



WISSENSCHAFTLICHE ERGEBNISSE
DER
DEUTSCHEN TIEFSEE-EXPEDITION

AUF DEM DAMPFER „VALDIVIA“ 1898-1899

IM AUFTRAGE DES REICHSAMTES DES INNERN

HERAUSGEGEBEN VON

CARL CHUN

PROFESSOR DER ZOOLOGIE IN LEIPZIG, LEITER DER EXPEDITION

UND NACH SEINEM TODE FORTGESETZT VON

AUGUST BRAUER

PROFESSOR DER ZOOLOGIE IN BERLIN

ACHTZEHNTER BAND

CARL CHUN

DIE CEPHALOPODEN

II. TEIL:

MYOPSIDA. OCTOPODA

MIT 39 ABBILDUNGEN IM TEXT UND 34 TAFELN

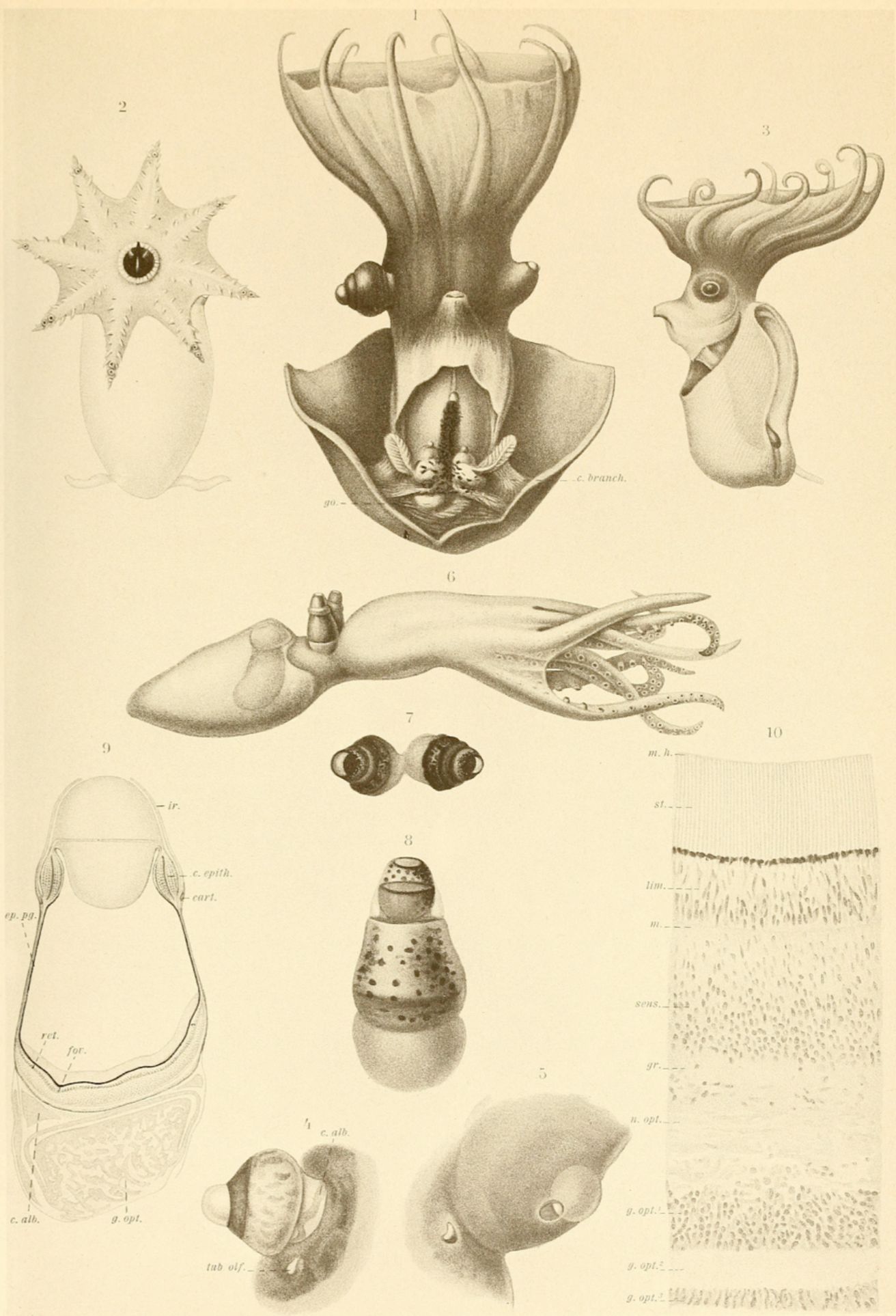
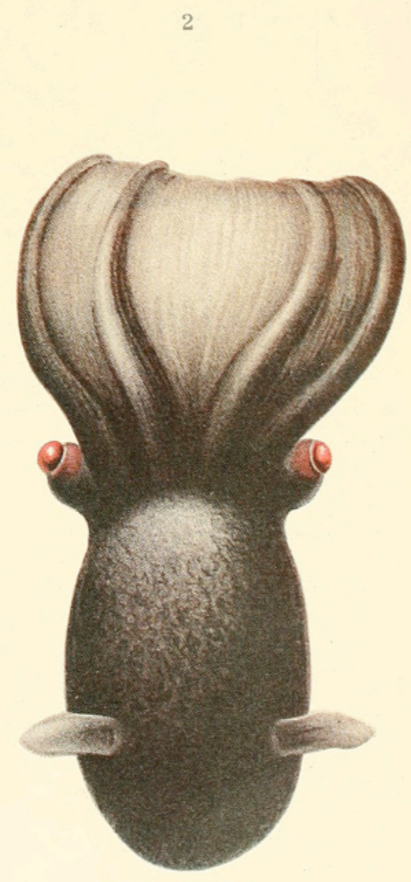
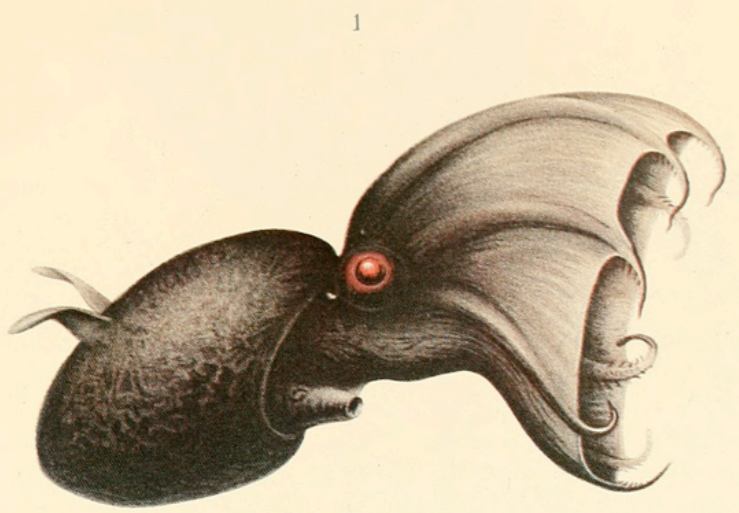


JENA

VERLAG VON GUSTAV FISCHER

1915

Eingegangen im März 1914, C. Chun





Kunstformen der Natur.

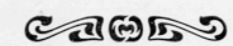
Von

Prof. Dr. Ernst Haeckel.

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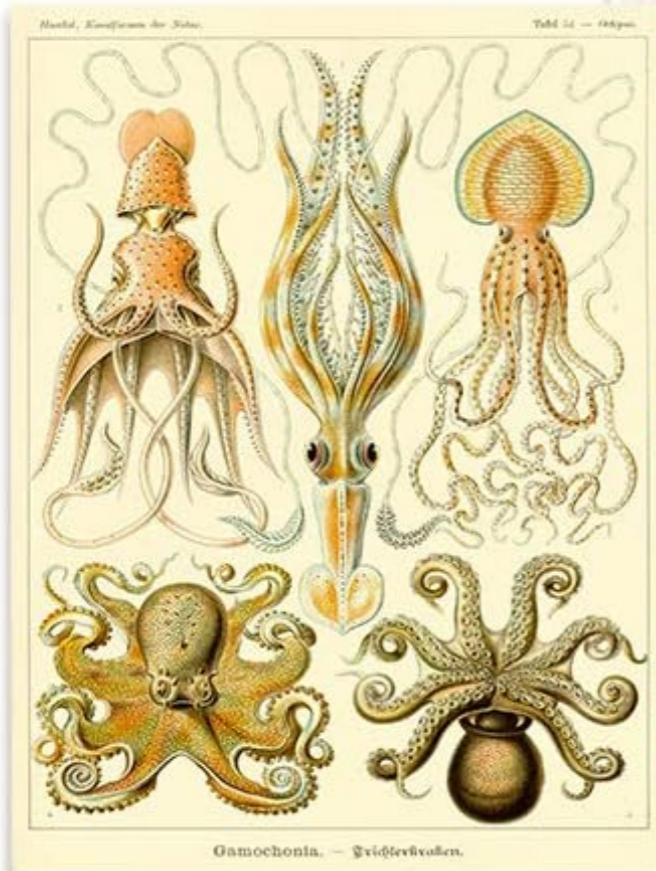
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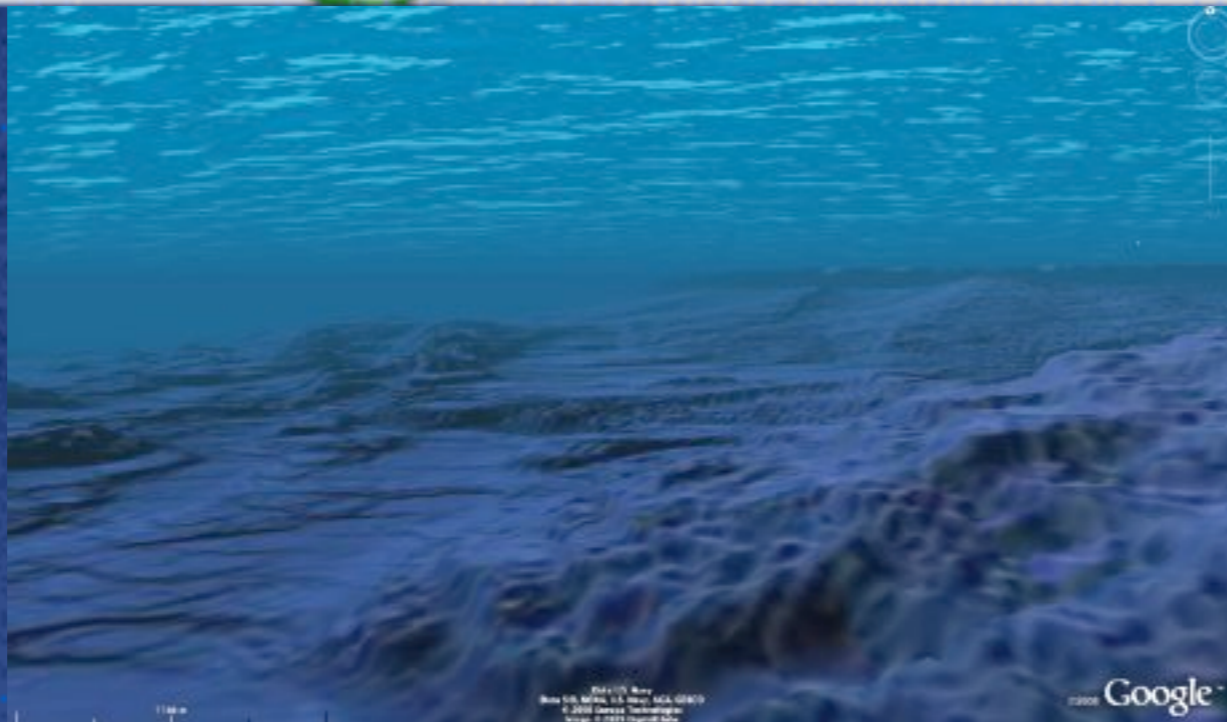
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23°05'19.21" N 40°09'05.08" W elev -13371 ft

Google

Eye alt 3288.08 mi



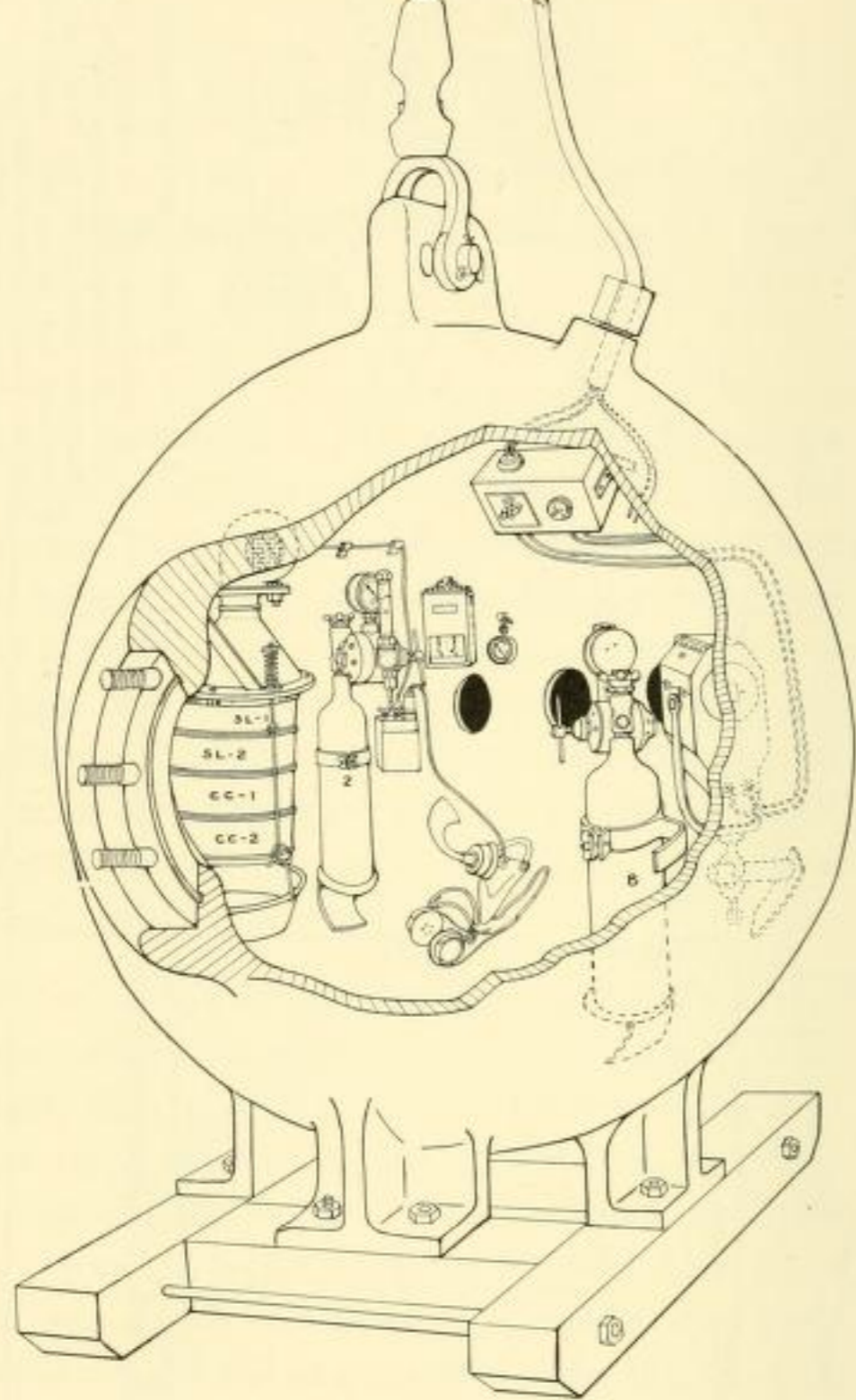


FIG. 123. Internal Arrangement of the Bathysphere of 1934. From left to right: Chemical apparatus with its blower, four trays and pan; oxygen tank and valve; telephone coil and battery box—the telephones are plugged into this box and it is connected by the wire shown on the two hooks above the oxygen valve, with the telephone wires in the communication hose; thermometer-humidity recorder, and below it the left hand sealed window; barometer; switch-box at top of sphere; central observation window, immediately below switch-box; oxygen tank and valve; searchlight. The communication hose is shown as it enters the bathysphere through the stuffing-box.

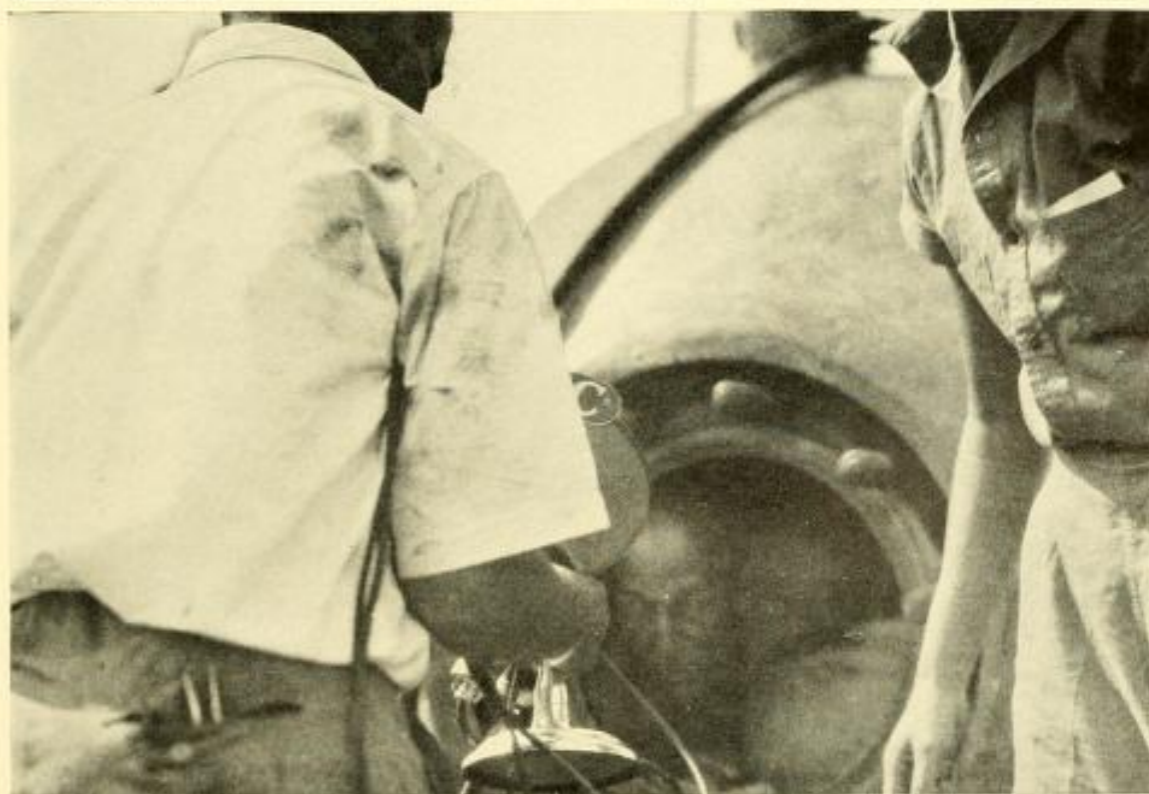
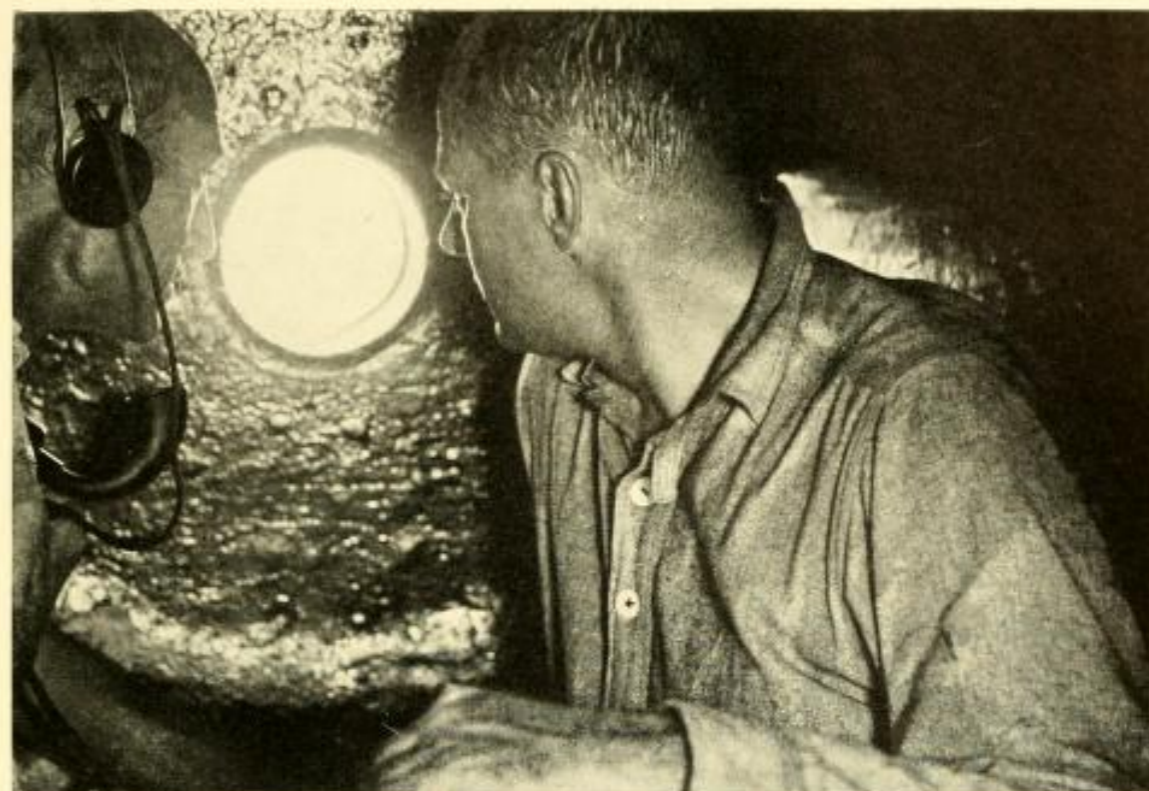


FIG. 80. (*upper*) Beebe and Barton in the bathysphere for the deep 1932 dive. Ear phones are on but connection is not yet made. Final examination of the windows. FIG. 81. (*lower*) Both divers inside, giving final instructions and agreeing on emergency signals in case the telephone should cease working.

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Half Mile Down

BY

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with 123 illustrations

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by Otis Barton

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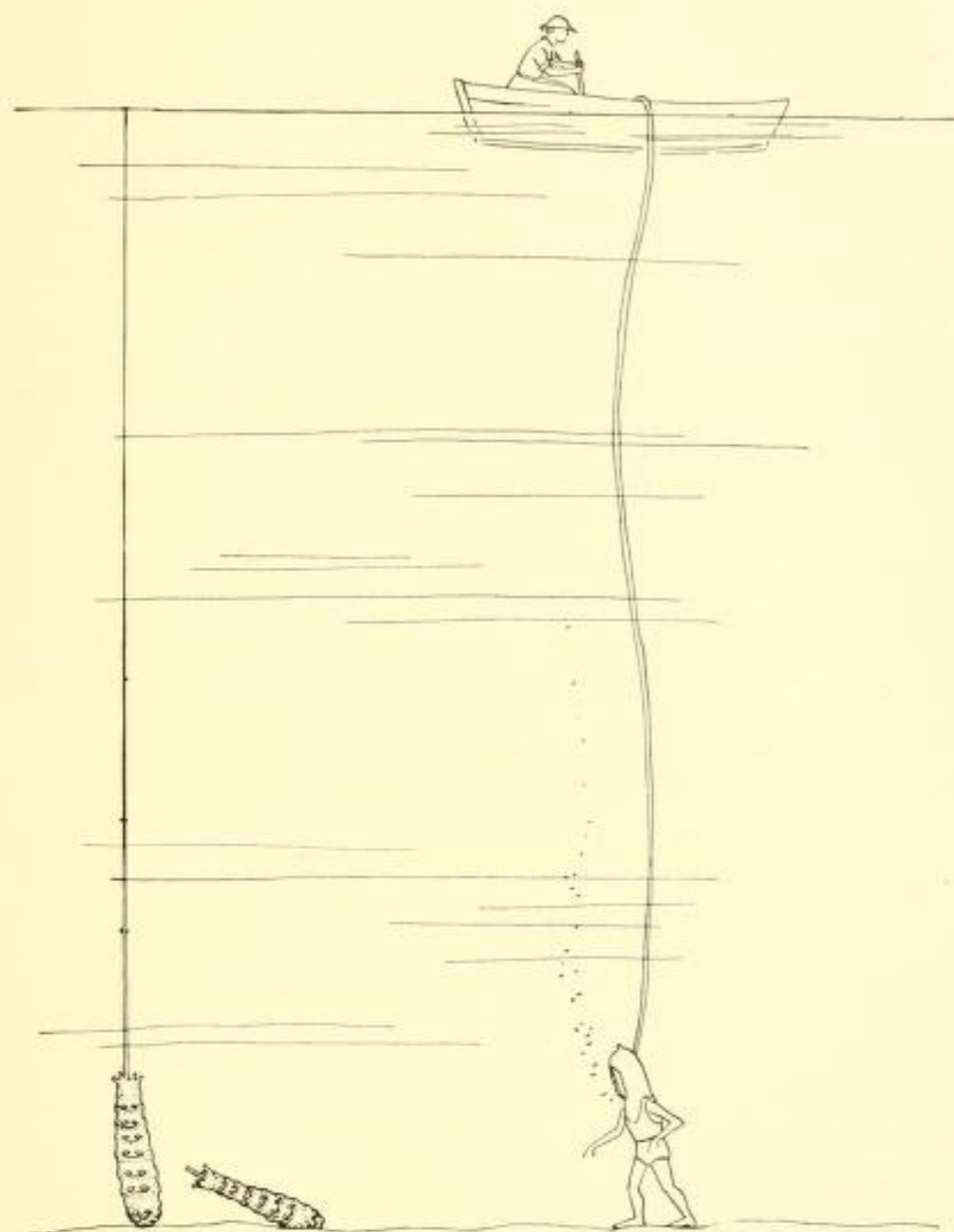


FIG. 3. The Rat-tailed Maggot with its own apparatus, and I in my diving helmet, can both descend to about ten times our own lengths, and successfully draw down a supply of air from the surface.

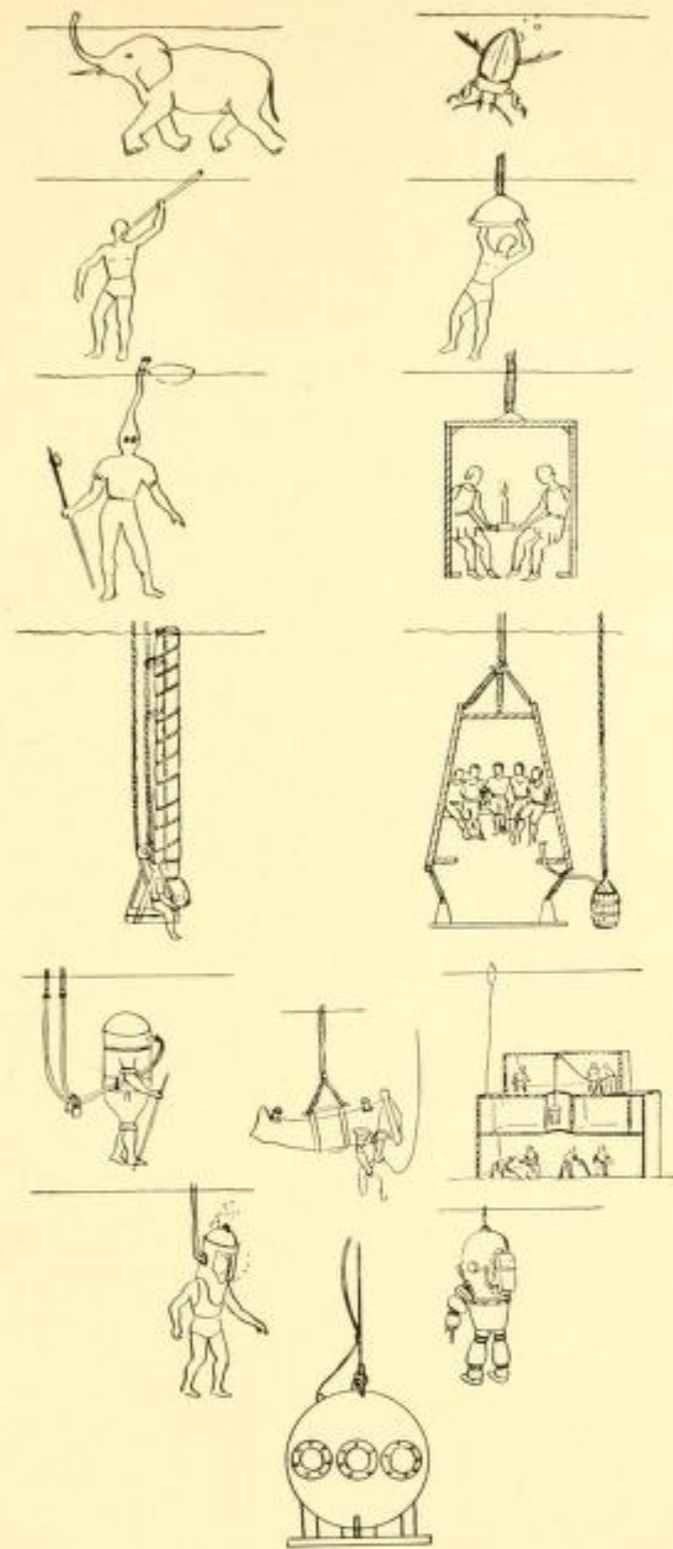


FIG. 20. The Evolution of Human Diving. The left column shows the various attempts at drawing air down from above to the diver, from the elephant's trunk to the modern helmet and hose. The right column illustrates the gradual attainment of success in actually conveying a supply of air beneath the surface. The water beetle does this, and points the way, from the inverted vase of Aristotle to the self-contained bathysphere.



FIG. 5. A medieval portrayal of the legendary descent of Alexander the Great. He is the first man who is reputed to have dived deep into the ocean merely to look at the fish. Several versions of the story declare that he saw a monster which took three days to swim past his glass cage! Note the lamps, which may be called the prototypes of the bathysphere searchlight. From a French manuscript of the thirteenth century.

(Courtesy of the Bibliothèque de Bourgogne, Brussels; and of the New York Public Library)

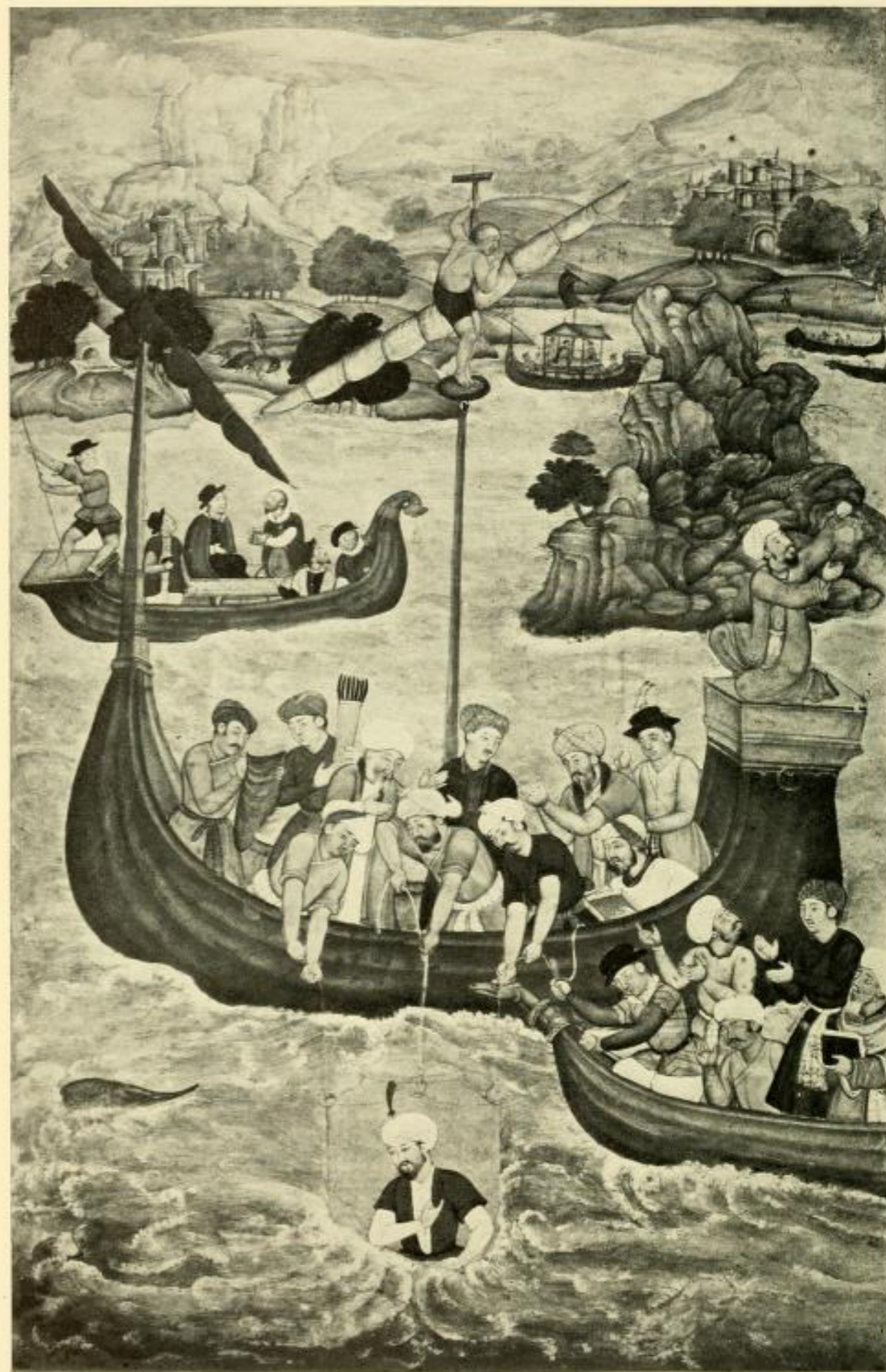


FIG. 6. This miniature by an Indian artist of the period of Akbar is from an unknown manuscript written about 1575. It undoubtedly illustrates the same legend as the preceding picture—the descent of Alexander the Great into the sea.

(Courtesy of the Metropolitan Museum of Art)

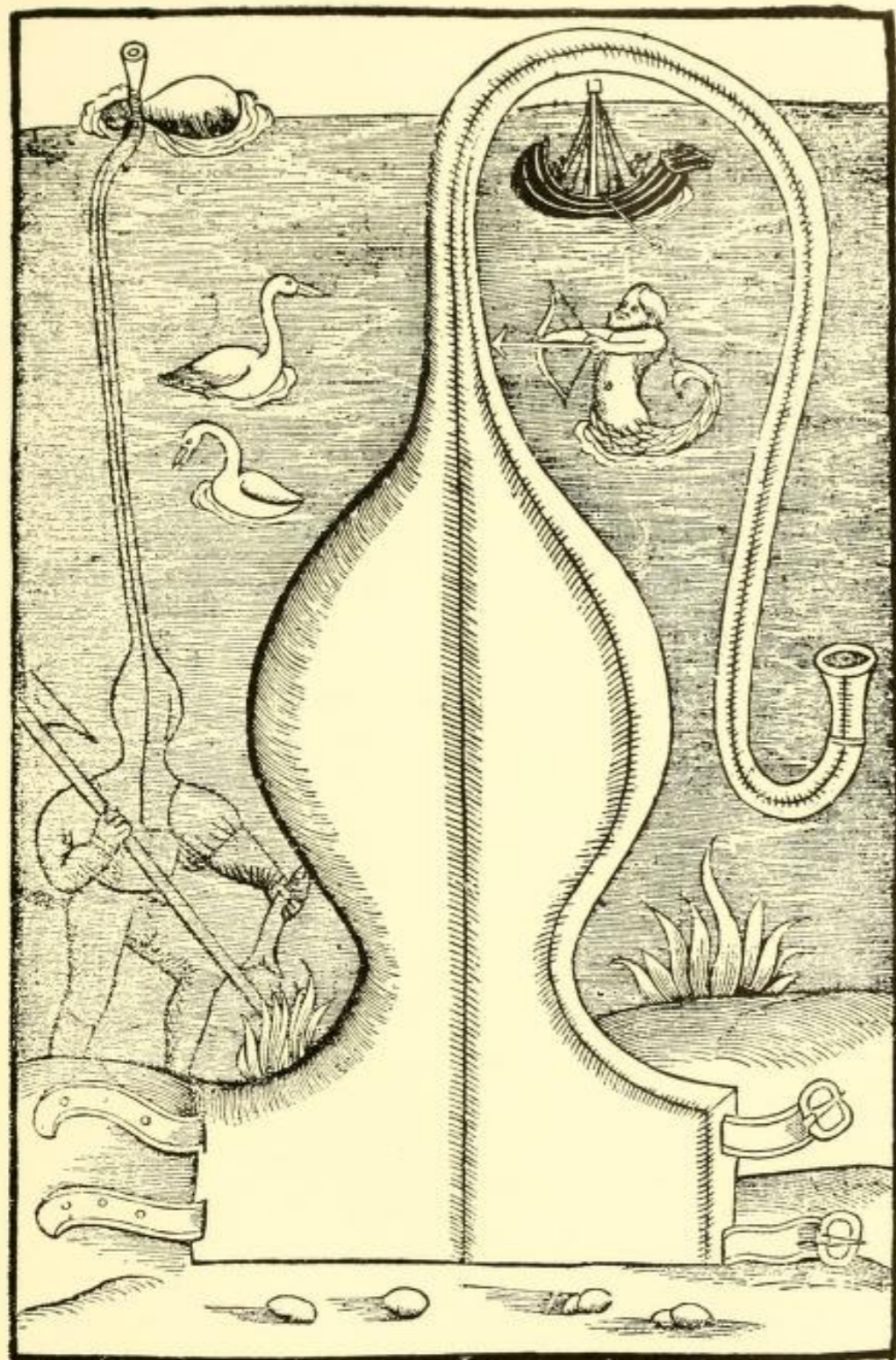


FIG. 7. This is one of the first printed designs for a diving helmet. It was to be made of leather, with a long air tube leading to the surface and fastened to a bladder float. From a wood-carving in a late edition of Vegetius's "De Re Militari," published in 1553.



FIG. 8. (left) In olden days pearl divers may have carried air-filled bladders under the water. FIG. 9. (right) For contrast with the primitive diver, the same artist placed immediately beside it this "modern" diver, equipped with a completely enclosed leather helmet. It was designed to be used in submarine warfare! This and the preceding figure are from a French edition of Vegetius's "De Re Militari" which appeared in 1532. (Courtesy of the New York Public Library)

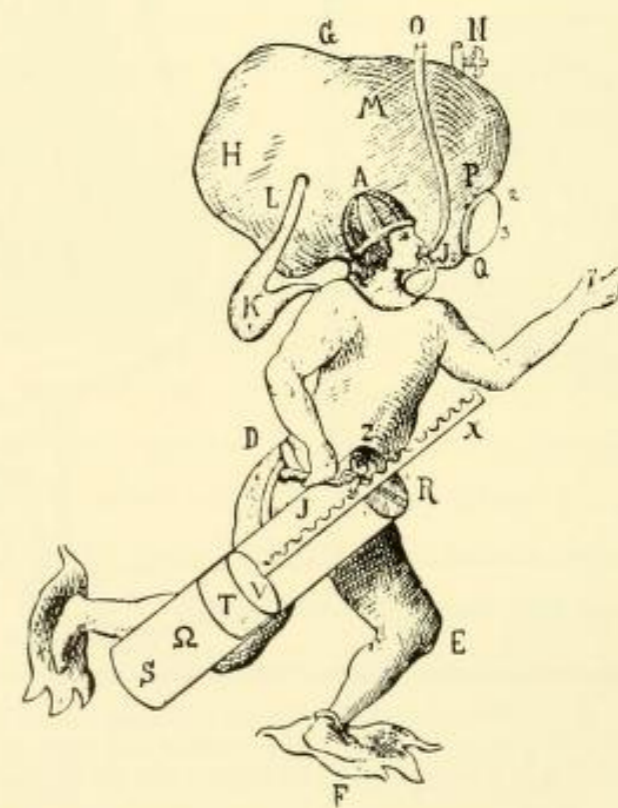


FIG. 10. This apparatus, impractical though it obviously was, contained the germ of the idea upon which modern diving suits are based—the removal of the confined air and the substitution of fresh. It was designed by Borelli in the seventeenth century.

(Courtesy of the New York Public Library)

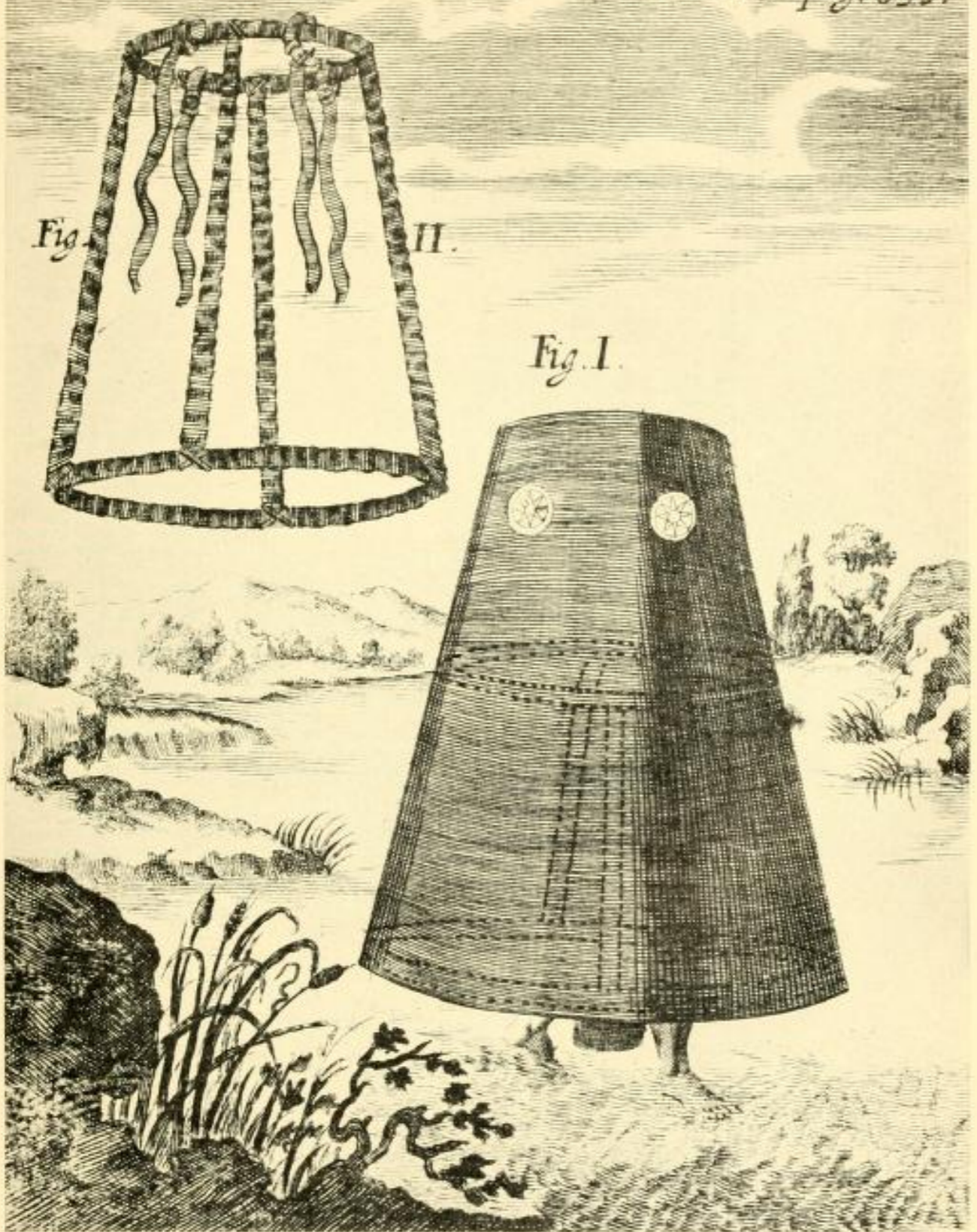


FIG. II. One of the first real diving helmets was this bell-like contrivance of leather and metal. From Gaspard Schott's *Technica Curiosa sive Mirabilia Artis*, published in 1664.

(Courtesy of the New York Public Library)

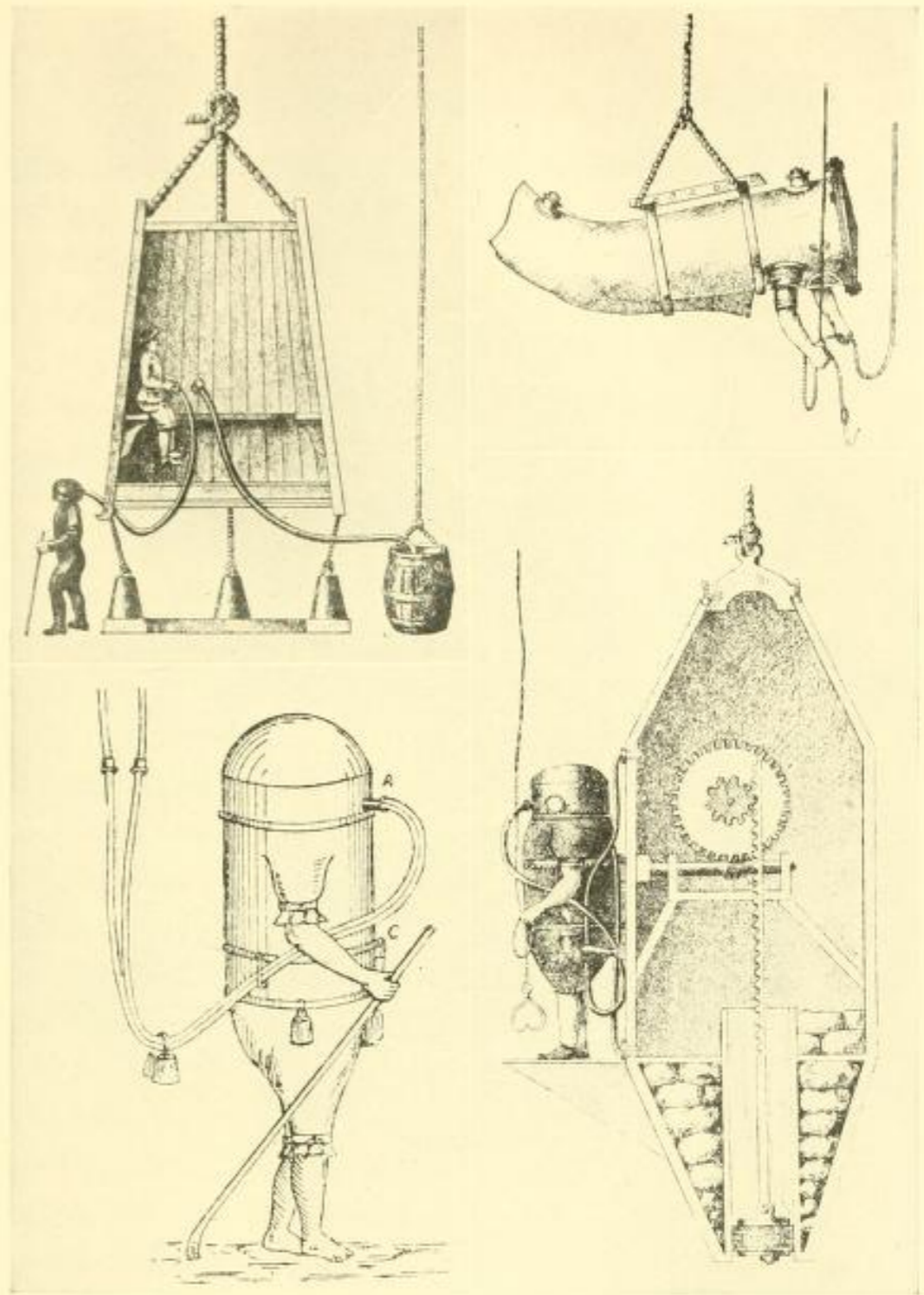


FIG. 13. (top left) This unquestionably successful diving bell was devised by Halley, the physicist and astronomer, early in the eighteenth century. Air was sent from the surface by an alternating succession of barrels, each of which in turn was connected with the bell by a leathern hose. In addition, a single diver could work out on the open sea bottom by wearing the leather helmet, which was tethered to the bell by a second air hose. The bell itself held five people and was used to a depth of fifty or sixty feet. FIG. 14. (top right) In the eighteenth century John Lethbridge said that he used this papoose-like affair with great success. He declares that he often worked in sixty feet of water, coming frequently to the surface for a fresh supply of air. This was introduced with a pair of bellows through a stop-cock. FIG. 15. (bottom) Early in the nineteenth century Kleingert invented the forerunners of modern diving suits. The first design is scarcely more than a helmet furnished with tubes for both fresh and foul air. The fresh air was introduced, for the first time, by a pump at the surface. The second suit leaves only the arms and legs free, and carries a compressed air machine.

(Courtesy of the New York Public Library)

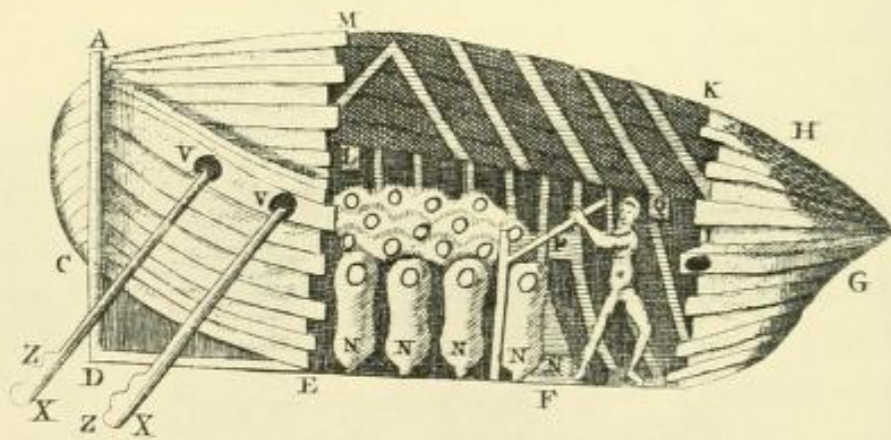
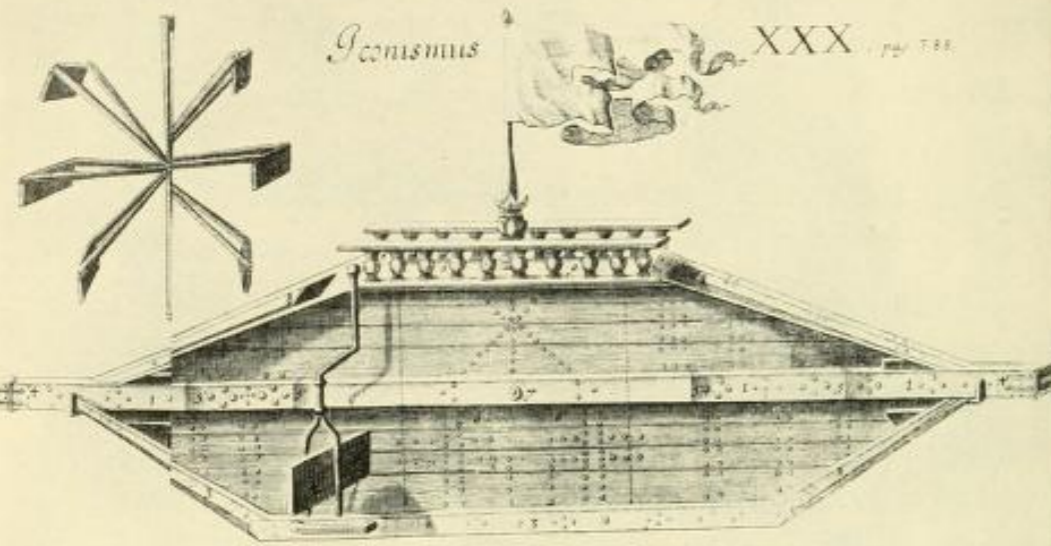


FIG. 16. (upper) The "Rotterdam Ship" was one of the earliest submarines ever designed; but, although the inventor planned in elaborate detail for its locomotion when under the sea, he never once succeeded in submerging it. FIG. 17. (lower) The sinking and rising of this submarine were to be accomplished by filling and emptying rows of goat-skin bags, which had their mouths applied to holes in the floor of the vessel. It was one of the many ingenious but quite impractical designs which were suggested during the eighteenth century. (Courtesy of the New York Public Library)

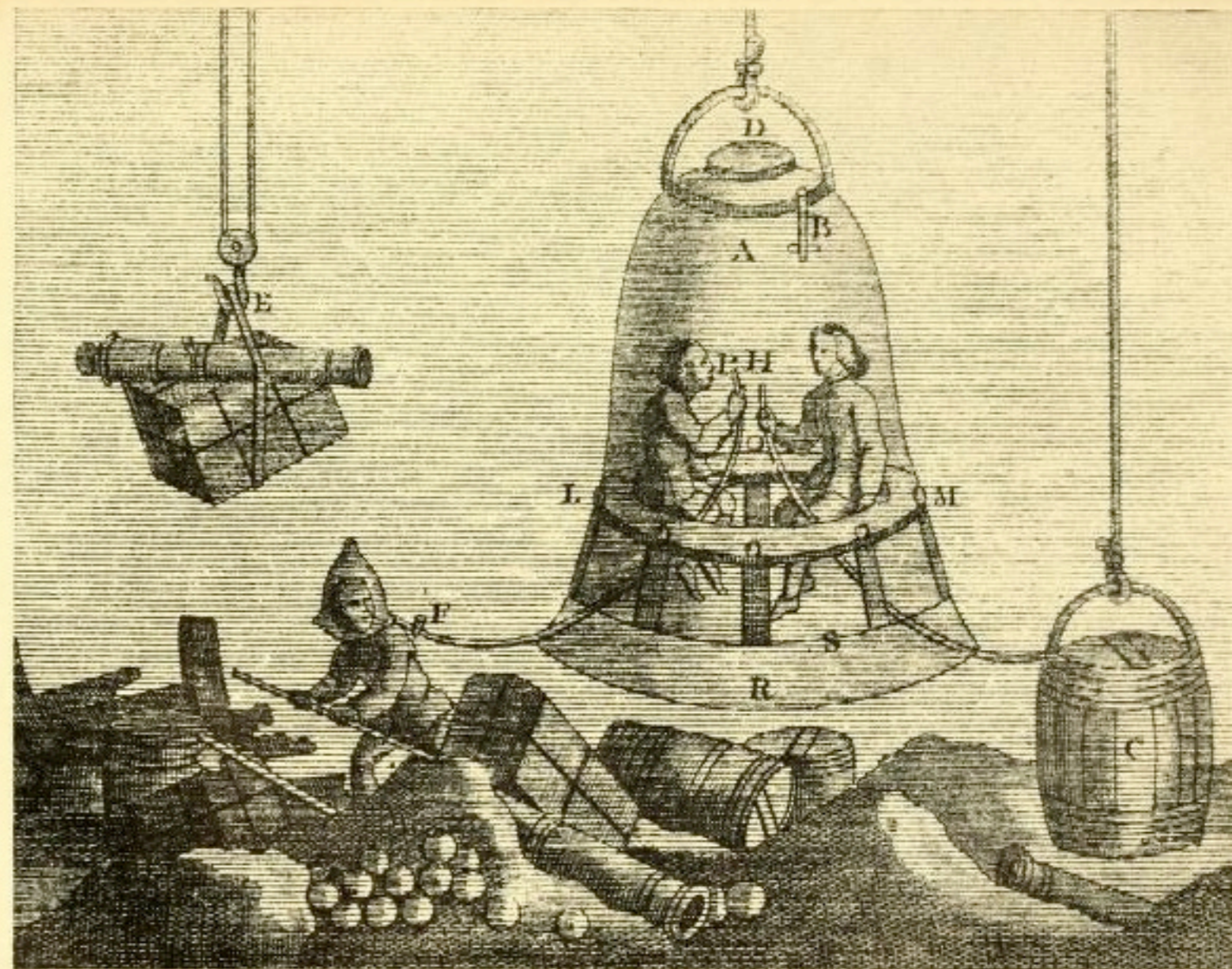


FIG. 18. An eighteenth century print depicting the salvaging of a warship. The divers are using an improved form of Halley's bell.



FIG. 120. Mr. Graham reveals one of the possible tragedies of diving.
(Courtesy of Judge)



"But Dr. Beebe? Where is he?"

«All outside was black, black, black, and none of my instruments revealed the faintest glimmer to my eyes. I had now attained one of the chief objects of this whole dive, namely, to get below the level of humanly visual light. I was beyond sunlight as far as the human eye could tell, and from here down, for two billion years there had been no day or night, no summer or winter, no passing of time until we came to record it. From here on, even if I went down six miles, on the bottom of Bartlett Deep, I would experience only differences in degree, not of kind.»

«Here I began to be inarticulate, for the amount of life evident from the dancing lights and its activity, the knowledge of the short time at my disposal, and the realization that most of the creatures at which I was looking were unnamed and had never been seen by any man were almost too much for any connected report or continued concentration».

William Beebe, *Half Mile Down*

«As I looked out over the tossing ocean and at the sinking sun, and realized what I had been permitted to see, almost half a mile below the surface, I knew that I should never again look upon the stars without remembering their active, living counterparts swimming about in that terrific pressure. It leaves the mind in a maze of wonder»

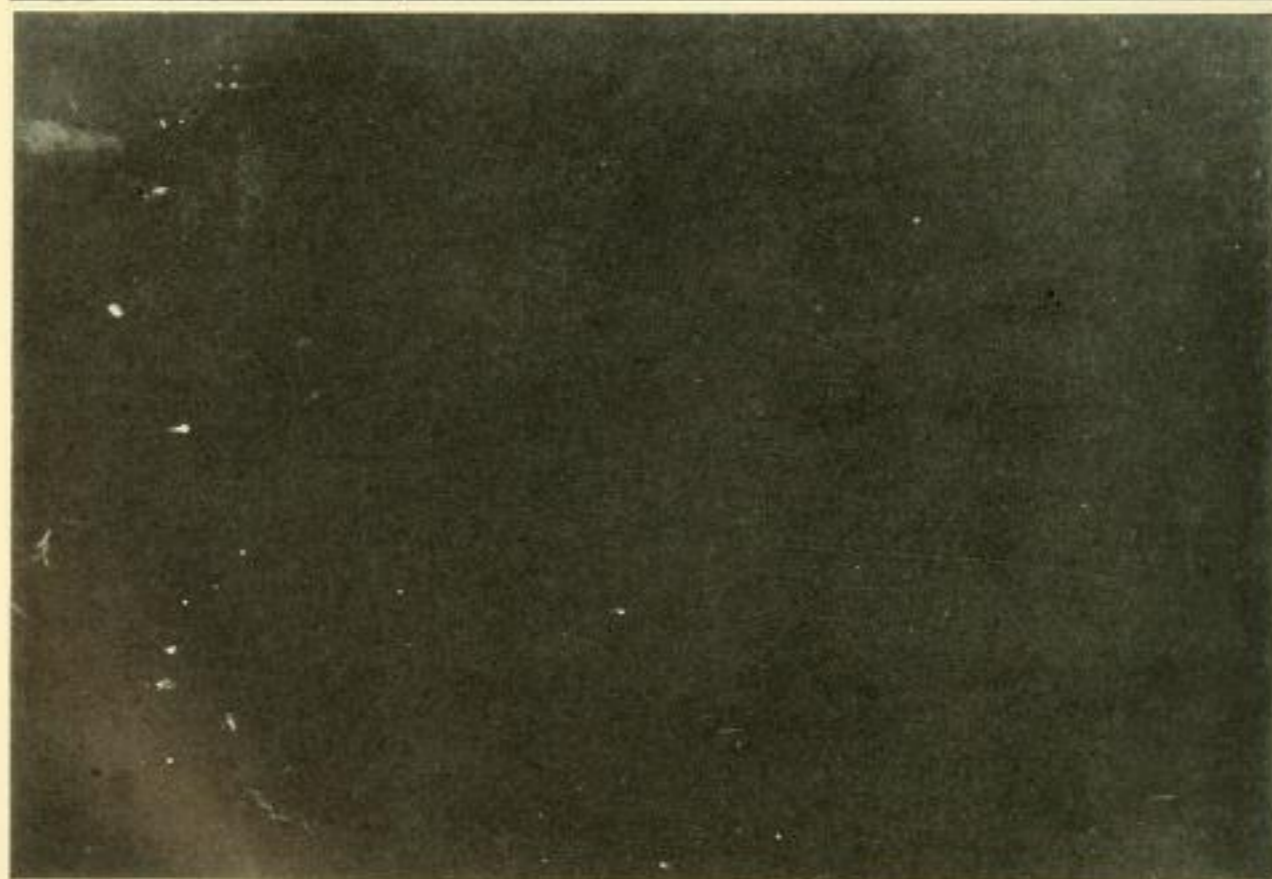
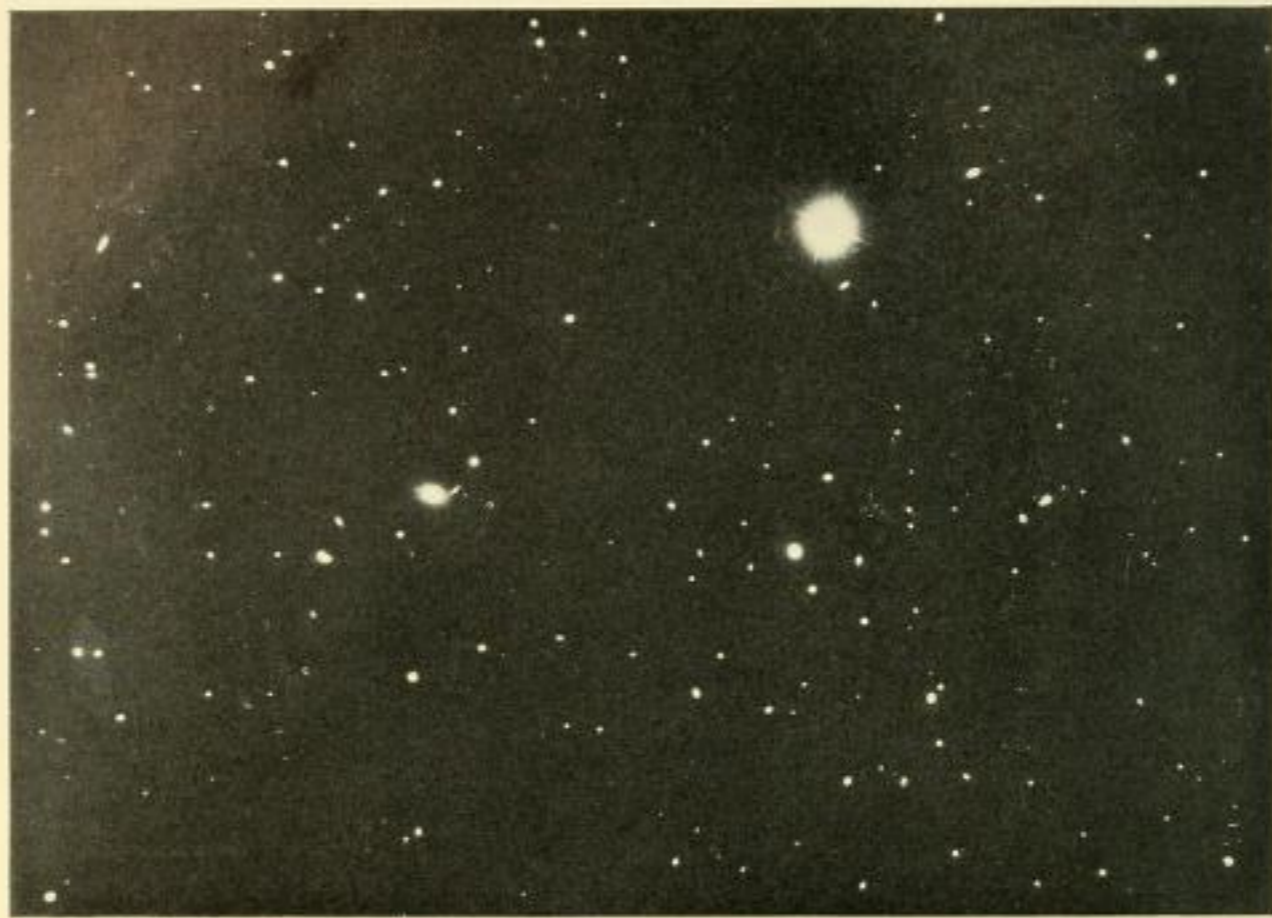


FIG. 90. (*upper*) The stars in the heavens (Courtesy of the Carnegie Institution). FIG. 91. (*lower*) A photograph of the waters of the sea at great depths shows only complete blackness, with a scattering of sparks and lights from the bodies of fish and other organisms.

