

H. C. Gedeke
phil.

THREE CRUISES OF THE BLAKE, VOL. II.

BULLETIN

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

AT

HARVARD COLLEGE, IN CAMBRIDGE.

VOL. XV.

Agassiz A 1888
=

[Published by permission of CARLILE P. PATTERSON and JULIUS E. HILGARD,
Superintendents U. S. Coast and Geodetic Survey.]

CAMBRIDGE, MASS., U. S. A.

1888.

A Contribution to American Thalassography.

THREE CRUISES

OF THE

UNITED STATES COAST AND GEODETIC SURVEY

STEAMER "BLAKE"

IN THE GULF OF MEXICO, IN THE CARIBBEAN SEA, AND ALONG
THE ATLANTIC COAST OF THE UNITED STATES,
FROM 1877 TO 1880.

BY

ALEXANDER AGASSIZ.

IN TWO VOLUMES.

VOL. II.

BOSTON AND NEW YORK:
HOUGHTON, MIFFLIN AND COMPANY.

The Riverside Press, Cambridge.

1888.

XX.

CHARACTERISTIC DEEP-SEA TYPES. — ACALEPHS.

CTENOPHORÆ AND HYDROMEDUSÆ.

As with fishes, a number of the deep-sea medusæ are occasionally taken at the surface, and undoubtedly many of the rarer of our jelly-fishes are deep-water forms which have accidentally found their way to the surface. To these probably belongs one of the most graceful of our jelly-fishes, *Ptychogena lactea* (Fig. 422), which swims at a considerable depth below the surface.

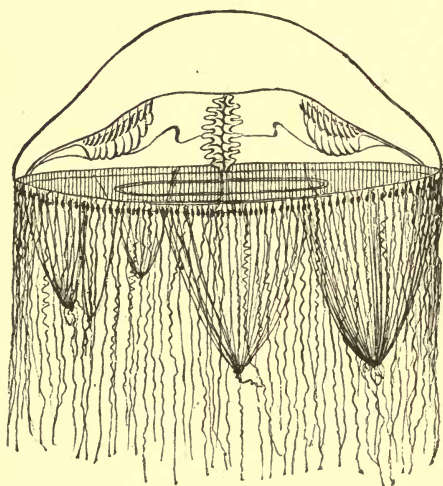


Fig. 422. — *Ptychogena lactea*. $\frac{1}{1}$.

The action of the light, and the increase of temperature at the surface, suffice to kill the animal in a short time. As soon as it reaches the surface, the disk loses its transparency, the genital organs become dull, and the medusa is soon completely decomposed, showing that the new conditions are totally unlike those under which it habitually thrives.

From the character of their development we may either find medusæ on the

bottom in their fixed younger hydroid stages, or we may collect them alive from the surface in an older stage. Others again are always pelagic, swimming freely on the surface in all their stages of growth, while a limited number of the so-called deep-sea medusæ perhaps inhabit the intermediate depths far below the

surface, moving from the bottom towards the surface, or even occasionally reaching it.

Although many of the characteristic surface jelly-fishes have been mentioned in the general sketch of the Pelagic Fauna and Flora, a few deserve a more extended notice in the systematic account of the group. Among the ctenophores I may mention a singular genus, *Ocyroë*, which has passed unnoticed for over fifty years, since its discovery in 1829. Unlike the other members of the group, it makes use of its large lateral lobes as flappers, and thus propels itself through the water with great rapidity. It is true that other ctenophores may, to a limited extent, guide their movements by the gentle undulation of the lateral lobes of the body, but their principal means of locomotion are the rows of locomotive flappers, or combs, from which the group derives its name. In *Ocyroë* the movement is produced by the development of muscular fibres on the inner surface of the lobes. *Ocyroë* is also noted for structural features of the highest interest. As has been observed by Dr. Fewkes,¹ it combines characters which exist in the two groups into which the ctenophores have been divided. It stands intermediate between the

groups, with marked characteristics of each. It is the only instance of a ctenophore with lateral lobes not provided with tentacles. The spotted *Ocyroë*, *O. maculata* (Fig. 423), was noticed near St. Vincent; and a species without spots, probably a young form, *O. crystallina*, was found at the Tortugas.

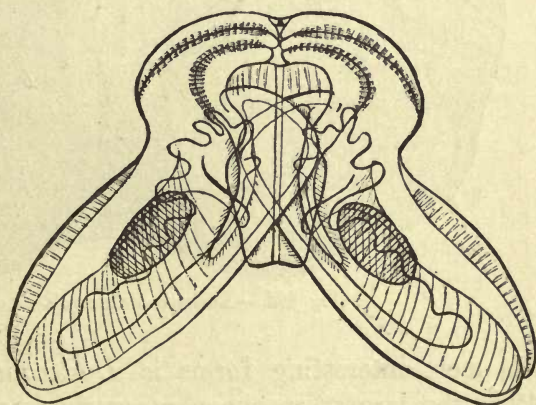


Fig. 423. — *Ocyroë maculata*. $\frac{1}{2}$.

One of the largest and most stately genera of tentaculated

¹ Dr. Fewkes has prepared the greater number of the descriptions of acalephs here given.

ctenophores is the well-known *Eucharis multicornis* (Fig. 424), also found in the Mediterranean. This genus, which had before escaped observation on this side of the Atlantic, was observed at the Tortugas and at Key West.

Among the medusæ called Discophoræ by Agassiz, one of

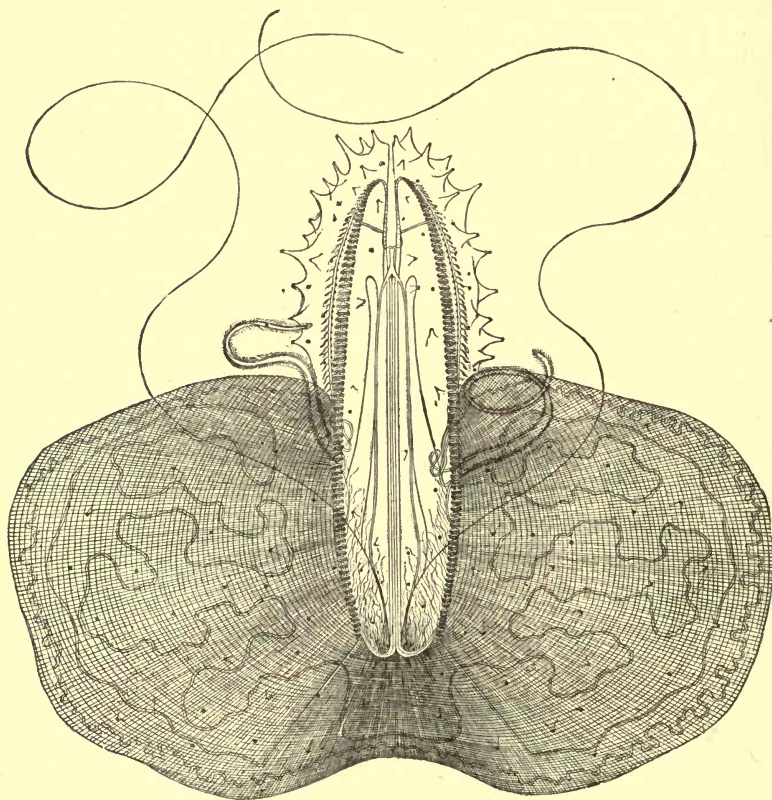


Fig. 424. — *Eucharis multicornis*. $\frac{1}{2}$. (Chun.)

the most interesting forms is *Dodecabostrycha dubia* (Fig. 425), the largest specimen measuring no less than nine inches in height. Several specimens of a dark claret-color were brought up in the trawl, and it is very probable, from the systematic affinities of this medusa, that, like its allies, the Rhizostomæ, it lives on the bottom, rarely coming to the surface. Belonging also to the true deep-sea medusæ are Periphylla, Atolla, and a few allied genera. The first genus has a more or less

pointed conical bell, widening below into a funnel-shaped margin, the upper and lower parts of the bell being divided into well-marked regions separated by a characteristic furrow. The margin is formed by a number of gelatinous blocks closely fitted together, which serve as supports for important organs called socles. These support tentacles, marginal sense bodies, and thin leaf-shaped lappets which have given the genus its name. The

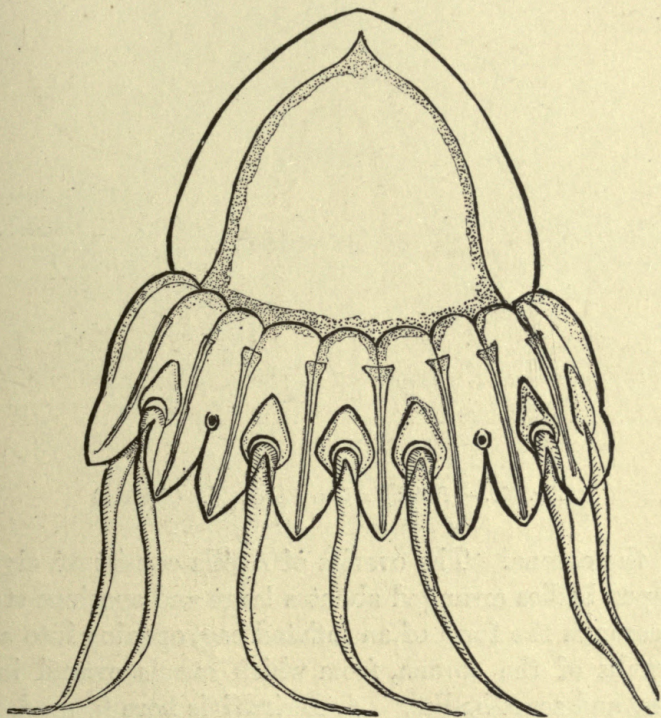


Fig. 425. — *Dodecabostrycha dubia*. $\frac{1}{2}$.

stomach hangs down from the under side of the bell, and in its spacious receptacles are found prominent filaments. The color is blue. The American species *P. hyacinthina* (Fig. 426) extends as far north as the coast of Greenland.

None of these so-called deep-sea medusæ, however, present such remarkable features as the species of *Atolla*. The genus has thus far been taken by the "Challenger" in the Antarctic Ocean, on the borders of the South Atlantic and South Indian

oceans, at the depth of about 2,000 fathoms. It is represented by a single species, *A. Wyvillei*. In the Gulf Stream and North Atlantic we have two species of *Atolla*, discovered by the "Albatross." They do not appear to be confined to deep water, but sometimes approach the surface. No discophore has as many sense segments as *Atolla*; and a marked feature of the oral surface of the bell is the large muscle found on the under

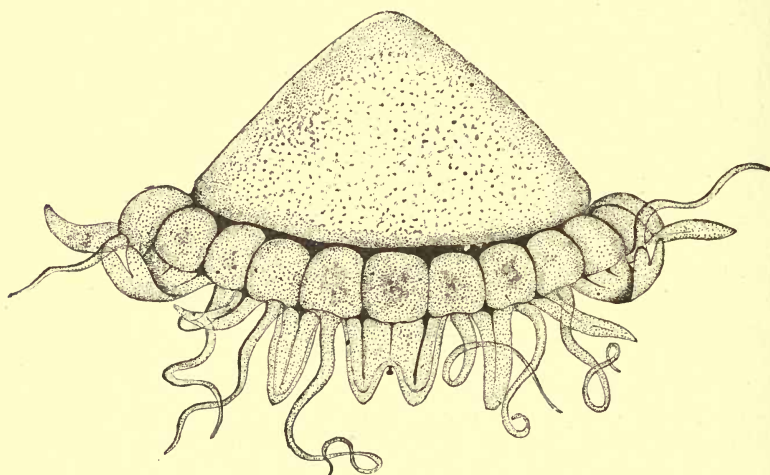


Fig. 426. — *Periphylla hyacinthina*. $\frac{3}{4}$. (Fewkes.)

side of the corona. The ovaries of *Atolla* consist of eight kidney-shaped bodies arranged about a large and spacious stomach, which assumes the form of an inflated bag, opening into a recess in the walls of the corona, from which canals extend into the tentacles and sense-bodies. *A. Bairdii* is here figured. (Fig. 427.)

Some of the most interesting medusæ discovered by the "Blake" belong to the Siphonophoræ. They are eminently pelagic in character, and wide-spread in their distribution. Previously to the "Blake" expeditions we knew only a few genera of these beautiful animals from the American coasts. Although genera of siphonophores occur in some of the most northern localities visited in Arctic exploration, the home of the group is essentially in the warmer waters. This group seems to be most varied and rich in the West Indian area. Before 1880,

not more than five genera were known from the Western Atlantic, while at the present time that number is more than doubled.

Of the aberrant group of Rhizophysidæ no less than three species are now known from the Gulf Stream. One of the most

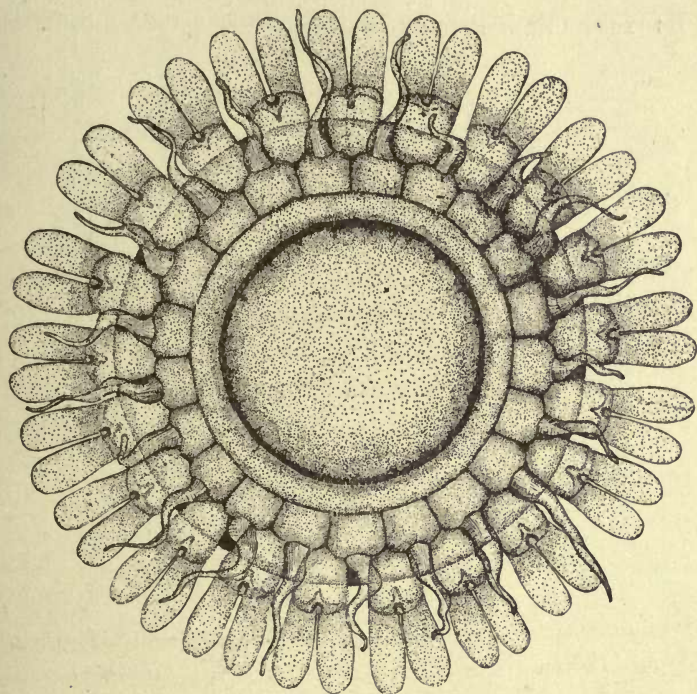


Fig. 427. — *Atolla Bairdii*. $\frac{2}{8}$. (Fewkes.)

characteristic species of the group, *Pterophysa*, has been mentioned in the chapter on the Pelagic Fauna.

Agalma Okenii (Fig. 428) is common in the Gulf Stream; it is easily recognized by the rigid nature of the colony, and by this can at once be distinguished from the *Agalma* found at Newport. The end of the axis opposite the float bears thick covering scales, while in the Newport *Agalma* the scale is leaf-like, and not cubical or polygonal.

One of the least known genera of Physophoræ is the genus *Athorybia*. It is remarkable in many ways, and differs from all known physophores in the character of its covering scales and

the absence of nectocalyces, whose function is in part taken by the covering scales. They are capable of a slight motion on their attachment, and by this movement an active propulsion is produced. The float is large, and the stem very much reduced in length. The genus is interesting from its resemblance to a young

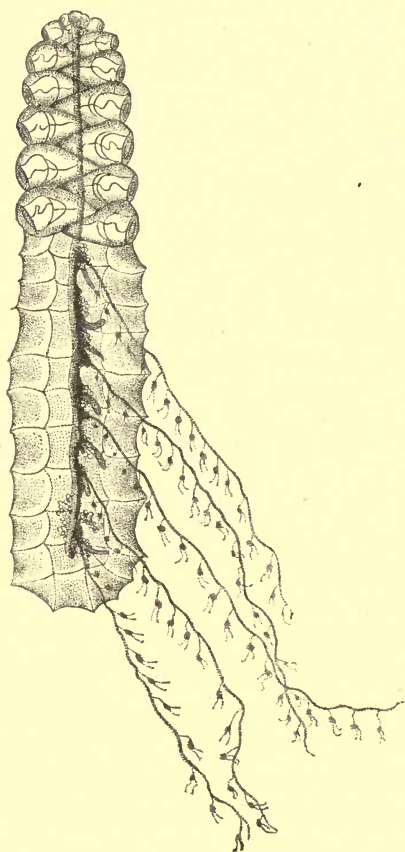


Fig. 428. — *Agalma Okenii*. $\frac{1}{4}$. (Fewkes.)



Fig. 429. — *Gleba hippopus*. $\frac{2}{1}$.
(Fewkes.)

stage of *Agalma* having no nectocalyces, in which a similar circle of covering scales is found. A new species, *A. formosa*, from the Florida Keys, has been added to the medusæ of the Gulf Stream.

The close resemblance of the swimming-bells of one genus of the floatless siphonophores to a horse's hoof suggested the name of *hippopus* to designate a wide-spread Mediterranean species (*Gleba hippopus*, Fig. 429) found in the Gulf Stream

by the "Blake." In its affinities, *Gleba* is one of the most problematical of all the siphonophores. Like the physophores, it has two rows of nectocalyces, but no true float or covering scales. Moreover, in the physophores the nectocalyces nearest the float are the smallest and the last to form, while those at the opposite end are larger. In *Gleba* the bells at the anterior extremity are fully formed, while those at the posterior end are least developed.

We have two or three species of a distinct group of siphonophores, known as the Calycophoræ, one of the most common of which is *Diphyes acuminata*. (Fig. 430.) Another species, belonging to the genus *Epibulia*, was also collected; it is similar to a Mediterranean species, and is probably the same as that recorded from the coast of Greenland by Leuckart. The genus *Abyla*, *A. trigona*, was found in the Caribbean Sea, and fragments of a large *Praya* were observed near the Tortugas. I have already alluded to this group of siphonophores as driven into Narragansett Bay during the summer.

The first extensive report on deep-sea hydroids was based upon the collections made by Pourtalès in the Straits of Florida. They are described by Professor Allman, in one of the most important memoirs ever published on this group. The subsequent explorations of the "Blake" added a number of genera possessing most important morphological characters. As has subsequently been found in other collections of deep-sea hydroids, a majority of the genera collected belong to the Plumularidæ. A species of the genus *Aglaophenia* (*A. crenata*)



Fig. 430. — *Diphyes acuminata*. ♂. (Fewkes.)