

Order SEMAEOSTOMEAE

Scyphomedusae with umbrella margin cleft into lappets; without a coronal furrow and without pedalia; with (or without) hollow marginal tentacles and with marginal rhopalia; with a single central mouth opening provided with four large curtain-like or gelatinous lips; with gonads in sac-like folds of the endodermal wall of the subumbrella.

Family PELAGIIDAE

Semaeostomeae in which the central stomach gives rise to completely separated, unbranched radiating pouches; without a ring-canal; tentacles arise from the umbrella margin between the clefts of the lappets; oral arms long, pointed, much folded.

Genus *Chrysaora* Péron & Lesueur 1809

Pelagiidae with 32–48 (or more) simple marginal lappets; with eight marginal sense-organs; with three or more (up to nine) tentacles between each successive pair of marginal sense-organs; with 16 radial stomach pouches; in the marginal zone the eight rhopalar stomach pouches are much narrower than the eight tentacular pouches; exumbrella with numerous minute nematocyst warts. All the specific characters are vague and variable.

Type-species: *C. hysoscella* (L.).

PÉRON & LESUEUR 1809, p. 364: *Chrysaora* n.g. L. AGASSIZ 1862, p. 166: as *Dactylometra* n.g. HAECKEL 1880, pp. 510, 517: *Chrysaora* and *Dactylometra*. KISHINOUYE 1902, p. 9: as *Kuragea* n.g. MAYER 1910, pp. 577, 583, 589: as *Chrysaora*, *Dactylometra* and *Kuragea*. BIGELOW 1913, p. 90: revision of *Dactylometra*. STIASNY 1919b, pp. 75 ff.: revision of *Dactylometra*. STIASNY 1939a, p. 183: *Chrysaora* cannot be separated from *Dactylometra*; p. 184: *Kuragea*=*Chrysaora*. RANSON 1949, p. 138: discussion, *Dactylometra* and *Chrysaora* are different. KRAMP 1955a, p. 297: *Dactylometra* and *Kuragea*=*Chrysaora*.

Chrysaora africana (Vanhöffen 1902)

100–130 mm wide; five long tentacles in each octant; lappets and tentacles red; red radial streaks over exumbrella. Probably = *C. fulgida*.

VANHÖFFEN 1902, p. 40, Pl. 4, fig. 20: as *Dactylometra africana* n.sp.; S.W. Africa. MAYER 1910, p. 588, text-fig. 373: as *D. africana*. BIGELOW 1913, p. 91: remarks, *D. africana* allied to *D. quinquecirrha*. non MAYER 1915a, p. 180: as *D. africana*; Philippines; South China. non MAYER 1917a, p. 201: as *D. africana*; Philippines; South China. LIGHT 1921, p. 30: as *D. africana*; doubts the validity of Mayer's

determination. STIASNY 1939a, p. 174, text-fig. 2: *D. africana* probably an older stage of *Chrysaora fulgida*. RANSON 1949, p. 142: as *D. africana*; W. Africa. KRAMP 1955a, pp. 298, 309: = *C. quinquecirrha* (erroneous).

Chrysaora blossevilliei Lesson 1830

Doubtful species; no adequate description.

LESSON 1830, p. 115, Pl. 13, fig. 2: *Chrysaora blossevilliei* n.sp.; Brazil. HAECKEL 1880, p. 514: non VANHÖFFEN 1888, p. 15, Pl. 1, fig. 3: Brazil. MAYER 1910, p. 581: as *C. hysoscella* var. *blossevilliei* in part; the diagnosis based on the description given by Vanhöffen, and is thus invalid. ?VANNUCCI 1954, p. 123, Pl. 6, figs. 1, 2: as *C. hysoscella*; Brazil (new locality).

Chrysaora depressa (Kishinouye 1902)

85 mm wide, 30 mm high. In each octant the tentacular lappets decrease in size from the median pair towards both sides; the two rhopalar lappets as large as the median tentacular lappets; up to seven or nine tentacles per octant; septa between stomach pouches straight until near margin, but in the middle of their length the rhopalar pouches are distinctly broader than the tentacular pouches; exumbrella with a 16-rayed stellate figure, resembling that of *C. hysoscella*, but reaching almost from centre outwards.

KISHINOUYE 1902, p. 9, Pl. 1, fig. 7: as *Kuragea depressa* n.g., n.sp.; Japan. MAYER 1910, p. 589, text-fig. 374: as *K. depressa*. STIASNY 1922e, p. 519, fig. 2: probably = *C. quinquecirrha* var. *pacifica* Goette; Japan. UCHIDA 1927b, p. 230: as *K. depressa*, non = *Dactylometra pacifica*. UCHIDA 1935, p. 44: Stiasny's *K. depressa* 1922 is 'nothing but specimens belonging to *D. pacifica*'. UCHIDA 1954, pp. 209-19.

Chrysaora fulgida (Reynaud 1830)

Up to 200 mm wide (or more?); central part of umbrella with base of oral arms particularly thick and cartilaginous; basal part of oral arms particularly broad; septa between stomach pouches straight until very near margin; in each octant four tentacular and two rhopalar marginal lappets, all of equal size, thick, with many small lobate diverticula from stomach pouches. Eight by five tentacles, all alike; exumbrella with 16 broad, dark, radial bands alternating with as many narrow streaks, confluent around bell margin.

REYNAUD 1830, p. 79, Pl. 25: as *Rhizostoma fulgidum* n.sp.; Cape of Good Hope, South Africa. MAYER 1910, p. 581: as *Chrysaora hysoscella* var. *fulgida*. VANHÖFFEN 1920, p. 17: *C. fulgida*. STIASNY 1934a, p. 388: Cape of Good Hope. STIASNY 1939a, pp. 172-85, figs. 1-7: as *Dactylometra fulgida*; historic review, description and discussion; *D. africana* Vanh. probably = *fulgida*; Walvis Bay, S. Africa. RANSON 1945b, p. 316. KRAMP 1955a, p. 298: *D. africana* non = *fulgida*.

Chrysaora helvola Brandt 1838

Up to 300 mm wide, hemispherical or flatter; rhopalar stomach pouches

oval, in middle portion twice as wide, at the margin half as wide as tentacular pouches; three tentacles per octant; umbrella yellowish-brown or reddish-yellow, with a 32-rayed chestnut-brown star on exumbrella.

BRANDT 1838a, p. 384, Pl. 15, text-figs. 1-4: *Chrysaora (Polybostrycha) helvola* n.sp.; northern Pacific Ocean. HAECKEL 1880, p. 515. VANHÖFFEN 1906, p. 48, text-fig. 11. MAYER 1910, p. 581, text-fig. 366: *C. helvola* (northern Pacific); p. 582: as *C. helvola* var. *calliparea* (Reynaud); (east coast of India; Zanzibar); p. 582: as *C. helvola* var. *chinensis* Vanh. 1888; (Hong Kong, China). RAO 1931a, p. 30: Bay of Bengal; *Dactylometra quinquecirrha* Light 1921 from the Philippines probably = *C. helvola*. UCHIDA 1935, p. 43, fig. 2: Japan. UCHIDA 1940a, p. 294: Japan. UCHIDA 1954, pp. 209-19. VANNUCCI 1954, p. 125: *C. helvola* = *callipara* and *chinensis*. NAUMOV 1956b, p. 38.

Chrysaora hysoscella (Linné 1766)

Up to about 200 mm wide; marginal lappets all alike, semicircular, thin; stomach pouches all of equal width, septa straight until very near margin; in each octant three tentacles all alike; exumbrella typically with 16 broad radial brown bands bordered by still darker, narrow V-shaped lines; marginal lappets brown.

LINNÉ 1766, p. 1097: as *Medusa hysoscella* n.sp. PÉRON & LESUEUR 1809, pp. 365, 366: as *Chrysaora cyclonata* etc. ESCHSCHOLTZ 1829, p. 79, Pl. 7, fig. 2: *Chrysaora hysoscella*. HAECKEL 1880, pp. 511, 513, Pl. 31, figs. 1-3: as *C. mediterranea* and *isosceles*. VANHÖFFEN 1906, p. 47, figs. 9, 10a, b: *C. hysoscella* = *mediterranea*. MAYER 1910, p. 579: *C. hysoscella*; (Mediterranean and Atlantic coasts of Europe). HADŽI 1911a, p. 406: as *Chrysaora* sp. HADŽI 1912b, pp. 52-3, figs. 1-4: *Chrysaora*; Adriatic Sea. HADŽI 1912c, pp. 578-89, figs. 1-26: *Chrysaora*; Adriatic Sea. HÉROUARD 1912, pp. xi-xxv, figs. 1-6: *Chrysaora*; Roscoff, France. JORDAN 1912, pp. 134 ff.: *Chrysaora*. LE DANOIS 1913b, p. 14: the Hebrides, Scotland. LE DANOIS 1913c, p. 351: northern Atlantic. LE DANOIS 1913d, p. 287: Bay of Biscay. BROCH 1914, p. 21: as *C. mediterranea*; Algeciras, Spain. HÉROUARD 1914, pp. 810-12: as *C. isosceles*; English Channel. STIASNY 1919b, p. 72: Katwijk, Holland. SCHAEFER 1921, pp. 49-59, figs. 1-2: *Chrysaora*. LEBOUR 1923, p. 73, fig. 1: as *C. isosceles*; food; Plymouth. KRAMP 1924, p. 53, fig. 38: Mediterranean. KRAMP & DAMAS 1925, p. 239: Norway. TEISSIER 1925, pp. 530-2: embryology; Roscoff, France. SCHODDUYN 1926, p. 40: Pas de Calais, English Channel. TEISSIER 1926, pp. 266-73: Roscoff, France. TEISSIER, L. & G. 1926, pp. 412-19, figs. 1-16: Roscoff. WEILL 1926a, p. 259: nematocysts. OKADA 1927b, p. 255, figs. 3-5: embryology. STIASNY 1927, pp. 73-86, Pls. 1-3: colour-variation; Holland. CHUIN 1928, pp. 790-1: as *C. isosceles*; Roscoff, France. CHUIN 1929a, pp. 1005-7, fig. 1: as *C. isosceles*. CHUIN 1929b, pp. 520-2: as *Chrysaora*. CHUIN 1929c, pp. 557-8: as *Chrysaora*. CHUIN 1929d, pp. 531-5, figs. 1-4: as *C. isosceles*. TEISSIER 1929, pp. 137-78, figs. 1-10, tab. I-III: development; Roscoff, France. CHUIN 1930, pp. 1-179, figs. 1-50: as *Chrysaora*; development. STIASNY 1930a, p. 7: *C. hysoscella*; Belgium; English Channel; p. 10: as *C. mediterranea*; Villefranche-sur-Mer, France. MAR. BIOL. ASS. 1931, p. 85: as *C. isosceles*; Plymouth. STIASNY, 1931a, p. 139: *C. hysoscella*; British coasts; as *C. mediterranea*; Naples, Italy. TEISSIER 1932a, p. 160: chemical composition of planula. BERNTROP 1934, p. 2084: North Sea coast of Holland. KRAMP 1934a, pp. 211-21: unusual occurrence in

Denmark. KRAMP 1934b, pp. 234-40: Denmark. WEILL 1934b, p. 541: as *C. isosceles*; nematocysts. LAMBERT 1936, p. 71, Pl. 3: as *C. isosceles*; Essex coast, England. PAPENFUSS 1936, p. 19, figs. 8, 13, 17, 22: nematocysts; Kristineberg, Sweden. KRAMP 1937b, p. 173, figs. 73b, 75: Denmark. STIASNY 1937c, pp. 273 ff.: comparison with *C. plocamia*. RENOUF 1939, p. 523: as *C. isosceles*; Ireland. WOOLLARD & HARPMAN 1939a, pp. 361-2: as *C. isosceles*; nervous system. WOOLLARD & HARPMAN 1939b, pp. 559-62: as *C. isosceles*; nervous system. MAADEN 1942a, pp. 347-62: Holland. VERWEY 1942, p. 410: Holland. FOX & PANTIN 1944, p. 122: pigmentation. RANSON 1945b, p. 316: Stornoway; France. CUTCLIFF 1946, p. 171: as *C. isosceles*; Ilfracombe, England. LELOUP 1947, p. 44: Belgium. BERRILL 1949b, pp. 393-410: development. ANON 1951, p. 805: as *Chrysaora*; British coasts. KÜNNE 1952, pp. 14, 32: S.E. North Sea. SMIDT 1952, p. 95: Danish Waddensea. CHAPMAN 1953a, pp. 161, 170, fig. 3: as *C. mediterranea*; physiology of mesogloea; Whitstable, England. NEWELL 1954, p. 330: as *C. isosceles*; Kent, England. ?VANNUCCI 1954, p. 123, Pl. 6, figs. 1, 2: off coast of Brazil. KRAMP 1955a, p. 296, fig. 14: Liberia and Monrovia, W. Africa. ALVARADO 1956, pp. 219-20: *C. hyoscella* with *Hyperia* (Amphipoda); Rio de Vigo, Atlantic coast of Spain. BASSINDALE & BARRET 1957, p. 247: Wales. VANNUCCI 1957a, pp. 594-6: Brazil. CARTHY 1958, p. 197: responses to stimuli. THIEL 1958b, p. 45.

Chrysaora lactea Eschscholtz 1829

Up to 80 mm wide; clefts in lappets adjacent to the rhopalia fully as deep as those between the remaining lappets; septa between stomach pouches straight until very near margin; usually five, but sometimes seven or nine tentacles per octant, the two secondary tentacles in each octant about half, the two tertiary about 1/4 as long as the median, primary tentacles, the others successively diminishing in length towards both sides; all tentacles issuing from clefts between lappets.

ESCHSCHOLTZ 1829, p. 81, Pl. 7, fig. 3: *Chrysaora lactea* n.sp.; Brazil. HAECKEL 1880, p. 517: as *Dactylometra lactea*. MAYER 1910, p. 583, text-figs. 369-70: as *D. lactea*; Jamaica and Cuba. BIGELOW 1913, p. 91: comparison with *C. pacifica*; measurements of specimens from Cuba. STIASNY 1919b, p. 76: *D. lactea* a valid species. RANSON 1949, p. 141: as *D. lactea*; Cabo de Vela, Colombia. KRAMP 1955a, p. 299: provisionally retained as *C. lactea*. VANNUCCI 1957a, pp. 594-6: Brazil.

Chrysaora melanaster Brandt 1838

Up to 300 mm wide, about 1/3 as high as wide; marginal lappets of almost equal size and shape; septa between stomach pouches straight, rhopalar pouches in middle portion somewhat broader, at margin considerably narrower than the tentacular pouches; 3-5 tentacles per octant; 32 radiating reddish or brown streaks on exumbrella and moreover 16 radiating dark-brown, almost black, streaks on subumbrella below the septa between the stomach pouches.

BRANDT 1838a, p. 385, Pls. 16, 17: *Chrysaora melanaster* n.sp.; Kamchatka. L. AGASIZ 1862, pp. 126, 166: as *Melanaster mertensii* n.g.; California. KISHINOUYE 1892,

p. 261, Pl. 2: as *Dactylometra longicirra* n.sp.; Japan; p. 264, Pl. 3: as *D. ferruginaster* n.sp.; Japan. KISHINOUYE 1899b, p. 44, fig. 1: as *C. gilberti* n.sp.; California. VANHÖFFEN 1906, p. 49, fig. 12: *C. melanaster*. KISHINOUYE 1910, p. 11, Pl. 2, figs. 11-14: as *C. convoluta* n.sp.; Japan. MAYER 1910, p. 581: as *C. convoluta*, = *helvola*; p. 582, text-fig. 367: *C. melanaster*; (from Kamchatka to California); p. 582: as *C. melanaster* var. 'gilberti'; p. 588: as *D. ferruginaster*; p. 589: as *D. longicirra*, probably identical with *ferruginaster*, and both growth-stages of *Kuragea depressa*. ?BIGELOW 1913, p. 90: ?*C. melanaster*, determination uncertain; Aleutian Islands, Alaska; p. 92: as *D. pacifica*; synonyms: *D. quinquecirrha* var. *pacifica* Goette 1886, *ferruginaster* and *longicirra* Kish. 1892, *Kuragea depressa* Kish. 1902; Japan. MAYER 1915a, p. 179, fig. 2: Philippines. MAYER 1917a, p. 200, fig. 8: Philippines. STIASNY 1919b, p. 73: *C. melanaster*; Japan; p. 74: *C. convoluta* probably = *melanaster*; p. 81: as *D. pacifica*. UCHIDA 1927b, p. 229: as *D. pacifica*; Japan. RAO 1931a, p. 31: Bay of Bengal. UCHIDA 1935, p. 44: as *D. pacifica*; Japan. KOIZUMI & HOSOI 1936, pp. 709-19: as *D. pacifica*; Japan. UCHIDA 1938a, p. 148: as *D. pacifica*; Japan. UCHIDA 1938b, p. 44: as *D. pacifica*; Japan. UCHIDA 1938c, p. 57: as *D. pacifica*; Japan. UCHIDA 1940a, p. 294: as *D. pacifica*; Japan. KOMAI 1942, p. 26, figs. 2-4: as *D. pacifica*; physiology; Japan. UCHIDA 1947b, p. 342: as *D. pacifica*; Japan. NAIR 1951, p. 72: Trivandrum coast, India (exumbrella golden yellow with radiating streaks of brown spots, lappets dark brown). CHIU 1954b, p. 56: as *D. pacifica*. UCHIDA 1954, pp. 209-19, fig. 2: as *D. pacifica* and *Kuragea depressa*; Japan. VANNUCCI 1954, p. 125: *C. gilberti* = *melanaster*. UCHIDA 1955a, p. 15: as *D. pacifica*; Loochoo Islands, S. of Japan. HARTMAN & EMERY 1956, p. 307: as *Chrysaora gilberti*; off California, U.S.A. NAUMOV 1956b, p. 38. UCHIDA 1958, p. 164: as *D. pacifica*; Sado, Japan. YAMAZI 1958, p. 139: as *D. pacifica*; Tanabe Bay, Japan.

Chrysaora pacifica (Goette 1886)

Unrecognizable species.

GOETTE 1886, p. 834: as *Dactylometra quinquecirrha* var. *pacifica* nov. var.; northern Pacific. (All later reports of *C. pacifica* belong to *melanaster* Brandt.)

Chrysaora plocamia (Lesson 1830)

Up to 300 mm wide, almost hemispherical; tentacular lappets, two per octant, broadly rounded, rhopalar lappets smaller; tentacles three in each octant; radial stomach pouches of equal width except the distal portion; exumbrella with 16 broad, radial bands of dark, brown colour with numerous light spots.

LESSON 1830, p. 116, Pl. 12, figs. 1, 2: as *Cyanea plocamia* n.sp.; coast of Peru. HAECKEL 1880, p. 516: *Chrysaora plocamia*. ?VANHÖFFEN 1888, p. 16: Punta Arenas, Pacific coast of S. America. MAYER 1910, p. 581: as *C. blossevillii* var. *plocamia*. STIASNY 1937c, pp. 273-84, figs. 1-6: Vanhöffen's record (1888) from Punta Arenas doubtful; Chile. KRAMP 1952, p. 14: Peru (new record). KRAMP 1955a, p. 296: *C. plocamia* a distinct species.

Chrysaora quinquecirrha (Desor 1848)

Up to 250 mm wide; marginal lappets semicircular or tongue-shaped; the lappet-clefts of the primary and secondary tentacles deep, the tertiary mere

shallow notches; stomach pouches all of equal width, septa straight until some distance from margin, where each of them makes an S-like bend before converging towards the rhopalar radius; in each octant three large tentacles and usually two (sometimes four) smaller ones issuing from subumbrella side of the rhopalar lappets; colour very variable, usually rather pale, yellowish or pink, sometimes in radiating stripes.

DESOR 1848, p. 76: as *Pelagia quinquecirrha* n.sp. L. AGASSIZ 1862, pp. 125, 166: as *Dactylometra quinquecirrha*. VANHÖFFEN 1888, p. 15, Pl. 1, fig. 3: as *Chrysaora blossevilliei*; Brazil. MAYER 1910, p. 581: as *C. hysoscella* var. *blossevilliei* in part; p. 585, Pls. 62–64A, text-figs. 371–2: as *D. quinquecirrha*; description; southern New England to Florida; Bermudas. BIGELOW 1913, p. 91: as *D. quinq.*; comparison with *C. pacifica*. BIGELOW 1914b, p. 27: as *D. quinq.*; New England. ?MAYER 1915a, p. 180: as *D. africana*; Philippines; South China. ?MAYER 1917a, p. 201: as *D. africana*. STIASNY 1919b, p. 75, Pl. 2, figs. 3–6, Pl. 3, figs. 7–9, text-figs. a–c: as *D. quinq.*; detailed description; Malayan Archipelago. LIGHT 1921, p. 30: as *D. quinq.*; Philippines. STIASNY 1921d, p. 112, fig. 2: as *D. quinq.*; Semarang, Java. STIASNY 1924b, p. 46: as *D. quinq.*; Philippines. BIGELOW 1926, p. 365: as *D. quinq.*; south of Cape Cod, U.S.A. FISH 1926, pp. 125–6: as *D. quinq.*; Woods Hole. STIASNY 1929c, p. 198: as *D. quinq.*; Malayan Archipelago. COWLES 1930, pp. 331, 369: as *D. quinq.*; Chesapeake Bay, U.S.A. STIASNY 1931a, p. 139: as *D. quinq.*; Lagos, Gulf of Guinea. THIEL 1935a, p. 4, text-fig. 4: as *D. quinq.* PAPENFUSS 1936, p. 14, figs. 7, 11, 16, 20: as *D. quinq.*; p. 17, figs. 12, 21: as *D. quinq.* var. *chesapeaki*; Chesapeake Bay, east coast of U.S.A. LITTLEFORD & TRUITT 1937, p. 426: as *D. quinq.* LITTLEFORD 1939a, pp. 368–81, figs.: as *D. quinq.*; development; Chesapeake Bay, U.S.A. STIASNY 1940a, p. 22: as *D. quinq.*; Gulf of Siam. GRAVELY 1941, p. 12: as *D. quinq.*; Madras, India. NAIR 1946, p. 97: as *D. quinq.*; Travancore, India. PATIL 1951, p. 132: as *Dactylometra*; Karwar coast, India. HEDGPETH 1954, p. 278: as *D. quinq.*; Gulf of Mexico. KRAMP 1955a, p. 297: *Chrysaora quinquecirrha*; Gulf of Guinea, W. Africa; Angola; p. 309: =*D. africana* Vanh. 1902 from W. coast of Africa. SOUTHcott 1956, p. 258: as *D. quinq.*; report on stinging. SEARLE 1957, p. 74: as *D. quinq.* KRAMP 1958b, p. 372: Puri coast, Bay of Bengal. KRAMP 1959b, p. 23: West Africa. SOUTHcott 1959, p. 575, fig. 5: as *D. quinq.*

Chrysaora spp.

KISHINOUYE 1910, p. 13: *Chrysaora* sp.; Saghalin, N. of Japan. MORSE 1910, pp. 544–5: *Dactylometra* sp. STIASNY 1919b, p. 74: *Chrysaora* sp.; Cheribon, Java. BIGELOW 1920, p. 138: *Chrysaora* sp.? arctic American Pacific. STIASNY 1922e, p. 518: *Chrysaora* sp.; Borneo. STIASNY 1930d, p. 32: *Chrysaora* sp.; off mouth of Congo. UCHIDA 1935, p. 43, text-fig. 2: *Chrysaora helvola*; Japan. MAC GINITIE 1955, pp. 42, 93, 104, 121: *Chrysaora* sp.; Point Barrow, Alaska.

Genus *Pelagia* Péron & Lesueur 1809

Pelagiidae with 16 marginal lappets; with eight marginal sense-organs; with eight tentacles alternating with the marginal sense-organs; with 16 radial stomach pouches, all alike, each terminating in a pair of unbranched canals

entering the marginal lappets; exumbrella with numerous nematocyst warts.

Type-species: *P. noctiluca* (Forskål).

PÉRON & LESUEUR 1809, p. 349: *Pelagia* n.g. HAECKEL 1880, p. 504. MAYER 1910, p. 570. BIGELOW 1928, pp. 517-19: probably only one species.

Pelagia noctiluca (Forskål 1775)

Up to about 65 mm wide; nematocyst warts on exumbrella very variable in size and number; colour very variable.

?LINNÉ 1758, p. 660: as *Medusa pelagica* n.sp. FORSKÅL 1775, p. 109: as *M. noctiluca* n.sp. PÉRON & LESUEUR 1809, p. 349: as *Pelagia cyanella* n.g., n.sp., and *P. panopyra* n.sp.; p. 350: *P. noctiluca*. ESCHSCHOLTZ 1829, p. 76, Pl. 6, fig. 3: as *P. flaveola* n.sp.; p. 76, Pl. 7, fig. 1: as *P. discoidea* n.sp. HAECKEL 1880, p. 505: *P. noctiluca*; p. 506: as *P. phosphora* and *perla*; p. 507: as *P. cyanella*; p. 509: as *P. papillata* n.sp. and *panopyra*; p. 510: as *P. placenta* n.sp. VANHÖFFEN 1888, pp. 10, 12, Pl. 1, figs. 1, 2, Pl. 6, figs. 12, 13: as *P. crassa* n.sp. and *P. minuta* n.sp.; tropical Atlantic. KISHINOUYE 1910, p. 9: as *P. panopyra*; Japan. MAYER 1910, p. 572, Pl. 6o, figs. 1-3: *P. noctiluca*; (Mediterranean and warm Atlantic); p. 574, Pl. 6t, fig. 1: as *P. cyanella*; (east coast of America); p. 575: as *P. panopyra*; (tropical Pacific); as *P. panopyra* var. *placenta*; (tropical Pacific) Philippine Islands; p. 576: as *P. flaveola*; (tropical Pacific); as *P. perla*; (North Atlantic); as *P. phosphora*; (Atlantic and Indian oceans); as *P. crassa*; (tropical Atlantic). SCHAXEL 1910a, pp. 407-14, figs. 1-3: *P. noctiluca*; Mediterranean; oogenesis. SCHAXEL 1910b, pp. 167-212, Pls. 10-13, text-figs. A, B: oogenesis; Mediterranean. BIGELOW 1913, p. 88: as *P. panopyra*; N.W. Pacific. LE DANOIS 1913d, p. 286: as *P. perla*; off Bay of Biscay. BIGELOW 1914b, p. 27: as *P. cyanella*; New England, east coast of U.S.A. BROCH 1914, p. 18, map: as *P. perla*; northern Atlantic. STIASNY 1914, p. 529, figs. 1, 2: as *P. purpuroviolacea* n.sp.; p. 531, figs. 3, 4: as *P. rosacea* n.sp.; Adriatic Sea. GROBBEN 1915, p. 4: ?as *P. perla*; Adriatic Sea. MAYER 1915a, p. 178: as *P. panopyra*; Philippines. BROWNE 1916a, pp. 204-6: as *P. panopyra* and *P. sp. B.*; Chagos Archipelago, Indian Ocean; as *P. flaveola* and *P. sp. A.*; N.E. of Madagascar. INT. PLANKT. CATAL. 1916, p. 45: as *P. perla*; English Channel; Ireland. MAYER 1917a, p. 199: as *P. panopyra*; Philippines. STIASNY 1919b, p. 72: *P. noctiluca*; Naples, Italy; as *P. rosacea* and *purpuroviolacea* Stiasny; Adriatic Sea. VANHÖFFEN 1920, p. 17: West Africa. STIASNY 1922f, p. 83, fig. 1: as *P. curaçaoensis* n.sp.; ?= *P. phosphora* Haeckel; West Indies; p. 84: as *P. minuta*, Pernambuco and *P. crassa*; Atlantic between Africa and S. America. HEYMANS & MOORE 1923, pp. 430-2: physiology; Naples. KRAMP 1924, p. 46, map: measures; N.E. Atlantic; Mediterranean. RANSON 1925a, p. 91, map. RANSON 1925b, p. 382. BIGELOW 1926, p. 365: as *P. cyanella*. WEILL 1926a, p. 259: nematocysts. RANSON 1927, figs. 1-3. BIGELOW 1928, pp. 517-19: probably only one species of *Pelagia*; p. 519: *P. noctiluca*; Galapagos Islands to Panama; Bermudas. STIASNY 1929c, p. 197: as *P. panopyra*; Malay Archipelago. MENON 1930, p. 6, Pl. 1, fig. 1: Madras, India. STIASNY 1930a, p. 6: as *P. perla*; Belgium; p. 7: *P. noctiluca*; Villefranche-sur-Mer, Mediterranean. NOBRE 1931, p. 26: Portugal. RAO 1931a, p. 29: Naples, Italy; Indian Seas. STIASNY 1931a, p. 139: as *P. panopyra*; Japan. STIASNY 1931b, p. 31: *P. noctiluca*, = *P. panopyra*; Port Jackson, Australia. DAKIN & COLEFAX 1933, p. 198: as *P. panopyra*; New South Wales, Australia. STIASNY 1934a, p. 386: agrees that only one species exists; South Atlantic. UCHIDA 1934b, pp. 428-30, figs. 1-4: as *P. panopyra*; Japan. WEILL 1934b, p. 540: as *P. perla*; nematocysts. STIASNY 1935, p. 14: *P. noctiluca*;

Malay Archipelago; p. 16, Pl. I, fig. 5: as *P. flaveola*, a valid species. UCHIDA 1935, p. 43, fig. 1: as *P. panopyra*; Japan. LAMBERT 1936, p. 71: as *Pelagia*; Irish coast. FROST 1937, p. 26: Newfoundland. STIASNY 1937a, p. 223, map: Arabian Sea; Zanzibar, E. Africa. BIGELOW 1938, pp. 164, 165: *P. panopyra* probably = *P. noctiluca*; Bermudas. BOONE 1938, p. 45: Canary Islands. RUSSELL 1938c, p. 497: Plymouth. STIASNY 1938, p. 15: Red Sea. UCHIDA 1938c, p. 57, fig. 7: as *P. panopyra*; Japan. BIGELOW 1940, p. 315: Pacific off Costa Rica and Colombia. LEGENDRE 1940, p. 140: Bay of Biscay. STIASNY 1940a, p. 20: Atlantic and Pacific. RIES & RIES 1941, pp. 69-72, figs. 1, 5-8: Naples. KOMAI 1942, p. 26, fig. 1: physiology; Japan. FOX & PANTIN 1944, p. 122: *Pelagia*; pigmentation. RANSON 1945b, p. 315: as *P. noctiluca*; Mediterranean; Atlantic; Madagascar; Indian Ocean; Indochina; Australia; Peru; Pacific; Rio de Janeiro; as *P. noctiluca* var. *perla*; Atlantic; p. 316: as *P. flaveola*; Pacific. RANSON 1945c, p. 47: *P. noctiluca*; Canary Islands; east of Balearics, Mediterranean; p. 48: as *P. noctiluca* var. *perla*; Canary Islands; the Azores; Bay of Biscay; Sargasso Sea. SKRAMLIK 1945, pp. 296-336: Naples. KRAMP 1947, p. 48: northern Atlantic. LELOUP 1947, p. 44: as *P. perla*; Belgium. UCHIDA 1947a, p. 317: as *Pelagia* sp.; South Pacific. UCHIDA 1947b, p. 342: as *P. panopyra*; Japan. KRAMP 1948a, p. 12: Cape Verde Islands; W. of Spain. KRAMP 1948b, p. 22: northern Atlantic. FRASER 1948, p. 43: as *P. perla*; N.E. of Scotland. BERRILL 1949b, pp. 393-409: development. MOORE 1949, p. 11: Bermudas. RANSON 1949, p. 138: as *P. noctiluca*; off Brazil; as *P. noctiluca* var. *perla*; coast of Guinea, W. Africa. FRASER 1950, p. 93: as *P. perla*; northern North Sea. ANON 1951, p. 805: as *Pelagia*; British coasts. FRANC 1951, p. 28: ephyra-stage; French coast of the Channel. NAIR 1951, p. 72: Trivandrum coast, India. COLE 1952, p. 587: as *P. perla*; invasion in Manx water, Irish Sea, in 1899. HUNT 1952, p. 934: as *Pelagia*; estuary of River Yealm, South Devon, England. GEORGE 1953, p. 82: Calicut, southern India. FOX & MILLOT 1954, pp. 392-408, figs. 1-11: as *P. noctiluca* var. *panopyra*; pigmentation; California. FRASER 1954b, p. 100: as *P. perla*; Scotland. LUBET 1954, p. 214: Arcachon, Bay of Biscay. MILLOT & FOX 1954, p. 169: pigmentation; California. UCHIDA 1954, pp. 209-19: Japan. FRASER 1955, pp. 4, 7, 12: British Isles. KRAMP 1955a, p. 294: from Guinea to Angola, West Africa; p. 308: = *P. phosphora* Haeckel from Canary and Cape Verde Islands. KRAMP 1955b, pp. 163, 164: by Haeckel 1880 determined as *P. perla*, *phosphora* and *cyanella*. UCHIDA 1955a, p. 15: as *P. panopyra*; Formosa and Okinawa. FRASER 1956, p. 26: east of the Faroes; p. 53: west of Scotland. HARTMAN & EMERY 1956, p. 307: as *P. cyanella*; California. KRAMP 1956a, p. 240: Iranian Gulf. BOUILLON & VANDERMEERSSCHE 1957, pp. 9-25, figs. 2, 6: histology of mesogloea. VANNUCCI 1957a, pp. 594-6: as *P. cyanella* and *phosphora*; Brazil. UCHIDA 1958, p. 164: as *P. panopyra*; Sado, Japan. ROSSI 1958, p. 4: Ligurian Sea, Mediterranean. THIEL 1958b, p. 40: discussion on alternation of generations. YAMAZI 1958, p. 139: as *P. panopyra*; Tanabe Bay, Japan. CHAPMAN 1959, pp. 599-610, figs. 1-7: mesogloea. HORRIDGE 1959, p. 89. KRAMP 1959b, p. 22: West Africa.

Genus *Sanderia* Goette 1886

Pelagiidae with 32 cleft marginal lappets; with 16 marginal sense-organs; with 16 tentacles alternating with the marginal sense-organs; with 32 radial stomach pouches all alike; exumbrella with numerous nematocyst warts.

Type-species: *S. malayensis* Goette.

GOETTE 1886, p. 835: *Sanderia* n.g. KISHINOUYE 1910, p. 14: as *Neopelagia* n.g. MAYER 1910, p. 590.

Sanderia malayensis Goette 1886

About 90 mm wide; large nematocyst warts on central portion of exumbrella; the four interradial, heart-shaped, genital ostia each bordered externally by about 24–30 finger-shaped papillae.

GOETTE 1886, p. 835: *Sanderia malayensis* n.g., n.sp.; Singapore, Malaya. KISHINOUYE 1910, p. 14, Pl. 3, fig. 15: as *Neopelagia eximia* n.g., n.sp.; Japan. MAYER 1910, p. 590, text-fig. 375: =*N. eximia*; (Indian Ocean; East Africa); Philippines. BIGELOW 1913, p. 90: Japan. MAYER 1915a, p. 180: Philippines. MAYER 1917a, p. 202, fig. 9: Philippines. STIASNY 1919b, p. 86: *S. malayensis*?; Malayan Archipelago. BROWNE 1926, p. 110: Suez Canal. STIASNY 1935, p. 18: Malayan Archipelago. UCHIDA 1935, p. 45: Japan. STIASNY 1937a, p. 225, Pl. 1, figs. 1–3, tex-tfig. 10: Arabian Sea. STIASNY 1937b, p. 206: Malayan Archipelago. UCHIDA 1938a, p. 148: Japan. RANSON 1945b, p. 316: Bay of Suez. CHIU 1954b, p. 56. UCHIDA 1954, pp. 209–19: Japan. KRAMP 1956b, p. 240: Iranian Gulf. SEARLE 1957, p. 73. YAMAZI 1958, p. 139: Tanabe Bay, Japan.

Family CYANEIDAE

Semaeostomeae in which the central stomach gives rise to radiating pouches which in turn give rise to numerous branching, blind canals in the marginal lappets; without a ring-canal; with gonads in complexly folded, interradial eversions of the wall of the subumbrella; with tentacles arising from the subumbrella at some distance from the margin.

Genus *Cyanea* Péron & Lesueur 1809

Cyaneidae with eight rhopalia; with eight adradial clusters of tentacles, each cluster contains several rows of tentacles; both radial and circular muscles in the subumbrella.

Type-species: *C. capillata* (Linné).

PÉRON & LESUEUR 1809, p. 363: *Cyanea* n.g. ESCHSCHOLTZ 1829, p. 67. HAECKEL 1880, pp. 524–8: as *Procyanea*, *Medora*, *Stenoptycha*, *Desmonema* (in part) and *Cyanea*. MAYER 1910, p. 595. STIASNY & MAADEN 1943, pp. 236–66, figs. 1–14: revision of species and varieties. THIEL 1958b, pp. 37–54: discussion on alternation of generations.

Cyanea annasethe (Haeckel 1880)

Young medusa; doubtful species.

HAECKEL 1880, p. 526, Pl. 30, figs. 1–4: as *Desmonema annasethe* n.sp.; S.W. Africa. MAYER 1910, p. 601: young medusa, ?synonym of *C. annaskala*. STIASNY & MAADEN 1943, p. 242: doubtful species.

Cyanea buitendijki STIASNY 1919

Up to 310 mm wide; rhopalar and tentacular stomach pouches connected by several broad, transverse anastomoses; peripheral canals without anastomoses; radial muscles entirely outside the periphery of the circular muscle band; horse-shoe-shaped insertions of tentacle groups 2-3 times as long as broad.

STIASNY 1919b, p. 87, Pl. 3, fig. 10: as *C. capillata* var. *buitendijki* nov. var.; Malay Archipelago. STIASNY & MAADEN 1943, p. 254: a valid species *C. buitendijki*.

Cyanea capillata (Linné 1758)

Diameter up to 1000 mm; rhopalar and tentacular stomach pouches completely separated; peripheral canals more or less curved; without or with very few anastomoses; colour reddish-brown or yellowish.

LINNÉ 1758, p. 660: as *Medusa capillata* n.sp. PÉRON & LESUEUR 1809, p. 363: as *Cyanea arctica* n.g., n.sp. ESCHSCHOLTZ 1829, p. 68: *C. capillata*. L. AGASSIZ 1862, pp. 119, 162: as *C. versicolor* n.sp., and *C. arctica*. VON LENDENFELD 1882a, p. 465, Pls. 27-33: as *C. annaskala* n.sp.; Australia. HARGITT & HARGITT 1910, p. 231, figs. 11-24: as *C. arctica*; Woods Hole, east coast of U.S.A. MAYER 1910, p. 596, Pl. 65, figs. 3, 4, text-figs. 380, 382: *C. capillata*; arctic, antarctic and temperate regions of all oceans; synonyms: *C. arctica* and *lamarcii* Pérón & Lesueur, *ferruginea* Eschscholtz and *postelsii* Brandt; p. 600, Pl. 66, figs. 1-7, Pl. 67, figs. 1-3: as *C. capillata* var. *fulva*; east coast of U.S.A.; p. 600, Pl. 65, figs. 1, 2: as *C. capillata* var. *versicolor*; east coast of U.S.A.; p. 601: as *C. annaskala*; (Australia). MORSE 1910, pp. 544, 545: as *C. arctica*; east coast of U.S.A. WIDMARK 1911, p. 381, fig. 3. JORDAN 1912, p. 131. BIGELOW 1913, p. 93, Pl. 4, figs. 8, 9: as *C. capillata* var. *capillata*; N.W. Pacific. KRAMP 1913a, p. 283: as *C. arctica*; W. Greenland. LE DANOIS 1913b, p. 15: *C. capillata* from Faroes and as *C. arctica* from N. of Iceland. LE DANOIS 1913c, p. 351: *C. capillata* and *arctica*; northern Atlantic. LE DANOIS 1913d, p. 287: as *C. arctica*; Iceland. ROBSON 1913b, pp. 34, 35, Pls. 5-7: abnormal ephyra. BIGELOW 1914b, p. 28: New England, east coast of U.S.A. KRAMP 1914, p. 445: as *C. arctica*; W. and E. Greenland. MAYER 1914a, pp. 5, 6, 22: as *C. arctica*; Tortugas, Florida. BIGELOW 1915b, pp. 316, 318: between Nova Scotia and Chesapeake Bay, U.S.A. KRAMP 1915, p. 20: Denmark. BIGELOW 1917, p. 303: Gulf of Maine, U.S.A. STIASNY 1919b, p. 90: *C. capillata* var. *capillata*; Holland; Bergen, Norway. BIGELOW 1920, p. 13: *C. capillata* var. *capillata*; p. 17: as *Cyanea* sp.?; Hudson Bay. GRIEG 1921, p. 81: Spitzbergen. PÉREZ 1921b, pp. 168-78: Pas de Calais, English Channel. SCHAEFER 1921, pp. 49-59: as *Cyanea*; physiology. ELMHIRST 1923, p. 22: Clyde Sea, Scotland. KRAMP & DAMAS 1925, p. 239: Norway. BIGELOW 1926, p. 357: as *C. cap.* var. *arctica*; Gulf of Maine, U.S.A. FISH 1926, pp. 125, 127: Woods Hole, U.S.A. MCINTOSH 1926, p. 257: Scotland. SCHODDUYN 1926, p. 40: Pas de Calais, English Channel. OKADA 1927b, p. 254, fig. 2: ontogeny. SCHODDUYN 1927, p. 26. UCHIDA 1927b, p. 230, fig. 5: Mutsu Bay, Japan. WU 1927, pp. 1-5: China. STIASNY 1930a, p. 10, Pl. 1, figs. 1-7: Belgium; Norway. MAR. BIOL. ASS. 1931, p. 85: Plymouth. NEPP 1931, pp. 143-9, figs. 1-4: Spitzbergen. STIASNY 1931a, p. 140: British coasts. STIASNY 1931b, p. 31, fig.: as *C. capillata* var. *annaskala*; Australia. TU 1931, p. 87: as *Cyanea*; China. ARNDT 1932, pp. 160, 333: Nordostseekanal, northern Germany. BATEMAN 1932, pp. 124-7: osmotic properties of *Cyanea*. RUNNSTRÖM 1932, p. 32:

Norway. BATEMAN 1933, p. 451: as *Cyanea*; water content. KRAMP 1933b, p. 16: Anmagssalik, S.E. Greenland. BERNTROP 1934, p. 2084: North Sea coast, Holland. HORSTMANN 1934a, pp. 406–20, figs. 1–5: physiology of swimming. HORSTMANN 1934b, pp. 421–31, figs. 1–6: physiology. WEILL 1934b, p. 535: nematocysts. KÜNNE 1935, p. 66: Baltic Sea. THIEL 1935a, p. 3, fig. 2: poisonous effect. KOIZUMI & HOSOI 1936, pp. 710–17: content of inorganic components; Japan. LAMBERT 1936, p. 72, Pl. 3: Essex coast, S. England. LÖNNBERG 1936, pp. 195, 196: Kristineberg, W. coast of Sweden. PAPENFUSS 1936, p. 5, figs. 1, 5, 9, 14, 18: Kristineberg, W. coast of Sweden. KRAMP 1937b, p. 176, figs. 76, 78, 79: Denmark. FRASER 1938, p. 92: as *Cyanea* sp.; Queen Charlotte Islands, Pacific coast of Canada. STIASNY 1938, p. 15, Pl. 1, figs. 1, 2: as *Cyanea* sp.; Red Sea. UCHIDA 1938b, p. 45: Mutsu Bay, Japan. KRAMP 1939a, p. 21: Iceland. UCHIDA 1940a, p. 294: Japan. KRAMP 1942, p. 128, figs. 34–6: comparison with *C. arctica*; W. Greenland. MAADEN 1942a, pp. 349–51, 354–6, 358: as *C. capillata* incl. *lamarckii*; Holland. MAADEN 1942b, pp. 63–70: *C. capillata*, incl. *lamarckii*; Holland. VERWEY 1942, p. 389: Holland. KRAMP 1943, p. 12: E. Greenland. STIASNY & MAADEN 1943, pp. 242, 244, 250: *C. capillata*; synonyms: *C. annaskala*, *arctica*, *lamarckii* and *palmstruchii*; p. 252: *C. versicolor* a colour-variety of *C. capillata*. FOX & PANTIN 1944, p. 121: as *Cyanea* sp.; p. 122: *C. capillata*; pigment. RANSON 1945b, p. 316: N.W. Europe; Novaja Zemlya; Nova Scotia. RANSON 1945c, p. 52, Pl. 1, fig. 7: as *C. arctica*, considered a valid species; Nova Scotia, Canada; p. 53, Pl. 1, fig. 8: *C. capillata*; Norway. USSING 1945, pp. 46–8, fig. 1: Mariagerfjord, Denmark. KRAMP 1947, p. 49: N.E. Atlantic. LELOUP 1947, p. 43: Belgium. MANKOWSKI 1948, p. 110: Gulf of Gdansk, Baltic. YASHNOV 1948, p. 76, Pl. 22, fig. 4: as *Cyanea*; Barents Sea; White Sea. BERRILL 1949a, pp. 283–92, figs. 1–3: Atlantic N. of Cape Cod. BERRILL 1949b, pp. 393–410. FRASER 1949b, p. 66: northern North Sea. POPE 1949, pp. 14–16, two text-figs.: as *C. annaskala*; Sydney. KÄNDLER 1950, p. 68: ephyrae of *Cyanea*; Fehmarnbelt, Baltic. NAIR 1951, p. 73: as *C. annaskala*; Trivandrum coast, India. DEEVEY 1952a, p. 65: as *Cyanea*; Block Island Sound, Connecticut, U.S.A. FRASER 1952b, p. 104: as *Cyanea*; northern North Sea. YASHNOV 1952, p. 96: off Kamchatka. KÜNNE 1952, pp. 7, 13, 32, 41: S.E. North Sea. SMIDT 1952, p. 95: Danish Waddensea. POPE 1953a, pp. 16–21: as *C. annaskala*; Australia. POPE 1953b, p. III: Australia. REES 1953a, p. 8: Herdla fjord, Norway. SEGERSTRÅLE 1953, p. 6: inner Baltic. CHIU 1954b, p. 56. HEDGPETH 1954, p. 278: as *C. capillata* var. *versicolor*; Gulf of Mexico. NEWELL 1954, p. 330: Kent, England. SOUTHWARD 1954, p. 20: Irish Sea. UCHIDA 1954, pp. 209–19, fig. 2, map: Japan. KRAMP 1955b, p. 164: by Haekel 1880 determined as *Stenopptycha dactylometra* and *C. arctica*. MAC GINITIE 1955, pp. 42, 93–5, 101, 102, 107, 120: breeding season; Point Barrow, Alaska. NAUMOV 1955c, pp. 102–4, fig. 2: reproduction. FRASER 1956, p. 27: as *Cyanea*; between Iceland and Faroes. HARTMAN & EMERY 1956, p. 307: California. HORRIDGE 1956b, pp. 366–83, figs. 1–8: innervation; Millport, Scotland. NAUMOV 1956b, p. 38. BASSINDALE & BARRET 1957, p. 248: Dale Fort, Wales. KAUFMAN 1957, pp. 1317–19, fig. 1: regeneration in scyphistoma. CARTHY 1958, pp. 197, 293: responses to stimuli. PLESSIS 1958, pp. 379–85: French coast of English Channel. THIEL 1958b, p. 37. DAHL 1959, pp. 1–8: as host of *Hyperia galba*; Norway. FRASER 1959, pp. 30, 66: southern Iceland; Scotland. GRAINGER 1959, pp. 473, 496, Iglooik, arctic Canada. HORRIDGE 1959, pp. 78–85, figs. 5, 7, 8 (diagrams). KRAMP 1959b, p. 24: West Africa; Nova Scotia.

Cyanea citrea Kishinouye 1910

Doubtful species.

KISHINOUYE 1910, p. 16, Pl. 4, figs. 16, 17: *Cyanea citrea* n.sp.; Japan. MAYER 1910, p. 597: synonym of *C. capillata*. STIASNY & MAADEN 1943, p. 246, fig. 10: doubtful species.

Cyanea ferruginea Eschscholtz 1829

Up to 400 mm wide; rhopalar and tentacular stomach pouches completely separated; peripheral canals straight, without anastomoses; colour brownish or yellowish.

ESCHSCHOLTZ 1829, p. 70, Pl. 5, fig. 1a, b: *Cyanea ferruginea* n.sp.; northern Pacific. MAYER 1910, p. 596: synonym of *C. capillata*. STIASNY 1919b, p. 88: as *C. capillata* var. *ferruginea*. STIASNY & MAADEN 1943, p. 247: is provisionally retained, only represented by Eschscholtz's original specimen. CHIU 1954b, p. 56.

Cyanea fulva L. Agassiz 1862

Doubtful species.

L. AGASSIZ 1862, pp. 119, 162: *Cyanea fulva* n.sp. MAYER 1910, p. 600, Pl. 66, figs. 1-7, Pl. 67, figs. 1-3: as *C. capillata* var. *fulva*; (east coast of U.S.A. from Cape Cod to Carolina). BIGELOW 1928, p. 520: *C. capillata* var. *fulva*; off New York. STIASNY & MAADEN 1943, p. 249: doubtful species.

Cyanea lamarcki Périon & Lesueur 1809

Similar to *C. capillata*, but colour blue; up to 300 mm wide.

PÉRON & LESUEUR 1809, p. 363: *Cyanea lamarcki* n.sp. MAYER 1910, p. 596: synonym of *C. capillata*; (N.W. Europe). LE DANOIS 1913d, p. 287: Bay of Biscay. STIASNY 1919b, p. 90: as *C. capillata* var. *lamarcki*; Holland. KRAMP & DAMAS 1925, p. 239: Norway. SCHODDUYN 1926, p. 40: Pas de Calais, English Channel. WEILL 1926a, p. 259: nematocysts. SCHODDUYN 1927, p. 27. MAR. BIOL. ASS. 1931, p. 85: Plymouth. RUSSELL 1931a, pp. 573-6: Plymouth. STIASNY 1931a, p. 140: British coasts. WEILL 1934b, p. 538: nematocysts. LAMBERT 1936, p. 73. LÖNNBERG 1936, pp. 193-5: Kristineberg, W. coast of Sweden. PAPENFUSS 1936, p. 10, figs. 6, 10, 15, 19: as *C. palmstruchii*; Kristineberg, W. coast of Sweden. KRAMP 1937a, pp. 163-73, fig. 1: Kattegat, Denmark. KRAMP 1937b, p. 183: Denmark. KRAMP 1939a, p. 21: Iceland. WOOLLARD & HARPMAN 1939a, pp. 361-2: nervous system. WOOLLARD & HARPMAN 1939b, pp. 559-62: nervous system. STIASNY 1940c, pp. 295-301, fig. 1: as *C. palmstruchii*; Skagerak. MAADEN 1942a, pp. 349-51, 354-6, 358: as *C. capillata* var. *lamarcki*; Holland. MAADEN 1942b, pp. 63-70: ?= *C. capillata*; Holland. VERWEY 1942, p. 378: Holland. STIASNY & MAADEN 1943, p. 244: = *C. capillata*. RANSON 1945b, p. 317: as *C. capillata* var. *lamarcki*; Iceland; Copenhagen, Denmark. KÜNNE 1952, pp. 7, 13, 32, 41: S.E. North Sea. CHAPMAN 1953a, pp. 161, 169, fig. 2: physiology of mesogloea; Whitstable, England. LUBET 1954, p. 214: Arcachon, Bay of Biscay.

Cyanea mijöbergi Stiasny 1921

Up to 140 mm wide; rhopalar and tentacular stomach pouches connected by several broad, transverse anastomoses; peripheral canals without anasto-

moses; radial muscles reaching half-way into the circular muscle band; horse-shoe-shaped insertion of tentacle groups almost as broad as long.

STIASNY 1921c, p. 3, fig.: as *C. capillata* var. *mjöbergi* nov. var.; W. Australia.
STIASNY & MAADEN 1943, p. 256: a valid species, *C. mjöbergi*.

Cyanea muellerianthe Haacke 1887

Doubtful species.

HAACKE 1887, p. 605, Pl. 36, figs. 1-4: *Cyanea muellerianthe* n.sp.; Australia. MAYER 1910, p. 601: synonym of *C. annaskala*. STIASNY 1922e, p. 521: *C. muellerianthe*; S.E. Australia. STIASNY & MAADEN 1943, p. 250: doubtful species. SOUTHcott 1958, p. 56, fig. 2d: South Australia.

Cyanea nozakii Kishinouye 1891

Up to 260 mm wide; rhopalar and tentacular stomach pouches connected by several broad, transverse anastomoses; peripheral canals with numerous anastomoses, forming a dense network; colour milky white.

KISHINOUYE 1891, three pp., one Pl.: *Cyanea nozakii* n.sp.; Japan. MAYER 1910, p. 601: as *C. capillata* var. *nozakii*. BIGELOW 1913, p. 93, Pl. 4, figs. 5-7: as *C. capillata* var. *nozakii*; N.W. Pacific. STIASNY 1919b, p. 89: as *C. capillata* var. *nozakii*. RAO 1931a, p. 32, figs. 1-3: as *C. capillata* var. *nozakii*; Mergui Archipelago, Indian Ocean. STIASNY & MAADEN 1943, p. 257: *C. nozakii* a valid species. RANSON 1945b, p. 317: Indochina. UCHIDA 1954, pp. 209-19, fig. 2, map: Japan. YAMAZI 1958, p. 139: Tanabe Bay, Japan.

Cyanea postelsi Brandt 1838

Doubtful species.

BRANDT 1838a, p. 375, Pls. 12, 13, 13a: *Cyanea postelsii* n.sp.; Aleutian Islands, North Pacific. MAYER 1910, p. 597: a variety of *C. capillata*. STIASNY & MAADEN 1943, p. 251: doubtful species.

Cyanea purpurea Kishinouye 1910

Up to 300 mm wide; rhopalar and tentacular stomach pouches completely separated; peripheral canals with numerous anastomoses; colour violet with reddish mouth-arms.

KISHINOUYE 1910, p. 18, Pl. 4, figs. 18, 19: *Cyanea purpurea* n.sp.; Saghalin, N. of Japan. MAYER 1910, p. 601: ?= *C. annaskala*. STIASNY & MAADEN 1943, p. 251, fig. 11: a valid species. NAIR 1946, p. 97: Travancore coast, India. UCHIDA 1954, pp. 209-19: Japan.

Cyanea rosea Quoy & Gaimard 1824

Doubtful species.

QUOY & GAIMARD 1824, p. 570, Pl. 85, figs. 1, 2: *Cyanea rosea* n.sp.; Great Barrier Reef, Australia. MAYER 1910, p. 601: ?=young medusa of *C. annaskala*. STIASNY & MAADEN 1943, p. 252: doubtful species.

Genus *Desmonema* L. Agassiz 1862

Cyaneidae with eight rhopalia and with eight adradial clusters of tentacles; no radial muscle strands in the subumbrella.

Type-species: *D. gaudichaudi* L. Agassiz.
L. AGASSIZ 1862, p. 166: *Desmonema* n.g. MAYER 1910, p. 591.

Desmonema chierchianum Vanhöffen 1888

About 300 mm wide; numerous narrow canals in the lappets, branching towards both sides; with long and thin tentacles in several rows in each cluster.

VANHÖFFEN 1888, p. 18, Pl. 1, fig. 4: *Desmonema chierchiana* n.sp.; Antarctic. BROWNE 1910, pp. 48 ff., Pl. 5, fig. 2: non = *D. gaudichaudi*. MAYER 1910, p. 593, text-figs. 377–9. STIASNY 1934a, p. 390, fig. 11: W. of Falkland Islands. STIASNY & MAADEN 1943, pp. 260–4: revision; survey of distribution: Puntas Arenas; Falkland Islands; between Falkland Islands and Patagonia. KRAMP 1957c, p. 3: Heard Island and Campbell Island, subantarctic.

Desmonema gaudichaudi (Lesson 1830)

500–600 mm wide; with only 5–7 tentacles in a single line in each cluster; few broad canals in the lappets, the lateral ones unilaterally branched.

LESSON 1830, p. 114, Pl. 13, fig. 1: as *Chrysaora gaudichaudii* n.sp.; Antarctic. L. AGASSIZ 1862, p. 166: *Desmonema gaudichaudi* n.g. BROWNE 1910, p. 49, Pl. 5, fig. 1: different from *D. chierchiana*; Cape Adare, Antarctic. MAYER 1910, p. 593, text-fig. 376. STIASNY 1931a, p. 139: Cape Adare, Antarctic. STIASNY 1934a, p. 389, fig. 10: South Georgia. STIASNY & MAADEN 1943, pp. 260–4: revision; survey of distribution: Cape Adare; Falkland Islands; South Georgia. KRAMP 1957c, p. 3: distinct from *D. chierchiana*.

Genus *Drymonema* Haeckel 1880

Cyaneidae with eight rhopalia; tentacles not grouped in isolated clusters, but arising from a wide zone in the subumbrella.

Type-species: *D. dalmatinum* Haeckel.
HAECKEL 1880, p. 633: *Drymonema* n.g. MAYER 1910, p. 603.

Drymonema dalmatinum Haeckel 1880

500–1000 mm wide; numerous (144) radial furrows on exumbrella, and between them same number of marginal lappets; the 16 stomach pouches terminate in 164–176 dichotomous ramuli: 8 × 2 rhopalar and 144–160 velar terminal canals; mouth-arms about half as long as diameter of umbrella; the numerous tentacles arise from the middle zone of the subumbrella; eight sense-organs in deep niches.

HAECKEL 1880, p. 642: *Drymonema dalmatina* n.g., n.sp.: Dalmatian coast of Adriatic Sea. HAECKEL 1881, p. 125, Pls. 30, 31: as *D. victoria* n.sp.; Straits of Gibraltar. MAYER 1910, p. 603, text-figs. 383, 384: (Mediterranean). STIASNY 1931a, p. 140: as *D. victoria*; Adriatic Sea. KOLOSVÁRY 1937, pp. 1-3, fig.: Adriatic Sea. STIASNY 1940b, pp. 14-18, fig. 1: Adriatic Sea. STIASNY 1940d, pp. 437-62, Pl. 4, text-figs. 1-8: description; Adriatic Sea. KOLOSVÁRY 1945, p. 140: Rovigno, Adriatic Sea. KRAMP 1959b, p. 25: Angola, West Africa.

Drymonema gorgo F. Müller 1883

About 300 mm wide; the 16 stomach pouches terminate in 176 dichotomous ramuli: 8×2 rhopalar and 8×20 velar terminal canals; mouth-arms longer than diameter of umbrella.

F. MÜLLER 1883, p. 220: *Drymonema gorgo* n.sp.; coast of Brazil. MAYER 1910, p. 604: a variety of *D. dalmatina*? STIASNY 1940d, pp. 439, 459. VANNUCCI 1957a, pp. 594-6.

Family ULMARIDAE

Semaeostomeae with simple or branched radial canals and a ring-canal; with or without subgenital pits.

Subfamily AURELIINAE

Ulmaridae in which the tentacles and lappets arise from the sides of the exumbrella above the margin; invaginated gonads with external subgenital pits.

Genus *Aurelia* Péron & Lesueur 1809

Aureliinae with four unbranched mouth-arms; bell margin divided into eight or 16 broad velar lobes; some or all radial canals give rise to anastomosing branches.

Type-species: *A. aurita* (Linné).

PÉRON & LESUEUR 1809, p. 357: *Aurellia* n.g. LAMARCK 1816, p. 513: *Aurelia*. MAYER 1910, p. 619: *Aurellia*. REES 1957a, pp. 26-8: proposed validation of the generic name *Aurelia*. (Now validated.) THIEL 1958b, pp. 37-54: discussion on alternation of generations.

Aurelia aurita (Linné 1758)

Up to about 400 mm wide, with eight broad, simple marginal lappets; mouth-arms as long as radius of disk, thick, stiff, with densely crenulated margins and numerous small tentacles; rhopalar and adradial canals un-

branched, the other canals branched, slender, anastomoses more numerous in American than in European specimens; sense-organs in shallow clefts; tentacles small; colour variable.

LINNÉ 1758, p. 660: as *Medusa aurita* n.sp. PÉRON & LESUEUR 1809, p. 359: as *Aurellia flavidula*. LAMARCK 1816, p. 513: *Aurelia aurita*. HARGITT & HARGITT 1910, p. 237, figs. 25-48: as *Aurelia flavidula*; Woods Hole, east coast of U.S.A. MAYER 1910, p. 623, Pl. 67, fig. 4, Pl. 68, figs. 1-4, text-fig. 397: *Aurellia aurita*; list of synonyms; northern Atlantic; p. 627: as *Aurellia aurita forma 'marginalis'*; (east coast of U.S.A.); p. 627: as '*Aurellia dubia*' Vanhoffen; (Gulf of Iran). MCINTOSH 1910, pp. 125-43, figs. 1-4: Clyde, Scotland. MORSE 1910, pp. 544, 545: as *A. flavidula*; physiology. MCINTOSH 1911, pp. 25-9: Clyde, Scotland. WIDMARK 1911, p. 378, figs. 1, 2: as *Aurellia aurita*. BIGELOW 1913, p. 99: N.W. Pacific. LE DANOIS 1913d, p. 288: Bay of Biscay; Faroes; Iceland. VANHÖFFEN 1913a, p. 429: West Indies. WIDMARK 1913, pp. 33-48, figs. 1-4: Kristineberg, west coast of Sweden. BIGELOW 1914b, p. 28: New England. MAYER 1914a, pp. 4-6, 16-18, 22: *Aurellia aurita*; Florida. BIGELOW 1915b, p. 316: *Aurellia aurita*; Gulf of Maine, east coast of U.S.A. KRAMP 1915, p. 20: Denmark. MAYER 1915a, p. 182: *Aurellia aurita*; Philippines. INT. PLANKT. CATAL. 1916, p. 45: English Channel; Baltic Sea. BIGELOW 1917, p. 303: Gulf of Maine, U.S.A. MAYER 1917a, p. 204: *Aurellia aurita*; Philippines. NEPPI 1919, p. 124: abnormal specimen; Naples, Italy. STIASNY 1919b, p. 95: Holland; as *A. flavidula*; Venezuela. GEMMILL 1921b, p. 222, figs. 1, 2: food-capture and ciliation in ephyrae. GRIEG 1921, p. 81: does not occur at Spitzbergen. LOW 1921, pp. 226-35, figs. 1-13: Cullercoats, England. ORTON 1922, pp. 178, 179: mode of feeding. STIASNY 1922e, p. 522: *Aurelia* sp.; Philippines. STIASNY 1922 ff., p. 83: Curaçao, West Indies. ELMHIRST 1923, p. 22: Clyde Sea, Scotland. LABOUR 1923, p. 71: Plymouth. PERCIVAL 1923, pp. 85-100, Pl. 6, text-figs. 1-3: *Aurelia*; strobilization. DE BEER & HUXLEY 1924, p. 471: dedifferentiation in *Aurelia*. KRAMP & DAMAS 1925, p. 239: Norway. WIKSTRÖM 1925a, pp. 209, 210, 228: Baltic Sea. WIKSTRÖM 1925b, pp. 244-6: Baltic Sea. BIGELOW 1926, p. 362: Gulf of Maine, U.S.A. FISH 1926, pp. 125, 126: as *A. flavidula*; Woods Hole, east coast of U.S.A. MCINTOSH 1926, p. 256: Scotland. SCHODDUYN 1926, p. 40: Pas de Calais, English Channel. STIASNY 1926a, p. 244: Philippines. WETOCHIN 1926, pp. 107-20, figs. 1-3: physiology. OKADA 1927b, p. 259, fig. 6: histology. USSING 1927, pp. 91-106, figs. 1-6: Mariagerfjord, Denmark. UCHIDA 1928a, p. 375: Japan. STIASNY 1930a, p. 22, Pl. 2, figs. 8, 9: Belgium. MAR. BIOL. ASS. 1931, p. 85: *Aurellia aurita*; Plymouth. RAO 1931a, p. 36: Andaman Islands, Indian Ocean. STIASNY 1931a, p. 140: British coasts. TU 1931, p. 87: Gulf of Korea. ARNDT 1932, pp. 160, 333: Nordostseekanal, northern Germany. RUNNSTRÖM 1932, p. 31: Norway. WIKSTRÖM 1932, p. 14: Baltic. BATEMAN 1933, p. 451: *Aurelia*; water content. BENAZZI 1933, p. 212. BOGUCKI 1933, pp. 117-19: Baltic. DEMEL 1933, p. 123: Baltic. HALISCH 1933, pp. 296-304, figs. 1-10: scyphistoma. HUMMELINCK 1933, pp. 453, 454: Bonaire, West Indies. BERNTRUP 1934, p. 2084: Holland. HORSTMANN 1934a, pp. 406-20: physiology. HORSTMANN 1934b, pp. 421-31: physiology. STEINER 1934, pp. 102-5, five text-figs.: physiology. WEILL 1934b, p. 543: nematocysts. KÜNNE 1935, p. 66: Baltic. STEINER 1935, pp. 176-81, five figs.: physiology. THIEL 1935a, p. 3, fig. 1: poisonous effect. KOIZUMI & HOSOI 1936, pp. 709-19: as *A. flavidula*; inorganic decomposition. LAMBERT 1936, p. 71, Pls. 3, 4: Essex coast, S. England. LÖNNBERG 1936, pp. 196, 197: Kristineberg, west coast of Sweden. GILCHRIST 1937, p. 143: *Aurelia*; scyphistoma. KRAMP 1937b, p. 184, figs. 77, 80-2: Denmark. THILL 1937, pp.

51-96. BIGELOW 1938, p. 168: *Aurellia aurita*; Bermudas. FRASER 1938, p. 92: as *Aurelia* sp.; Queen Charlotte Islands, Canada. UCHIDA 1938a, p. 148: Japan. BUHK 1939, pp. 433-5, figs. 1-6. KRAMP 1939a, p. 22: Iceland. MAADEN 1939, p. 29, one text-fig.: sense-organs. NETCHAEFF & NEU 1940, p. 61: Bosphorus; Bulgarian coast. STIASNY 1940a, p. 22: the Azores; tropical Indo-Pacific. KOMAI 1942, p. 28: physiology; Japan. KRAMP 1942, pp. 125-8, figs. 29, 30, 33, map: *A. aurita* var. *occidentalis* (= *A. flavidula*) nov. var.; W. Greenland. LOWNDES 1942, p. 234: water content. MAADEN 1942a, pp. 347-62: Holland. VERWEY 1942, p. 394: *Aurellia aurita*; Holland. HYMAN 1943, p. 140: water content. LOWNDES 1943, p. 226: water content. FOX & PANTIN 1944, p. 121: *Aurelia* sp.; pigment. KHALAF EL-DUWEINI 1945, p. 337: Red Sea. KOLOSVÁRY 1945, p. 139: Rovigno, Adriatic Sea. RANSON 1945b, p. 317: Faroes; Scotland; Norway; Denmark; Baltic Sea; English Channel; French Mediterranean coast; Red Sea; Gulf of Bengal. RANSON 1945c, p. 65: discussion of species; Nova Scotia. CUTCLIFF 1946, p. 171: *Aurellia aurita*; England. KRAMP 1947, p. 48: N.E. Atlantic. LELOUP 1947, p. 43: Belgium. USSING 1947, pp. 95-9, fig. 1: Mariagerfjord, Denmark. FRASER 1948, p. 43: Scotland. MANKOWSKI 1948, p. 110: Gulf of Gdansk, Baltic. YASHNOV 1948, p. 76, Pl. 22, fig. 3a, b: Barents Sea; White Sea. BERRILL 1949b, pp. 393-409: development. PURASJOKI 1949, p. 100: Gulf of Finland. RANSON 1949, p. 144: description; Martinique, West Indies. SOUTHWARD 1949, p. 536: ciliation. FRASER 1950, p. 93: *Aurelia*; Faroe area. HÄGG 1950, pp. 165, 259: Baltic. KÄNDLER 1950, p. 68: ephyrae; Fehmarnbelt, Baltic. WIEDEMANN 1950, p. 186, fig. 1: physiology. ANON 1951, p. 805: *Aurelia*; British coasts. CHILD 1951, pp. 178-85, figs. 1-13: discussion and comparison with *Haliclystus* and *Corymorphus*; California. FRANC 1951, p. 28: English Channel. FRASER 1951a, p. 25: Faroe area. GOTTO 1951, p. 163: Ireland. HELA 1951, pp. 71-8, fig. 1: Baltic. HOLLOWDAY 1951, pp. 193-8, figs. 1-11: development (scyphistoma-stage called *Hydratuba*); English Channel. FRASER 1952a, p. 35: from Scotland to Faroes. KÜNNE 1952, pp. 14, 42: S.E. North Sea. PANTIN & DIAS 1952, pp. 351-64: rhythmic activity and responses. SMIDT 1952, p. 95: Danish Waddensea. CHAPMAN 1953a, pp. 159, 169, fig. 1: physiology of mesogloea; Whitstable, England. FRASER 1953, p. 33: Faroe area. HORRIDGE 1953, p. 400, one fig.: *Aurellia aurita*; physiology. REES 1953a, p. 8: Herdlafjord, Norway. SEGERSTRÅLE 1953, p. 6: Inner Baltic. CHIU 1954b, p. 56: as *Aurellia aurita*. FRASER 1954b, p. 101: *Aurelia*; Scotland. HEDGPETH 1954, p. 278: *Aurellia aurita*; Gulf of Mexico. HORRIDGE 1954a, p. 594, figs. 1-4: *Aurellia aurita*; nerve conduction; Millport, Scotland. HORRIDGE 1954b, p. 85, figs. 3, 4: *Aurellia aurita*; physiology. HUMMELINCK 1954, p. 166: *Aurellia aurita*; no longer occurs in Zuiderzee, Holland. LUBET 1954, p. 214: Arcachon, Bay of Biscay. NEWELL 1954, p. 330: Kent, England. PALMÉR 1954, pp. 122-31: Gulf of Finland. SOUTHWARD 1954, p. 20: Irish Sea. UCHIDA 1954, pp. 209-19, fig. 2: Japan. KRAMP 1955a, p. 300: Gulf of Guinea, W. Africa. MAC GINTIE 1955, pp. 107, 120: as *Aurelia* sp.; Point Barrow, Alaska. NAUMOV 1955c, pp. 102-4, figs. 1, 3, 4. SOUTHWARD 1955, pp. 201-16, figs. 1-7: ciliary currents and mode of feeding; Irish Sea; English Channel. UCHIDA 1955a, p. 15: Riu-ku Islands and Formosa, W. Pacific. FORSMANN 1956, p. 17: Baltic. HARTMAN & EMERY 1956, p. 307: California. HORRIDGE 1956a, pp. 59-74, figs. 1-9: *Aurellia aurita*; nervous system of ephyrae. HORRIDGE 1956b, p. 380: innervation. HÜSING 1956, pp. 479-81: nutrition. NAUMOV 1956b, p. 38. BASSINDALE & BARRET 1957, p. 248: Dale Fort, Wales. BOUILLOU & VANDERMEERSSCHE 1957, pp. 9-25, fig. 7: histology of mesogloea. REES 1957a, pp. 26-8: historic review of the name *Aurelia*, *Aurelia* proposed to be validated, *Aurellia* Pér. & Les. proposed to be suppressed. SEARLE 1957, p. 73,

fig. 3: Singapore. SEGERSTRÅLE 1957, pp. 777, 778: Baltic. VALKANOV 1957, p. 17: Black Sea. VANNUCCI 1957a, pp. 594–6: (Brazil). VANNUCCI 1957c, p. 326, fig. 1: double monster ephyrae; Brazil. VučETIĆ 1957, p. 37: rock pools, Mljet Island, Adriatic Sea. CARTHY 1958, pp. 197, 293: responses to stimuli. HALME 1958, p. 44: Baltic coast of Finland. PAUL 1958, p. 535: Eastbourne, Maine, U.S.A. SOUTHcott 1958, p. 58, fig. 2A: South Australia. THIEL 1958a, pp. 13–26, figs. 1–4: growth and reproduction. THIEL 1958b, p. 45. UCHIDA 1958, p. 164: Sado, Japan. YAMAZI 1958, p. 139: as *Aurellia aurita*; Tanabe Bay, Japan. DAHL 1959, pp. 1–8: as host of *Hyperia galba*; Norway. HORRIDGE 1959, pp. 72–91, figs. 1, 2, 3, 6, 9 (diagrams): rhythm. LINDQUIST 1959, p. 45: Gulf of Bothnia, Baltic Sea. KRAMP 1959b, p. 24: West Africa. MAADEN 1959, pp. 5–7, fig. 1: Gulf of Aqaba, Red Sea.

Aurelia coerulea von Lendenfeld 1884

Up to 210 mm wide, with eight broad marginal lobes without or with faintly indicated adradial depressions; mouth-arms very broad and only faintly crenulated, their base with many broad, flat folds, cauliflower-like; rhopalar and adradial canals unbranched, the other canals branched with anastomoses; tentacles remarkably long.

VON LENDENFELD 1884c, p. 280: *Aurelia coerulea* n.sp.; Australia. MAYER 1910, pp. 620, 623: as *Aurellia aurita* var. *coerulea*, = var. *colpota*. STIASNY 1924c, p. 69, fig. 6: *A. coerulea*; Sydney, Australia. STIASNY 1931b, p. 40: Australia. DAKIN & COLEFAX 1933, p. 198: New South Wales, Australia.

Aurelia colpota Brandt 1838

Up to 170 mm wide, with eight broad, marginal lobes slightly notched centrally; branching of the canals mainly in their distal portions; mouth-arms long and broad, much folded and lobed throughout their length, with a deep incision at their base; colour: tentacles and gonads rose-red.

BRANDT 1838a, p. 370, Pl. 9: *Aurelia colpota* n.sp., described as a doubtful species; South Africa. MAYER 1910, pp. 620, 623: as *Aurellia aurita* var. *colpota*, = var. *coerulea*; (Indian Ocean to Pacific). STIASNY 1919b, p. 91: as *A. aurita* var. *colpota*; Malay Archipelago. STIASNY 1926a, p. 244: as *A. aurita* var. *colpota*; Philippines.

Aurelia labiata Chamisso & Eysenhardt 1821

Up to 300 mm wide, with 16 marginal lobes divided by more or less deep median clefts; canal system similar to *A. aurita*, with many anastomoses; mouth-arms fairly short, thick, pyramidal, somewhat folded; subgenital ostia small; colour: yellowish or light violet.

CHAMISSO & EYSENHARDT 1821, p. 358, Pl. 28, figs. 1A, B: *Aurelia labiata* n.sp. MAYER 1910, p. 628, text-fig. 398: *A. labiata*, incl. *limbata* Brandt; (Pacific); Philippines. BIGELOW 1913, p. 98: remarks on marginal lappets. LIGHT 1914b, p. 200: Philippines. MAYER 1915a, pp. 160, 182: Torres Strait; Philippines. MAYER 1917a, p. 205, fig. 11: Philippines. STIASNY 1919b, p. 93: Malay Archipelago. LIGHT 1921, p. 31: Philippines. STIASNY 1926a, p. 244: as *A. aurita* var. *labiata*; Philippines. UCHIDA 1928a, p. 374, fig. 1: five-rayed specimen; Japan. STIASNY 1931a, p. 140. STIASNY 1935, p. 34: Malay Archipelago. STIASNY 1937b, p. 207. RANSON 1945c, pp. 60, 61. CHU & CUTRESS 1954, p. 9: cause of dermatitis; Hawaii.

Aurelia limbata (Brandt 1838)

Up to about 150 mm wide, with eight broad marginal lobes, in certain states of contraction with 16 clefts, especially in living specimens; all canals except the eight adradial much and profusely branched, with numerous lateral diverticula, forming numerous anastomoses; disk yellow, margin brown.

BRANDT 1838a, p. 372, Pl. 10: as *Diplocraspedon limbata* n.sp.; N.W. Pacific. GOETTE 1886, p. 836: *Aurelia limbata*. KISHINOUYE 1910, p. 22: Japan; Saghalin. MAYER 1910, p. 628: synonym of *A. labiata*. BIGELOW 1913, p. 99, Pl. 5, figs. 1-4: N.W. Pacific. KRAMP 1913a, p. 280, figs. 3, 4: as *A. flavidula*; W. Greenland. KRAMP 1914, p. 447: as *A. flavidula*; W. Greenland. BIGELOW 1920, pp. 14-17: Alaska; Labrador. STIASNY 1922e, p. 522: Vancouver, Pacific coast of Canada. UCHIDA 1934c, pp. 698-700, figs. 1, 2: Japan. UCHIDA 1940a, p. 294: Japan. KRAMP 1942, pp. 122-5, figs. 28, 31, 32, map: W. Greenland; remarks. STIASNY & MAADEN 1943, p. 234: Sea of Okhotsk; Sea of Kamchatka. RANSON 1945c, pp. 60-3: discussion. CHIU 1954b, p. 56. UCHIDA 1954, pp. 209-19, fig. 2, map: Japan. KRAMP 1955b, p. 164: by Haeckel 1880 determined as *A. flavidula*. NAUMOV 1956b, p. 38.

Aurelia maldivensis Bigelow 1904

Up to 250 mm wide; the eight wide marginal lobes each with a very slight central depression; the eight rhopalar and the eight adradial canals unbranched, the other canals branched with occasional anastomoses; mouth-arms large, curtain-like, lips complexly folded, with numerous short tentacles; colour: violet.

BIGELOW 1904, p. 261, Pls. 6, 8, text-figs. 22, 23, 27: *Aurelia maldivensis* n.sp.; Maldives Islands, Indian Ocean. MAYER 1910, p. 629, text-fig. 399: *Aurelia maldivensis*. ?STIASNY 1919b, p. 92, Pl. 3, figs. 11, 12: as *?A. maldivensis*; Malay Archipelago. STIASNY 1935, p. 32, Pl. 1, fig. 3, text-fig. 8: Red Sea. STIASNY 1937a, p. 227: Arabian Sea. STIASNY 1937b, p. 206. RANSON 1945b, p. 317: Indochina. RANSON 1945c, pp. 60-4.

Aurelia solida Browne 1905

Up to about 105 mm wide, hemispherical, jelly very thick and unusually solid; eight simple marginal lobes; canals slender, with few anastomoses; mouth-arms like thin, narrow ribbands, their margins slightly folded in proximal portions; the sub-genital cavities large, the ostia very small; each marginal sense-club arises from the inner end of a very deep groove and points upward towards the exumbrella.

BROWNE 1905a, p. 960, Pl. 94, figs. 1, 2: *Aurelia solida* n.sp.: Maldives Islands, Indian Ocean. MAAS 1909, p. 45: the Azores. MAYER 1910, p. 627: *Aurelia solida*; Madeira Island. BROCH 1914, p. 22: S. of the Azores. RAO 1931a, p. 38: Maldives Islands, Indian Ocean. GRAVELY 1941, p. 12: Madras, India. RANSON 1945b, p. 317: Atlantic W. of N. Africa. RANSON 1945c, p. 65: the Azores. NAIR 1951, p. 73: Trivandrum coast, India.

Aurelia spp.

STIASNY 1938, p. 15, Pl. 1, fig. 3: *Aurelia* sp.; Red Sea. GEORGE 1953, p. 82: *Aurelia* sp.; Calicut, southern India.

Genus *Aurosa* Haeckel 1880

Aureliinae with four bifurcated mouth-arms.

Type-species: *A. furcata* Haeckel.

HAECKEL 1880, p. 559: *Aurosa* n.g.

Aurosa furcata Haeckel 1880

80 mm wide; eight velar lappets, eight sense-organs; four horse-shoe-shaped gonads; 24 radial canals, all with anastomosing side-branches; mouth-arms folded, bifurcated; tentacles numerous, small.

HAECKEL 1880, p. 559, Pl. 33, figs. 7, 8: *Aurosa furcata* n.g., n.sp.; near Cocos Island, Indian Ocean. MAYER 1910, p. 630, text-fig. 400.

Subfamily *STHENONIINAE*

Ulmaridae in which the tentacles arise in linear clusters from the subumbrella; with protrusive sac-like gonads; without subgenital pits.

Genus *Phacellophora* Brandt 1835

Sthenoniinae with 16 rhopalia alternating with 16 clusters of tentacles; radial canals in the rhopalar radii branched, in the tentacular radii simple; four gonads.

Type-species: *P. camtschatica* Brandt.

BRANDT, 1835, p. 224: *Phacellophora* n.g. HAECKEL 1880, p. 549. MAYER 1910, p. 612.

Phacellophora camtschatica Brandt 1835

Up to 500–600 mm wide; 16 wide, simple velar lappets containing 5–8 simple, blindly-ending centrifugal canals; tentacles in 16 clusters arising in a single row below the ring canal, each group curved with the concavity outwards.

BRANDT 1838a, p. 366, Pl. 8: *Phacellophora camtschatica* n.g., n.sp.; Kamchatka; p. 380, Pls. 27, 28: as *Haccaedecoma ambiguum* n.sp.; Pacific coast of N. America. VERRILL 1869, p. 117: as *Callinema ornata* n.sp.; east coast of U.S.A. HAECKEL 1880, p. 549: *P. camtschatica*; p. 550: as *P. ambigua* (Brandt); p. 551: as *P. sicula* n.sp.; Messina, Italy; p. 643: as *P. ornata* (Verrill). KISHINOUYE 1910, p. 21, fig. 2:

as *P. ambigua?*; Japan; Kuriles. MAYER 1910, p. 613: *P. camtschatica*; (Kamchatka; San Francisco); p. 613, text-fig. 392: as *P. sicula*; Naples, Italy; p. 615, text-fig. 393: as *P. ambigua*; p. 616, text-figs. 394, 395: as *P. ornata*; (east of Montevideo, Uruguay). BIGELOW 1913, p. 96, Pl. 4, fig. 10, Pl. 5, fig. 5: as *P. ambigua*; synonyms: *P. ornata*, *sicula*, *?camtschatica*; Bering Sea. BIGELOW 1914b, p. 28: as *P. ornata*; Gulf of Maine. MYERS 1919, p. 120: content of organic material. BIGELOW 1926, p. 364: as *P. ornata*; Gulf of Maine, U.S.A. STIASNY 1934a, p. 391, Pl. 15, fig. 6, text-fig. 12: as *P. ornata*; Angola, W. Africa. FEDELE 1937, pp. 195, 257, figs. 1-4: revision of the genus; only one species, *P. camtschatica*; Naples, Italy. FEDELE 1938, pp. 133-5: *P. camtschatica* and *P. sp.*; Naples. ?KRAMP 1939a, p. 22: as *?P. ornata*; S.E. Iceland. STIASNY 1940a, p. 22, Pl. 1, fig. 1: Cape Verde Islands. UCHIDA 1947b, p. 342: as *P. ambigua*; Japan. KRAMP 1948b, p. 22: as *P. ambigua*; northern Atlantic. KRAMP 1952, p. 11, figs. 6, 7, map: Chile. CHIU 1954b, p. 56. UCHIDA 1954, pp. 209-19: as *P. ambigua*; Japan. KRAMP 1955a, p. 302: *P. camtschatica* the only species; Gulf of Guinea, W. Africa; p. 309: =*P. ornata* from Angola, report of Stiasny 1934. NAUMOV 1956b, p. 38: as *P. ambigua*.

Genus *Poralia* Vanhöffen 1902

Sthenoniinae with 16 rhopalia; numerous straight, unbranched radial canals; numerous gonads in a ring around the stomach margin.

Type-species: *P. rufescens* Vanhöffen.

VANHÖFFEN 1902, p. 40: *Poralia* n.g. MAYER 1910, p. 617.

Poralia rufescens Vanhöffen 1902

Up to about 250 mm wide; margin wavy, with 16 deep clefts for the rhopalia; the ring canal gives rise to one or two blindly-ending diverticula in each of the inter-rhopalar spaces; about 40 simple radial canals; gonads an almost continuous ring around the periphery of the stomach; tentacles?

VANHÖFFEN 1902, p. 41, Pl. 4, figs. 15, 16: *Poralia rufescens* n.g., n.sp.; Indian Ocean. MAYER 1910, p. 617, text-fig. 396: (eastern tropical Pacific). BROCH 1914, p. 22: northern Atlantic. ?BIGELOW 1938, p. 165: ?*P. rufescens*; Bermudas. RANSON 1945c, p. 53, Pl. 2, figs. 10, 11: the Azores.

Genus *Sthenonaria* Eschscholtz 1829

Sthenoniinae with eight rhopalia; eight adradial linear clusters of tentacles; perradial and interradial canals branched; adradial canals some simple and some branched.

Type-species: *S. albida* Eschscholtz.

ESCHSCHOLTZ 1829, p. 59: *Sthenonaria* n.g. MAYER 1910, p. 611.

Sthenonaria albida Eschscholtz 1829

About 300 mm wide, disk-shaped; stomach small; a simple and a forked canal arise in each of the eight radii of the velar lappets; these radial canals

anastomose to some extent; the eight adradial rows of tentacles are somewhat shorter than the intervals between them.

ESCHSCHOLTZ 1829, p. 59, Pl. 4: *Sthenonia albida* n.g., n.sp.; Kamchatka. MAYER 1910, p. 611, text-fig. 391.

Subfamily *ULMARINAE*

Ulmaridae in which the tentacles arise from the clefts between the marginal lappets; with protrusive, sac-like gonads; without subgenital pits.

Genus *Diplulmaris* Maas 1908

Ulmarinae with 16 rhopalia, 16 tentacles and 64 lappets; 16 rhopalar canals branched, 16 tentacular canals simple.

Type-species: *D. antarctica* Maas.

MAAS 1908, p. 9: *Diplulmaris* n.g. VANHÖFFEN 1908b, p. 45: as *Ulmaropsis* n.g. MAYER 1910, p. 609.

Diplulmaris antarctica Maas 1908

42 mm wide; marginal lappets pointed; tentacular canals as broad as rhopalar canals; canals without anastomoses.

MAAS 1908, p. 12, one Pl.: *Diplulmaris antarctica* n.g., n.sp.; Antarctic. VANHÖFFEN 1908b, p. 45, figs. 10-12: as *Ulmaropsis drygalskii* n.g., n.sp.; Antarctic. BROWNE 1910, p. 52, Pl. 6, figs. 1-6: ?*D. antarctica*; McMurdo Sound and Cape Adare, Antarctic. MAYER 1910, p. 610, text-fig. 390. STIASNY 1931a, p. 140.

Diplulmaris malayensis Stiasny 1935

About 30 mm wide; exumbrella with numerous warts; marginal lappets broad and flat; tentacular canals narrower than rhopalar canals, with a marginal network of anastomoses.

STIASNY 1935, p. 24, Pl. 1, fig. 4, text-figs. 3-7: *Diplulmaris malayensis* n.sp.; Malay Archipelago. STIASNY 1937b, p. 206.

Genus *Discomedusa* Claus 1877

Ulmarinae with eight rhopalia, 24 tentacles, 32 lappets; the eight perradial and interradial canals branched, the eight adradial canals simple.

Type-species: *D. lobata* Claus.

CLAUS 1877, p. 42: *Discomedusa* n.g. HAECKEL 1880, p. 545: as *Umbrosa* n.g. MAYER 1910, p. 606: synonyms: *Umbrosa* and *Ulmaris* Haeckel.

Discomedusa lobata Claus 1877

150 mm wide, disk-shaped; the 16 rhopalar lappets are as wide as, but

somewhat longer than, the 16 tentacular lappets, without centrifugal canals; the terminal ramifications of the perradial and interradial canals fuse with the adradial canals.

CLAUS 1877, p. 42, Pls. 8, 9: *Discomedusa lobata* n.g., n.sp.; Adriatic Sea. HAECKEL 1880, p. 546: as *Umbrosa lobata*. MAYER 1910, p. 607: synonym: *Ulmaris prototypus* Haeckel. RUSSELL 1937, p. 683: English Channel. RUSSELL 1938c, p. 497: English Channel. RANSON 1945b, p. 317: as *Umbrosa lobata*; Banyuls, French Mediterranean coast. KRAMP 1955a, p. 301: Gulf of Guinea. KRAMP 1959b, p. 24: West Africa.

Discomedusa philippina Mayer 1910

About 30 mm wide, exumbrella with numerous prominent warts; the 32 marginal lappets oval and all alike and each with two centrifugal, blind canals; the perradial and interradial canals terminate in a network of anastomosing vessels, which fuse with the ring canal, but not with the adradial, simple canals.

MAYER 1910, p. 607, text-fig. 388: *Discomedusa philippina* n.sp.; Philippines. MAYER 1915a, p. 181: ? = *Parumbrosa polylobata* Kishinouye. MAYER 1917a, p. 203, fig. 10: Philippines.

Discomedusa sp. Moore 1949

MOORE 1949, p. 11: *Discomedusa* sp.; Bermudas.

Genus *Floresca* Haeckel 1880

Ulmarinae with eight rhopalia; 32 marginal lappets, 24 tentacles; 16 simple unbranched radial canals, joined by a marginal ring canal.

Type-species: *F. parthenia* Haeckel.

HAECKEL 1880, pp. 537, 538, 643: *Floscula* n.g. and *Floresca* n.g. MAYER 1910, p. 605.

Floresca parthenia Haeckel 1880

50 mm wide, 30 mm high, with a 16-rayed pigmented, star-like marking on the exumbrella; four interradial crescentic gonads, lined on their inner, concave sides by a row of gastric cirri.

HAECKEL 1880, p. 537, Pl. 32, figs. 1-4: as *Floscula promethea* n.g., n.sp.; Cocos Islands, Indian Ocean; p. 538, Pl. 32, figs. 5-8: *Floresca parthenia* n.sp.; New Caledonia, tropical Pacific; p. 539: as *Floresca palladia*; New Guinea; p. 643: as *Floscula pandora* n.sp.; tropical Pacific. MAYER 1910, p. 605, text-figs. 385, 386: *Floresca parthenia*.

Genus *Parumbrosa* Kishinouye 1910

Ulmarinae with eight rhopalia, 24 tentacles, 64 lappets; the eight perradial and interradial canals branched, the eight adradial canals simple.

Type-species: *P. polylobata* Kishinouye.

KISHINOUE 1910, p. 19: *Parumbrosa* n.g. MAYER 1910, p. 728.

Parumbrosa polylobata Kishinouye 1910

Up to 160 mm wide, flat, disk-shaped, gelatinous substance very delicate; exumbrella uniformly granulated; oral arms lanceolate, finely frilled, about as long as radius of disk; gonads long, narrow, transversely folded bands; tentacles fairly long; colourless.

KISHINOUE 1910, p. 19, Pl. 4, figs. 20-3: *Parumbrosa polylobata* n.g., n.sp.; Japan. MAYER 1910, p. 728, text-fig. 428. BIGELOW 1913, p. 94: southern Japan. RANSON 1945b, p. 317: Indochina. UCHIDA 1954, pp. 209-19: Japan.

Genus *Ulmaris* Haeckel 1880

Ulmarinae with eight rhopalia, eight adradial tentacles, and 16 marginal lappets; the eight adradial, tentacular canals simple, the eight rhopalar canals each with a pair of lateral branches; with or without anastomoses near ring canal; no canals in lappets.

Type-species: *U. prototypus* Haeckel.

HAECKEL 1880, p. 545: *Ulmaris* n.g. MAYER 1910, p. 606: synonym of *Discomedusa*.

Ulmaris prototypus Haeckel 1880

30 mm wide; marginal lappets pointed, as long as broad; mouth-arms broad, egg-shaped; canals without anastomoses.

HAECKEL 1880, p. 545, Pl. 33, figs. 1-4: *Ulmaris prototypus* n.g., n.sp.; St Helena, Atlantic. MAYER 1910, p. 607, text-fig. 387: as *Discomedusa lobata* in part. STIASNY 1935, p. 20: re-erects the genus and species.

Ulmaris snelliisi Stiasny 1935

18-25 mm wide, exumbrella with lines of nematocysts; marginal lappets rectangular, broad, with concave edge; mouth-arms narrow, pointed; canals with anastomoses.

STIASNY 1935, p. 20, Pl. 1, figs. 6, 7, text-figs. 1, 2: *Ulmaris snelliisi* n.sp.; Malay Archipelago. STIASNY 1937b, p. 206.

Genus *Undosa* Haeckel 1880

Ulmarinae with eight rhopalia, 40 tentacles, 48 lappets; eight branched perradial and interradial and eight simple adradial canals and a ring canal.

Type-species: *U. undulata* Haeckel.

HAECKEL 1880, p. 546: *Undosa* n.g. MAYER 1910, p. 608.

Undosa undulata Haeckel 1880

120 mm wide, 40 mm high; a brown, 16-rayed star-like figure on exumbrella.

HAECKEL 1880, p. 546, Pl. 33, figs. 5, 6: *Undosa undulata* n.g., n.sp.; coast of Guinea, W. Africa. MAYER 1910, p. 609, text-fig. 389. KRAMP 1955a, p. 307: reference to Haeckel.

Subfamily *STYGIOMEDUSINAE*

Ulmaridae with branched radial canal system and a ring canal; with no marginal tentacles.

Genus *Stygiomedusa* Russell 1959

Stygiomedusinae with four long mouth arms; with alternating branched rhopalar and unbranched inter-rhopalar radial canals all anastomosing towards periphery.

Type-species: *S. fabulosa* Russell.

RUSSELL 1959b, p. 1527: *Stygiomedusa* n.g.

Stygiomedusa fabulosa Russell 1959*

About 500 mm wide, disk-shaped; stomach large; 40 radial canals leaving stomach; 20 rhopalia; with asexual reproduction in specialized brood chambers; typical deep brown-red deep-sea coloration.

RUSSELL 1959b, pp. 1527-29, figs. 1-2: *Stygiomedusa fabulosa* n.g., n.sp.; Bay of Biscay.

* See Addenda, p. 445.