

Depictions of the Deep: Illustrations in the Popular Press of Deep-Sea Animals from Jules Verne (1860's) to William Beebe (1930's) and beyond

Portrait des eaux profondes : Évolution des illustrations d'animaux des profondeurs dans la presse populaire, de Jules Verne (1860) à William Beebe (1930) jusqu'aujourd'hui

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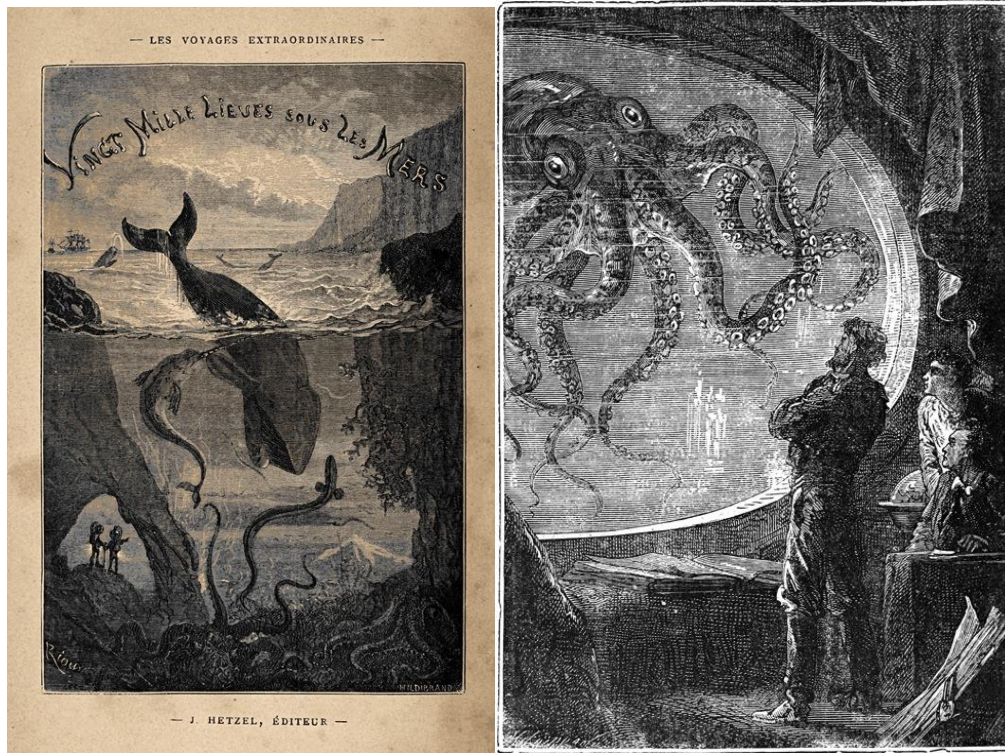
ABSTRACT. Our vision of deep-sea life changed dramatically with the results of scientific explorations and study of the deep that began in the 1860's. Mythical monsters, epitomized by Jules Verne's giant octopus, gave way to mysterious landscapes inhabited by odd creatures actually dredged up from the deep. While we now know of the diversity and unusual life cycles of deep-sea creatures, visions of the deep as a world of monstrous creatures persists today in the popular press.

KEYWORDS. scientific illustrations, popular press, oceanography, deep-sea exploration, history of science, history of oceanography, marine biology.

Introduction

Here are shown, in five 'chapters', changes in the depictions of deep-sea life in popular books and magazines. The time period covered is from the era of Jules Verne (1860's) to that of William Beebe (1930's) and to recent years. The major focus is on the period of the 1860's to the 1930's as it corresponds, firstly with early scientific exploration of the deep-sea, and secondly, growth in our knowledge of natural history of organisms in the deep-sea. Traditionally images such as those illustrating "20,000 Leagues under Sea" (and before) were of mythical monsters in the deep sea. With the first scientific explorations of the deep sea, from the 1860's - 1920's, the existence of odd creatures became known. The deep-sea was then depicted as an eerie land of monstrous forms but about which little was known. Finally with the first systematic studies, including in situ observations by William Beebe, some of the natural history of deep-sea organisms became known. Organisms were then shown with their predator-prey relationships and depictions of life-cycle stages of deep-sea animals appeared. From the eras of Jules Verne to that of William Beebe, the imaginary monsters of the deep were gradually replaced by actual animals but of many with frightening shapes and unimaginable life cycles. Nonetheless, ferocious-looking and monstrous forms of the deep-sea still remain popular in contemporary works.

I. Jules Verne's 1860's: Mythical Giants ruled the Deep in the Popular Press



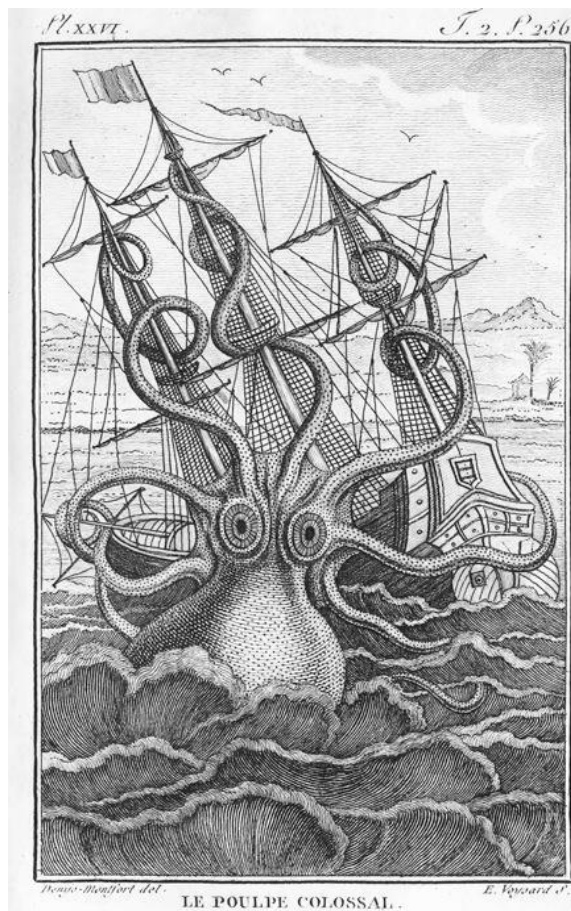
1869. Left Panel: Jules Verne's "*20,000 leagues Under the Sea*", the frontispiece in first edition 1869 showing sea serpents, giant narwhals and octopus observed by deep-sea divers. Right Panel: Captain Nemo admiring a giant octopus. Illustrations by Édouard Riou. The inspiration for Nemo's encounter is said to have been inspired by the "Calmar de Bouyer" alleged event of 1861 in which a giant squid was captured (below).



1865. "*Le Monde de la Mer*" (Frédol 1865) contained an illustration of an alleged "1861 event": the capture of a giant squid by the crew of the French steamer Alecon, near Cayene. Illustration by P. Lackerbauer. The event, doubted by Frédéric, included killing the squid by firing several cannon balls into it. The images of this event are said to have inspired Jules Verne (Hatcher & Battey 2013). The giant deep-sea creatures in Jules Verne's book were commonly thought to exist in the 1860's despite the dominant scientific view that life was not possible at great depth. Images of giant creatures from the deep attacking ships have a long history as shown below.



1868. An illustration of the "Kraken" - the mythical deep-sea creature attacking a ship during a storm at sea. Illustration by E. Etherington. From Mangin's 1868 "*Les Mystères de l'Océan*". Mangin detailed the long existence of Kraken stories.

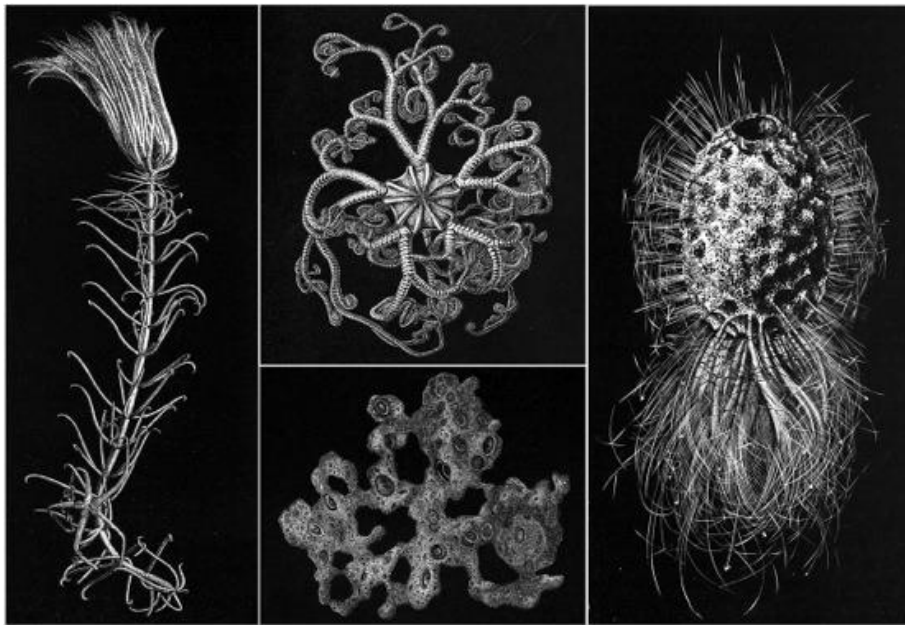


1802. The first "scientific description" of a giant cephalopod: Le Poulpe Colossal (Giant Octopus) from Denys-Monfort (1802). Illustration by P. Denys-Monfort. Today it is considered no more than an imagined deep-sea monster based on Denys-Monfort's finding a large tentacle, likely from a deep-sea squid.

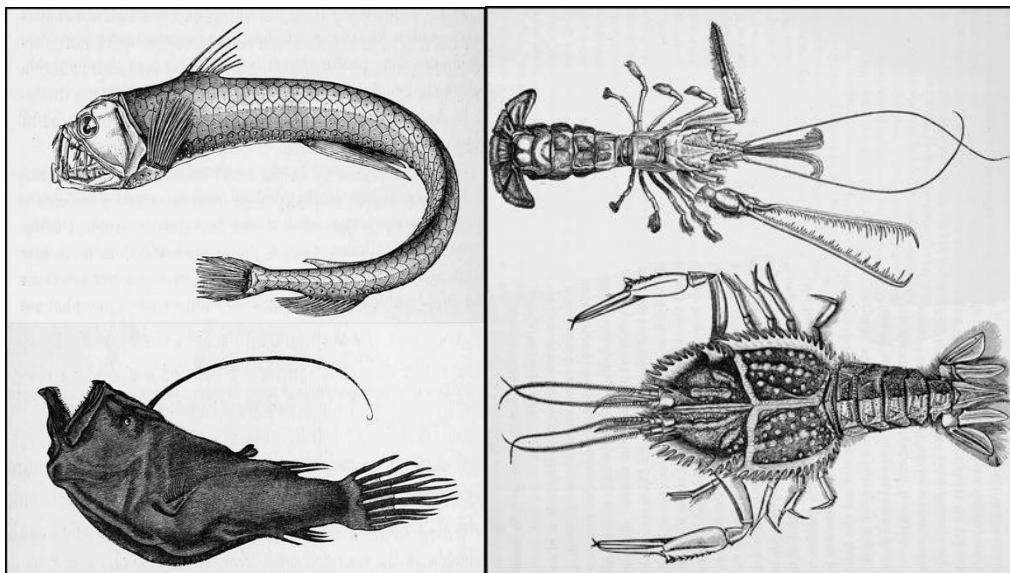
II. Early Scientific Explorations of the Deep-Sea 1862- 1900: Existence of life and strange creatures at great depths revealed



1862. This sketch of a brittlestar wrapped around a piece of sounding rope is likely the first image of a deep-sea creature (from 2000 m depth) brought up alive, from Wallich 1862, Plate I. Illustration by G.C. Wallich. About the same time that *20,000 Leagues* was being written, the first deep-sea explorations were underway. Early observations of deep-sea creatures were of organisms on telegraph cable brought up from deep water for repair (e.g. Milne-Edwards 1861) dispelling the dominant scientific notion of the time that life was not possible at great depth (i.e., Forbes 1844). One of the early expeditions to determine the suitability of the sea-bed characteristics for laying telegraph cables was an expedition of the British ship *H.M.S. Bulldog* sounding between Great Britain and Canada in 1860. During the sounding operations, living deep-sea animals were brought up, seastars - having attached themselves to the ropes dragged along the sea bottom. The image above is from Wallich's 1862 account of the *Bulldog* expedition. He found deep-sea forms that resembled those known from shallow waters, not monsters of any sort.

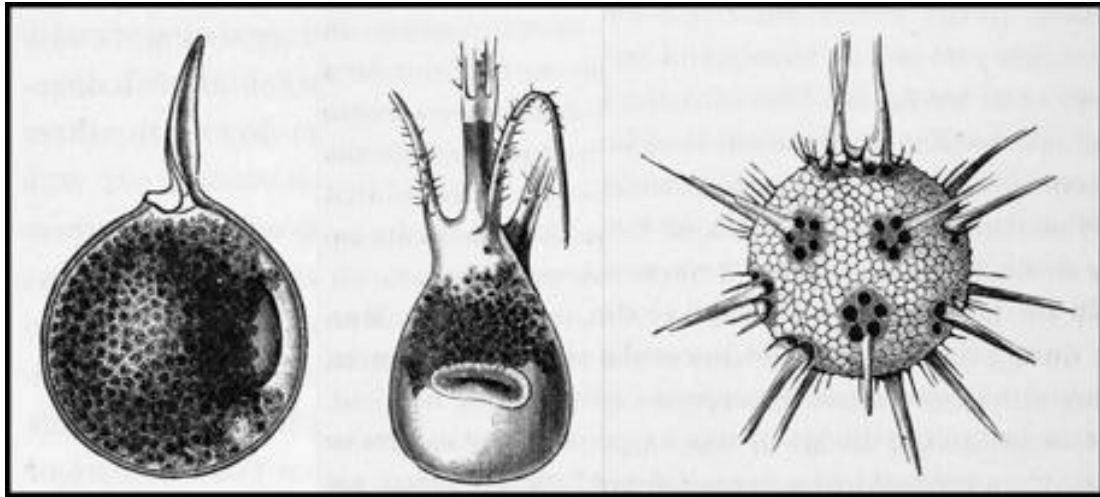


1873. Following soon after the explorations of the *Bulldog* were the voyages of the *Porcupine* and *Lightning* made famous in Thompson's 1873 book: "*The depths of the Sea*". While the *Bulldog* expedition was a submarine survey seeking information for laying a telegraph cable, the *Porcupine* and *Lightning* expeditions were specifically focused on collecting deep-sea life. The book's illustrations of novel organisms in the dark sea, on a black background, were striking and the first use of white on a black background. Illustrations by J. Wild. The organisms shown above appeared as 4 separate illustrations. At the left, a stalked crinoid (relative of a seastar), top center is a brittlestar much like the one retrieved on a sounding rope from the *Bulldog* expedition, the bottom center shows a microscopic amorphous mass "*Bathybius*", thought to be a primordial life form, a few years later revealed to be an inert chemical precipitate (Rehbock 1975), and at the left, a deep-sea sponge skeleton.



1877. The results from the *Porcupine* and *Lightning* revealing the existence of deep-sea life, motivated in large part the organization of the *Challenger Expedition* (1873-1876), the first global-scale oceanographic expedition (Bailey 1953). The 3-year voyage eventually yielded a massive series of 50 volumes composed of over 80 monographs published from 1885 to 1889. The illustrations above, from the *Preliminary Report* by C.W. Thompson in 1878, showed ferocious fish,

monstrous, but small (left panel) and showed armored prawns, perhaps monstrous, but also small. Illustrations by J. Wild.



1877. Another illustration from the *Preliminary Report* by C.W. Thompson in 1878 showed tiny jewels of the deep sea - "Challengerids", protists of the microzooplankton, he named them (all about 200 μm in size) for the ship, the *Challenger*. Illustrations by J. Wild.



1885. The first French oceanographic expedition was the expedition of the *Travailleur* in 1880 (Rice 1980). In 1885 Filhol published "*La Vie au Fonds des Mers: Les explorations sous-marines et les voyages du Travailleur et du Talisman*". Left Panel: Animals of the deep sea shown in an eerie landscape. Right Panel: a fantastic, garden-like seascape. Illustrations by A.L. Clément.

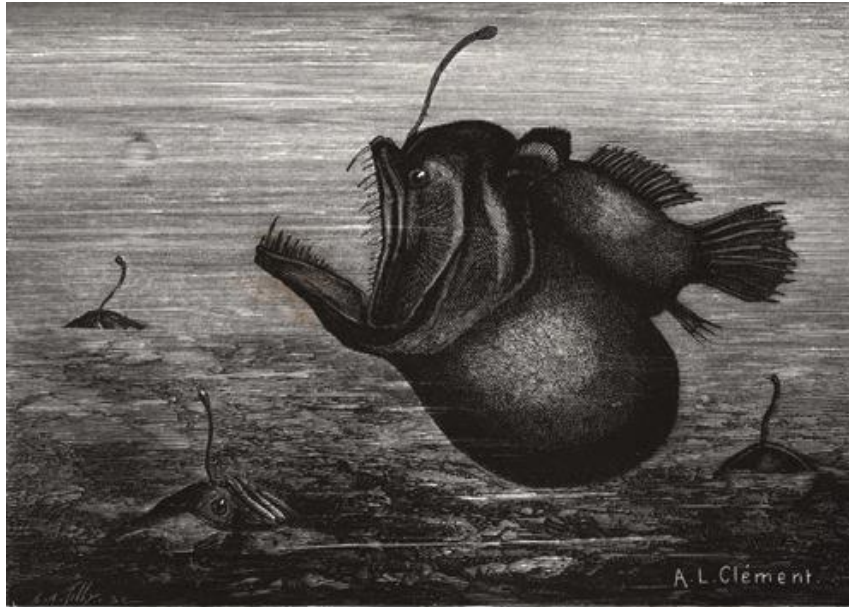
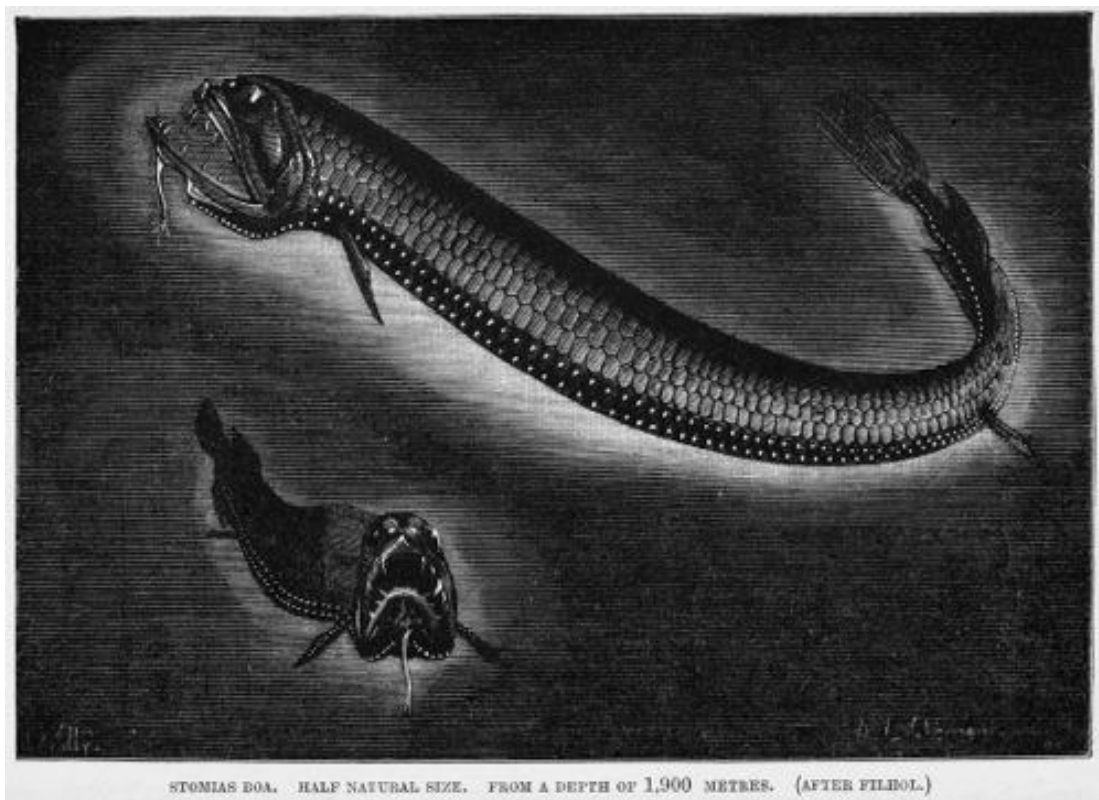


Fig. 27. — *Melanocetus johnsonii* (Günth.). Moitié de grandeur naturelle.

1885. A sea of fierce anglerfish from Filhol "La Vie au Fonds des Mers: Les explorations sous-marines et les voyages du Travailleur et du Talisman". Illustration by A.L. Clément.




STOMIAS BOA. HALF NATURAL SIZE. FROM A DEPTH OF 1,900 METRES. (AFTER FILHOL.)

1894. By 1894 some of Filhol's images of scary fish mages were becoming wide-spread appearing in other books such as Hickson's book "*Fauna of the Deep*" published in 1894. Illustration by A.L. Clément.

III. Early Modern Period 1900 - 1928: Actual deep-sea creatures appear in not only in books but also newspapers and magazines

SAN FRANCISCO CHRONICLE, FRIDAY, NOVEMBER 11, 1900.

FIVE MILES UNDER WATER.




RUN ON THE bow of the Albatross, the command of the United States Fish Commission, the Albatross, under the command of Lieutenant-Commander J. J. Galloway, is on her way to the bottom of the Pacific Ocean. She is the first of a new class of deep-sea fishing vessels, and her mission is to explore the deep-sea fisheries of the Pacific. She is now five miles under water, and her crew is busy with their work.


The Albatross is a small, fast, and maneuverable vessel, and she is well equipped for her work. She has a powerful engine, and she is able to dive to a depth of five miles. She is also equipped with a variety of fishing gear, and she is able to catch a wide variety of deep-sea fish.

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UNITED STATES FISH COMMISSION STEAMER ALBATROSS



MARK GENERAL RUSSIAN WORK U.S.S.




Illustration of several glass jars containing various specimens, likely deep-sea fish or other marine life.




Illustration of a large fish, possibly a shark or a large cod, being hauled up by a crane.




Illustration of a large fish, possibly a shark or a large cod, being hauled up by a crane.


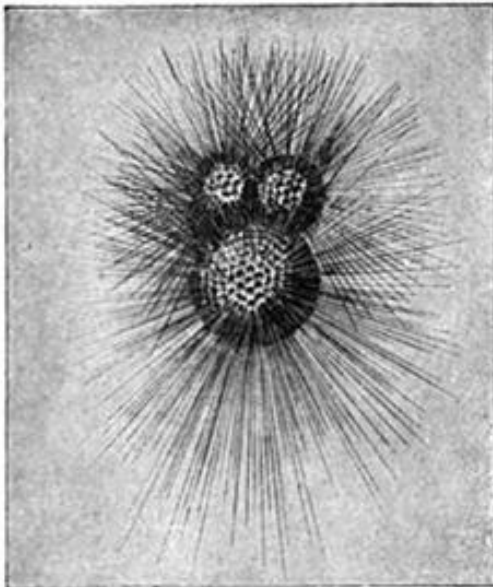


Illustration of a large fish, possibly a shark or a large cod, being hauled up by a crane.

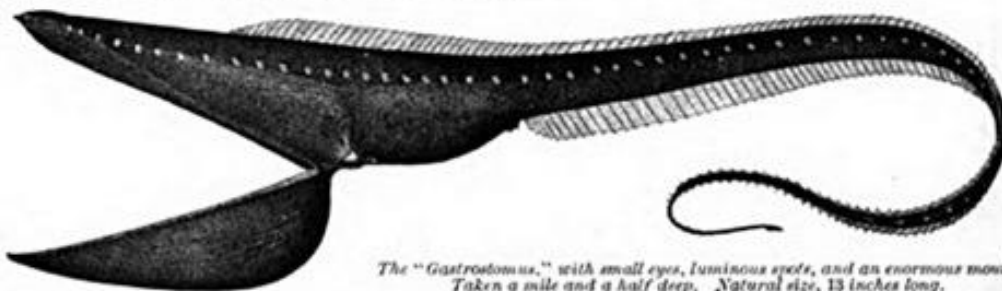
1900. The *San Francisco Chronicle* reporting on the findings of the *Albatross* explorations of the deep Pacific. Pictured were preserved odd deep-sea fish but note that a deep-sea octopus still decorated the view of the deep sea. Illustration by L. Anguth.



tively upon the character of the surface life prevailing above them.

Beyond these, in the deeper parts of the ocean, we find the *red clay* deposits, which cover about half the ocean floor. This region is not affected by material from the land, and receives little matter from the surface belt. It lies so deep that the shells of pelagic organisms falling down are removed through the solvent action of the deep water. The red clay is believed to have formed slowly, not more than a few feet of matter having accumulated since the Tertiary period.

Exploring in the mid-Pacific basins, the *Albatross* encountered many wide areas nearly destitute of animal life, but covered almost entirely by mineral deposits, principally manganese. The detailed study of marine deposits will help to solve mysteries in the evolution of the continental and



The "*Gastrophysus*," with small eyes, luminous spots, and an enormous mouth. Taken a mile and a half deep. Natural size, 13 inches long.



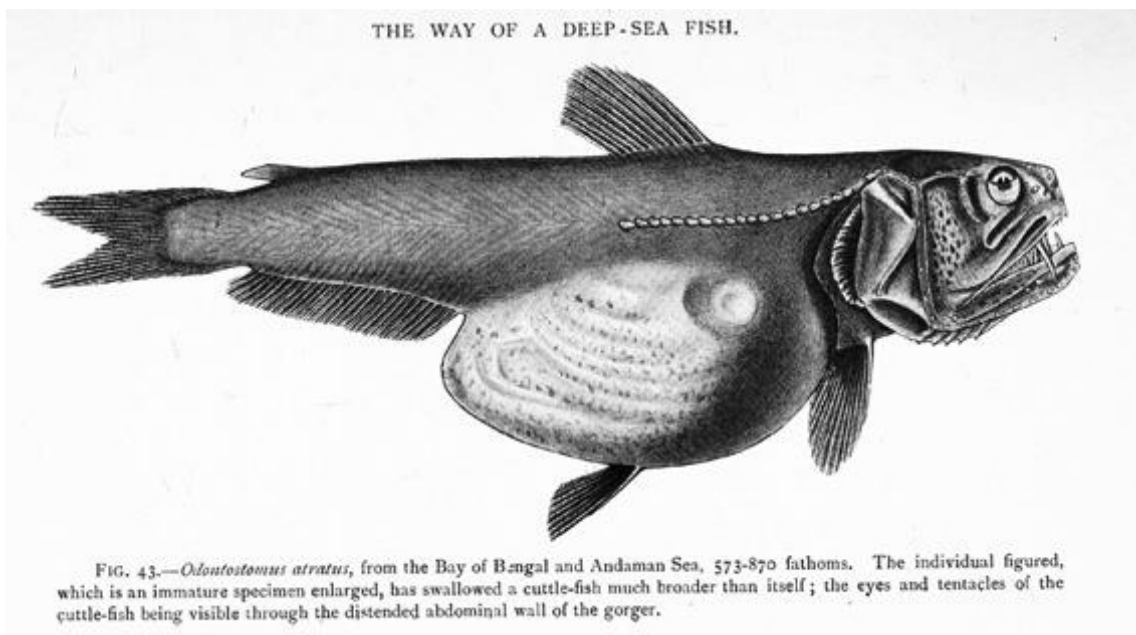
At the top are living Foraminifera; below, Crinoids, or Scutellias (animals, not plants).

oceanic areas. Plant life has not been found in great depths, and marine vegetation exists along the shore region, and only down as far as sunlight can penetrate.

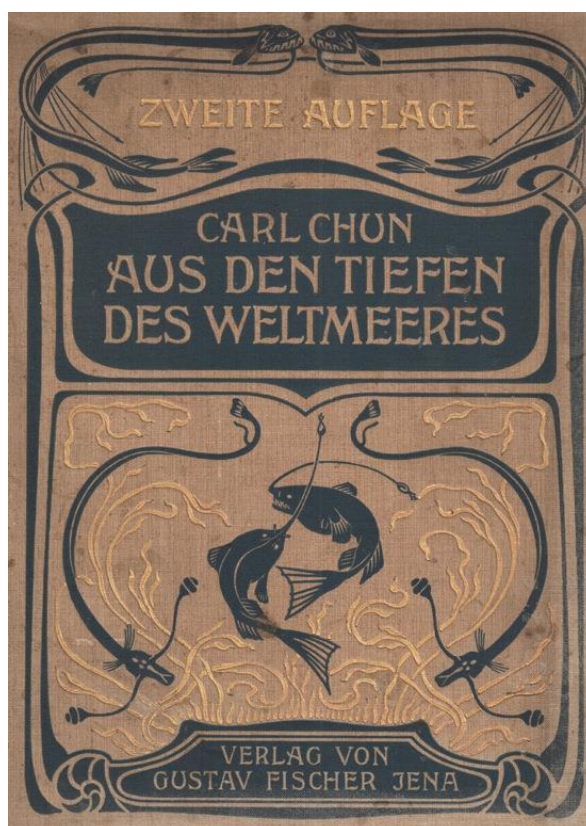
From the evidence now at hand with respect to light in the sea, it seems certain that the sunlight does not extend below a couple of hundred fathoms, and even there becomes very dim. Below this the vast body of the ocean is absolutely dark. The brilliantly colored and abundant surface life is not found here, and the whole region is devoid of animals, except for the sinking through it of the calcareous remnants of those which have died at the surface. This is the intermediate and probably lifeless belt.

The abyssal region at the bottom is illuminated only where there are animals, in which case the light is phosphorescent. It has the actinic property of rendering conspicuous the reds, yellows, and greens which predominate among deep-sea animals. Dredg-

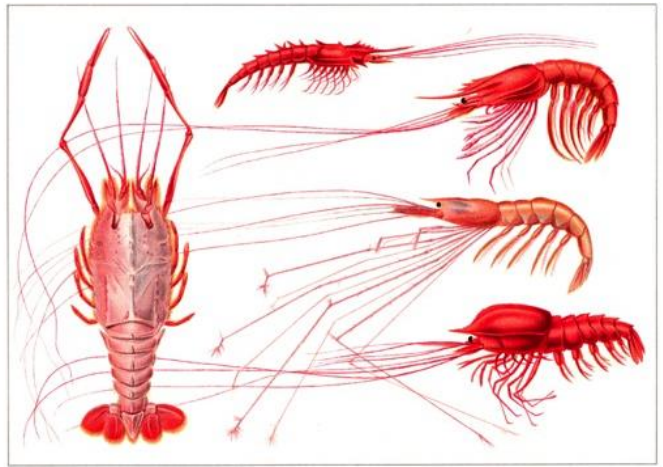
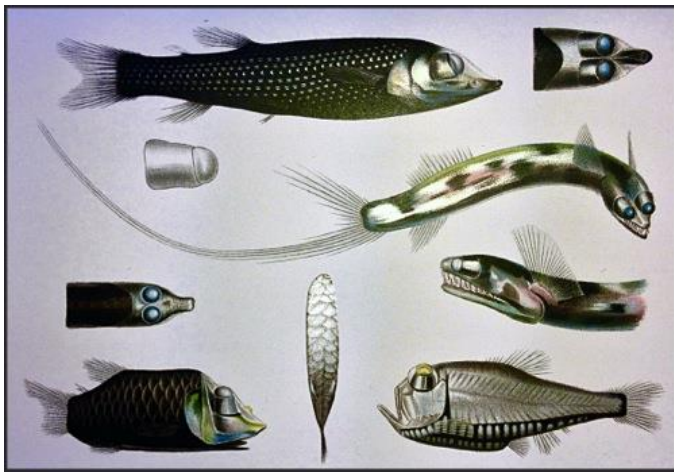
1902. From an article in "*Everybody's Magazine*" by C.H. Townsend: "Life in the Deep Sea", also on the *Albatross* expeditions. Note that that non-monstrous organisms, a microscopic foraminifera (top) and a flower-like crinoid (bottom) were shown along with the Gulper Eel. The unattributed illustrations were likely those of J. Wild.



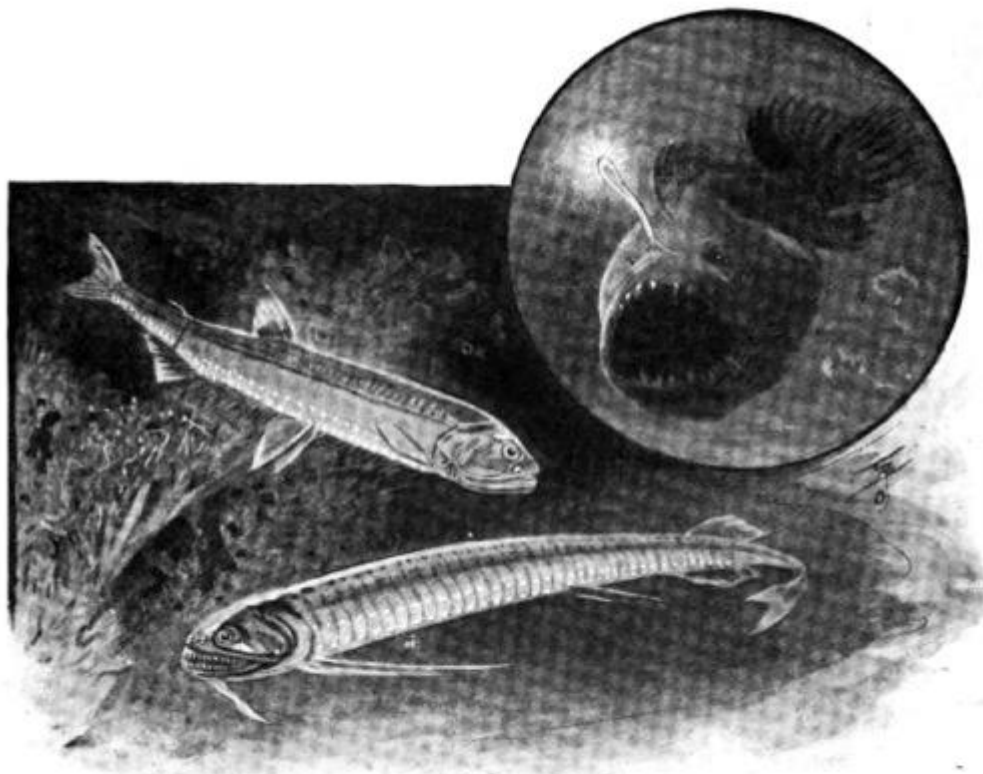
1902. "The Way of a Deep-Sea Fish". Illustration by A. Alcock. Perhaps the first depiction of the natural history of a deep-sea fish, as it shows what it ate, a squid larger than itself. From Alcott's 1902 book, "*A Naturalist in Indian Seas*"



1903. The cover of Chun's popular book on the 1901 *Valdivia* Expedition was decorated with the strange shapes of deep-sea fish. The *Valdivia* Expedition was the first large-scale (global) devoted to investigation of deep-sea life. Cover artwork not attributed.

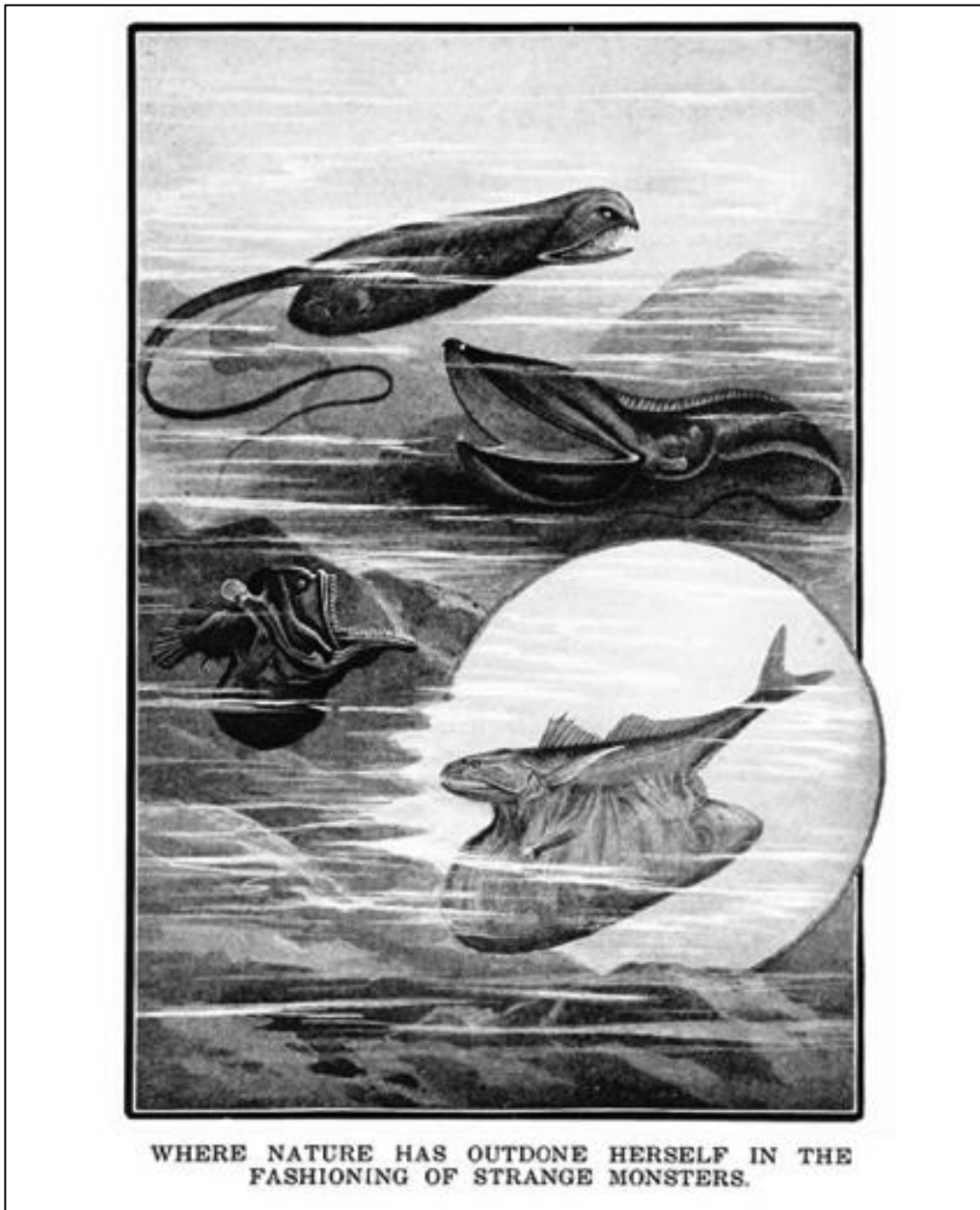


1903. From Carl Chun's popular book (1903) on the Valdivia Expedition. More deep-sea oddities from the first large-scale oceanographic expedition dedicated to deep-sea exploration, the *Valdivia* Deep-Sea Expedition. Illustration by F. Winter.

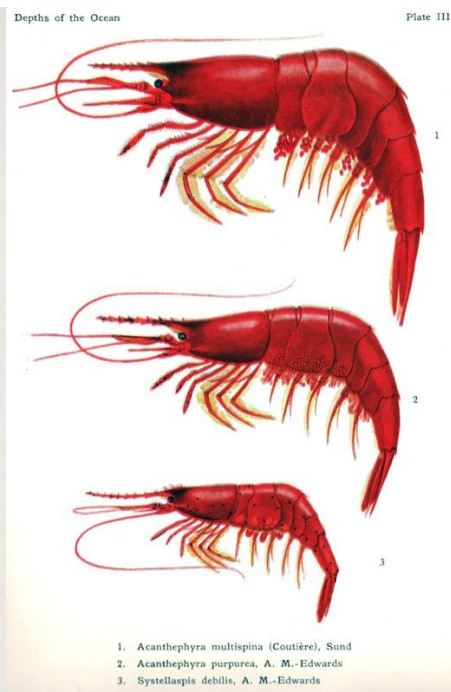
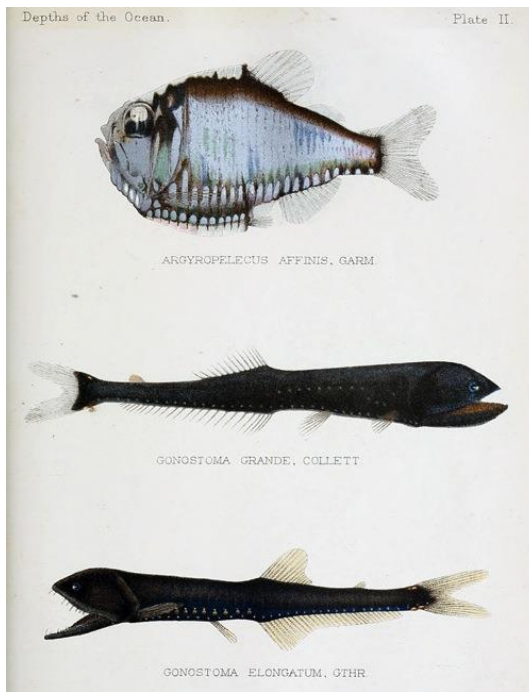


"ROWS OF BRIGHT AND EVER-BURNING LAMPS, IN ORGANS FITTED WITH LENSES AND REFLECTORS."

1904. The mysterious view of the deep-sea persisted. From a *Strand Magazine* article by C.J. Cornish "Living Lamps on Land and Sea" on bioluminescent creatures. Note that 2 of the 3 forms of deep-sea fish shown are fearsome. Illustration not attributed.



1904. Bullen's popular book "*Denizens of the Deep*" showing actual fish described as "strange monsters", then known to exist and shown fearsome, in an eerie landscape. Illustration by C.L. Bull.



1. Acanthephyra multispina (Coutière), Sund
 2. Acanthephyra purpurea, A. M.-Edwards
 3. Systellaspis debilis, A. M.-Edwards

1912. Illustrations of scary fish and bright red shrimp in the second large-scale expedition dedicated to deep-sea explorations in 1910, from Murray and Hjort (1912) on *Michael Sars Expedition* in the North Atlantic in their book "*The Depths of the Ocean*". Illustrations not attributed.

**Living Wonders
of the Deep Sea.**

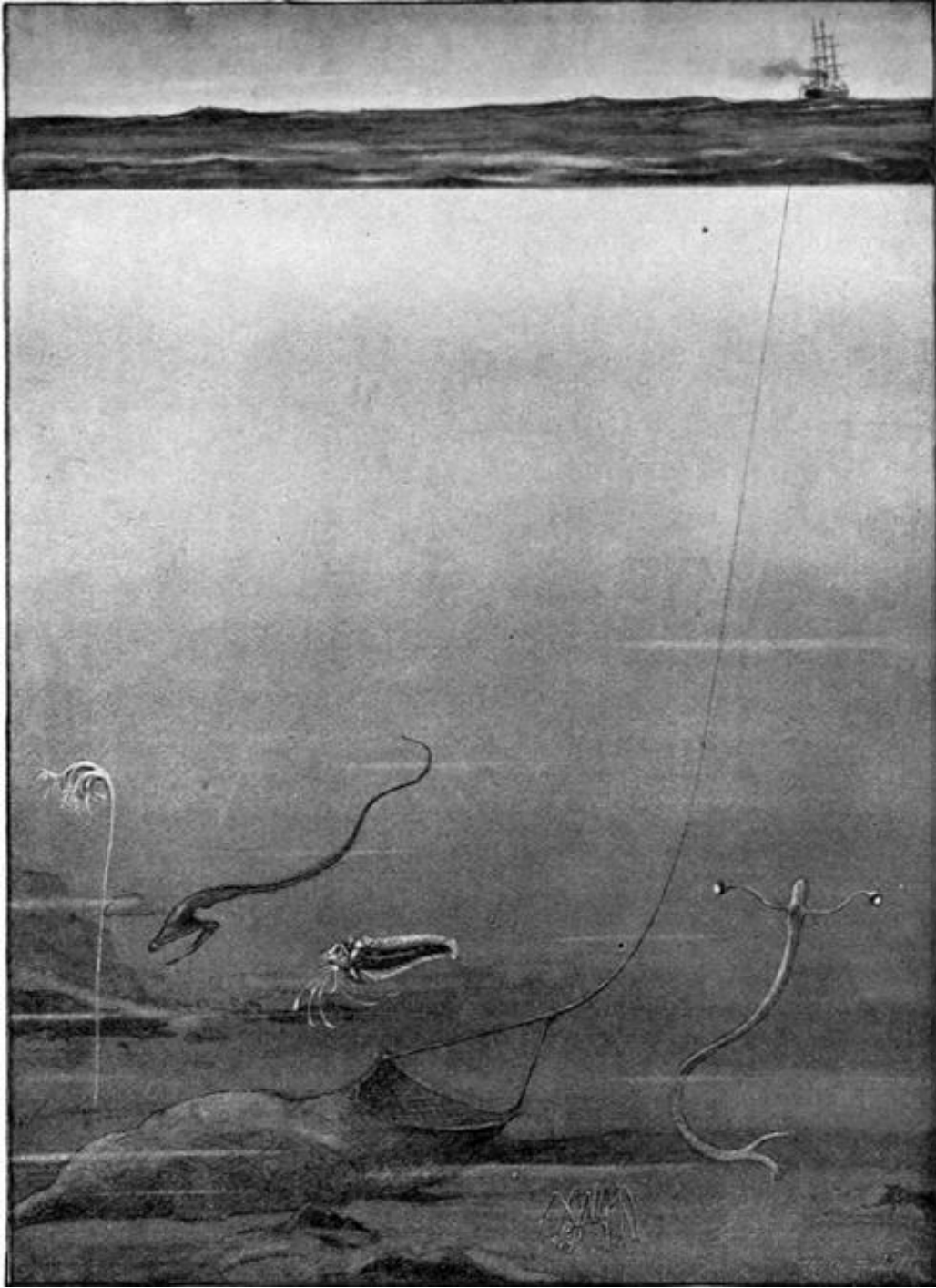
SOME STRIKING
RECENT DISCOVERIES.

By CLEVELAND MOFFETT.

Photographs lent by the American Museum of Natural History.

HERE is no more remarkable fishing in the world than that done by the United States steamer *Albatross*, a glistening white craft of less than a thousand tons, manned by a force of bluejackets and presided over by oceanographers and zoologists from various museums and universities, who face perils and discomforts in many seas in pursuit of strange creatures of the deep. The *Albatross* fishes with a line three miles long, often four miles long, sometimes six

1915. By Cleveland Moffett in *Strand Magazine*. Still showing deep-sea as full of Anglerfish and monstrous forms. The artistic images of bizarre fish were based on actual reports from the *Albatross Expedition*. Illustrations not attributed.



1922. An illustration from the book "*Haunts of Life*" by J.A. Thomson. As the ship dredging is a steamer, it is possibly the *Albatross*. Note the often-shown gulper eel, and the fish with stalked eyes (also on the cover of Chun's 1903 book) but also a non-monstrous, flower-like, meter-long stalked crinoid at the left. Illustration by W. Smith.



1922. Bioluminescence in deep-sea squids from an article by Dahlgren (1922) on light production by plants and animals in *Natural History Magazine*. The squid are non-threatening, not all deep-sea creatures depicted were fearsome. Illustration by E. Grace.

PLATE VIII

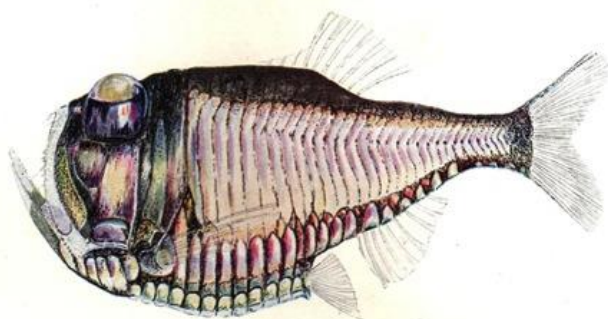


FIG. A



FIG. B

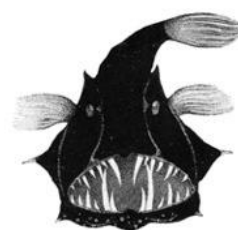
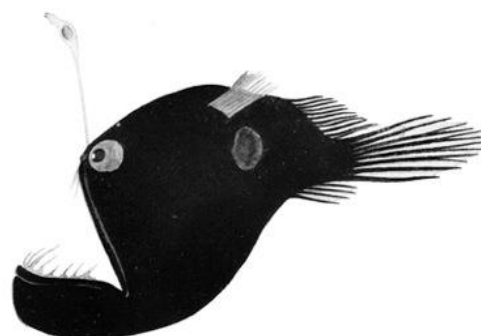
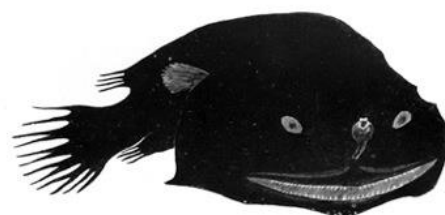


FIG. 58.—A SEA DEVIL WITH LUMINESCENT TEETH.



FIGS. 59, 60.—TWO SPECIES OF SEA DEVILS FROM THE BLACK ZONE.

1926. Left Panel: The first illustration, the frontispiece, in William Beebe's book "The Arcturus Adventure", an account of a 6-month oceanographic expedition in 1924 focused on deep-water sampling. Illustration by H. Tee-Van. Note that the hachetfish, shown also by Chun in his 1903 book and Murray & Hjorts's 1912 book, while quite odd are not threatening. Right Panel: One of the last illustrations in William Beebe's book, the anglerfish shown were found in deep water about 125 Km off New York in the deep-sea Hudson River Canyon. Ferocious fish, one with a diabolical smile, were still prominent. Illustration by D. Franklin.

IV. Modern Period Views (1928 - Present Day): Beyond Deep-Sea Ferocity - Depictions of Natural History

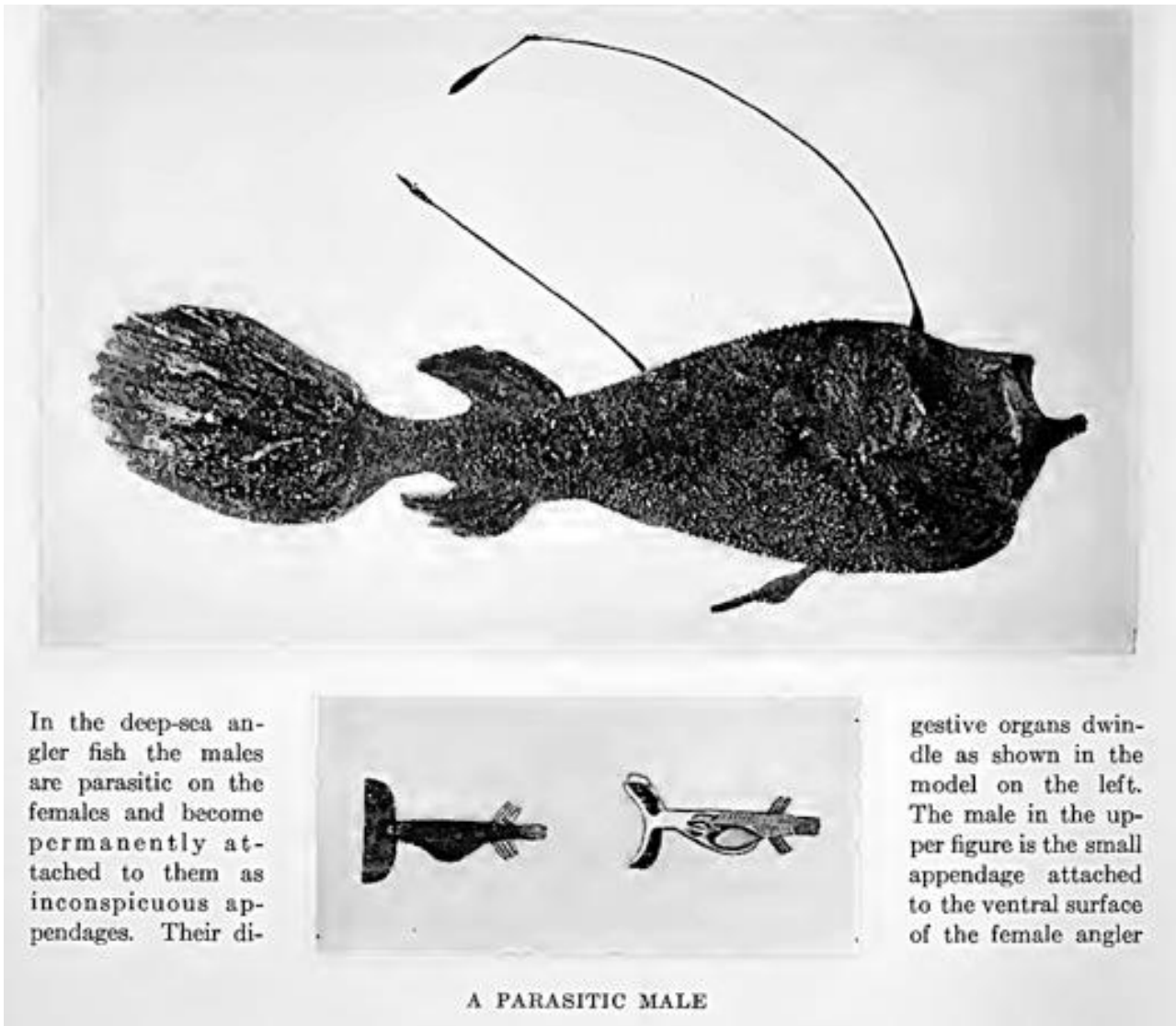


Fig. 11

THE COUNTRY OF PERPETUAL NIGHT

The Country of Perpetual Night lies at the bottom of the ocean a thousand fathoms deep. Its inhabitants are hobgoblins, fearsome shapes that writhe and dart in and out in the midst of a fantastic Garden of Death. Gleaming serpent forms, blind creatures that crawl and grope in the darkness, black living masses, horrible and cold to the touch, they look at first like evil spirits condemned by some wicked magician to live in this desolate purgatory. But when Science holds up for us her crystal lens, the scene loses its terrors, and we see each quaint hobgoblin as it really is—a miracle of design—fitted to live in the midst of inconceivable pressure and able to find its own mate in the loneliness of Perpetual Night.

1928. "The Country of Perpetual Night", a picture of a deep-sea diorama showing fish swimming about a whale skeleton. From Gregory (1928), an article in *Natural History Magazine* on the new fish exhibition hall in the American Museum of Natural History. The caption emphasizes that science has revealed that the odd morphologies of deep-sea fish are simply adaptations to live in the 'Perpetual Night'.



1930. Illustration of the very strange life cycle of the deep-sea anglerfish, discovered in a few years earlier by C.T. Regan (1925). The illustration is from an article by C.G. Noble in *Natural History Magazine*, "Probing Life's Mysteries". The male of the fish species is a very small form that attaches itself to the female and feeds from its blood. The life cycle of the fish is actually much stranger than its morphology. The differences in male and female morphologies of the deep-sea anglerfish are the most extreme example of sexual dimorphism known among all vertebrate animals (Fairbairn 2013).

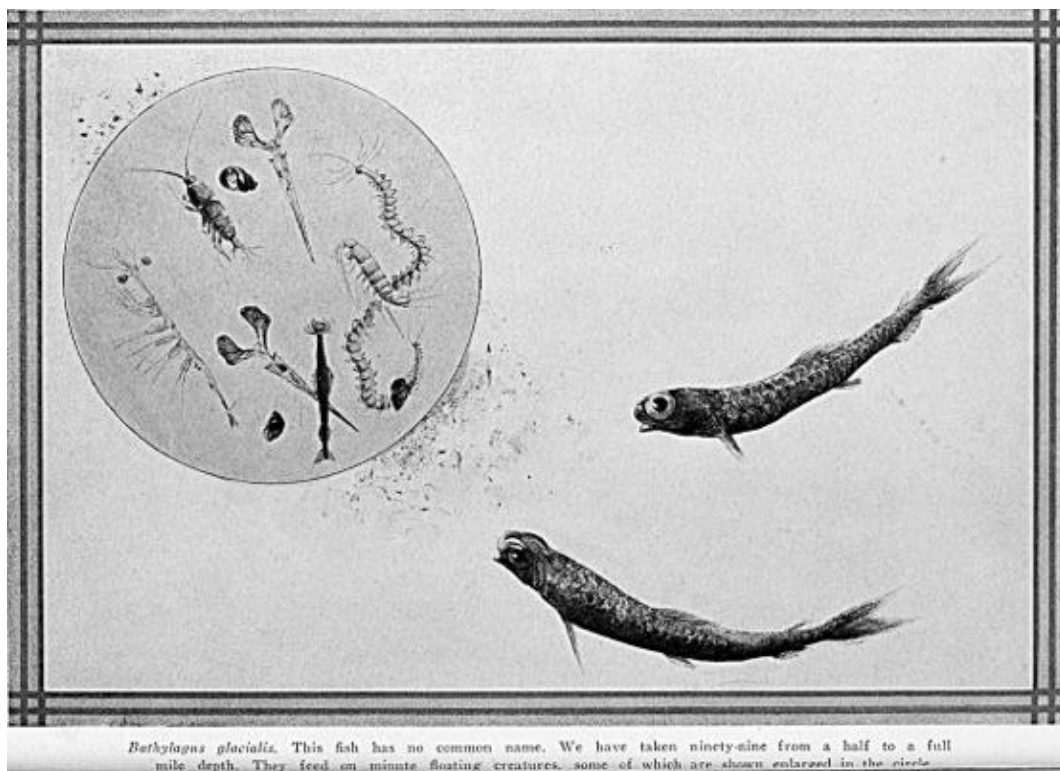


A school of Gerupylids, deep-sea fish whose paired fins have changed into two long spines.

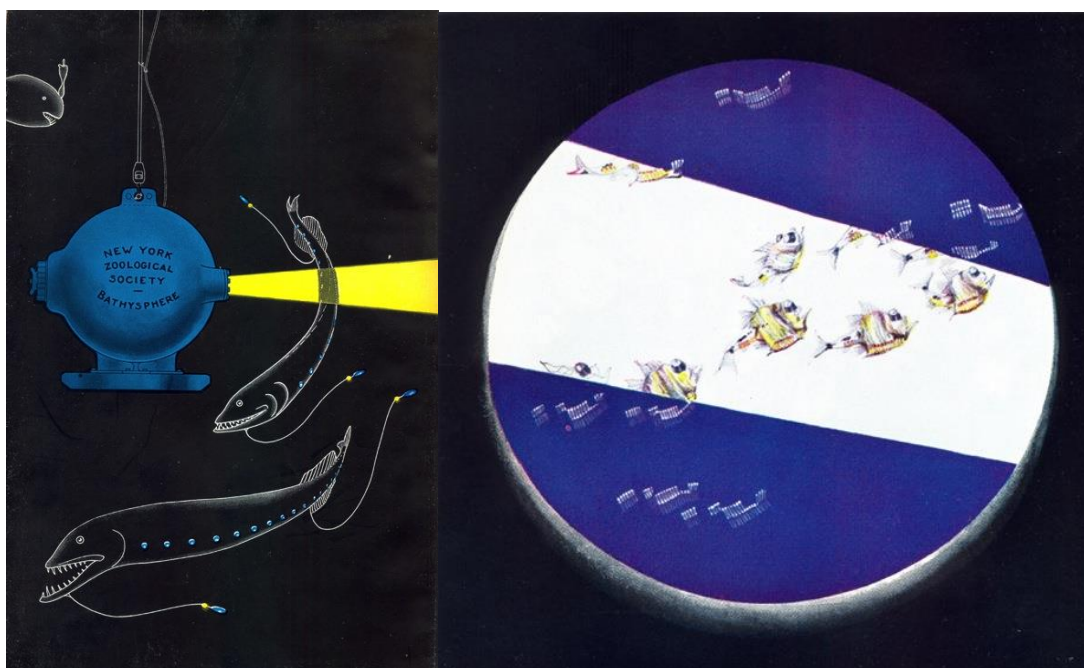
1931. Odd, but non-threatening, deep-sea fish shown by William Beebe in his article in the *Annual Report of the New York Zoological Society* on his deep sea sampling in Bermuda. Beebe established a field station from which near daily deep-sea sampling was carried out. The Annual Reports were distributed to all the over 4000 members of the Zoological Society of the Bronx Zoo. The 1931 illustration may be the first of a deep-sea fish in the popular press as an appealing, rather than a monstrous, form. Illustration not attributed.



1932. Fierce fish from the cover of the *Bulletin of the New York Zoological Society*, the Bronx Zoo member's newsletter, in September 1932. Threatening fish were still a popular image but this time shown feeding on squid, not prey larger than themselves, and not as solitary monsters, but a pair. Illustration by E. Bostelman.



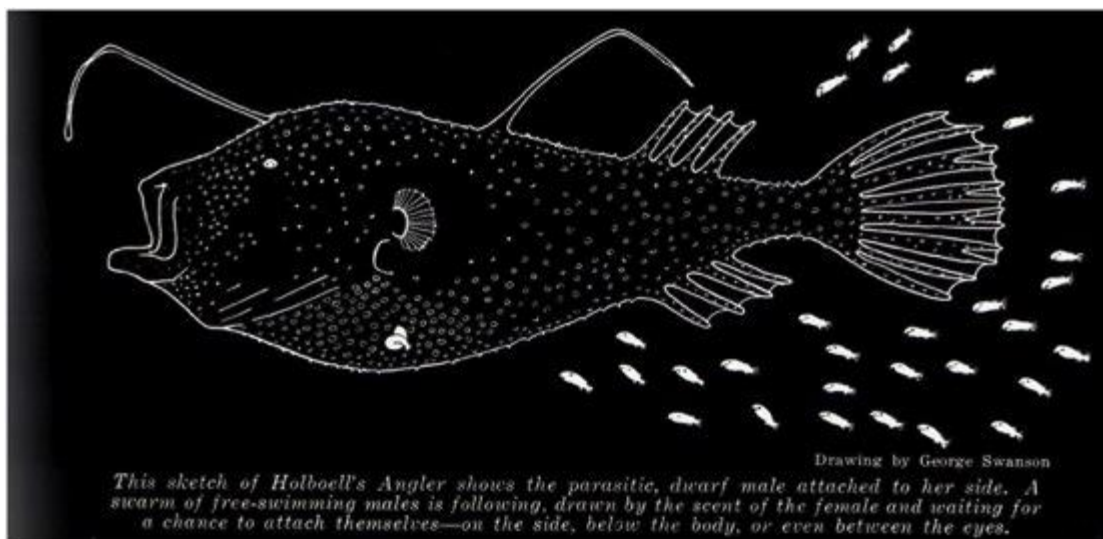
1934. An illustration in Beebe's 1934 article in *Annual Report of the Zoological Society* showing some deep-sea fish, non-threatening, to be similar in feeding habits to surface water fish, feeding on prey smaller than themselves shown magnified in the circle. Illustration not attributed.



1934. Left Panel: The inside back cover illustration from William Beebe's book *"Half Mile Down"* on his dives in the bathysphere to observe deep sea creatures, the first in situ observations ever made. Illustration by J. Tee-Van. Right Panel: Plate 1 from Beebe's book, Hatchet fish as seen through the porthole of the Bathysphere, crossing the light beam of the Bathysphere's light. Note the harmless, social (schooling) depiction compared to the hatchetfish images in the 1903 plate of Chun or the 1912 plate of Murray & Hjort. Illustration by E. Bostelman.



1934. Beebe's "*Half-Mile Down*" book had illustrations showing predator-prey relationships in the deep based on his observations. Again, social scenes as schools of fish are shown, as predators in the left panel, and as prey in the right panel. Illustrations by E. Bostelman.



1938. From Beebe's last popular article (1938) in *New York Zoological Society Bulletin* on a deep-sea species concerned its life cycle - showing the remarkable sexual dimorphism and male parasitism in deep-sea anglerfish in a cartoon-like fashion. A school of dwarf males are shown headed toward the female. The species is the same as that shown in the 1930 article in *Natural History* magazine. The bizarre secret lives of deep-sea fish were revealed to the public in a nearly comical fashion. Illustration by G. Swanson.

V. Contemporary Images of Deep-Sea Life: persistence of odd and ferocious forms



2009. Cover art from the book "Oceanic Anglerfishes: Extraordinary Diversity in the Deep Sea" by Pietsch (2009). Beebe's bathysphere is shown descending into a monstrous sea of anglerfishes much like that shown in Filhol's 1885 "La Vie au Fonds des Mers". Artwork by Ray Troll © 2008, courtesy of Ted Pietsch.



2014. A painting by Henry Compton. From "*Fire in the Sea: Bioluminescence & Henry Compton's Art of the Deep*" by David A. McKee, courtesy of Texas A&M University Press, College Station, Texas, USA (www.tamupress.com). Note that the monstrous stalk-eyed fish larvae, (shown by Chun in 1903, Moffet in 1915 and Thomson in 1922), appear to be attracted to the lighted lure of the anglerfish. The stalk-eyed form was found by Beebe (1933) to be no more than a larval form of a normal-looking, cigar-shaped fish, another example of a strange life cycle in deep-sea forms.

Conclusion

Our visions of life in the deep dark sea changed dramatically from 19th to the 20th century. In the popular imagination, the inhabitants changed from giant ship-eating cephalopods to ferocious, long-fanged fish in eerie landscapes. The change was due to scientific explorations of the deep-sea revealing the odd inhabitants of the deep. The explorations also changed a scientific view of the deep-sea from that of a life-less zone to that of a biome of surprising diversity of species with odd morphologies and unusual life histories. Work in recent decades has revealed the deep sea to be peppered with zones of hydrothermal vents inhabited by a unique fauna of amazing worms and bivalves, dependent on symbiotic bacteria, in turn fueled by the hydrothermal vents (e.g., Van Dover 1997). Nonetheless, it seems that the most popular visions of deep-sea life remain the monstrous forms of strange fish!

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