954b, p. 56: as *C. norvegica*. ZENKEWITCH 1954, p. 72: Kurile-Kamchatka trench, 500-2,000 metres. NAUMOV 1956b, p. 38: as *C. brunnea*; Okhotian Sea; Bering Sea. PETERSEN 1957, p. 44: N. Atlantic. KRAMP 1959a, pp. 190, 253, 254, 256, 259, 263, 273, fig. 286: diagnosis; distribution.

### Genus *Homoeonema* (Maas 1893) Browne 1903

Rhopalonematidae without a gastric peduncle; with gonads forming a continuous band around the base of the stomach extending outwards along the eight radial canals; with numerous tentacles all alike; with vesicular marginal statocysts.

Type-species: *H. platygonon* Browne.

MAAS 1893, p. 15: *Homoeonema* n.g.; insufficient description. BROWNE 1903, p. 21: adequate description of both genus and species. MAYER 1910, p. 383: as *Homoeonema* and *Colobonema*. KRAMP 1947, pp. 14-17: revision, *H. platygonon* the only species

### *Homoeonema platygonon* Browne 1903

1-2 mm wide and high; gonads extending from stomach outwards along proximal half of radial canals; about 80 or more tentacles; four statocysts.

? MAAS 1893, p. 15, Pl. 1, fig. 8: *Homoeonema platygonon* n.g., n.sp.; between Iceland and Greenland. BROWNE 1903, p. 21, Pl. 2, figs. 2, 3: new description; coast of Norway. MAYER 1910, p. 386, text-figs. 232-4. ?GROBBEN 1915, p. 4: Adriatic Sea. ?NEPPI 1915, p. 4: Adriatic Sea. ?PELL 1918, pp. 22, 28, text-fig. 3: Adriatic Sea. ?NEPPI 1920b, p. 91: abnormal specimen; Naples, Italy. KRAMP & DAMAS 1925, p. 318: Norway. BROCH 1929, p. 502, text-fig. 14: between Scotland and southern point of Greenland; Norwegian fjords. RUNNSTRÖM 1932, p. 30: biological remarks; Herdla- and Hjeltefjord, Norway. THIEL 1932a, p. 152. THIEL 1932b, p. 444 ff.: distribution. BERNSTEIN 1934, pp. 26, 53: Kara Sea. KRAMP 1937b, p. 132, text-fig. 59c. BIGELOW 1938, p. 120: discussion. ?PELL 1938, p. 927: Adriatic Sea. YASHNOV 1939, p. 112: Kara Sea. KRAMP 1947, p. 17, Pl. 2, fig. 6: discussion, *H. platygonon* the only species; Herløfjord, Norway. YASHNOV 1948, p. 73, Pl. 21, fig. 2: Kara Sea. ?VANNUCCI 1951b, pp. 112, 114, 115, 117: as *H. platygonon* sens. Browne; Brazil. KRAMP 1957a, pp. 55, 56. KRAMP 1959a, pp. 185, 242, 243, fig. 269: diagnosis; distribution.

### Genus *Pantachogon* Maas 1893

Rhopalonematidae without a gastric peduncle; with the apical outlines of the subumbrellar muscular fields forming an entire circle; with gonads along the eight radial canals separated from stomach; with 48 or more tentacles all alike; with free, club-shaped marginal statocysts.

Type-species: *P. haeckeli* Maas.

MAAS 1893, p. 17: *Pantachogon* n.g. MAYER 1910, pp. 387, 388: as *Homoeonema* in part and *Pantachogon*. BIGELOW 1913, p. 44: discussion of species; as *Pantachogon*, *Isonema* and *Homoeonema* in part. THIEL 1936b, p. 24: only two species: *P. rubrum* and *platygonon*.

#### *Pantachogon haeckeli* Maas 1893

About 12 mm high and wide, bell-shaped, with thin jelly and without an apical projection; with very strong and conspicuous musculature; stomach short; four small, simple lips; gonads extending along greater portion of the eight radial canals; 64 tentacles all alike; 64 club-shaped statocysts; velum very broad.

MAAS 1893, p. 17, Pl. 1, fig. 2: *Pantachogonon haeckelii* n.g., n.sp.; S.W. of Iceland. VANHÖFFEN 1902, p. 63, Pl. 9, fig. 9, Pl. 10, figs. 19, 20, Pl. 11, fig. 25: as *P. rubrum* n.sp.; tropical Atlantic, Indian and Pacific oceans. MAYER 1910, p. 389, text-fig. 239: *P. haeckelii*; p. 389, text-figs. 240, 241: as *P. rubrum*, possibly = *P. haeckelii*. BIGELOW 1913, p. 44: N.W. Pacific. KRAMP 1913a, p. 274: as *P. rubrum*; W. Greenland. KRAMP 1914, p. 433: as *P. rubrum*; W. Greenland. BROWNE 1916a, p. 195: as *P. rubrum*; Chagos Archipelago; between Providence Islands and Alphonse Islands., Indian Ocean. KRAMP 1920b, p. 5: as *P. rubrum*; northern Atlantic. FOERSTER 1923, p. 265: report of Bigelow. KRAMP 1924, p. 22: as *P. rubrum*; Bay of Biscay; S.W. of Ireland. BROCH 1929, p. 503, text-fig. 15: as *P. haeckeli*; p. 504, text-fig. 16: as *P. rubrum*; distribution. ?THIEL 1931, p. 330: as *P. rubrum*; Weddell Sea (probably *P. scotti*). THIEL 1932a, p. 152: as *P. haeckeli* and *rubrum*. THIEL 1932b, pp. 444 ff.: as *P. haeckeli* and *rubrum*; distribution. RANSON 1936b, p. 147, Pl. 2, fig. 16: as *P. rubrum*; discussion; Bay of Biscay; Straits of Gibraltar; waters between Azores, Canary Islands and Madeira; between the Azores and America. THIEL 1936b, p. 24, map: as *P. rubrum*, = *P. haeckeli*, *P. scotti* in part, *Homoeonema typicum* and *militare*, *Colobononema sericeum*; southern Atlantic. BIGELOW 1938, p. 115: *P. haeckeli* = *rubrum*; discussion; morphological remarks; Bermudas. KRAMP 1942, p. 78: *P. haeckeli* = *rubrum*; Davis Strait; Baffin Bay. KRAMP 1947, p. 19, Pl. 2, figs. 7, 8, map: northern Atlantic. UCHIDA 1947b, p. 336: Japan. KRAMP 1948a, p. 9: N. and N.W. of South Georgia, Antarctic. KRAMP 1948b, p. 9: northern Atlantic. YASHNOV 1948, p. 73, Pl. 21, fig. 3: Bering Sea; Sea of Okhotsk. FRASER 1950, pp. 94, 95: as *P. rubrum*; N.W. of Scotland. YASHNOV 1952, p. 95: off Kamchatka. RUSSELL 1953, p. 440, Pl. 25, fig. 2, text-figs. 290-2: W. of Ireland. CHIU 1954b, p. 56. BLACKBURN 1955, p. 416: S.E. Australian waters. FRASER 1955, pp. 9, 12: British Isles, as *P. rubrum*. KRAMP 1955a, p. 273: off Senegal, Liberia; Gulf of Guinea. KRAMP 1957a, pp. 53, 92, 100, 110 ff., 126, text-fig. 18, map: with larvae of Narcomedusae; W. and E. African waters south of Cape Verde Islands and Somaliland; southern Indian Ocean; S.W. Atlantic; Weddell

Sea; p. 54: *P. rubrum* synonym of *P. haeckeli*. KRAMP 1957b, pp. 158, 162: Indian Ocean and Antarctic Sea. PETERSEN 1957, p. 44: N. Atlantic. KRAMP 1959a, pp. 51, 186, 253, 254, 256, 260, 261, fig. 272: Bay of Biscay; off west coast of Africa; West Indies; diagnosis; distribution.

### *Pantachogon militare* (Maas 1893)

7–10 mm wide, 6 mm high, mitre-shaped, with a well developed apical projection; gonads lancet-shaped, on distal half of the eight radial canals; 48 tentacles all alike. Four (or more?) statocysts.

MAAS 1893, p. 16, Pl. 1, fig. 1: as *Homoeonema militare* n.sp.; N. of Bermudas. MAYER 1910, p. 387, text-fig. 235: as *H. militare*; Mediterranean. BIGELOW 1913, p. 44: *Pantachogonon militare*. BROCH 1929, p. 501, text-fig. 13: as *H. militare*. THIEL 1931, p. 326: as *H. militare*; Weddell Sea, Antarctic. THIEL 1935b, p. 37: =*H. typica*, and probably =*P. rubrum*. THIEL 1936b, p. 24: =*P. rubrum*. KRAMP 1947, pp. 15, 19: discussion. KRAMP 1959a, pp. 52, 186, 253, 256, 263, fig. 273: off west coast of Africa; diagnosis; distribution.

### *Pantachogon scotti* Browne 1910

About 4 mm wide, a little broader than high, with thin jelly and without an apical projection; with strong musculature; stomach very small; four short lips; gonads linear, extending along proximal 2/3 of the eight radial canals; about 120 tentacles all alike; number of statocysts unknown.

BROWNE 1910, p. 36, Pl. 3, figs. 5, 6: *Pantachogon scotti* n.sp.; McMurdo Sound, Antarctic. VANHÖFFEN 1912, p. 378, text-fig. 16: Gauss Station, Antarctic. THIEL 1931, p. 329: as *P. rubrum*; Weddell Sea. THIEL 1932b, p. 477. THIEL 1936b, p. 24: *P. scotti* in part, =*P. rubrum*. KRAMP 1957a, p. 55. KRAMP 1959a, pp. 186, 242, 252, fig. 274: *P. scotti* a distinct species, has seen type-specimen.

## Genus *Persa* McCrady 1857

Rhopalonematidae with a short gastric peduncle; with only two gonads, pendent, on the subumbrellar portions of two opposite radial canals; eight radial canals; with numerous long tentacles, all alike, each with a terminal knob; statocysts free, club-shaped.

Type-species: *P. incolorata* McCrady.

MCCRADY 1857, p. 206: *Persa* n.g. MAYER 1910, p. 406.

### *Persa incolorata* McCrady 1857

2 mm wide, 3 mm high; umbrella with or without a small apical knob; lateral jelly thin; stomach tubular, elongated; four small, broadly rounded lips; gastric peduncle very retractile; two oval or sausage-shaped, pendent gonads near middle points of two opposite radial canals; up to 48 long tentacles with a terminal knob; eight statocysts.

McCRADY 1857, p. 206, Pl. 12, fig. 3: *Persa incolorata* n.g., n.sp.; South Carolina, east coast of U.S.A. MAYER 1910, p. 408, text-figs. 261, 262: *P. incolorata*; North Carolina, U.S.A.; pp. 406, 407, text-figs. 259, 260: probably =*P. lucerna* Haeckel from Mediterranean and *P. dissogonima* Haeckel from Gibraltar and *Persa* sp. Haeckel from Naples. THIEL 1935b, p. 62: southern Atlantic. WEILL, R. & M. 1935, pp. 371-9, text-figs. 1-4: as *Quadralaria pyramidalis* n.g., n.sp.; Mediterranean. THIEL 1936b, p. 43, map: southern Atlantic. PICARD 1951b, pp. 20-3, text-fig.: *Quadralaria pyramidalis* Weill =*P. incolorata*; Marseilles and Villefranche, Mediterranean coast of France. VANNUCCI 1951b, p. 117: Brazil. BLACKBURN 1955, p. 418: S.E. Australian waters (first record outside the Atlantic). KRAMP 1957a, pp. 60, 125: Gulf of Guinea, W. Africa. KRAMP 1958a, p. 125: Villefranche, Mediterranean. KRAMP 1959a, pp. 189, 242, 246, 248, 253, 255, 256, 259, 260, 263, fig. 283: diagnosis; distribution.

### Genus *Ransonia* Kramp 1947

Rhopalonematidae with a high, conical bell (similar to *Aglantha*); with a long and narrow gastric peduncle; with eight radial canals; with linear gonads along the peduncular portions of the radial canals, not on subumbrella; with numerous tentacles all alike; statocysts unknown.

Type-species: *R. krampi* (Ranson).

RANSON 1932b, p. 1: as *Aglantha* in part. KRAMP 1947, p. 12: *Ransonia* n.g.

#### *Ransonia krampi* (Ranson 1932)

15 mm high, 8 mm wide; conical, with thin walls and a small, solid, conical apical projection; gonads more or less discontinuous along the eight radial canals on the peduncle; about 88 tentacles; statocysts unknown.

RANSON 1932b, pp. 1-19, text-fig.: as *Aglantha krampi* n.sp.; near Gibraltar; Mediterranean. RANSON 1936b, p. 183, Pl. 2, fig. 21: as *A. krampi*; off Algeria, North Africa. KRAMP 1947, p. 12: *Ransonia krampi* n.g. KRAMP 1948b, p. 11: Mediterranean near Gibraltar (new record). KRAMP 1955a, p. 274: Gulf of Guinea, W. Africa. KRAMP 1959a, pp. 55, 190, 253, 255, 256, 260, 263, fig. 284: Straits of Gibraltar; off west coast of Africa; diagnosis; distribution.

### Genus *Rhopalonema* Gegenbaur 1856

Rhopalonematidae without a gastric peduncle; with gonads along the eight radial canals separated from stomach; with tentacles of two kinds: radial clubs, and inter- and adradial cirri; with enclosed marginal statocysts.

Type-species: *R. velatum* Gegenbaur.

GEGENBAUR 1856, pp. 245-51: as *Trachynema* and *Rhopalonema* n.g. HAECKEL 1879, p. 263: as *Marmanema* n.g. MAYER 1910, p. 376. KRAMP 1947, p. 12.

#### *Rhopalonema funerarium* Vanhöffen 1902

Up to 17 mm wide and 14 mm high, somewhat conical, without an apical

projection; stomach narrow, elongated, hardly reaching velar opening; gonads linear, extending along distal 2/3 of radial canals; eight radial tentacles; eight interradial and 16 adradial cirrus-like, very small tentacles each with a globular terminal knob; 32 statocysts in middle of the spaces between tentacles and cirri; velum very broad.

VANHÖFFEN 1902, p. 61, Pl. 9, fig. 2, Pl. 10, fig. 17, Pl. 11, fig. 31: *Rhopalonema funerarium* n.sp.; off west coast of Africa and near St Paul in Indian Ocean. MAYER 1910, p. 380, text-fig. 223: as *R. coeruleum* Haeckel; (Mediterranean; tropical Atlantic, Indian and Pacific oceans). VANHÖFFEN 1912, p. 372: tropical Atlantic. BIGELOW 1917, p. 306: off Georges Bank, east coast of U.S.A. BIGELOW 1919, p. 323. KRAMP 1924, p. 22: *R. funerarium* different from *R. coeruleum* Haeckel; dimensions; S.W. of Ireland. BIGELOW 1926, pp. 54, 67: Gulf of Maine, U.S.A. BROCH 1929, p. 496; text-fig. 8: distribution. RANSON 1936b, p. 144: S.W. of and near the Azores; near Monaco. KRAMP 1947, p. 14, Pl. 2, figs. 4, 5, map: S.W. of Ireland; the locality Cadiz Bay (Kramp 1924) erroneous. KRAMP 1948b, p. 8, map: N.E. Atlantic to W. of Scotland. RUSSELL 1953, p. 434, text-figs. 285, 286. KRAMP 1957a, pp. 52, 53, 92, 104, 108, 126, text-fig. 19, map: with larvae of Narcomedusae; W. coast of Africa; S. Georgia. KRAMP 1957b, pp. 158, 162: Indian Ocean. VANNUCCI 1957d, p. 76. KRAMP 1959a, pp. 50, 74, 185, 253, 255, 256, 259, 260, 261, 263, 272, fig. 271: Bay of Biscay; off west coast of Africa; diagnosis; distribution.

### *Rhopalonema velatum* Gegenbaur 1856

8–10 mm wide, somewhat flatter than a hemisphere, with a conical apical thickening; stomach narrow, elongated, reaching almost to velar opening; four short, simple lips; gonads linear or oval extending along middle 1/3 of radial canals; eight radial club-shaped tentacles; eight interradial and, in adult specimens, 16 adradial cirrus-like very small tentacles; a statocyst close beside each of the radial tentacles and the interradial cirri; velum very broad.

GEGENBAUR 1856, p. 251, Pl. 9, figs. 1–5: *Rhopalonema velatum* n.g., n.sp.; Mediterranean. HAECKEL 1879, p. 263, Pl. 17, figs. 1, 2: as *Marmanema clavigerum* n.sp.; tropical Atlantic; p. 264, Pl. 17, figs. 3–6: as *R. coeruleum* n.sp.; p. 264: as *R. velatum*; p. 265, Pl. 17, figs. 7–11: as *R. polydactylum* n.sp. MAAS 1893, p. 15, Pl. 1, figs. 3, 4: as *R. striatum* n.sp.; tropical Atlantic. MAYER 1910, p. 378, text-figs. 213–19: *R. velatum*; Naples, Mediterranean; (tropical Atlantic, Indian and Pacific oceans); p. 379, text-fig. 220: as *R. polydactylum*; (Mediterranean, Sea of Marmora); p. 380, text-figs. 221, 222: as *R. coeruleum*, = *funerarium*; (Mediterranean; tropical Atlantic, Indian and Pacific oceans); p. 381, text-fig. 224: as *R. striatum*; (tropical Atlantic); p. 382, Pl. 49, figs. 1–1", text-fig. 225: as *R. clavigerum*; (tropical Atlantic). NEPPI & STIASNY 1911, p. 399: Trieste, Adriatic Sea. NEPPI 1912, p. 730, Pl. 4, fig. 9: description; Dalmatian coast, Adriatic Sea. VANHÖFFEN 1912, p. 371: southern and northern Atlantic and Indian Ocean. BIGELOW 1913, p. 44: Japan. NEPPI & STIASNY 1913b, p. 79, Pl. 4, fig. 38: Trieste. VANHÖFFEN 1913a, p. 426: *R. velatum*, = *clavigerum*; Tortugas, Florida. VANHÖFFEN 1913b, p. 29: central and eastern Pacific. BIGELOW 1914b, p. 20: New England, east coast of U.S.A. MAYER 1915a, p. 202, Pl. 2, fig. 4: Torres Strait, Australia. BIGELOW 1915b, pp. 269, 316: off Delaware Bay, east coast of U.S.A. BROWNE 1916a, p. 193: discussion, *R. velatum* non = *funerarium*, non = *coeruleum*; Chagos Islands, Mauritius, Farquhar Islands and Amirante Islands, all Indian Ocean. BIGELOW 1917, p. 306: off Georges Bank, east

coast of U.S.A. BIGELOW 1918, p. 388: from Chesapeake Bay to Bermudas, Bahamas and Florida; p. 433, map: distribution in Atlantic. PELL 1918, pp. 22, 28: Adriatic Sea; pp. 22, 23, 27: as *Trachynema funerarium*. BIGELOW 1919, p. 323: Philippines. NEPPI 1920b, p. 91, text-fig. 5: abnormal specimen; Naples. BIGELOW 1922, p. 157: S. of Martha's Vineyard, east coast of U.S.A. FOERSTER 1923, p. 265: from Lower California to Guatemala. KRAMP 1924, p. 23, map: Mediterranean and Bay of Cadiz; biology; *R. coeruleum* different from *funerarium*. RANSON 1925a, p. 89, map: Mediterranean and adjacent Atlantic. RANSON 1925b, p. 381: Mediterranean and adjacent Atlantic. BIGELOW 1926, p. 54: Gulf of Maine, east coast of U.S.A. UCHIDA 1928b, p. 77, text-fig. 1: to subfamily Rhopalonematinae nov.; Japan. BROCH 1929, p. 495, text-fig. 7: *R. velatum*, report; p. 496: *R. coeruleum* Browne 1906 = *R. velatum*; p. 497: *R. coeruleum* Maas 1905 = *R. funerarium*; text-figs. 9, 10: as *R. clavigerum* and *striatum*. DAVIDOFF 1936, p. 469: southern China. RANSON 1936b, p. 137: *R. velatum*, incl. *coeruleum*; discussion; many localities in the western Mediterranean; the area between Canary Islands, Azores, Madeira and Morocco. THIEL 1936b, pp. 10, 14, map of distribution: *R. velatum*, = *R. striatum*, *polydactylum*, *funerarium*, *coeruleum* and *clavigerum*. BIGELOW 1938, p. 113: Bermudas. PELL 1938, p. 925: Adriatic Sea. KRAMP 1947, p. 13, map: northern Atlantic. UCHIDA 1947b, p. 336: Japan. BABNIK 1948, pp. 41, 70, 71: biology; Adriatic Sea. KRAMP 1948a, p. 9: tropical Atlantic. KRAMP 1948b, p. 7, map: northern Atlantic. FRASER & SAVILLE 1949b, pp. 61, 63: Scotland. MOORE 1949, pp. 7, 91, tab.: Bermudas. RANSON 1949, p. 130: Senegal, W. Africa. FRASER 1950, p. 95: N. and W. of Scotland. ROSSI 1950, p. 26: Golfo di Rapallo, Italy. VANNUCCI 1951b, pp. 113, 115, 117: Brazil. FRASER 1952a, p. 34: Scotland-Faroe area. KRAMP 1953, p. 299: Great Barrier Reef, Australia. RUSSELL 1953, p. 430, text-figs. 283, 284. CHIU 1954b, p. 55. FRASER 1954a, p. 31: Scottish area. FRASER 1954b, p. 100: near Shetland Islands. BERNARD 1955b, p. 13: Bay of Algeria, Morocco. BLACKBURN 1955, p. 414: S.E. Australian waters. FRASER 1955, pp. 4, 7, 9, 12: British Isles. HURE 1955, p. 6: Adriatic Sea. KRAMP 1955a, p. 272: off West Africa north of Equator; pp. 308, 309: synonyms: *Trachynema octonarium* and *R. coeruleum* Haeckel from Canary Islands, *Marmanema clavigerum* from Canary Islands and off N.W. Africa, *M. velatoides* Maas from N.W. Africa. FRASER 1956, p. 53: W. of Scotland. ALVARIÑO 1957b, p. 26: Atlantic coast of Spain and Portugal. KRAMP 1956a, pp. 2, 3: off coast of Colombia; east tropical Pacific. KRAMP 1957a, pp. 52, 53, 91, 110 ff., 125: with larvae of Narcomedusae; warm parts of all oceans. VANNUCCI 1957d, pp. 75, 93, 96, 97, 99, 102, figs. 22, 23 (map and diagram): Brazil; discussion. GANAPATI & NAGABHUSHNAM 1958, pp. 93, 94: Vizagapatam coast, India. KRAMP 1958a, p. 124: Villefranche, Mediterranean. KRAMP 1958b, p. 368: the Nicobars. YAMAZI 1958, p. 137: Tanabe Bay, Japan. KRAMP 1959a, pp. 47, 74, 185, 242-6, 250, 252, fig. 270: Atlantic Ocean; diagnosis; distribution. KRAMP 1959b, p. 12: West Africa; Bay of Biscay.

### Genus *Sminthea* Gegenbaur 1856

Rhopalonematidae without a gastric peduncle; with globular gonads on the eight radial canals; with only eight radial tentacles; with enclosed marginal statocysts.

Type-species: *S. eurygaster* Gegenbaur.

GEGENBAUR 1856, p. 245: *Sminthea* n.g., to family Eucopidae. MAYER 1910, p. 382.

*Sminthea (?) arctica* Hartlaub 1909

Doubtful species.

HARTLAUB 1909c, p. 466, Pl. 76, fig. 2: as *Trachynema arctica*; between Spitzbergen and Greenland. BROCH 1929, p. 499: *Sminthea (?) arctica*. THIEL 1932a, p. 152: *S. arctica*. THIEL 1932b, pp. 444 ff.: *S. arctica*. THIEL 1936b, p. 17: as *S. eurygaster*.

*Sminthea eurygaster* Gegenbaur 1856

Up to 6 mm wide and about half as high, with a small apical gelatinous projection; stomach short; four very short lips; gonads close to the ring canal; eight marginal statocysts.

GEGENBAUR 1856, p. 245, Pl. 9, figs. 14, 15: *Sminthea eurygaster* n.g., n.sp.; Mediterranean. HAECKEL 1879, p. 260: as *Trachynema eurygaster*. MAYER 1910, p. 383, text-figs. 226, 227: *S. eurygaster*; (warm parts of the Atlantic). GROBBEN 1915, p. 5: Adriatic Sea. NEPPI 1915, p. 5: Adriatic Sea. BROWNE 1916a, p. 194: N. of and at the Chagos Archipelago; Amirante Islands, Indian Ocean. PELL 1918, pp. 22, 28: Adriatic Sea. BROCH 1929, p. 499, text-fig. 11: distribution. THIEL 1935b: southern Atlantic. RANSON 1936b, p. 145: the Azores. THIEL 1936b, p. 17, map: = *S. arctica* (Hartlaub); southern Atlantic. PELL 1938, p. 926: Adriatic Sea. VANNUCCI 1951b, p. 117: Brazil. BLACKBURN 1955, p. 415: S.E. Australian waters. KRAMP 1955a, p. 308: = *Marmanema mammaeforme* Haeckel from Canary Islands. KRAMP 1957a, pp. 55, 125: Gulf of Guinea and W. of Cape of Good Hope, Africa. KRAMP 1958b, p. 368: west of Ceylon. KRAMP 1959a, pp. 54, 187, 242, 246, 248, 251, 253, 255, 256, 259, 260, 263, fig. 276: near Sicily in Mediterranean; off west coast of Africa; diagnosis; distribution.

Genus *Stauraglaura* Haeckel 1879

Rhopalonematidae with a well developed stomachal peduncle; with only four gonads, situated on the peduncle on every other of the eight radial canals, four radial canals being without gonads.

Type-species: *S. tetragonima* Haeckel.

HAECKEL 1879, p. 277: *Stauraglaura* n.g.

*Stauraglaura tetragonima* Haeckel 1879

12 mm high, 8 mm wide, bell-shaped, with a small, conical apical projection; peduncle long and slender; stomach small, four very short lips; four large, spherical gonads on the peduncle, near stomach; 60–80 tentacles; four statocysts. Probably = *Aglaura hemistoma*.

HAECKEL 1879, p. 277, Pl. 16, figs. 10, 11: *Stauraglaura tetragonima* n.g., n.sp.; coast of Australia. MAYER 1910, p. 406, text-fig. 258. KRAMP 1953, p. 309: probably = *Aglaura hemistoma*, in which four of the gonads are not developed (not lost!).

Genus *Tetrorchis* Bigelow 1909

Rhopalonematidae without a gastric peduncle; with only four gonads

attached to four of the eight radial canals; gonads sausage-shaped, pendent; with four large perradial and several small tentacles.

Type-species: *T. erythrogaster* Bigelow.

BIGELOW 1909a, p. 123: *Tetrorchis* n.g.

*Tetrorchis erythrogaster* Bigelow 1909

10–12 mm wide, 8 mm high, pyriform, apex very thick, lateral jelly thin; stomach tubular, reaching slightly beyond velar level; four small lips; gonads attached to four of the eight radial canals near their middle points; four large perradial tentacles opposite to the four gonad-bearing radial canals, and 16–24 small tentacles; statocysts unknown; stomach a brilliant carmine.

BIGELOW 1909a, p. 124, Pl. 29, figs. 1–3: *Tetrorchis erythrogaster* n.g., n.sp.; eastern tropical Pacific. MAYER 1910, p. 388. THIEL 1936b, p. 39: tropical Atlantic. KRAMP 1957a, pp. 60, 99, 126: Gulf of Guinea, W. Africa; west of Cape of Good Hope. KRAMP 1959a, pp. 55, 189, 253, 256, 263, 272, fig. 282: off the Gulf of Guinea, W. Africa; diagnosis; distribution.