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SYNOPSIS OF NORTH AMERICAN INVERTEBRATES.

XIV. PART IV. THE SCYPHOMEDUSÆ.

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THE following synopsis is a continuation of that upon Hydromedusæ which appeared as XIV of the *American Naturalist* series, during April, May and July, 1901.

As in the preceding parts, while depending largely upon my own records of the Scyphomedusæ, I have at the same time drawn freely upon the literature wherever found, but chiefly Hæckel's "System der Medusen" and to a less extent Mayer's numerous papers. (*Bull. Mus. Comp. Zoöl.*) Fewkes' papers, chiefly of the same series, including also L. Agassiz, "*Contr. Nat. Hist. United States*," 1862, and A. Agassiz' "Catalog N. A. Acalephæ," 1865.

In only a few cases has any attempt been made to present accounts of the synonymy of the several species, and then only so much as might serve to obviate ambiguity.

In general form, habit, structure and distribution the Scyphomedusæ have much in common with the Hydromedusæ and probably sustain a more intimate relation to them than to any other coelenterate Class.

They may however be somewhat sharply distinguished by the following characters :

1. Absence of a true velum. The velarium of the Cubomedusæ has important structural differences, though doubtless serving an identical function.
2. Sense organs when present are modified tentacles, variously designated as tentaculocysts, rhopalia, etc.
3. Entodermic origin of sexual products.

In development there is general correspondence between this and the preceding Class. In some the medusa arises by direct

(hypogenic), development from the egg; while in others, and by far the larger number, development is indirect (metagenic), exhibiting perfectly evident alternation of generations; in this case however, involving a distinct metamorphosis, the polyp giving rise to a free-swimming ephyra which is in turn transformed directly into a medusa. It should also be noted that asexual budding is, unlike that of the former class, by the transverse fission of the polyp body into a series of disks which become free as ephyrae, as already noted. Direct asexual budding from medusoid organs, common in many Hydromedusae, is unknown among the Scyphomedusae.

SYNOPSIS OF THE ORDERS.

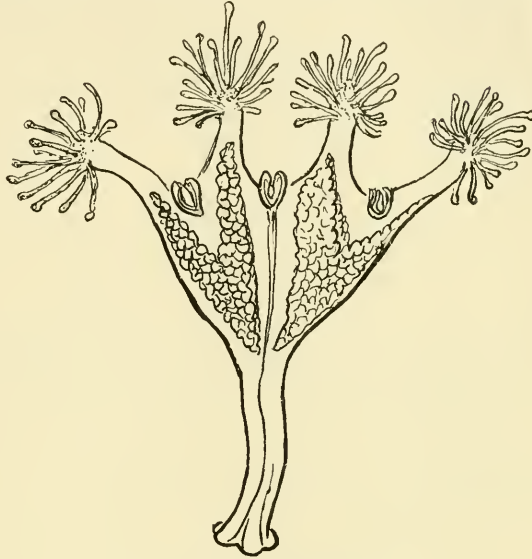
- I. STAUROMEDUSÆ. Scyphomedusæ with vasisform or sub-conical umbrella. In some cases sedentary, attached by an aboral peduncle or stalk. Wholly devoid of sensory organs, but with eight tentacles or tentacular organs which serve as anchors. Stomach with four wide gastric pouches which communicate with a marginal canal. Gonads in four crescentic loops on the floor of the gastric pouches.
- II. PEROMEDUSÆ. Scyphomedusæ with bell more or less conical in shape and with a usually well-developed horizontal constriction which divides it into two regions; an aboral, resembling quite remarkably the apical projection of the bell of certain Hydromedusæ; the marginal portion, which is eight or sixteen lobed and bearing tentacles and rhopalia or tentaculocysts. Stomach capacious with four gastric pouches which are separated by narrow septa, and extending into a circular sinus. Gonads much as in the former order.
- III. CUBOMEDUSÆ. Scyphomedusæ with a distinctively quadrate umbrella, provided with a well-defined velarium, which is supported at the radial angles by thickenings or frenulae. Marginal tentacles four, interradially disposed, and with four perradial rhopalia. Bases of tentacles often provided with wing-like expansions, pedalia.
- IV. DISCOMEDUSÆ. Scyphomedusæ with shallow, or disk-shaped, eight lobed umbrella. Marginal sense organs eight, per- and interradially disposed about the margin. Tentacles often very numerous. Manubrium often very large, pendulous and complexly frilled or plaited. Stomach with four to eight or more gastric pouches, within which are borne the gonads.

The medusæ of this order are often of large size. Specimens of *Cyanea* reaching a diameter of from four to six feet in some cases and with tentacles having an extent of more than fifty feet when fully extended. The average size however, even of this species, is very much smaller, as will be noted later.

SYNOPSIS OF FAMILIES OF STAUROMEDUSÆ.

- I. TESSERIDÆ. Margin of umbrella devoid of definite lobes or anchors; the umbrella attenuated at the apex into a hollow stalk, which in some genera serves as a means of attachment; eight tentacles, four of which are perradial and four in-terradial.

So far as known no representatives of this family come within our range.

FIG. 1. *Haliclystus auricula* Clark.

- II. LUCERNARIDÆ. Margin of umbrella definitely lobed, each terminating in tufts of delicate knobbed tentacles; exumbrella attenuated at the apex as an organ of attachment; margin of umbrella with eight tentacles, arranged as in previous family, but sometimes modified as anchors.

KEY TO THE GENERA.

- A. Without gastrogenital pockets in the sub-umbrella wall of the radial pouches.
1. Umbrella with 8 marginal anchors . . . Haliclystus.
 2. Umbrella without marginal anchors . . . Lucernaria.
- B. With four perradial gastrogenital pockets in the subumbrellar wall of the four radial pouches.
3. Margin of umbrella with 8 anchors . . . Halicyathus.

Haliclystus auricula Clark. 1863.

Fig. 1.

Haliclystus auricula, Clark, 1863, 1878.

“ “ A. Ag. 1865.

“ *primula*, Hæckel, 1877.

Lucennaria “ “ 1865.

Haliclystus auricula, “ 1880.

Umbrella octangular-pyramidal, umbrella stalk quadrate-prismatic, approximately as long as the bell height. Eight arms, arranged in pairs; four perradial sinuses broader and deeper than the four interradians: each arm with from 100-120 tentacles; eight large marginal anchors.

Color.—Very variable, often including almost every tint of the spectrum, though generally having a single color.

Size.—Broad diameter 20-30 mm. Height, including stalk, 20-30 mm.

Distribution.—From Massachusetts Bay northward to Maine, etc.

Halicystus salpinx Clark. 1863.

H. salpinx Clark, 1863.

H. salpinx A. Ag. 1865.

Lucernaria salpinx Hæckel, 1865.

Halicystus salpinx Hæckel, 1880.

Umbrella octangular, stem quadrate, prismatic, with four interradian longitudinal muscles: eight arms, symmetrically disposed, each with a tuft of 60-70 slender tentacles. Marginal anchors very large about as long as the arms.

Distribution.—Chiefly Northeastern Atlantic coast.

Lucernaria quadricornis O. F. Müll. 1776.

Umbrella flat funnel-shaped or quadrate-pyramidal, approximately twice as broad as high. Stem cylindrical, single-chambered, about as long as the bell-height and with four interradian longitudinal muscles. Eight arms arranged in pairs, the four perradial sinuses of the bell margin as broad and deep as the four interradians. Each arm with from 100-120 tentacles.

Color.—Variable, gray, green, yellowish brown to red-brown.

Size.—Umbrella 50-60 mm., height including stalk, 50-70 mm.

Distribution.—As in *Halicystus*.

Halicyathus lagena Hæckel. 1880.

Lucernaria auricula Fabr. 1780.

L. typica Greene 1858.

L. fabricii L. Ag. 1862.

L. lagena Hæckel 1865.

Manania auricula Clark, 1863.

M. auricula A. Ag. 1865.

M. lagena Hæck. 1877.

Halicyathus lagena Hæck. 1880.

Bell deep flask-shaped, about twice as high as broad; stalk slender cylin

dical, single chambered, much longer than height of bell. Arms eight, arranged in pairs, not longer than broad; each arm with 60-70 delicate tentacles. Eight marginal anchors.

Color.—Black or dark brown, occasionally reddish- or yellowish-brown.

Size.—5-7 mm., height including stem, 20-30 mm.

Distribution.—Eastport, Me. (Stimpson), Swampscott, (Ag.), Greenland.

SYNOPSIS OF THE FAMILIES AND GENERA OF PEROMEDUSÆ.

Family PERIPHYLLIDÆ. Rhopalia 4, marginal lobes 16, tentacles 12.

Family Pericolidæ. Rhopalia 4, marginal lobes 8, tentacles 8.

A single genus only of the Peromedusæ is represented within the range of the present synopsis, namely, *Periphylla* and under this three species have been recorded.

Generic characters:—Umbrella with four perradial, buccal pouches and with four basal funnels; gastric pouches with two rows of filaments.

Periphylla, hyacinthina Steenstrup.

1837.

Fig. 2.

Umbrella bell-shaped, about as broad as high; marginal lobes nearly right-angled truncated below; the eight tentacle lobes with about the same marginal dimensions as the rhopalial lobes; tentacles about double the length of the bell-height. Manubrium extending to the base of the marginal lobes, and about double as broad as high.

Color.—Exumbrella reddish, pedalia and marginal lobes red to violet, tentacles bluish. (Hæckel.)

Distribution.—Greenland, Steenstrup, Gulf Stream 90-100 miles S. E. off Martha's Vineyard (Fewkes).

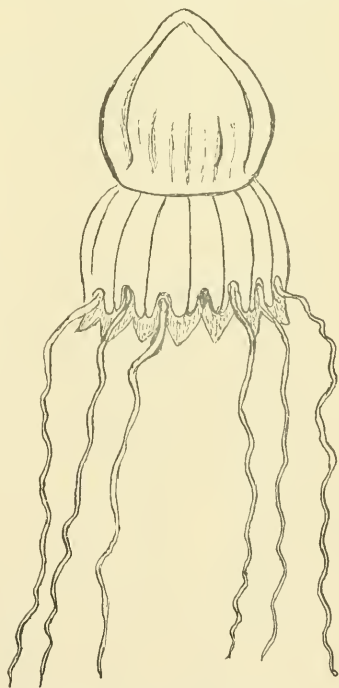


FIG. 2. *Periphylla peronii* Hæckel.

Periphylla humilis Fewkes. 1884.

Bell low conical, diameter twice that of height. Rhopalia 4, provided with protecting hood; marginal tentacles 12, of yellow color. Color of exumbrella brown, rough and opaque; central disk and corona rather uniform brownish in color.

Distribution.—Off Martha's Vineyard as for previous species.

Periphylla peronii Hæckel, 1880.

Charibdea periphylla, Per. & Les. 1809.

C. periphylla, L. Ag. 1862, Cont. Nat. Hist. U. S.

Stomolophus periphylla, Fewkes?

Umbrella low conical, about as broad as high. Marginal lappets 16, eight tentacular and eight ocular. Tentacles long and stout, about as broad at the base as the marginal lappets. Manubrium about as broad as high, somewhat cubical.

Distribution.—Tropical Atlantic, (L. Agassiz), St. George's Bank (S. I. Smith).

FAMILIES OF CUBOMEDUSÆ:

Of the Cubomedusæ only a single Family has been represented by species within the range of this synopsis, namely Charibdeidæ, and under this but a single genus and species.

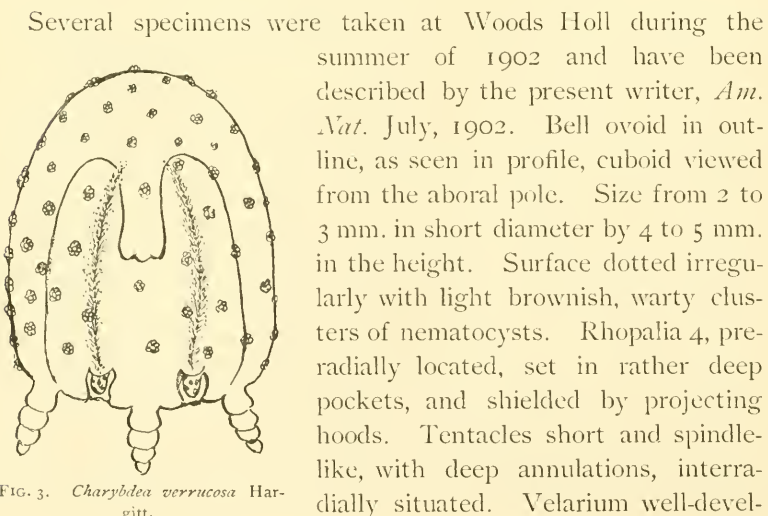
Charybdea verrucosa Hargitt, 1902. Fig. 3.

FIG. 3. *Charybdea verrucosa* Hargitt.

oped, but without distinguishable canals, supported by frenulæ on the inner perradial corners of the sub-umbrella. Gonads were undeveloped, and no distinguishable gastric filaments were present.

In color the specimens were light amber being darker on the tentacles.

As pointed out in the description before cited, the specimens under consideration show many points of difference or contrast as compared with typical *Charybdea* species. Mayer who has described a similar species from the Tortugas ascribes this to immaturity. This has seemed to me somewhat doubtful, and some hesitancy was entertained as to whether they probably come within the *Charybdeidæ*; but in the absence of specimens in sufficient numbers or undoubted maturity it seems impossible to more definitely settle the problem.

Mayer has described two species from the Tortugas, namely, *C. aurifera* and *C. punctata*. Both species were based on single specimens and both seemed immature. Hence the same doubt rests upon these as upon the previous species. A comparison of Mayer's figures, *Bull. Comp. Zool.*, XXXVII, No. 2, will show many points of similarity and suggests close relationships.

SYNOPSIS OF SUB-ORDERS AND FAMILIES OF DISCOMEDUSÆ.

Sub-order 1. CANNOSTOMÆ.

Discomedusæ with simple, quadrate mouth, devoid of oral lobes or tentacles; marginal tentacles short, solid.

Family EPHYRIDÆ. Radial pouches usually 16, broad and simple; no marginal canal. Chiefly deep-sea forms, occasionally taken at the surface.

Family LINERGIDÆ. Radial pouches broad, terminating in numerous branching, blind distal canals.

Sub-order 2. SEMOSTOMÆ.

Discomedusæ with quadrate mouth, and with elongated, oral arms, or lobes, which are often complexly folded and frilled; marginal tentacles hollow, often very long. Marginal lobes usually 8.

Family ULMARIDÆ. Radial canals of small size, but usually numerous and branching, the branches often anastomosing into an intricate network and finally uniting with a definite marginal canal.

Family CYANEIDÆ. Radial canals broad and pouch-like, and with numerous ramifying, blind, lobular canals; no circular canal; 8-16, rarely more, marginal lobes.

Family PELAGIDÆ. Radial canals rather broad but simple and without ramifying branches; no marginal canal; usually 16 marginal lobes.

Sub-order 3. RHIZOSTOME.

Discomedusæ in which the mouth early becomes more or less overgrown and obliterated by the 8 root-like oral arms; gastric cavity extending into the oral arms and opening by funnel-like mouths on the edges and surfaces. Devoid of marginal tentacles.

Family TOREUMIDÆ. Radial canals 8-16, narrow and with anastomosing branches; devoid of marginal canal; rhopalia 8-16. Suctorial funnels on the outer (dorsal) surface of the oral arms.

Family PILEMIDÆ. Radial canals 8-16, occasionally more, variously branching and anastomosing; rhopalia 8. Suctorial funnels on both outer and inner surfaces (dorsal and ventral), of the oral arms.

KEY TO THE GENERA.

EPHYRIDÆ.

1. Gonads four, simple, horse-shoe-shaped; devoid of marginal lobes or lobular pouches Ephyra
2. Gonads 4, Lobular pouches 16; 8 ocular, 8 tentacular. Bathyluca.
3. Gonads 8, symmetrically disposed: 16 lobular pouches, ocular, Nausithoë.
4. Gonads 8, symmetrically disposed: 32 lobular pouches, 16 ocular, 16 tentacular, Nauphanta.
5. Gonads 8, arranged in pairs; lobular pouches 64-128, number indefinite, Atolla.
6. Gonads 4, two-lobed, with interradian septum Linerges.

ULMARIDÆ.

7. Rhopalia 8; tentacles numerous, short, borne on under margin of the umbrella without the velar lappets; oral arms 4, simple but with the margins fringed with nematocysts, Aurelia.
8. Rhopalia 16; tentacles numerous, long, in 16 clusters on the lower margin within the velar lappets Phacellophora.

CYANEIDÆ.

9. Rhopalia 8; tentacles very numerous, long, arranged in 8 clusters, each comprising several rows. Oral lobes four, but highly folded and fringed, Cyanea.

PELAGIDE.

10. Marginal tentacles 8; marginal lobes 16. Pelagia.
 11. Marginal tentacles 24; marginal lobes 32. Chrysaora.
 12. Marginal tentacles 40; immature specimens. often less in younger individuals; marginal lobes 48, Dactylometra.

Ephyroides rotaformis Fewkes. 1884.

Report U. S. Fish Commission, p. 949.

Among medusæ of the Gulf Stream Fewkes has described what is considered by him a new genus and species of an Ephyra-like medusa.

The generic characters given are somewhat indefinite, no mention being made as to gonads, radial pouches, sense organs, etc. The following brief notes are condensed from the above cited report:

Umbrella flat discoid, and viewed from the aboral pole comprises three zones:—"Discus centralis; Zona coronalis; Zona marginalis." The last named zone is marked by definite marginal lappets of large size with rounded outlines twice as long as broad, and 16 in number. Interposed between the lappets are a similar number of gelatinous elevations, "socles," ending a short distance from the deepest point of the marginal incision and abutting the line of junction of the discus centralis and zona coronalis. The marginal lappets are supported at their base by a pair of gelatinous "socles."

Distribution.—

Nausithoë punctata Koll.

Bull. Mus. Comp. Zool. Vol. XXXVII, p. 67.

Umbrella flat, 9-10 mm. broad. Marginal tentacles 8, stiff, about 7 mm. long. Rhopalia 8, alternating with the tentacles. Marginal lappets 16, long and flexible; gastric pouches 16, simple, and extending to the lappets. Mouth simple, quadrate, devoid of lobes or tentacles.

Distribution.—Bahama and Tortugas Islands. (Mayer.)

Nauphantopsis diomedæ Fewkes. 1884.

Op. cit. p. 946.

From a fragmentary specimen collected by the Albatross in the Gulf Stream Fewkes has proposed the new genus and species here mentioned. The following very brief synopsis of characters are condensed from his description. *Report U. S. Fish Commission* 1884.

Umbrella high disk-shaped, with marginal walls probably somewhat vertical. Marginal lobes 32. Tentacles 24, rhopalia probably 8.

Distribution.—Lat. 38° N., long. 69° W.; depth 2.033 fathoms.

Atolla bairdii Fewkes. 1884.

Report U. S. Fish Commission, p. 936.

Umbrella disk-like with aboral center convex. Marginal lappets 44. Marginal tentacles 22, each supported by a gelatinous "soele." Rhopalia 22, situated in notches between the lappets. Manubrium large, with simple mouth. Gastric pouches 22.

Color.—Slightly bluish, with rust-colored patches, especially on the border of the coronal furrow.

Distribution.—Gulf Stream, between N. lat. 35–38; W. long. 72–75. One specimen from the depth of 991 fathoms, the other from surface.

Arolla verrillii, Fewkes. 1884.

Op. cit. p. 939.

Umbrella flat discoid, six to eight times broader than high.

Marginal tentacles 22 to 28, with same number of interposed rhopalia.

Marginal lappets same number as the combined number of tentacles and rhopalia.

Distribution.—Between lat. 38–40; long. 68–71; from depth of from 373 to 2,369 fathoms.

Linerges mercurius Hæckel. 1880. Fig. 4.

Op. cit. p. 950.

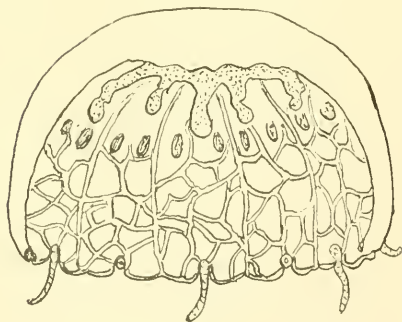


FIG. 4. *Linerges mercurius* Hæckel.

Umbrella mitre-shaped, with arched crown and usually vertical sides, diameter about twice that of height. Lobular canals bowed and rounded out. Tentacles cylindrical. Gonads horseshoe-shaped. Size 12 to 16 mm. broad. 6 to 10 mm. high.

Distribution.—Bahama and Tortugas Islands (Mayer). Gulf of Mexico. Straits of Florida (Fewkes).

Bathyluca solaris Mayer. 1900.

Bull. Mus. Comp. Zool., XXXVII, p. 2.

Umbrella flat and rather thick, aboral surface dotted with batteries of nematocysts. Marginal lappets 24; tentacles 16, long and hollow. Rho-

palia 8. Manubrium cruciform, simple, devoid of arms or appendages. Gonads 4, horseshoe-shaped, beneath which on the subumbrel wall are four open sub-genital pits. Stomach large and with 16 gastric pouches, eight of which extend to the ocular lobes and eight to the tentacular lobes.

Color. Disk translucent, slightly bluish; clusters of nematocysts dull yellowish-brown; tentacles slightly greenish.

Aurelia flavidula Per. & Les. Fig. 5.

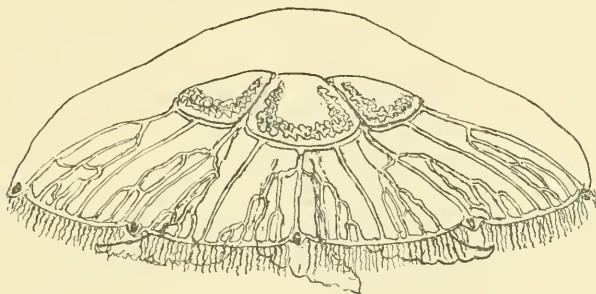


FIG. 5. *Aurelia flavidula* Per. & Les.

Umbrella flat and disk-like, somewhat arched above; margin normally eight-lobed and with eight rhopalia located in the marginal sinuses. Many variations from the normal octamerous form are found in some collections reaching as high as 25%.

Marginal tentacles numerous, short, forming a delicate fringe about the entire margin except at the rhopalial sinuses. Radial canals 16, of three sorts, per-inter- and adradial; the first two series branching and anastomosing freely, the last usually straight and simple from its origin to its junction with the marginal canal.

Manubrium cruciform in cross section, and with four long oral arms which are more or less fimbriated and the margins bearing numerous batteries of nematocysts. Gonads crescentic in form, borne upon the floor of the four gastric pouches.

Color.—*Aurelia* is among the duller colored of the Scyphozoa, the bell being quite transparent, but with a bluish opalescence. The gonads present a pale pinkish hue, though the ova are almost clear white as examined singly.

Distribution.—*Aurelia* is one of the commonest of the Atlantic coast medusæ and ranges from the coast of Maine to Florida. It is most abundant during the early summer or spring along most of the New England coast, though fairly abundant northward till late in summer. Its breeding habits seem to be somewhat continuous during most of the summer. The scyphistoma stage is a somewhat extended one, probably lasting over the entire winter season. Kept for weeks in aquaria they showed no signs of metamorphism. I have taken them in all stages of strobilization during

April and early May, when ephyrae were being discharged in great numbers. During the summer season the polyps bud and stolonize very freely, from a single scyphistoma a colony of many individuals arising within a space of ten days. Figure shows such a colony reared within a watch-glass aquarium.

Aurelia marginata L. Ag. 1862.

Cont. Nat. Hist. U. States, Vol. IV.

Umbrella flat dome-shaped to hemispherical, three times as broad as high. Mouth-arms relatively small, considerably shorter than the umbrella radius. Gonads very large.

A southern medusa, reported by Agassiz from Key West, Florida.

Callinema ornata, Verrill. 1869.

Umbrella flat and disk-shaped, rather thick and aborally rounded: the exumbrella surface covered with wart-like papillae: walls transparent and with prominent radial canals which are of two sorts, one branching and anastomosing, the other simple and straight, each 16 in number. Margin with 16 lobes deeply incised within which is located a conspicuous rhopalium. Tentacles numerous and of varied size and length, arising from the under surface of the margin beneath the marginal canal. Manubrium large and pendulous and with prominent folded oral lobes, somewhat like those of *Cyanea*. Gonads 8, in prominent pouches within the gastric cavity. In size specimens vary from 10–18 inches in diameter. Distribution, taken at Eastport, Maine, by Verrill, and later by Fewkes, from whose account this description is condensed. *Cf. Bull. Mus. Comp. Zool.* Vol. XIII, No. 7.

Cyanea arctica, Per. & Les.

Umbrella flat and disk-like, with a central aboral convexity, with 8 principal lobes and 16 or more secondary lappets: ocular pouches small sub-triangular, tentacular pouches two or three times as broad as the ocular.

Color. — Radial pouches purplish to brownish; oral lobes deep chocolate brown; gonads yellowish white; tentacles variably colored, yellowish, orange, purplish or brown.

Size. — From 100 to 500 mm. in diameter, though in many cases larger. A. Agassiz notes one having a size of seven feet and with tentacles more than 100 feet in length.

Distribution. — Almost the entire Northeast coast of the United States.

L. Agassiz has described two additional species, namely, *C. fulva*, and *C. versicolor*. These are of doubtful distinctness, variation in size and coloration being the chief differences clearly recognizable. Collections

made from a wide range of New England coast waters show every feature of intergradation between the several extremes and sufficiently establish the fact that at most only *C. versicolor*, of the Carolina coast, has possibly a varietal distinctness.

In this connection it is pertinent to refer to the morphological variation in the common species. *C. arctica*, which is nearly as marked as in *Aurelia*, including variation in the radial symmetry, number of gonads, oral arms, etc. Variation in color is sufficiently indicated in the references just given.

Pelagia cyanella Per. & Les. Fig. 6.

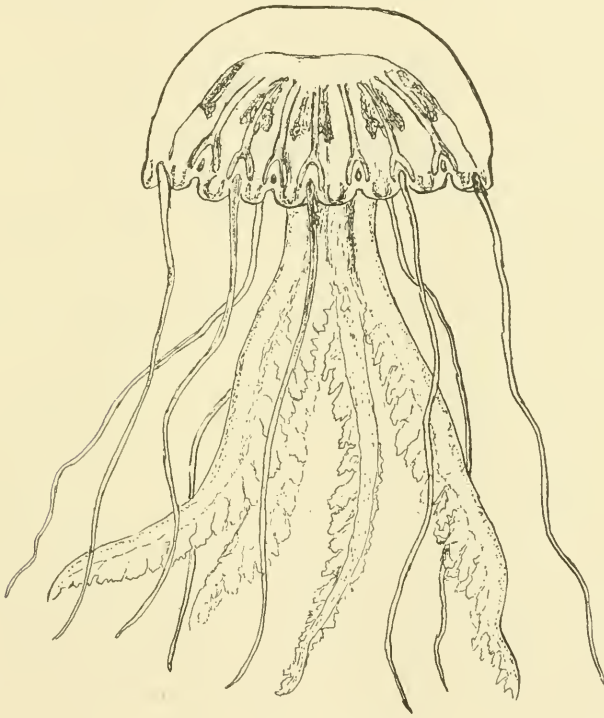


FIG. 6. *Pelagia cyanella* Per. & Les.

Umbrella disk-like, with rather highly arched aboral surface; marginal lobes 16, and with 8 rhopalia and 8 tentacles symmetrically and alternately disposed at the lobular sinuses. Gonads 8, forming conspicuous pouch-like masses within the gastric pouches of the tentacular radii. Manubrium large and pendulous, with four frilled oral arms approximately as long as the tentacles.

Color.—Disk translucent bluish tint, sprinkled with reddish-brown pigment spots over the entire exumbrellar surface, the more numerous near

the margin and forming crescents at the marginal lobes: manubrium similarly mottled on the outer edges of the arms, inner edges and frills delicate flesh-colored; tentacles a dull, madder-red; gonads pale purplish.

Two specimens of this medusa have been taken in the Woods Holl region recently, the last in July, 1902, some 65 miles south of Marthas Vineyard. According to Agassiz, Contr. Nat. Hist. U. S., the development of this medusa is direct, skipping the fixed polyp and strobila stages.

Dactylometra quinquicirri L. Ag.

Umbrella rather high and arched aborally much as in *Pelagia*, disk three to four times as broad as high. Manubrium long and pendulous with slender oral arms, which are more or less frilled as in *P. cyanell*. Rhopalia 8, marginal tentacles 40, marginal lobes 48. In arrangement five tentacles are located between each pair of rhopalia in adult specimens, though in some cases only three are present, particularly in small specimens. Gonads in four masses within the gastric pouches, and beneath each gonad in the sub-umbra wall is a prominent subgenital pit.

Color.—In general much like *Pelagia*, though less brilliant, the various hues being paler and somewhat more delicate. Exumbrella delicate bluish, mottled with reddish brown fading into yellowish; tentacles reddish to orange; oral arms pale pinkish with bluish tint variously blended, making this medusa one of the most beautiful among the *Pelagiæ*.

Distribution.—Is less extended than that of *Aurelia* or *Cyanea*. It is quite common in Buzzard's Bay, Vineyard Sound, Nantucket.

Like several of the preceding *Dactylometra* exhibits considerable variation. According to Mayer, *Bull. Mus. Comp. Zool.* Vol. XXXII, No. 7, the tertiary tentacles arise on either side of the ocular lappets. In several specimens examined during the past summer this was not found to be the case. On the contrary they sprang in every case examined between the primary and secondary sets. Again according to the same observer the tertiary tentacles only appear when the medusæ approximate maturity, and after attaining a size of 130 mm. in diameter. On the contrary I found them well developed in specimens having a size of only 40 mm. and where no gonads were developed. There was also noted the same variation in the marginal lobes and other organs which have been noted in connection with species previously noted.

Dactylometra lactea L. Ag. 1862.

This is a southern medusa, no record of its occurrence north of Florida having come to my notice. In general aspects it is much like the preceding species, though of smaller size. Its color is milk-white with a purplish iridescence, and with yellowish dots over the exumbrella. It has been reported from the Bahama and Tortugas Islands, from the Gulf of Mexico, and from the coast of South America.

Cassiopea frondosa Lamarck. 1817.

Polyclonia frondosa L. Ag. *Contr. Nat. Hist. U. S.* 1862.

Umbrella disk-like, arched, about three times as broad as high, with 12 distinct, broad, ocular radial stripes. Margin with 12 broad velar lobes. Manubrium approximately as long as the bell-radius, very stout, pinnæ of mouth arms variously parted and distally plumose or frondose.

Color.— Bluish to olive-green; arms greenish or yellowish, with whitish terminal filaments.

Distribution.— Coast of Florida, Tortugas Islands, etc.

Stomolophus meleagris L. Ag. 1862.

Contr. Nat. Hist. U. S.

Umbrella high, arched, more than hemispherical, with 8 deep ocular incisions, and with 96 marginal lappets.

Color.— Whitish-blue, the margins becoming yellowish-brown, margin lappets dark-brown.

Size.— About five inches broad by about three inches high.

Distribution.— Southern Atlantic coast, Savannah, Charleston, etc.

SYRACUSE UNIVERSITY,

The Zoölogical Laboratory,

Feb. 10, 1903.

