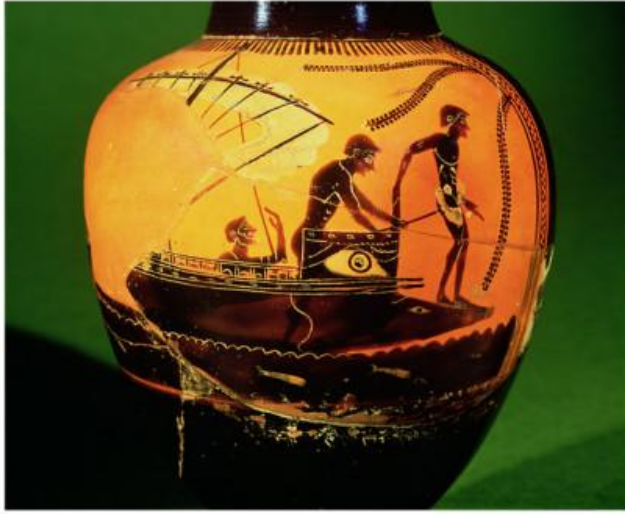


A Brief History of Underwater Enterprise and Exploration



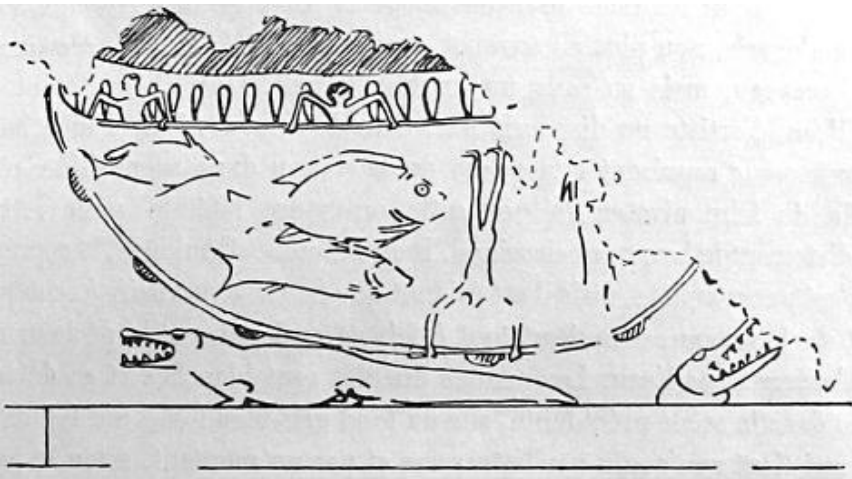
The incentives to risk one's life underwater from the earliest records of diving:

- 1) Subsistence and general aquatic harvest
- 2) Commerce/salvage
- 3) Warfare

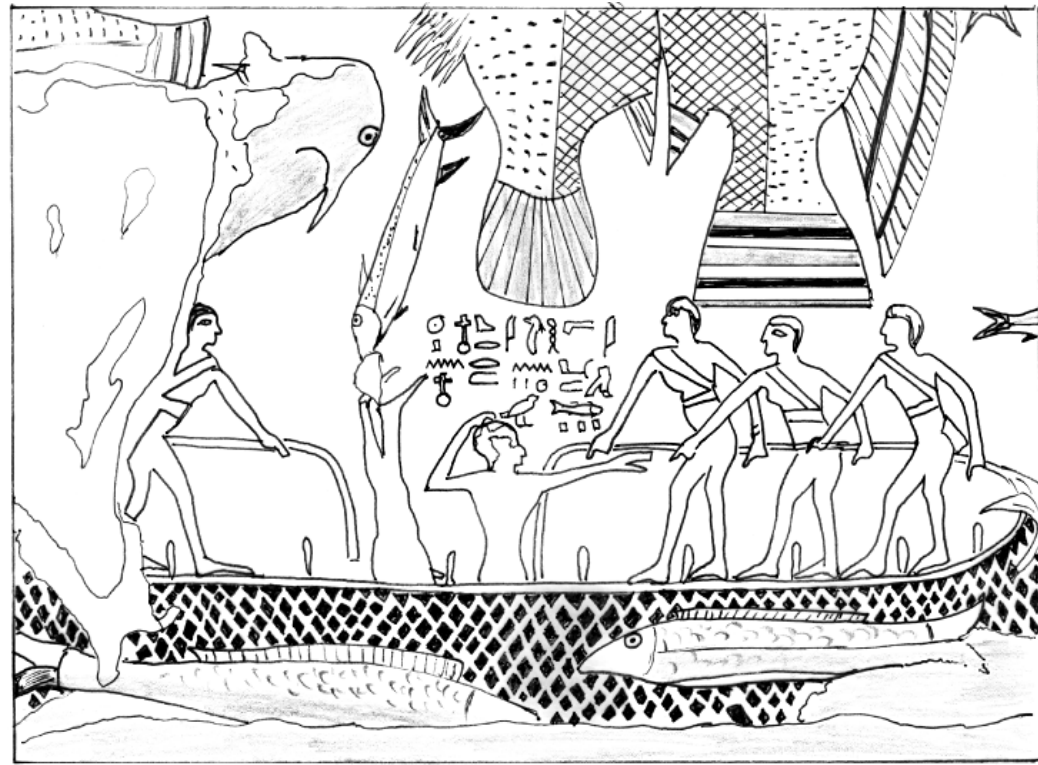


A sponge diver about to take the plunge, Classical Greece ca. 500 BCE

The beginnings: subsistence in Ancient Egypt: skin divers netting fish in the Nile



Tomb of Djar, 11th Dynasty (ca. 2000 BCE)



‘Pull out well! (It is) a Happy day! Measure you, measure you, for you, good great fishes’

Text and image from the tomb of Ankhtifi (ca. 2100 BCE)

The beginnings: other kinds of aquatic/underwater harvest: mother of pearl (left) and sponge diving (right)

Mesopotamia (southern Iraq, ca. 2500 BCE)



The so-called 'Standard of Ur': a mosaic of lapis lazuli (from the exotic region of Afghanistan) and mother of pearl (from the exotic source of a seabed), deposited in an elite tomb in Mesopotamia

Classical Greece (ca. 500 BCE)



A sponge diver about to take the plunge with a knife and a sack, the jar was also deposited in an elite tomb



The beginnings: in search of exotic and high value things (things difficult to access/procure)

Epic of Gilgamesh (composed in Mesopotamia no later than ca. 2100 BCE) records a heroic dive after a 'plant of immortality' on the seabed

'He tied heavy stones [to his feet]
They pulled him down into the deep [and he saw the plant]
He took the plant though it pricked his hands
He cut the heavy stones from his feet
The sea cast him up upon the shore'

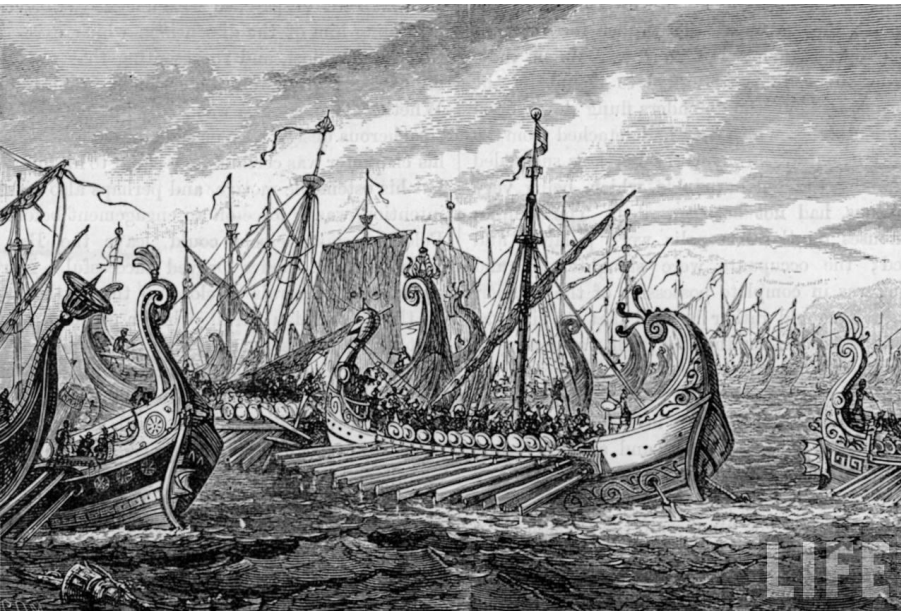


The value of mother of pearl and sea sponge resides, in part, in the process of procuring them



The beginnings: salvaging lost cargoes (lost valuable things)

Scyllias and his daughter Hydna: the first professional divers known by name, famed for salvaging huge volumes of gold and silver (tribute and booty) from a Persian fleet in the Aegean that lost many ships in a storm (ca. 480 BCE, recorded by Herodotus 40 years later)

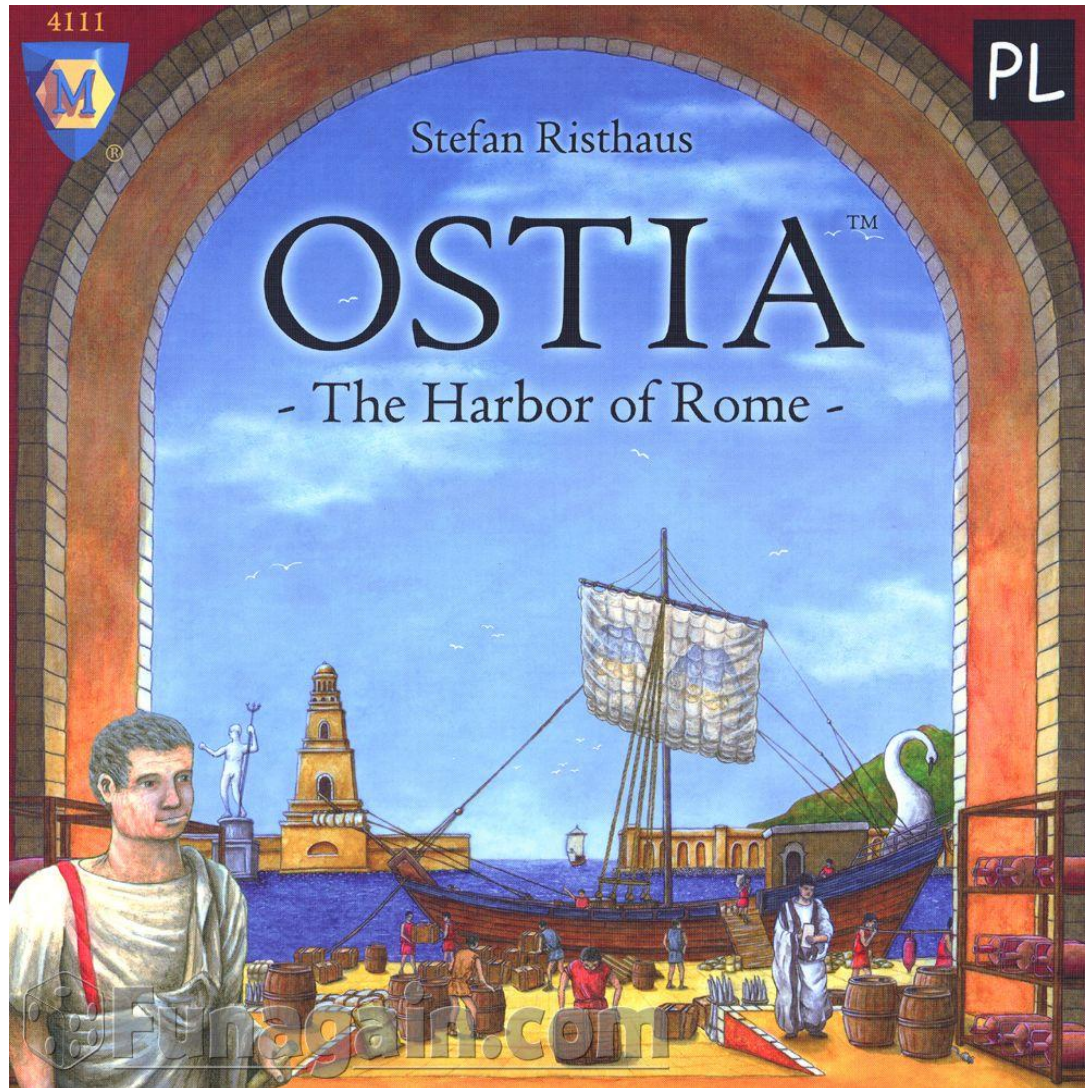


Xerxes' invading fleet in the Aegean



Hydna and Scyllias cutting the moorings of a Persian ship

The earliest diver's guild: *urinatores*, Roman salvage divers at Ostia (ca. AD 200)



From the *Rhodian Sea Laws* (ca. AD 600-800, Byzantine):

‘If gold or silver or something else be raised from the deep from 8 fathoms, the salvager is to take the third part; if from 15 fathoms, the salvager is to take half, because of the danger of the depth’



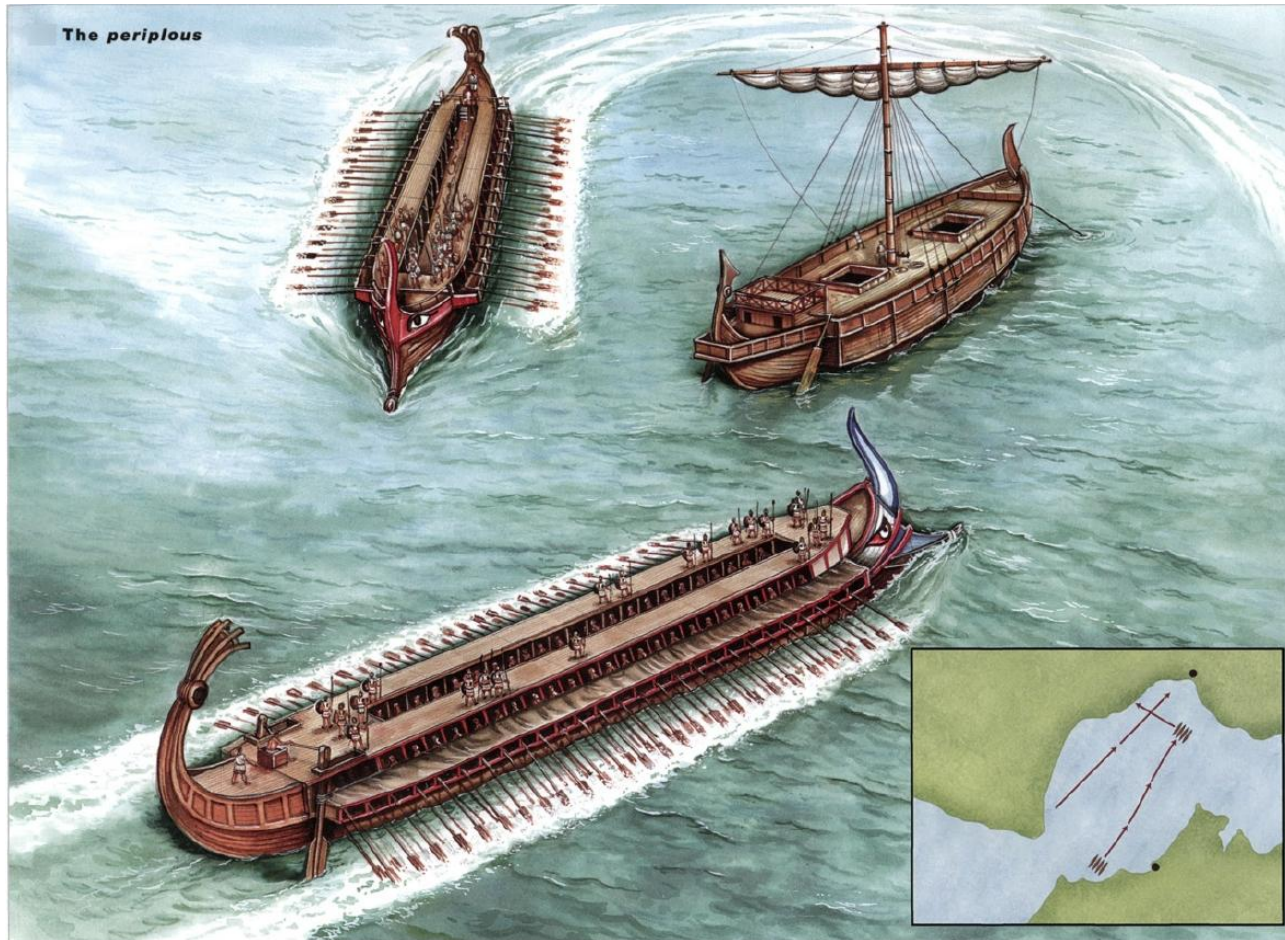
Reconstruction of the Byzantine Yassi Ada shipwreck (sunk ca. AD 600 with gold coins)

Swimming/diving as a military strategy

Ancient Mesopotamia (870 BCE)



Divers in the Peloponnesian War (Ancient Greece, 431-404 BCE)



Some of their tasks in the Second Battle of Syracuse included (according to Thucydides):

- **swimming supplies past a naval siege
- **pounding stakes in the seafloor at the entrance of a harbor to block/trap a naval advance

Luxury/high value materials, fishing/foraging, shipwreck salvage and warfare remain strong reasons to dive (and risk one's life) to the present day



Crucial technological advances in the history of underwater enterprise and exploration



Alexander the Great and the (legend of the?) diving bell (332 BCE)

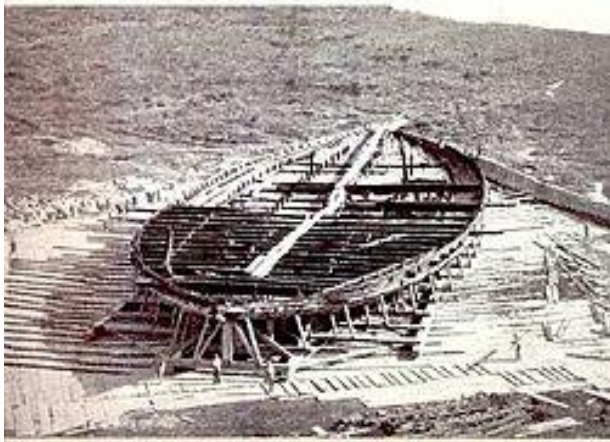


A medieval painting showing Alexander the Great descending in a submersible (diving bells used in medieval Europe were called 'Alexander's container')

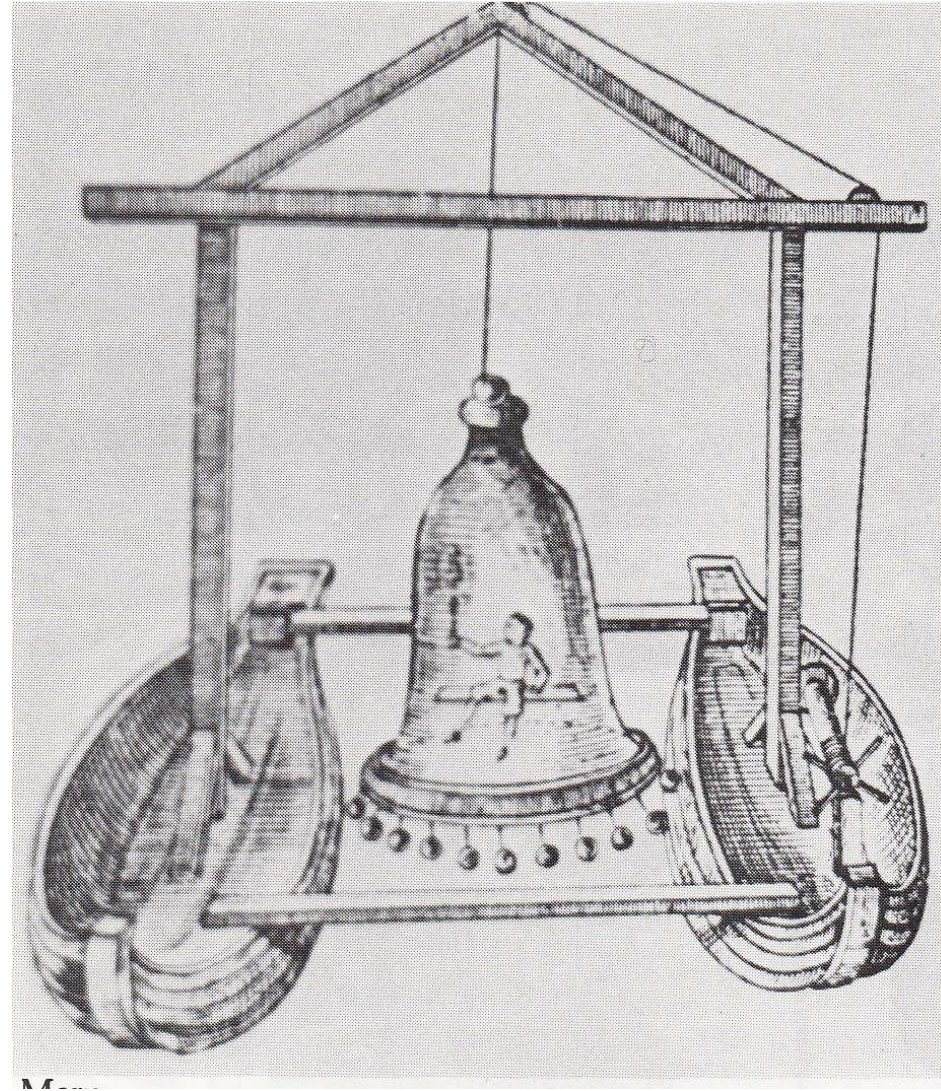
The next recorded use of a diving bell dates to AD 1531, used to search for Roman (!) shipwrecks



In search of treasures from Caligula's pleasure barge (sunk in Lake Nemi, 1500 years earlier)

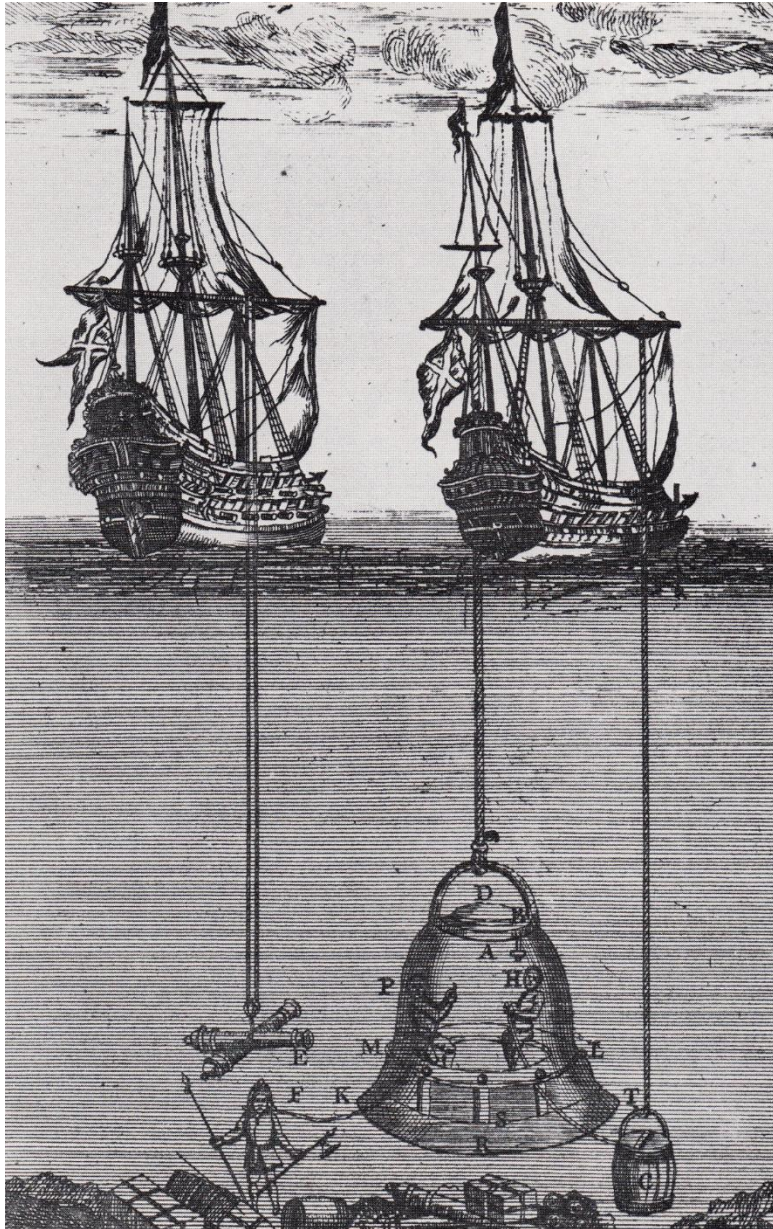


Caligula's barge after Mussolini drained the lake from 1928-31



A diving bell from the AD 1500's

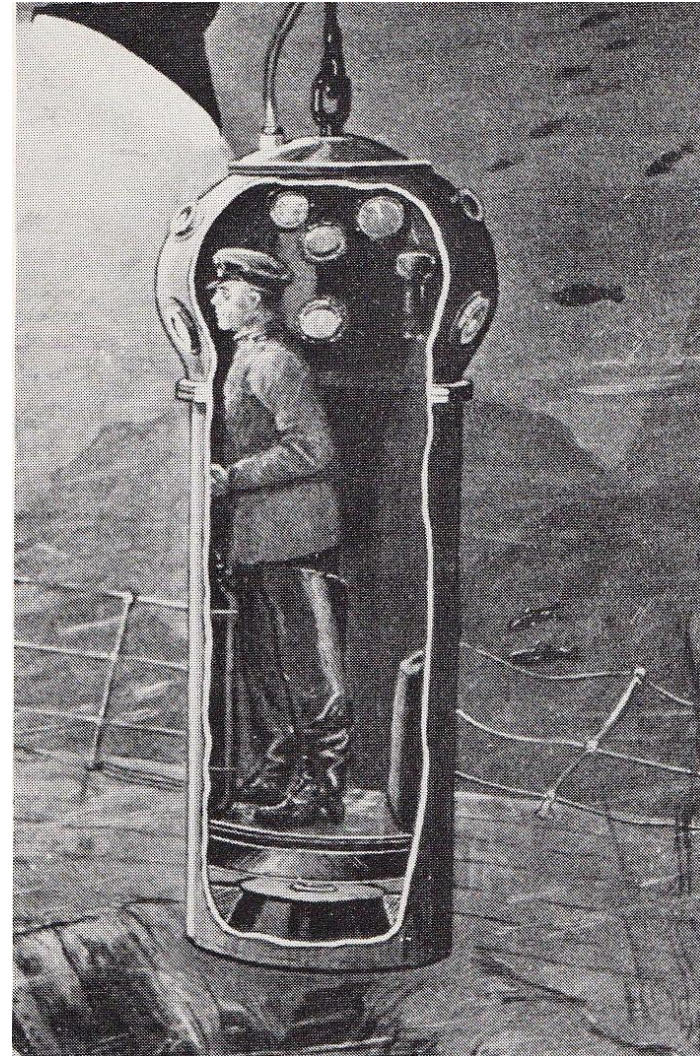
The evolution of the diving bell (trapped air) to the caisson (supplied air, patented 1788)



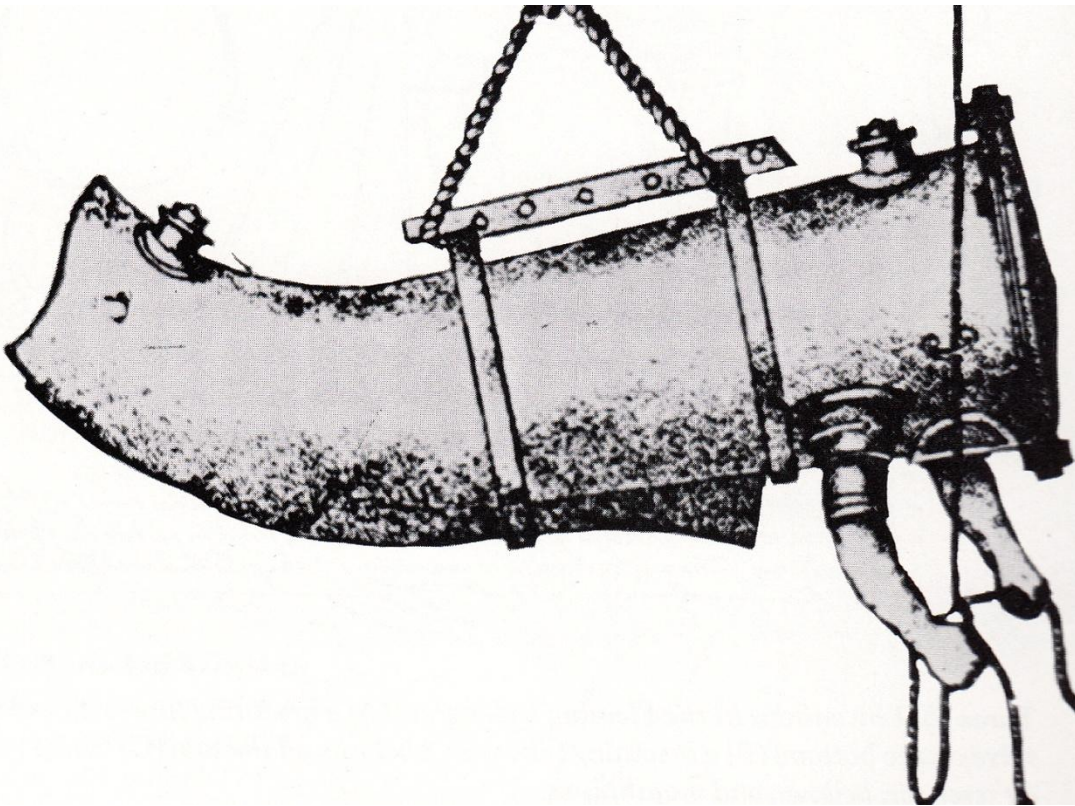
By the late 1700's every major European port was equipped with a diving bell, used for:

- **shipwreck salvage
- **harbor construction
- **lighthouse construction
- **bridge construction
- **ship repair

Prototypes of bathyspheres (early 1900's), enclosed, supplied with air, descended like a bell



The evolution of the self-contained underwater breathing apparatus



Patented in 1715 and used successfully
for shipwreck salvage

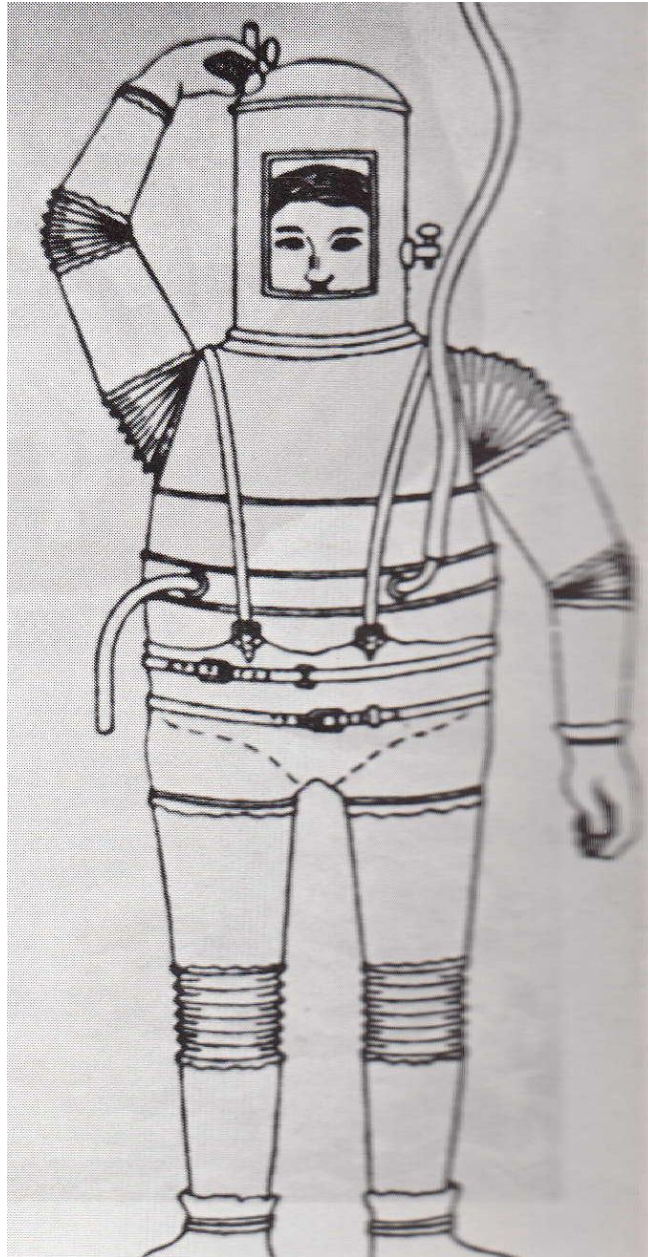


Diving suit, 1835

Working surface air diving helmet suits of the 1820's-30's (depth 100 ft.)



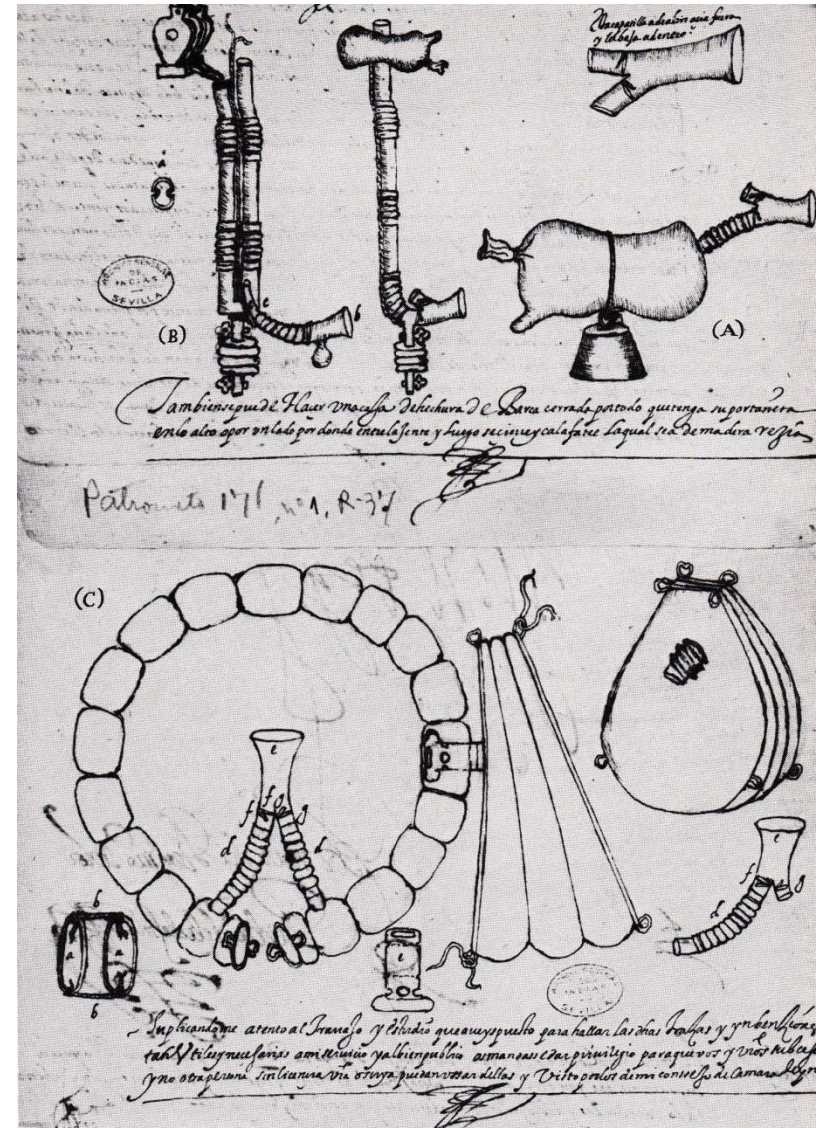
Armored (surface air) diving suit (patented 1838, depth 200 ft.)



Surface air diving helmets continued to be used by Turkish sponge divers through the 1950's

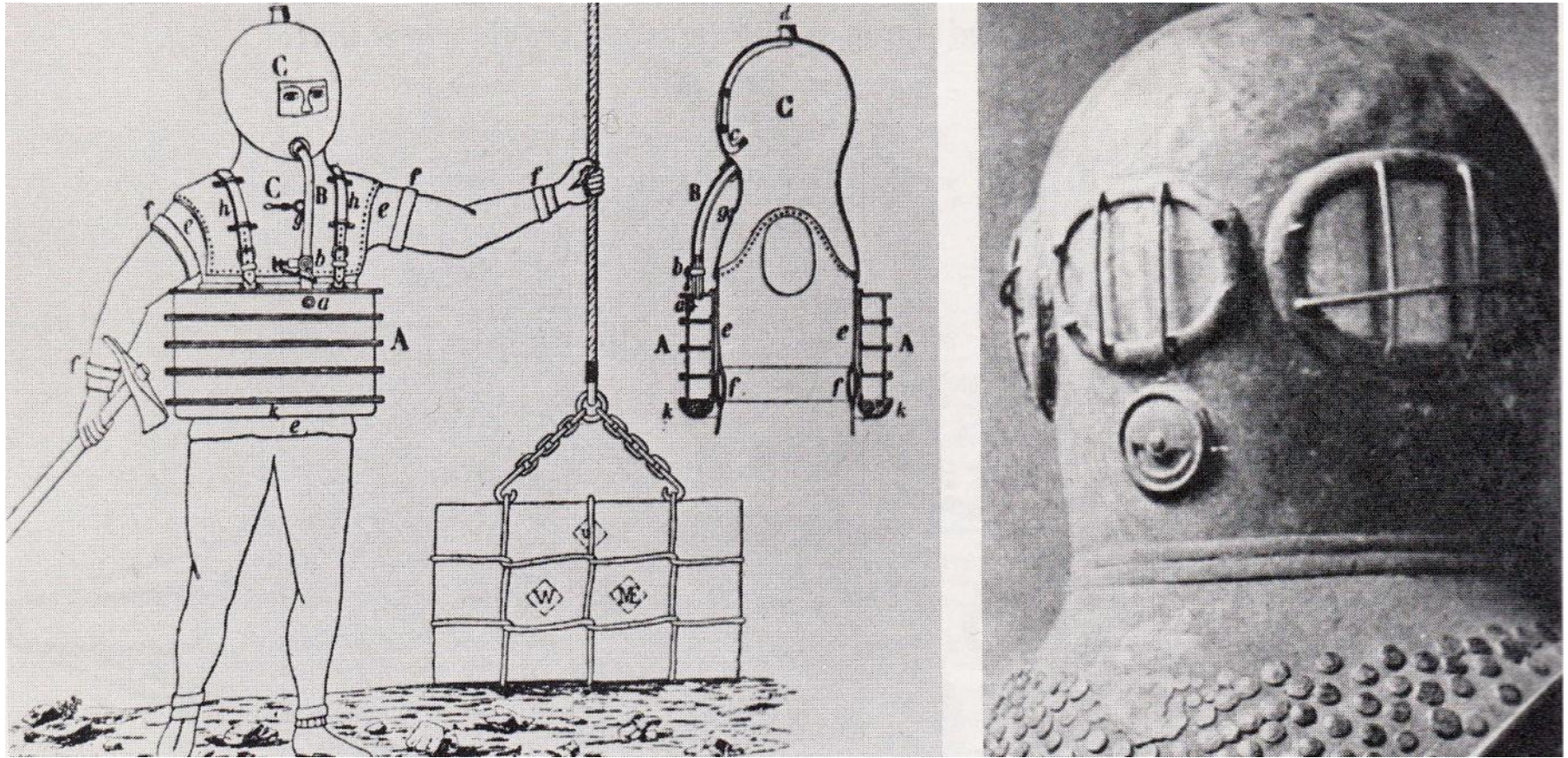


The challenges of SCUBAs



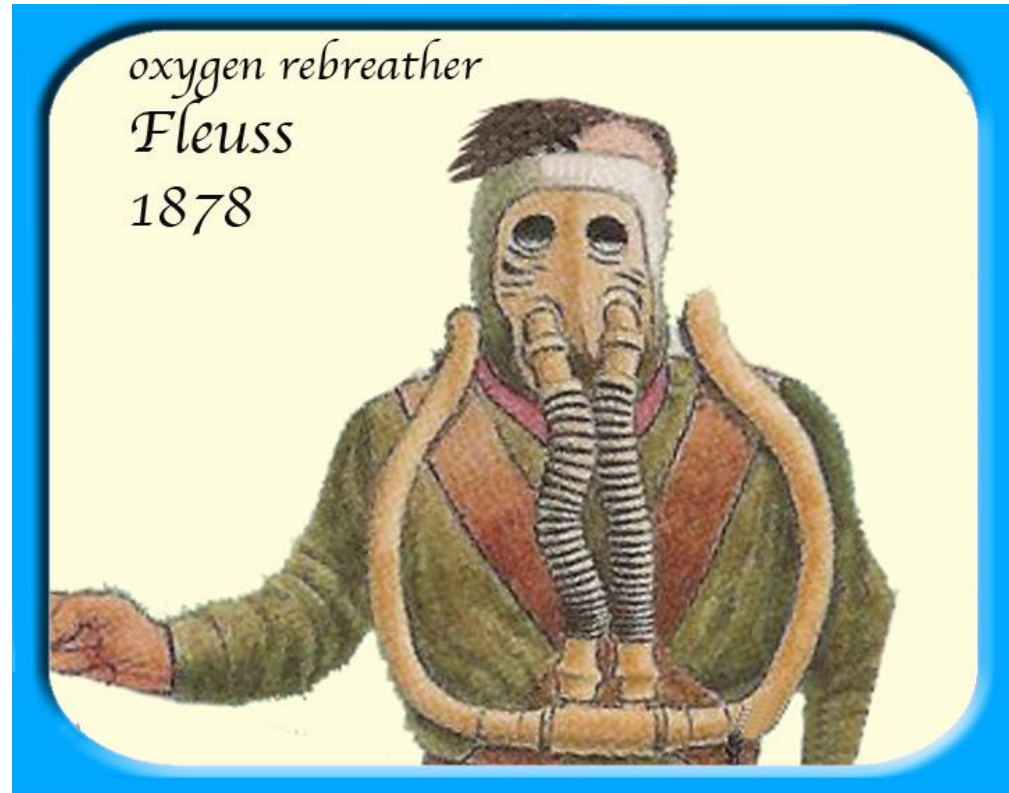
Since Leonardo da Vinci inventors have been hard pressed to find a solution for SCUBAs

The first fully operational SCUBA (patented 1825)



The trick: a metal reinforced belt (A) that could hold pressurized air (max. 20 minute dives)

The Fleuss Apparatus: a closed-circuit pure compressed oxygen re-breather



The trick: caustic soda absorbs carbon dioxide from the diver's breath; the remaining oxygen simply circulates (max. 3 hour dives, though max. depth 33 feet)

1910's: Experimentation with oxygen-nitrogen mixtures compressed in steel tanks worn on the diver (max depth 200 ft. though still confined to the diving suit)



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Photo No. 170.
Front View.*

*Siebe, Gorman & Co.'s Copyright.
Photo No. 171.
Back View.*

Here's something new: diving for the sport of it, and a related invention :

The founding of the 'Club of Divers and Underwater Life' (1935)

Hose simply connected to a face mask radically increased mobility (to spear-fish)



The Aqualung (1942): the key is the regulator

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DELUXE TWO-STAGE REGULATOR.
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Prior to 1930's, the only reasons to dive and risk one's life were:

- 1) For subsistence (fishing)
- 2) To harvest luxury or otherwise rare materials (sponge and pearl diving)
- 3) For commercial salvage (cargoes from shipwrecks)
- 4) For military advantage (swimming/diving commandos)
- 5) For the support and maintenance of commerce and navies (harbor and ship repair)
- 6) Research and development of technology towards the above ends, and for its own sake

