Jewels of Scientific Illustration from Oceanographic Reports in the Library of the Institute de la Mer de Villefranche

Bijoux de l'illustration scientifique dans des rapports océanographiques de la bibliothèque de l'Institut de la Mer de Villefranche

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ABSTRACT. The discipline of Oceanography might seem unlikely to harbor artistic work. However, the study of the ocean includes the study of marine organisms. Depictions of marine organisms appear in many reports of oceanographic expeditions, and some are undeniably works of art, jewels of scientific illustration. Here are exhibited a selection of plates from reports of early oceanographic expeditions held in the library of the Institut de la Mer de Villefranche. From the reports of the *Challenger Expedition* (1873-1876), the *Campaigns of Albert 1er of Monaco* (1885-1915), the *Plankton-Expedition* (1889) and the *Deutsche Tiefsee-Expedition auf dem Dampfer 'Valdivia'* (1898-1899).

RÉSUMÉ. La discipline océanographique pourrait sembler peu susceptible d'abriter des œuvres artistiques. Cependant, l'étude de l'océan inclut l'étude des organismes marins. Les représentations d'organismes marins apparaissent dans de nombreux rapports d'expéditions océanographiques, et certaines sont indéniablement des œuvres d'art, des bijoux de l'illustration scientifique. Sont exposées ici une sélection de planches issues des rapports des premières expéditions océanographiques conservées à la Bibliothèque de l'Institut de la Mer de Villefranche, à savoir les expéditions *Challenger Expedition* (1873-1876), *Campagnes d'Albert 1er de Monaco* (1885-1915), *Plankton-Expedition* (1889) et *Deutsche Tiefsee-Expedition auf dem Dampfer 'Valdivia'* (1898-1899).

KEYWORDS. Ernst Haeckel, Adolphe Giltsch, René Koehler, Reinhard Armbruster, Franz Schütt, Ewald Rübsaamen.

MOTS-CLÉS. Ernst Haeckel, Adolphe Giltsch, René Koehler, Reinhard Armbruster, Franz Schütt, Ewald Rübsaamen.

Introduction

When one thinks of masterpieces of scientific illustration, the first that comes to mind are likely the luxurious illustrations of landscapes and exotic flora and fauna in accounts of voyages of exploration such as *Voyage de découvertes aux terres australes* or works on particular taxa such as John J. Audubon's out-sized *The birds of America: from drawings made in the United States and their territories*. Illustrations in reports of oceanographic expeditions likely do not come to mind. However, in the early days of oceanography, the expeditions were indeed voyages of exploration, of the unknown. A large component of early oceanographic expeditions was then documentation of the organisms of the deep, and for this, artistic talent was a prerequisite as sketches and watercolors were used. An artist was often a member of the scientific staff. While many reports from oceanographic expeditions contained only sparse sketches focused on anatomical details of organisms, some contain illustrations that merit designation as artworks of distinction. Here is presented a small selection of illustrations from oceanographic expedition reports held in the library of the Institut de la Mer de Villefranche (IMEV). The primary goal of this exhibition is to show that jewels of scientific illustrations are unexpectedly present in the often dry reports of oceanographic expeditions. A secondary goal is to draw attention to the value of maintaining the holdings of libraries and archival collections on site allowing easy access of professionals and the public to these extraordinary works. This is because easy access fosters accidental discovery, the best kind of discovery!

The 12 works shown here in the reports of the *Challenger Expedition*, the *Campagnes scientifiques accomplies sur son yacht par Albert Ier*, the *Plankton-Expedition*, and the *Valdivia German Deep-Sea*

Expedition. The choice of illustrations was, necessarily, subjective. However certain criteria were employed. An attempt was made to show a large range of taxa, and works were favored by individuals for whom some information was available. All of the plates shown were obtained from the digital versions available through the Biodiversity Heritage Library (see the section 'Resources & Further Reading'). The image files obtained were altered to correspond in appearance with the copies held in the library of the IMEV. The alterations were primarily removing the yellowing and adjusting brightness and contrast of the Biodiversity Heritage Library images. In each of the following four sections, a brief introduction to the oceanographic reports is first given and followed by the selected plates. Little technical information is provided concerning the organisms portrayed such as the currently accepted names of the organisms portrayed, nor habitats, actual sizes, etc. The plates are presented here as works of art rather than illustrations of specimens.

1. Challenger Expedition Reports

Fig. 1. *The Challenger Expedition, from Vol. 1, the Narrative, of the Challenger Reports. The left panel shows the vessel at sea, an unsigned illustration. The right panel shows the well-known frontispiece, a woodcut of a painting by Elizabeth Gulland, a notable painter of the Victorian period, she was responsible for many of the illustrations in the "Narrative" volumes.*

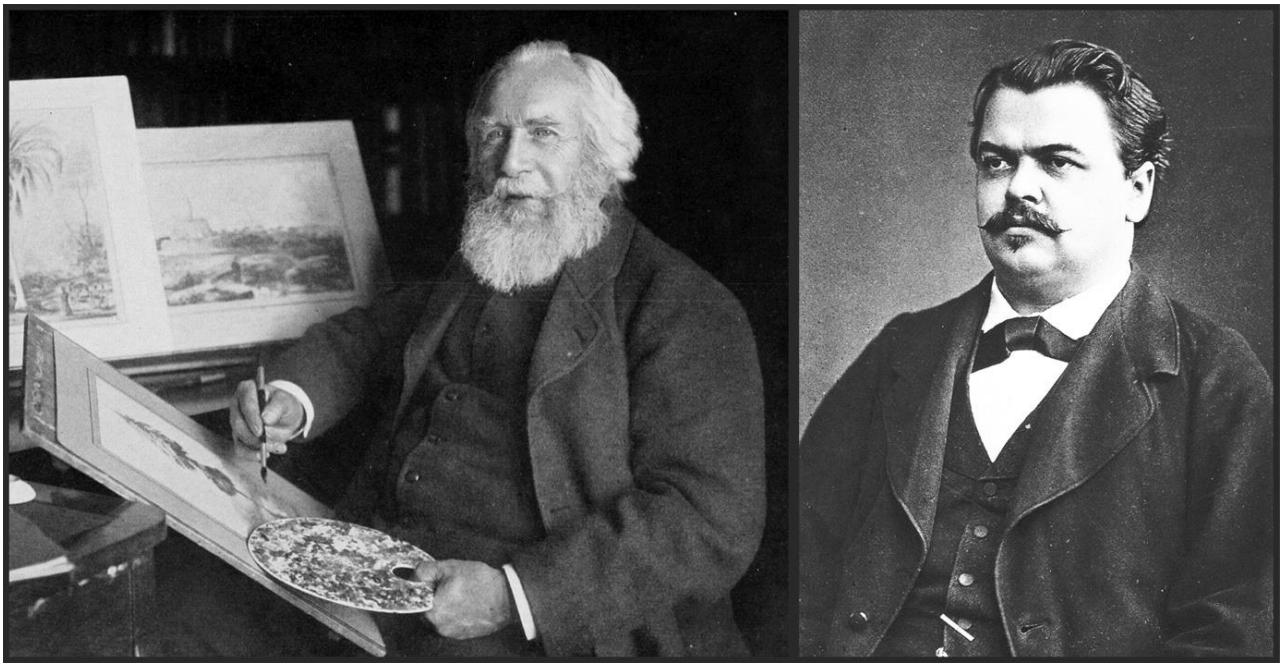

Fig. 2. *The most famous illustrations in the Challenger Expedition Reports are signed by Ernst Haeckel (1834-1919), left panel, and Adolf Giltsch (1853-1911), right panel, as the artists.*

The voyage of the H.M.S. Challenger during the years 1873 to 1876 marks the beginning of Oceanography. The "Reports of the Scientific Results" were published between 1885 and 1895 in 83 "parts", bound in 50 volumes and total nearly 30,000 pages in length. A complete collection of the Challenger Reports is held by the library of the IMEV, an uncommon privilege. Some of the most famous illustrations of marine organisms are in the Challenger Reports and these are the plates of Ernst Haeckel's reports. Here are shown four plates, all credited to both Haeckel and Adolf Giltsch, Haeckel's longtime collaborator in illustration. Haeckel recognized his debt to Giltsch and named a medusa for him in plate 26 of his classic art book, *Kunstformen der Natur*.

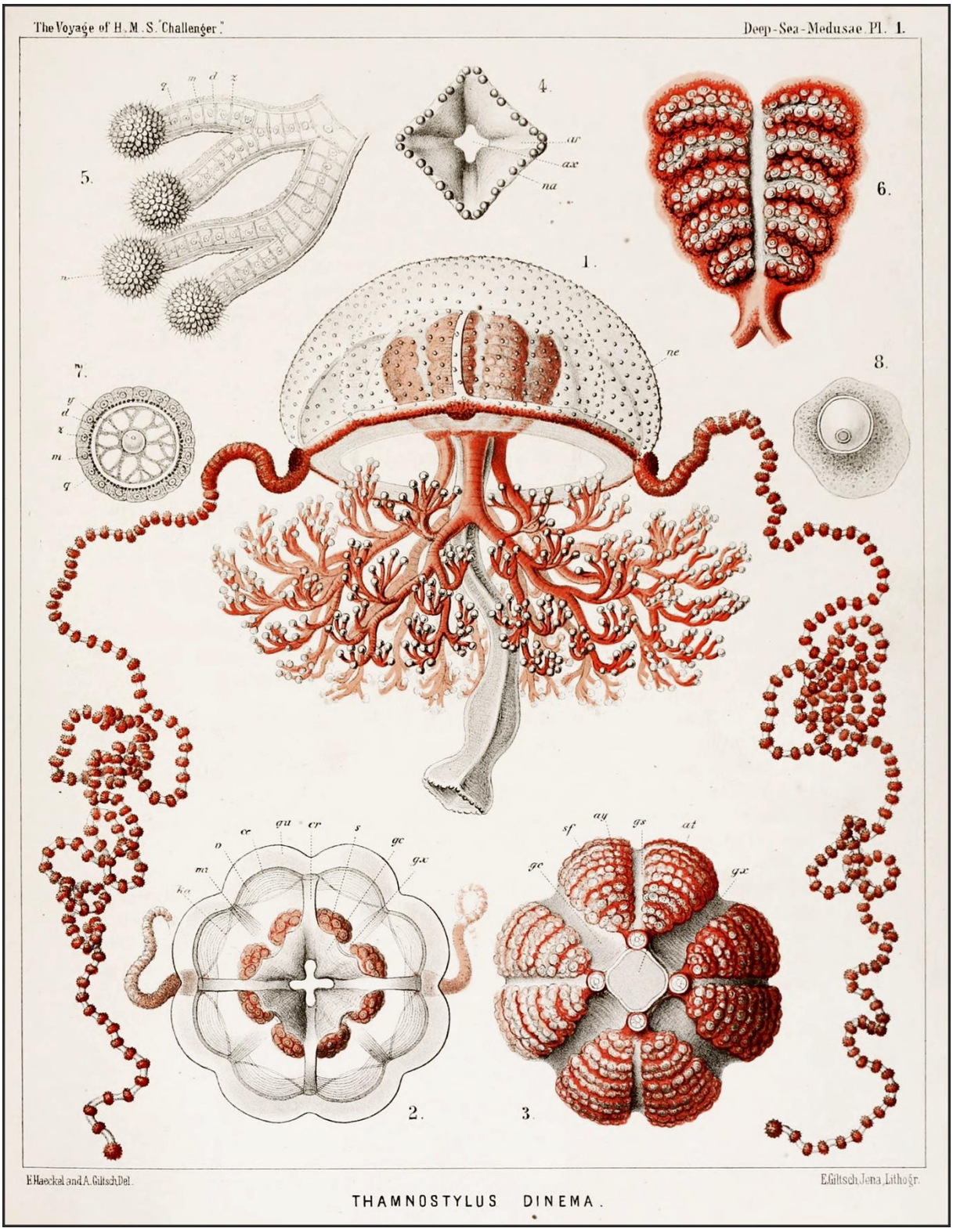

Fig. 3. *Plate 1 of vol. 4, part 12 (1882), on the deep-sea medusa. Thamnostylus dinema. Artists: Haeckel and Giltsch; lithographer: Giltsch*

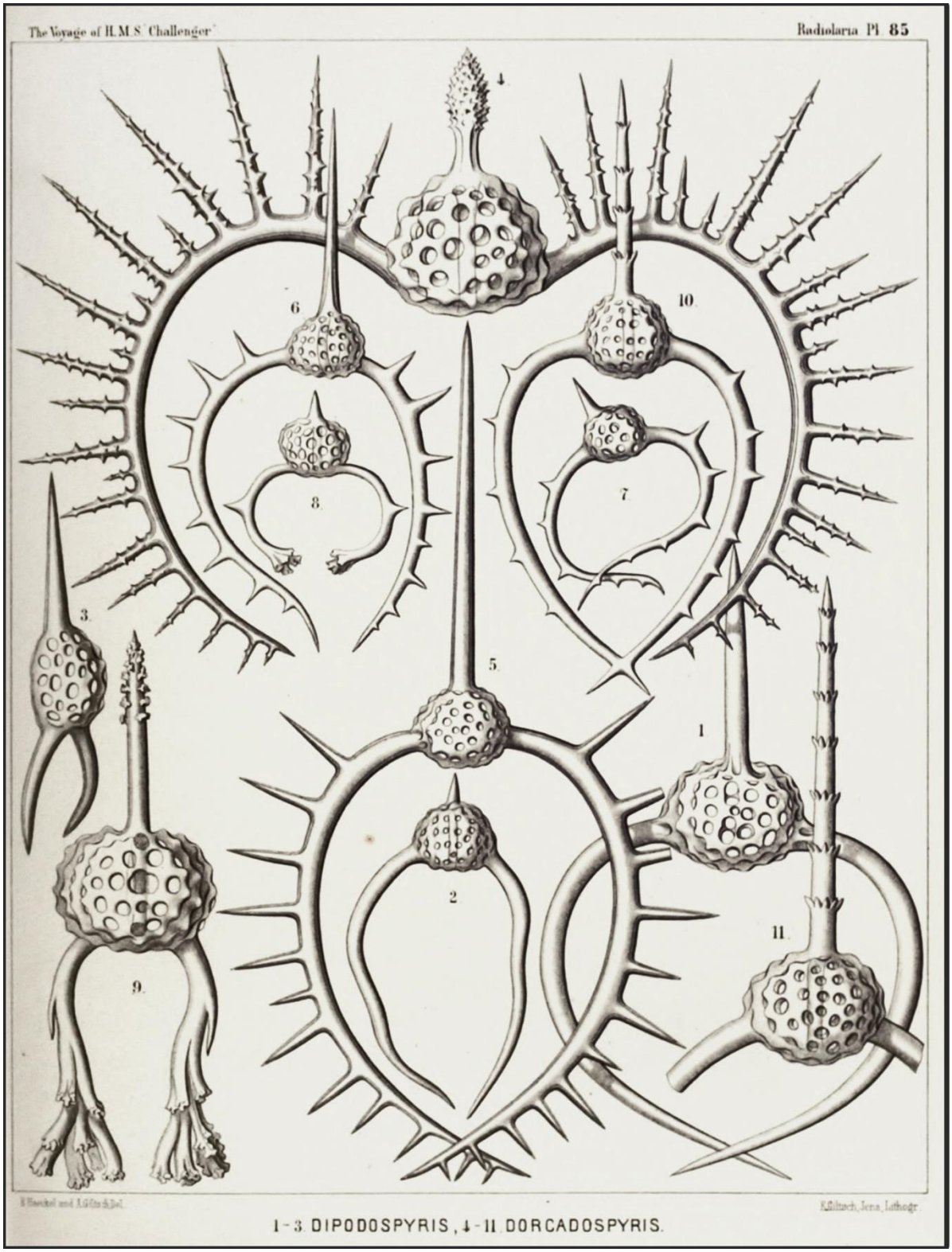

Fig. 4. *Plate 85 of Vol. 18, part 40 (1887), on the radiolaria. Species of the genera Dipodospyris and Dorcadospyris. Artists: Haeckel and Giltsch; lithographer: Giltsch.*

Fig. 5. *Plate 8 from Vol. 28, part 77 (1888), on the siphonophores. Forskalia tholoides Artists: Haeckel and Giltsch; lithographer: Giltsch. It is a classic illustration of a siphonophore.*

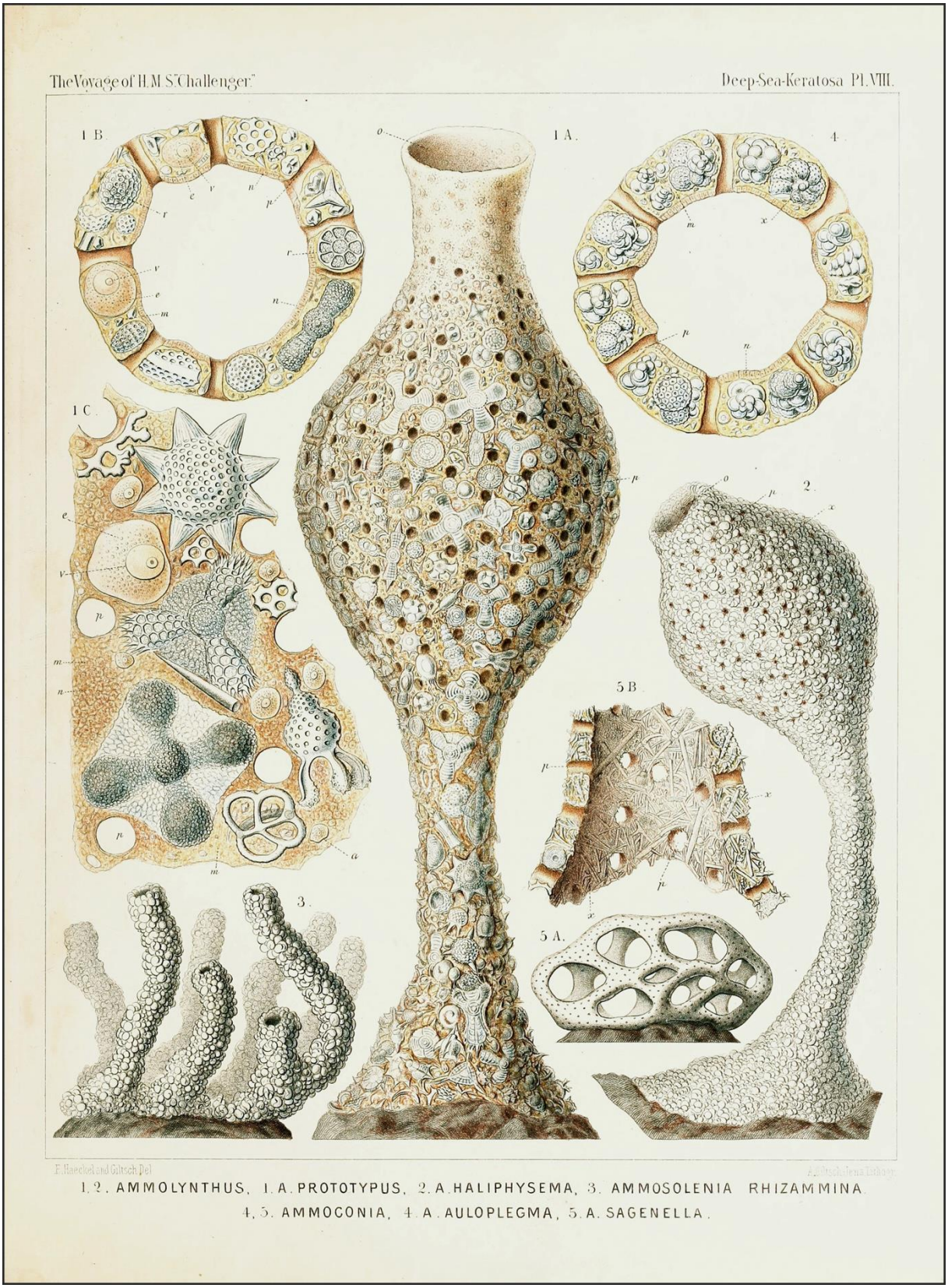

Fig. 6. *Plate 8 from Vol. 32, part 82 (1889). Species of deep-sea sponges of the genera Ammolynthus, Ammosolenia, and Ammoconia. Artists: Haeckel and Giltsch; lithographer: Giltsch. The insets show remains of radiolaria encrusted on the surface of the sponge.*

2. Résultats des campagnes scientifiques accomplies sur son yacht par Albert Ier, Prince Souverain de Monaco

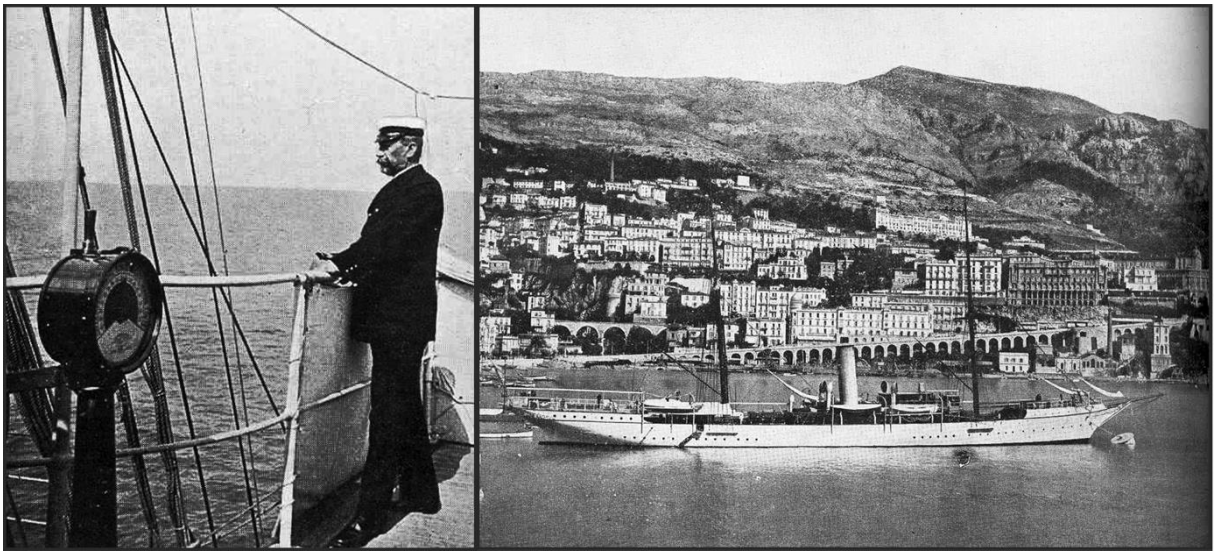

Fig. 7. *Prince Albert (left panel) and one of the Prince's yachts used in his oceanographic expeditions, the Hirondelle, in the port of Monaco (right panel).*

Albert of Monaco (1848-1922) has been called "the prince of oceanography". Aboard his yachts, the *Princess Alice I* and *II*, and the *Hirondelle*, he made dozens of excursions between 1885 and 1915 to locations as distant from Monaco as Svalbard, in the Arctic. The material gathered during his oceanographic campaigns was entrusted to various experts for analysis. Their reports constitute the *Résultats des campagnes scientifiques*, published from 1898 to 1950. The publication was, for most of the years under the direction of Jules Richard (Fig. 8), a biologist whose early work was on crustaceans. Some of the most striking illustrations in all of the *Résultats des campagnes scientifiques* were the work of René Koehler (Fig. 8), an accomplished zoologist whose specialty was echinoderms. Two of his plates are presented here in the four from the *Résultats des campagnes scientifiques*. All four of the plates shown here were printed by the prestigious firm of Werner & Winter in Frankfort.

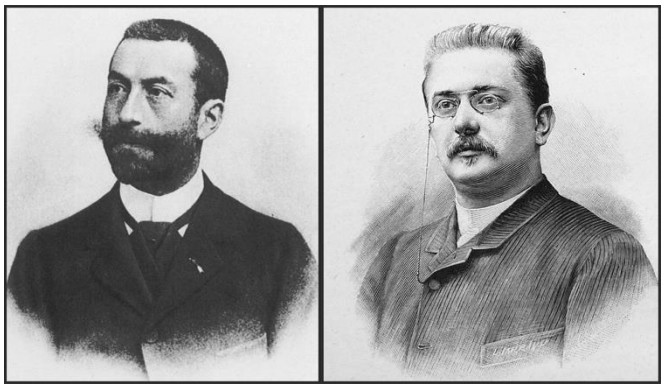

Fig. 8. *Jules Richard (1863-1945) was the Director of the Résultats des campagnes scientifiques from 1895 to 1945. René Koehler (1860-1931) was Professor of Zoology at the University of Lyon whose illustrations of echinoderms in his report are among the finest in the Résultats des campagnes scientifiques.*

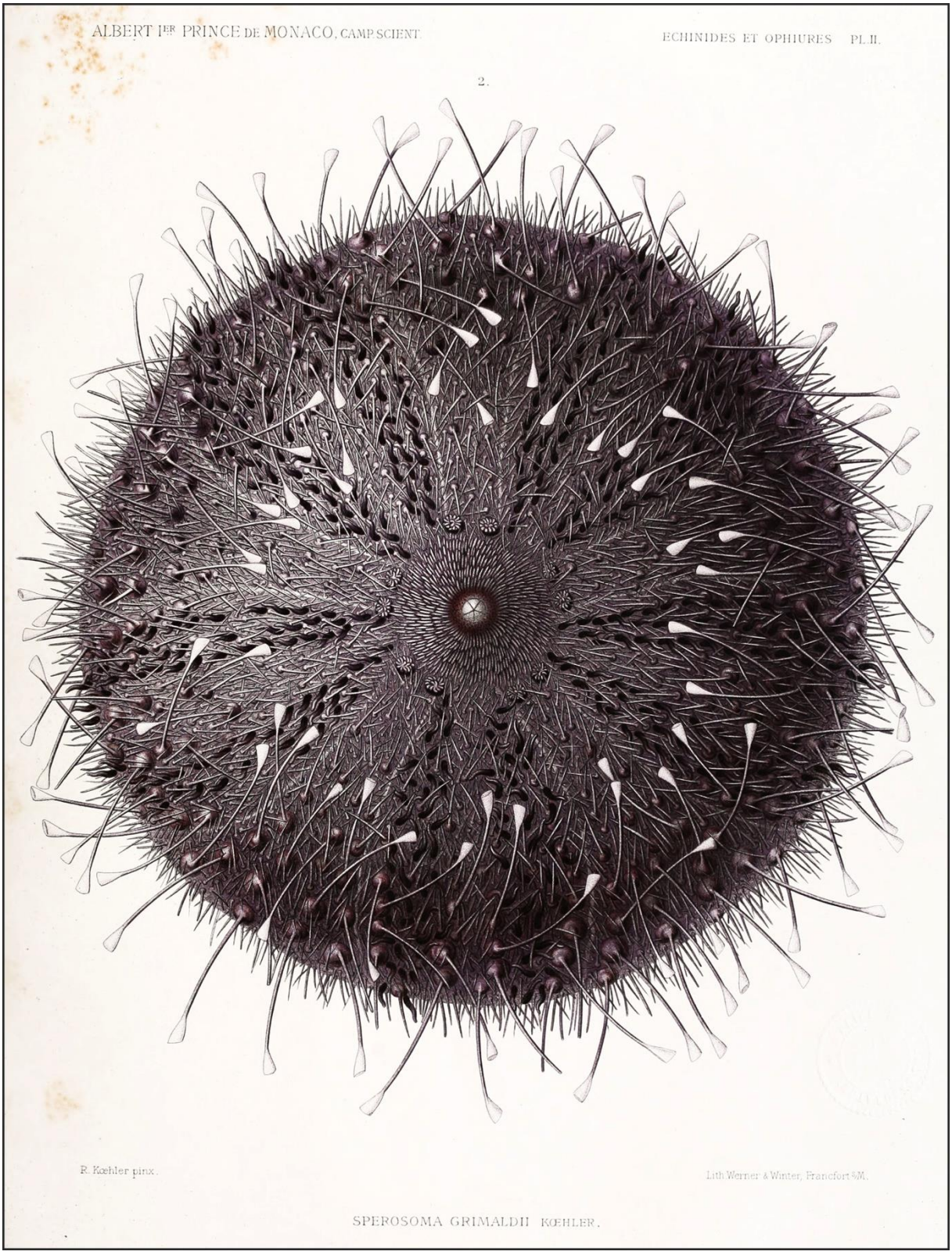

Fig. 9. *Fasc. 12 (1898) Échinides & Ophiures: plate 2. Sperosoma grimaldi. The painter (pinx.) credited is Rene Koehler.*

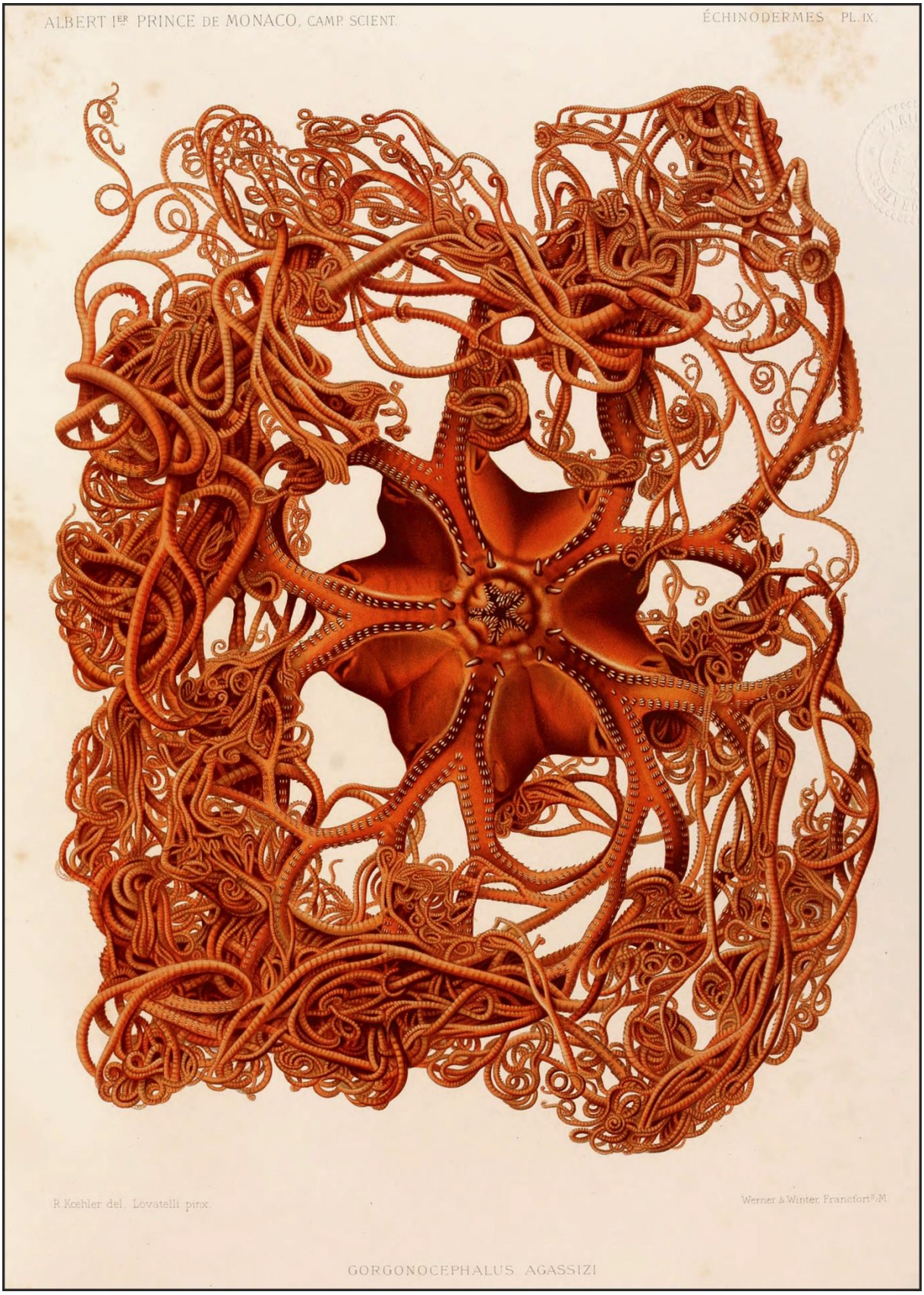

Fig. 10. *Fasc. 34 (1909) [Échinodermes]: Plate 9. Gorgonocephalus agassizi. The drawing is credited (del.) to René Koehler, and as painter (pinx.) Lovatelli (full name unknown).*

Fig. 11. *fasc.20 (1901) [Alcyonaires]: Plate 5. Stachyodes trilepis. Both the drawing (del.) and the paintings (pinx.) are credited to Reinhard Armbruster (1842-1915). The organism is a deep-sea coral.*

Fig. 12. *Fasc. 54 (1920) Céphalopodes I: Plate 5. Melanoteuthis lucens. The artist credited is Miss Vesque. According to the figure legend, after a watercolor of a living specimen by L. Tinayre done at the moment the animal was captured.*

3. Plankton Expedition Reports

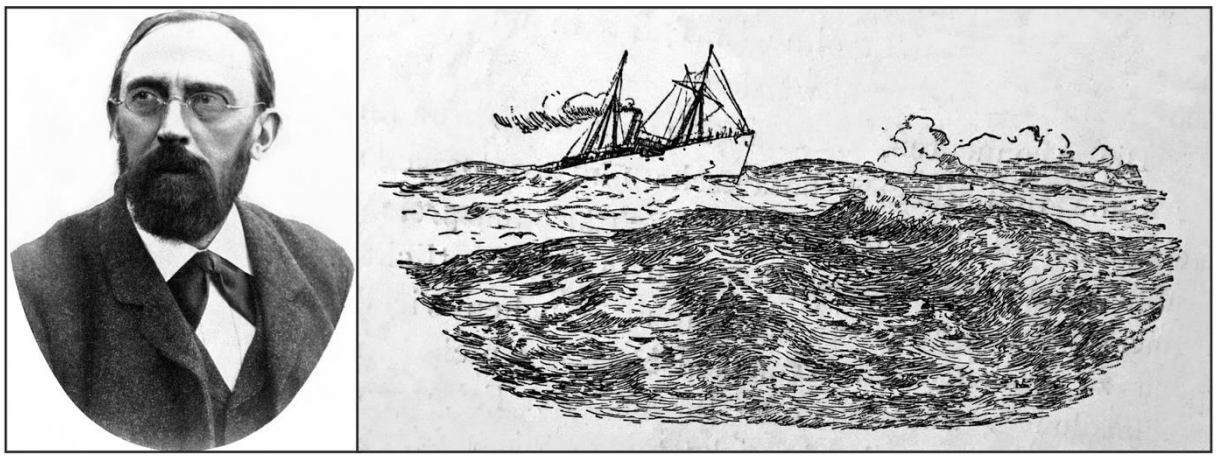

Fig. 13. *Victor Hensen (1835-1924), the organizer and chief scientist of the Plankton Expedition and the sketch of the National steaming in rough seas, which appeared on the cover of each of the Plankton Expedition Reports.*

Victor Hensen coined the term "plankton", and his Plankton Expedition of 1889 marks the beginning of Biological Oceanography. He set out to show that plankton is the base of the oceanic food webs by quantifying the biomass of plankton and to investigate the composition of the assemblages of plankton in different zones. Samples from the expedition were analysed by experts with specialized knowledge of the diverse groups of organisms making up the plankton. The reports, *Ergebnisse in dem Atlantischen Ocean von Mitt Juli Anfang November 1889 ausgeführten Plankton-Expedition der Humboldt-Stiftung*, were published over a long period (1892-1926) in 61 distinct parts totaling over 6800 pages of text and nearly 500 plates. Few institutions have a complete set. The library of the IMEV contains but a partial collection. However, among the holdings of the IMEV is the large and wonderfully illustrated volume by Franz Schütt on the dinoflagellates, a group of microscopic organisms, at the time considered to be related to plants. Schütt was among the scientists who sailed with Hensen. The plates in his report were all based on his own drawings. Shown here are two of his plates.

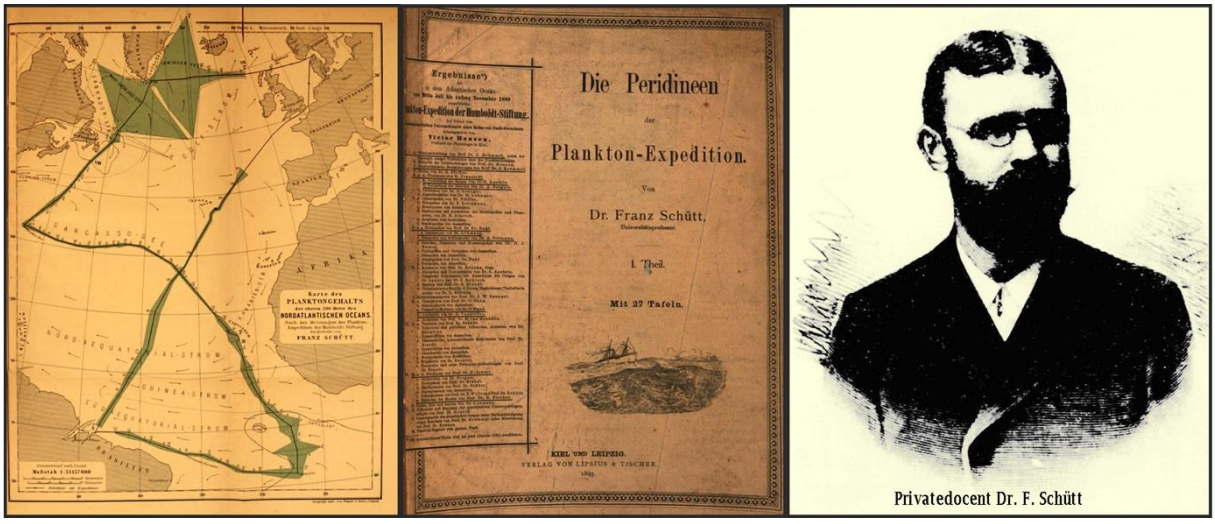

Fig. 14. *The map of Schütt's showing the cruise track of the National and variation in the stocks of plankton, the cover of his 1895 report on the Peridinea, and a portrait of Franz Schütt from 1898.*

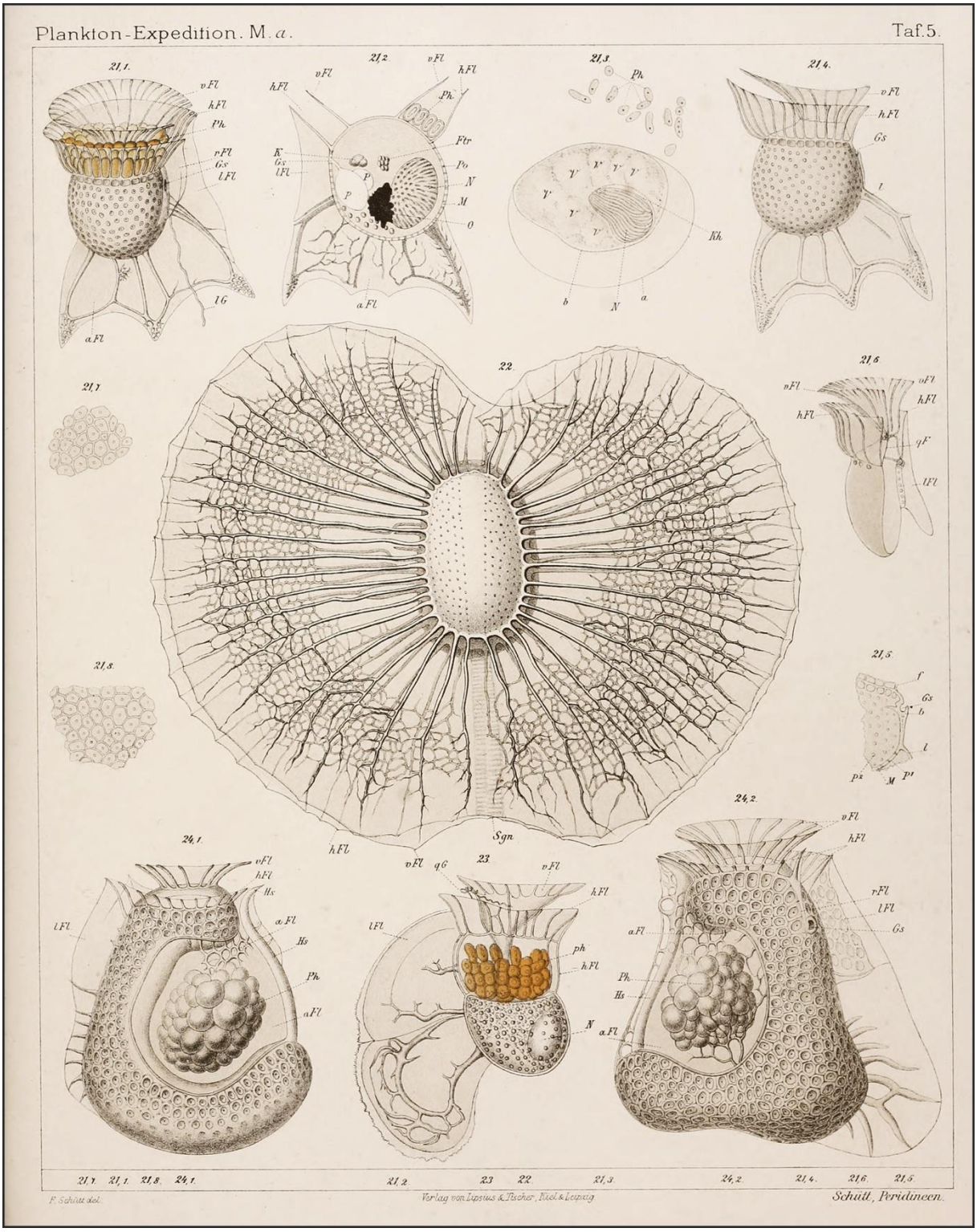

Fig. 15. *From the 1895 Bd. IV.M.a: Die Peridineen: Plate 5. Species of the dinoflagellate genera Ornithocercus (center & top half), Histioneis (bottom center) and Citharistes (bottom left and right). The actual sizes of the organisms are about 100 µm in longest dimension. The orange spheres are symbiotic algae. The artist credited (del.) is F. Schütt, the lithographer (Lith. Artist) is Emil Laue.*

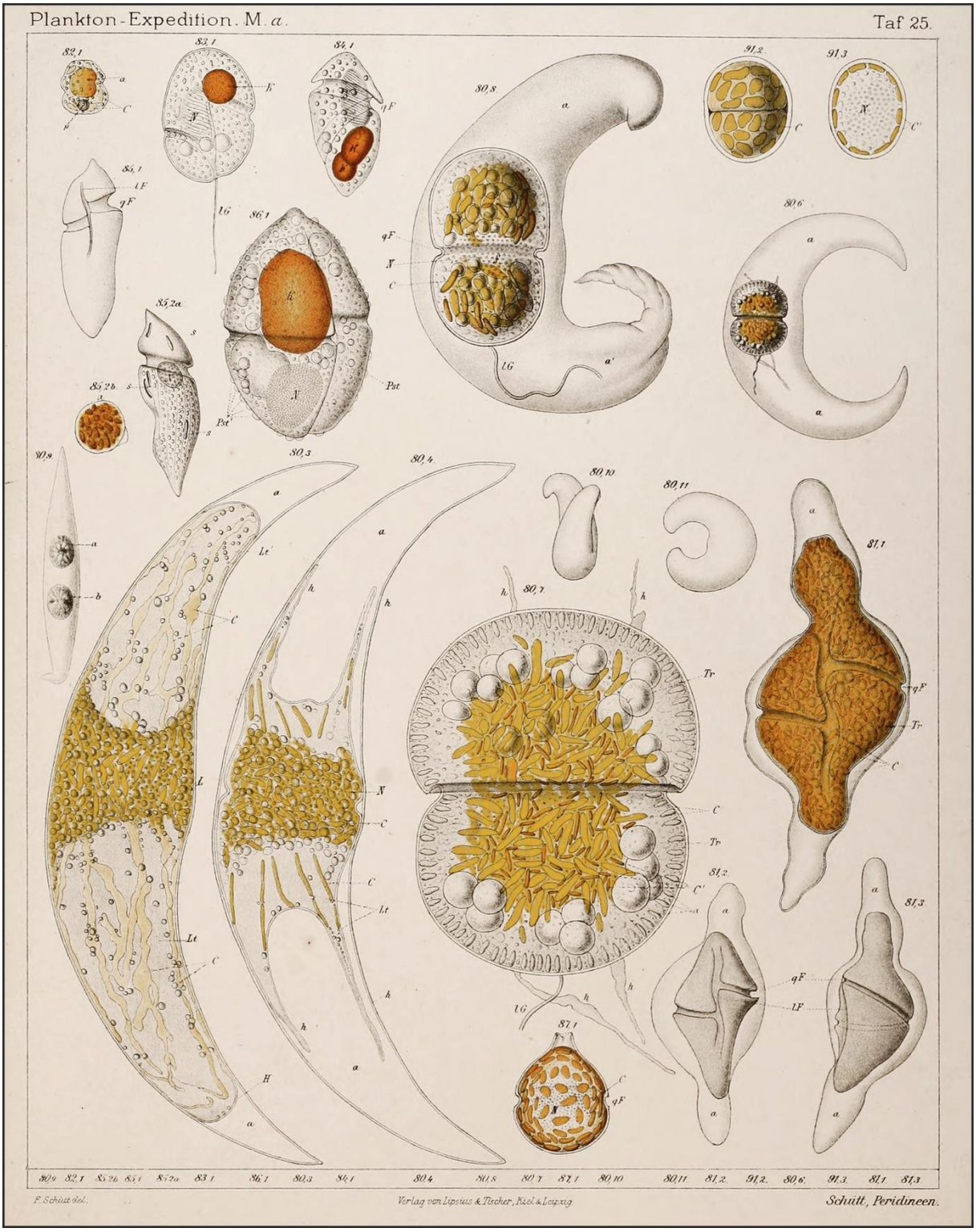

Fig. 16. *From the 1895 Bd. IV.M.a: Die Peridineen: Plate 25. Species of the dinoflagellate genus Gymnodinium. The crescent-shaped cells, now known as Pyrocystis lunula are about 150 µm in longest dimension. The artist credited (del.) is F. Schütt, the lithographer (Lith. Artist) is Emil Laue.*

4. Valdivia German Deep-Sea Expedition

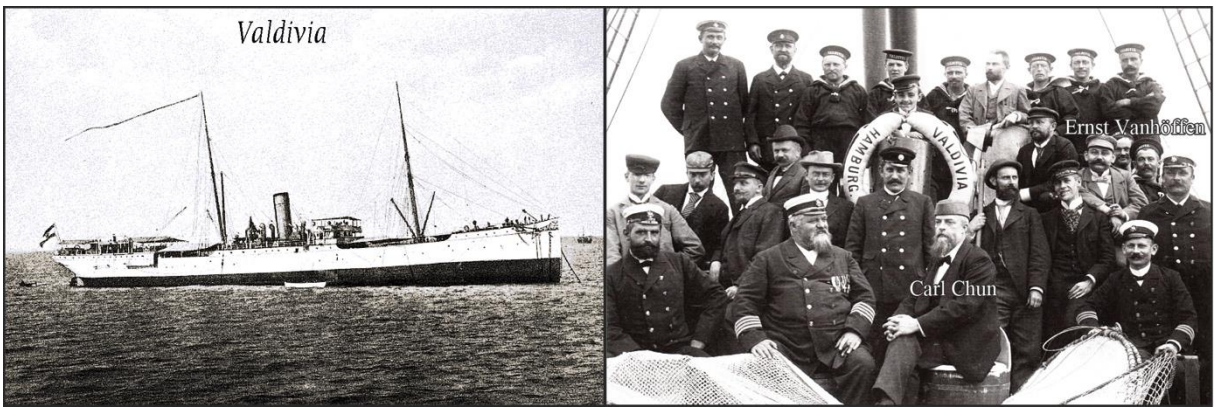

Fig. 17. *The steamer Valdivia and the personnel (captain, crew and scientific staff) of the cruise. Labeled are the chief scientist Carl Chun, the organizer of the cruise, and Ernst Vanhöffen, author of the report featured here.*

The German Deep-Sea Expedition of 1898-1899 (*Deutsche Tiefsee-Expedition auf dem Dampfer 'Valdivia' 1898-1899*) was the last great oceanographic expedition of the 19th century. The organizer and chief scientist of the expedition, Carl Chun (1852-1914), was an expert on deep-sea pelagic organisms. The cruise was designed to concentrate sampling in zones that had not been explored by the Challenger Expedition. Like the Challenger Reports, the reports of the expedition, entitled *Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898-1899*, were published in parts dedicated to specific taxa. In all, there are 98 titles published between 1902 and 1940. Ernst Vanhöffen (1858-1918) was one of the scientific staff of the expedition (Fig. 17) and was responsible for investigations of the medusa species. His first report was on Scyphozoan medusa (Fig. 18). The eight plates were all done by Ewald Rübsamen (1857-1928). He was a notable entomologist who was very talented with a pencil or brush. He had first trained as art teacher before turning to Zoology. Here two of the plates are shown.

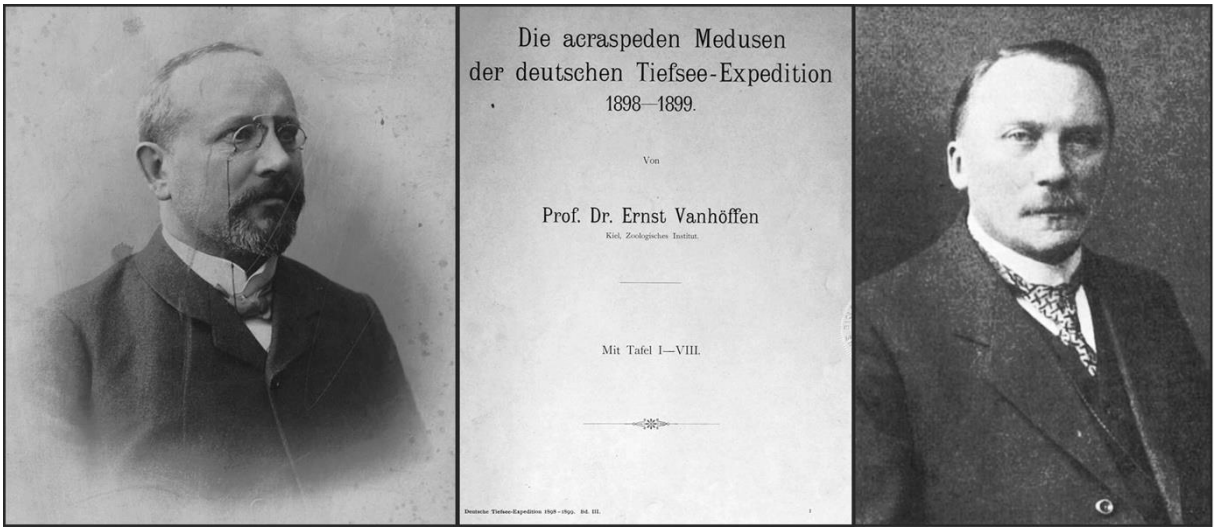

Fig. 18. *Ernst Vanhöffen (left panel), the cover of his first 1903 report on medusa species (center panel) and Ewald Rübsamen, the illustrator of the report.*

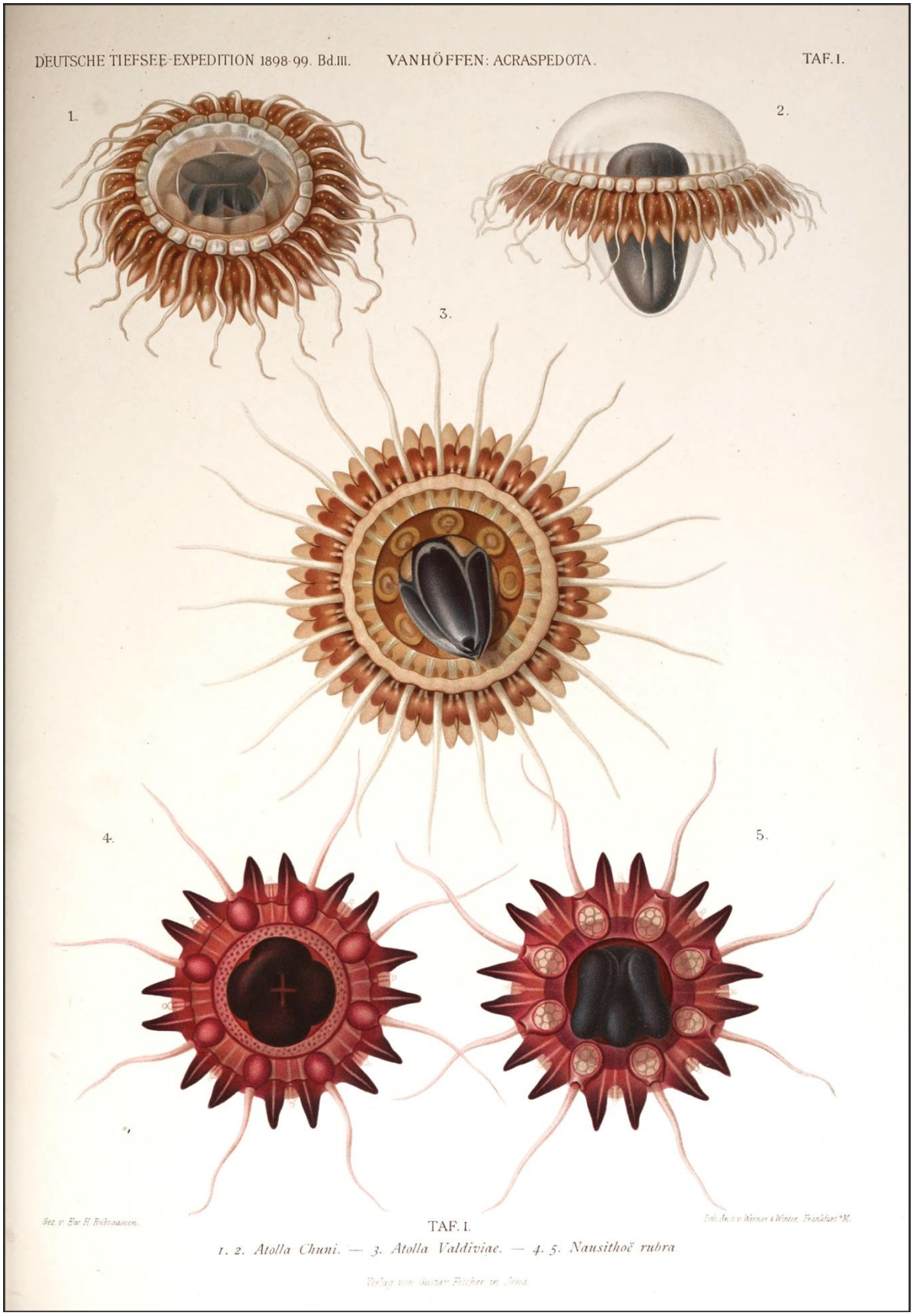

Fig. 19. *From the 1903 Bd. 111: Plate 1. Species of Atolla and Nausithol. The artist (gez.) is Rübsamen; the lithography is credited to Werner and Winter.*

Fig. 20. *From the 1903 Bd. 111: Plate 3. Palephyra indica (10), Atorella subglobobosa (11), and Sanderia malayensis (12). The artist (gez.) is Rübsamen; the lithography is credited to Werner and Winter.*

Acknowledgements

The comments and corrections of the anonymous reviewers and Christian Sardet, on a previous version of the manuscript, were very helpful.

Resources & Further Reading

Introduction

Voyage de découvertes aux terres australes https://www.biodiversitylibrary.org/item/96197#page/12/mode/thumb

John J. Audubon, *The birds of America: from drawings made in the United States and their territories*

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I. Challenger Expedition

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