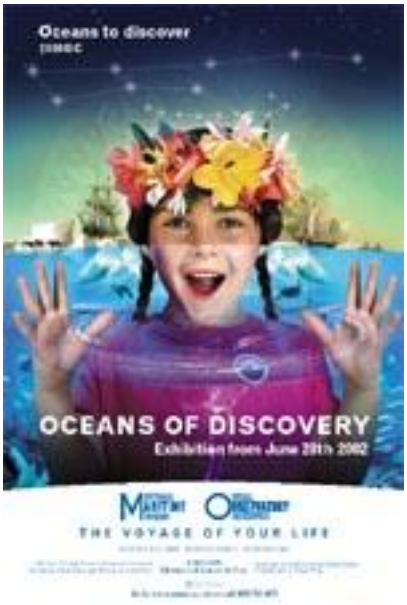
# OCEANS OF DISCOVERY

## The gallery




The oceans are a source of fascination and curiosity. Far from being a barrier, they have long been a conduit for commerce and communication. People have travelled across them to trade and to settle and have also ventured under them to uncover treasure and explore the mysteries of the deep.

Oceans of Discovery aims to illustrate the fascinating story of human endeavour to explore and understand the world and its oceans.
The gallery is divided into five sections:

**Navigating the oceans** explains the basic components of the navigational sciences through objects and educational interactives:

- How did man find his way across the seas?
- What tools did he use?
- What is the legacy for modern sailors?

The earliest maritime explorers travelled vast distances in small craft, using their knowledge of the seas and the stars and some simple navigational tools to help them find their way. Polynesian voyagers travelled thousands of miles across the South Pacific from New Guinea to New Zealand, whilst the Vikings journeyed across the North Atlantic reaching Greenland and even North America. The ancient Greek and

Romans relied more on coastal navigation, never venturing far from the sight of land. Nevertheless, they managed to sail around the continent of Africa by 600 BC!

Mariners Mirror
Repro ID A1730_1


**Mapping the world** investigates the significant developments in man's understanding of the world that led to the first attempts to circumnavigate the globe. It also explores the development of the sea chart and how knowledge was transmitted throughout the maritime community.

The 15th and 16th centuries saw an increased pace of exploration. Knowledge about the seas was spread throughout Europe by means of maps, charts and books, which provided vital navigational information for sailors.

The 15th century rediscovery of an important geographical text by the Greco-Egyptian astronomer and cartographer Claudius Ptolemy meant that mapmakers could finally depict their discoveries with mathematical accuracy. These developments enabled explorers, such as Columbus, Magellan and Drake to travel round the globe, opening up the New World and the Far East to Europeans.

James Clark Ross
Repro ID BHC2981


**Science and the sea** examines developments during the age of Enlightenment (*c.*1700–1850) when a belief in the processes of scientific enquiry first came to the

fore. It explores the impact of new technologies, scientific method and scientific instruments, focussing on Captain James Cook's three Voyages of Discovery. Cook, explored and charted the Pacific, as well as searching for the Northwest Passage between the Atlantic and Pacific Oceans and looking for the 'Great Southern Continent'.

Advances in scientific instrumentation not only helped him journey more safely, but allowed him to establish 'mini-laboratories' at every landfall.

**Exploring the Poles** concentrates on the heroic voyages of polar explorers, raising issues about magnetic variation and the problems of finding the magnetic northern and southern Poles.

The gruelling nature of the climate and the featureless landscape of the Polar regions make navigating there even more of a challenge to the intrepid explorer. Antarctica was the last continent to be mapped. British explorers, such as Robert Falcon Scott and Ernest Shackleton, led their expeditions under the most difficult conditions. And Scott's 1910–12 race to the South Pole ended in tragedy, with the whole of the expedition crew perishing on the return journey.

Shackleton managed to save his crew during the 1914–17 expedition, when their ship *Endurance* was crushed in the ice – but only after Shackleton himself and a handful of men had endured an 800-mile rescue mission in the ship's life-boat *James Caird*.

**Under the seas** charts the history of underwater exploration from Classical times to the present and investigates the technological developments that have allowed man to explore to increasing depths. Displays include objects such as a model of Ballard's *Jason*, *Deep Worker* and the Newt Suit. You can see images and more information about these on the key objects page.

People have dived under the seas for many thousands of years. However, journeying to the depths has its own hazards: crushing water pressure, intense cold and the impenetrable darkness of the deep ocean. To solve these problems, a wide variety of inventive solutions have been devised, from diving bells in the 16th century to the metal helmets and enclosed suits of the 19th century.

It is only in the last 30 years that we have been able to dive into the most remote depths of the sea. Now, manned and unmanned submersibles are finally allowing us to explore the vast realms of the ocean and uncover the secrets of the many creatures that live there.

## Key objects

Mariner's compass
Repro ID A1763-4
© NMM London

Model of the Golden Hind
Repro ID E0433
© NMM London

K1 Marine Chronometer
Repro ID D9661
© NMM London

World map
Repro ID C4568-1
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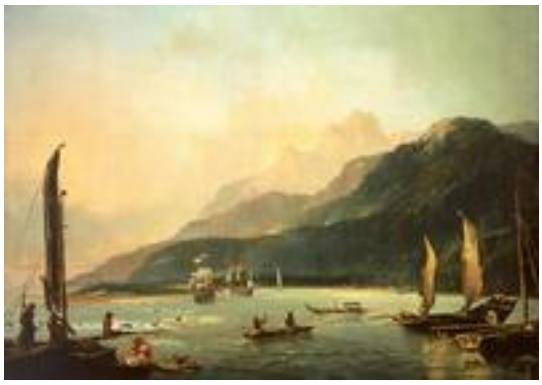


HMS Resolution and Adventure with fishing craft in Matavi Bay
Repro ID BHC1932
© NMM London

The Newt Suit
On loan from Stolt Offshore Ltd
Repro ID F3852-1
© NMM London

The Newt Suit is a type of Atmospheric Diving Suit developed by Dr Phil Nuytten in

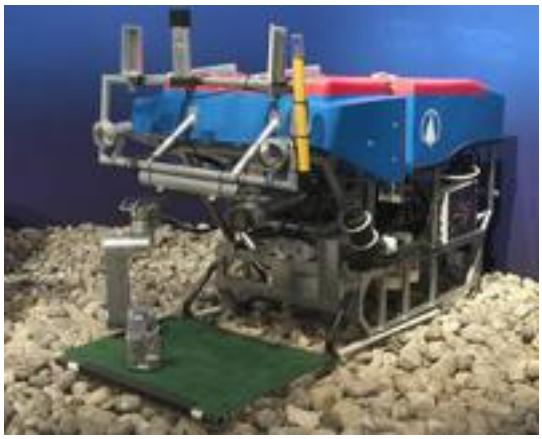
1987. It is constructed to function like a 'submarine you can wear', allowing the diver to work at normal atmospheric pressure even at depths of over 300 metres. It is made of cast aluminium and has fully-articulated joints so the diver can move more easily underwater. The life-support system provides 6–8 hours of air.

Scale model of 'Deep Worker'
The model is courtesy of The National Geographic Society, Washington DC.
Repro ID F3852-3


*Deep Worker* is a self-propelled one-person submarine designed by Dr Phil Nuytten. It is able to descend to a depth of 606 metres and can travel at speeds of up to 3.5 knots.

Deep Water was used in the Sustainable Seas Expeditions - a five-year project to explore, document and provide scientific data on coastal waters of the United States. The project developed a long-term strategy for the conservation and restoration of the marine environment.

You can find out more about the Sustainable Seas Expeditions on the National Geographic and National Oceanic and Atmospheric Administration websites.



Scale model of 'Jason'
On loan from the National Geographical Society, Washington DC
Repro ID F3852-5


Dr Robert Ballard is one of the world's foremost underwater explorer-scientists. In the late 1970s, he began to design a remotely-operated vehicle (ROV) for the use with a

manned submersible.

This motorized, remotely-operated robot is called *Jason* and it has imaging cameras which transmit pictures using fibre-optic cables and a gripping arm. One of its first deep-sea missions was to explore the wreck of a 4th-century Roman trading ship in the Mediterranean Sea.

## Interesting facts

Sir Francis Drake
Repro ID BHC2662
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Francis Drake was the second person to circumnavigate the globe. In the course of his trip, he collected enough gold and valuable spices to ensure that investors in the trip gained almost 5000% on their original stake.

In 1947, Norwegian adventurer Thor Heyerdahl sailed in the wooden raft Kon-Tiki to demonstrate how ancient sailors from South America might have reached the islands of Polynesia before settlers from the west.

The types of ships that the Vikings used can be seen in the 11th century Bayeux Tapestry. William the Conqueror's great-great-great-grandfather, the Viking chieftain Rollo, settled in Normandy in 911.

Captain James Cook
Repro ID BHC2628
©NMM London, Greenwich Hospital Collection

Captain Cook made sure that his crew did not develop scurvy, a disease caused by a lack of vitamin C in the diet, by feeding them with pickled cabbage, vegetables and limes.

The crew of the 1872–76 Challenger expedition discovered the Mid-Atlantic Ridge, but they didn't know what it was. It was only in the 1960s that scientists realised its geological significance, as the place where the continents are formed.

The tallest mountain on Earth is really Mauna Kea, an inactive volcano on Hawaii. From the base to the peak it is 10,200m high - but only 4205m of its height is above water!

The ice sheet covering Antarctica is 4 km thick. It contains 90% of the world's fresh water in about 7 million cubic km of ice.

## Timeline

*c.*2000 BC - Polynesian navigators learn to navigate beyond the sight of land. By 1000 BC they have settled in Tonga and Samoa.

*c.*600 BC - A Phoenician expedition sails around Africa, travelling from the Red Sea to the Mediterranean.

*c.*400 BC - Aristotle describes a form of diving bell and metal tubing used for snorkels.

*c.*150 BC - Greek geographer, Ptolemy, compiles a map of the Earth divided into degrees of latitude and longitude.

*c.*815 CE - Vikings from Norway settle in Iceland. In around 982, Erik the Red sailed further west and landed in Greenland.

1492 - Christopher Columbus, on the first of his four journeys to the 'New World' lands in the Bahamas, Cuba and Hispaniola.

1519–22 - Ferdinand Magellan leads an expedition that sails around the world. He is killed in the Philippines on 27 April 1521, nearly 18 months before the voyage is completed.

1577–80 - Francis Drake circumnavigates the globe

1620 - Cornelis Drebbel builds the world's first submarine. It has an iron-reinforced wooden frame and is covered with leather.

1737 - John Harrison completes his first marine timekeeper, now known as 'H1'.

1768–79 - James Cook makes three voyages across the Pacific Ocean. His missions included the observation of the Transit of Venus and the search for the North-West Passage.

1829 - Sir John Ross and his nephew James Clark Ross make a second attempt to

find the North-West Passage. The younger Ross locates the North Magnetic Pole in 1831

1837 - Augustus Siebe tests a diving helmet and suit that will become the standard deep diving equipment of the 19th century.

1872–76 - The *Challenger* expedition makes the first worldwide oceanographic cruise. It makes scientific observations at 362 stations, resulting in 50 volumes of findings.

1906 - Founding of the Oceanographic Institute by Prince Albert I of Monaco, with a museum in Monaco and teaching institution in Paris.

1934 - William Beebe and Otis Barton descend in the bathysphere to become the first people to directly observe deep-sea life.

1943 - Jacques Cousteau and Emile Gagnan invent the aqua-lung with an automatic demand valve that releases air as the diver inhales.

1960 - Jacques Piccard and Don Walsh dive in Trieste to the bottom of the Challenger Deep in the Pacific Ocean. Their deep-diving record still stands.

1977 - Hydrothermal vents, an unknown form of ecosystem, are discovered in the Pacific Ocean

1985 - Robert Ballard and an American-French team discover the wreck of the *Titanic*

1993 - Japan tests *Kaiko*, the world's deepest diving robot submersible.

1998 - The United Nations declares the 'International Year of the Ocean'.

2002 - The final year of the Sustainable Seas expedition, led by Dr Sylvia Earle. This is a five-year project of underwater exploration using the latest technology to undertake cutting-edge scientific research and raise public awareness of the marine environment.

## Gallery details

**Curator:** Kristen Lippincott
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**Assistant Curator:** Claire Warrior
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**Graphic Designer:** Pat O'Leary, O'Leary Prescott
**Contractor:** Silver Knight Special Projects
**Audioguides:** Flexleigh Audioguides Ltd.
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**Sponsor:** CP Ships
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