THE CHALLENGER EXPEDITION

A COLLECTION OF PRINTED WORKS MANUSCRIPTS LOGS & ARTIFACTS.

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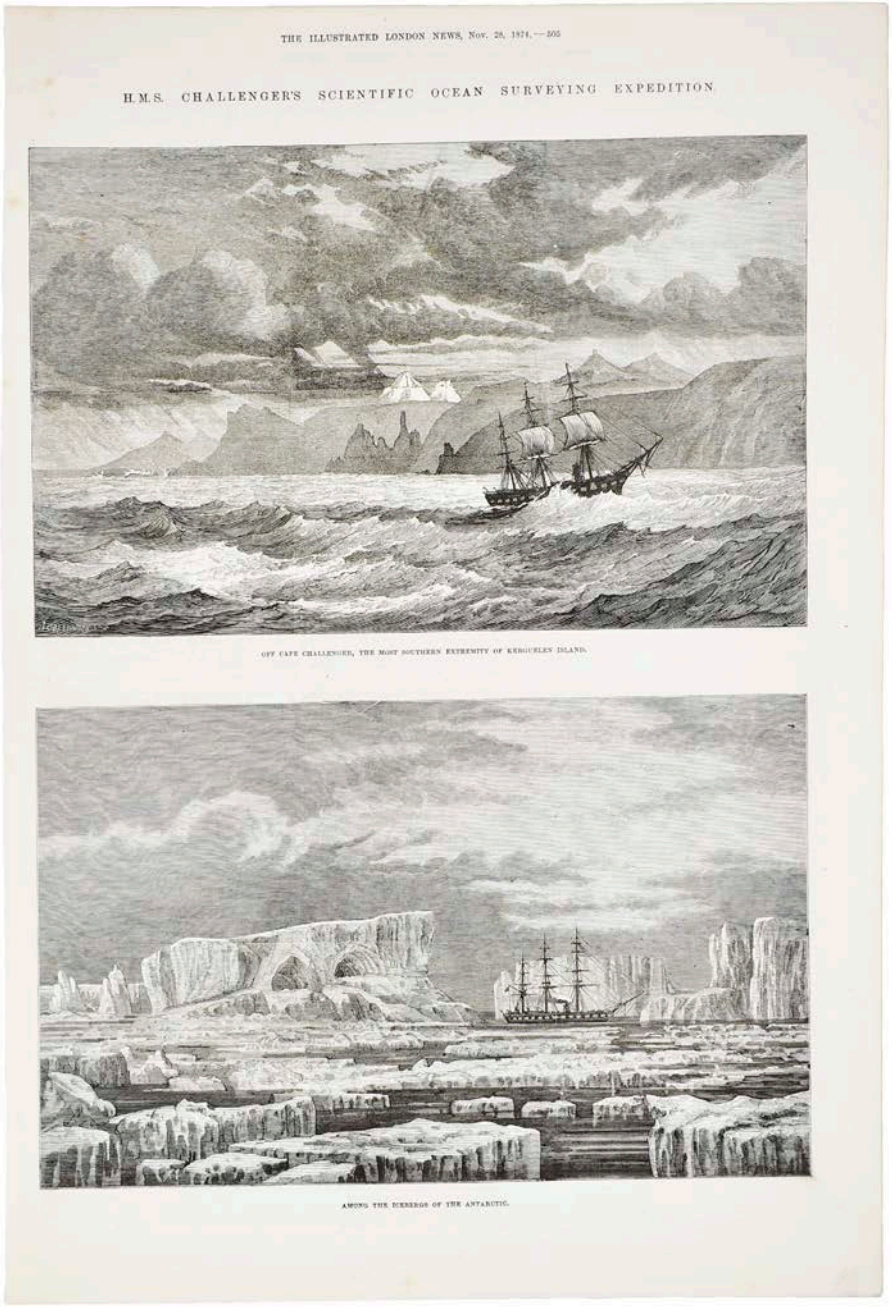
THE ILLUSTRATED LONDON NEWS, Nov. 28, 1874.—505

H.M.S. CHALLENGER'S SCIENTIFIC OCEAN SURVEYING EXPEDITION

OFF CAPE CHALLENGER, THE MOST SOUTHERN EXTREMITY OF KERGUELEN ISLAND.

AMONG THE ICEBERGS OF THE ANTARCTIC.

THE CHALLENGER EXPEDITION THE MOST IMPORTANT SCIENTIFIC CIRCUMNAVIGATION

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'THE BIRTH OF MODERN OCEANOGRAPHY'

On December 21, 1872 the H.M.S. Challenger sailed from Portsmouth, for an epic voyage which would last almost three and a half years. It was the first expedition organized and funded for a specific scientific purpose: to examine the deep-sea floor and answer questions about the ocean environment.

The expedition covered 69,000 nautical miles and gathered data on currents, water chemistry, temperature, bottom deposits and marine life at 362 oceanographic stations. More than 4700 new species of marine animals were discovered during the course of the voyage, many of which were found on the seafloor, an environment that scientists originally believed to be too inhospitable to support life. Included in their discoveries were many of the fish and marine creatures thought at that time to be of legend and numerous specimens from this voyage are preserved and on view in one of the largest collections in the Natural History Museum, London.

The idea for the expedition began in 1868, with naturalist William B. Carpenter and Sir Charles Wyville Thomson, Professor of Natural History at Edinburgh University. They persuaded the Royal Society of London to sponsor a prolonged voyage of exploration across the oceans of the globe. But it was not until 1872 that the Royal Society of London obtained the use of HMS Challenger from the Royal Navy. The Challenger was a three-masted square rigged wooden corvette and the first vessel specifically equipped for general oceanographic research. All but two of her 17 guns had been removed to make way for purpose-built scientific laboratories and workrooms. Storage space for all the trawls and dredges was also necessary, together with space for the anticipated sample collection.

The expedition was led by Captain George Nares and the scientific work was conducted by Wyville Thomson assisted by Sir John Murray, John Young Buchanan, Henry Nottidge Moseley, and the German naturalist Rudolf von Willemoes-Suhm among others. They were also interested in supporting the theories of Charles Darwin and disproving the azoic theory of a dead zone below 1,800 feet.

In December 1874, Nares left the Challenger at Hong Kong to assume command of the British Arctic Expedition of 1875-1876 in the search for Franklin, and Captain Frank Tourle Thomson took his place.

The first leg of the expedition took the ship from Portsmouth (December 1872) south to Lisbon (January 1873) and then on to Gibralter. The next stops were Madeira and the Canary Islands (both February 1873). The period from February to July 1873 was spent crossing the Atlantic westwards from the Canary Islands to the Virgin Islands, then heading north to Bermuda, east

to the Azores, back to Madeira, and then south to the Cape Verde Islands. During this period, there was a detour in April and May 1873, sailing from Bermuda north to Halifax and back, crossing the Gulf Stream twice with the reverse journey crossing further to the east.

After leaving the Cape Verde Islands in August 1873, the expedition initially sailed south-east and then headed west to reach St Paul's Rocks. From here, the route went south across the equator to Fernando de Noronha during September 1873, and onwards that same month to Bahia (now called Salvador) in Brazil. The period from September to October 1873 was spent crossing the Atlantic from Bahia to the Cape of Good Hope, touching at Tristan da Cunha on the way.

December 1873 to February 1874 was spent sailing on a roughly south-eastern track from the Cape of Good Hope to the parallel of 60 degrees south. The islands visited during this period were thePrince Edward Islands, the Crozet Islands, the Kerguelen Islands, and Heard Island. February 1874 was spent travelling south and then generally eastwards in the vicinity of the Antarctic Circle, with sightings of icebergs, pack ice and whales. The route then took the ship north-eastward and away from the ice regions in March 1874, with the expedition reaching Melbourne in Australia later that month. The journey eastward along the coast from Melbourne to Sydney took place in April 1874, passing by Wilsons Promontory and Cape Howe.

When the voyage resumed in June 1874, the route went east from Sydney to Wellington in New Zealand, followed by a large loop north into the Pacific calling at Tonga and Fiji, and then back westward to Cape York in Australia by the end of August. The ship arrived in New Zealand in late June and left in early July. Before reaching Wellington (on New Zealand's North Island), brief stops were made at Port Hardy (on d'Urville Island) and Queen Charlotte Sound (on New Zealand's South Island) and Challenger passed through the Cook Strait to reach Wellington. The route from Wellington to Tonga went along the east coast of New Zealand's North Island, and then north and east into the open Pacific, passing by the Kermadec Islands en route to Tongatabu, the main island of the Tonga archipelago (then known as the Friendly Islands). The waters around the Fijian islands, a short distance to the north-west of Tonga, were surveyed during late July and early August 1874. The ship's course was then set westward, reaching Raine Island (on the outer edge of the Great Barrier Reef) at the end of August and thence arriving at Cape York, at the tip of Australia's Cape York Peninsula.

Over the following three months (September to November 1874), the expedition visited several islands and island groups while sailing from Cape York to China and Hong Kong (then a British colony). The first part of the route passed north and west over the Arafura Sea, with New Guinea to the north-east and the Australian mainland to the south-west. The first islands visited were the Aru Islands, followed by the nearby Kai Islands. The ship then crossed the Banda Sea touching at the Banda Islands, to reach Amboina (Ambon Island) in October 1874, and then continuing to Ternate Island. All these islands are now part of modern-day Indonesia. From Ternate, the route went north-westward towards the Philippines, passing east of Celebes (Sulawesi) into the Celebes Sea. The expedition called at Samboangan (Zamboanga) on Mindanao, and then Iloilo on the island of Panay, before navigating within the interior of the archipelago en route to the bay and harbour of Manila on the island of Luzon. The crossing north-westward from Manila to Hong Kong took place in November 1874.

After several weeks in Hong Kong, the expedition departed in early January 1875 to retrace their route south-east towards New Guinea. The first stop on this outward leg of the journey was Manila. From there, they continued on to Samboangan, but took a different route through the interior of the Philippines, this time touching at the island of Zebu (Cebu). From Samboangan the ship diverged from the inward route, this time passing south of Mindanao (in early February 1875). Challenger then headed east into the open sea, before turning to the south-east and making landfall at Humboldt Bay (now Yos Sudarso Bay) on the north coast of New Guinea. By March 1875, the expedition had reached the Admiralty Islands, north-east of New Guinea. The final stage of the voyage on this side of the Pacific was a long journey across the open ocean to the north, passing mostly west of the Carolina Islands and the Mariana Islands, reaching port in Yokohama, Japan, in April 1875.

Challenger departed Japan in mid-June 1875, heading east across the Pacific to a point due north of the Sandwich Islands (Hawaii), and then turning south, making landfall at the end of July at Honolulu on the Hawaiian island of Oahu. A couple of weeks later, in mid-August, the ship departed south-eastward, anchoring at Hilo Bay off Hawaii's Big Island, before continuing to the south and reaching Tahiti in mid-September. The expedition left Tahiti in early October, swinging to the west and south of the Tubuai Islands and then heading to the south-east before turning east towards the South American coast.

The route touched at the Juan Fernández Islands in mid-November 1875, with Challenger reaching the port of Valparaiso in Chile a few days later. The next stage of the journey commenced the following month, with the route taking the ship south-westward back out into the Pacific, past the Juan Fernández Islands, before turning to the south-east and back towards South America, reaching Port Otway in the Gulf of Penas on 31 December 1875.

Most of January 1876 was spent navigating around the southern tip of South America, surveying and touching at many of the bays and islands of the Patagonian archipelago, the Strait of Magellan, and Tierra del Fuego. Locations visited here include Hale Cove, Gray Harbour, Port Grappler, Tom Bay (all in the vicinity of Wellington Island), Puerta Bueno (near Hanover Island), Isthmus Bay (near the Queen Adelaide Archipelago), and Port Churruca (near Santa Ines Island).

The final stops, before heading out into the Atlantic, were Port Famine, Sandy Point, and Elizabeth Island. Challenger reached the Falkland Islands towards the end of January, calling at Port Stanley and then continuing northward, reaching Montevideo in Uruguay in mid-February 1876. The ship left Montevideo at the end of February, heading first due east and then due north, arriving at Ascension Island at the end of March 1876. The period from early to mid-April was spent sailing from Ascension Island to the Cape Verde Islands (visited almost three years ago on the outward journey). From here, the route taken in late April and early May 1876 was a westward loop to the north out into the mid-Atlantic, eventually turning due east towards Europe to touch land at Vigo in Spain towards the end of May. The final stage of the voyage took the ship and its crew north-eastward from Vigo, skirting the Bay of Biscay to make landfall in England.

The biological findings were received with great interest. All the new species were carefully described, and were sketched by the expedition's artist, J.J. Wild, but the most famous paintings are those from Hoyle's monographic studies on cephalopods and Haeckel's series included in "Kunstformen der Natur".

When in 1895, the first reports of the Challenger's findings were published, John Murray summed up the significance of the voyage by calling it "the greatest advance in the knowledge of our planet since the celebrated discoveries of the fifteenth and sixteenth centuries".

Among the Challenger Expedition's discoveries is included the first ever rough map of the ocean floor and the finding of an enormous depression in the north-west Pacific Ocean representing the deepest places in the Earth's crust, now called the Mariana trenches, the deepest point in it is named the 'Challenger Deep' in honour of the expedition. However, the greatest discovery of the expedition would be that of the Mid-Atlantic ridge, a mountain chain extending the entire length of the Atlantic Ocean near its centre.

When the voyage came to an end in 1876, only 144 crew remained on the ship from the original 216 members. Seven people had died, 26 were left in hospitals or were unable to continue the journey, and several had deserted at the various ports of call. After the death of Thomson in 1882, John Murray became director and along with Dr James Chumley, edited the Expedition's Reports. The result was the massive 50 volume publication that took 23 years to compile and publish.

This must be considered the first and probably the most important scientific circumnavigation in history.

Almost all of the material concerned with the expedition was reserved for scientific institutions for research, so forming any meaningful collection is quite difficult. This collection below has some original material and artefacts collected over the last 25 years.

SIR C.WYVILLE THOMSON & SIR JOHN MURRAY

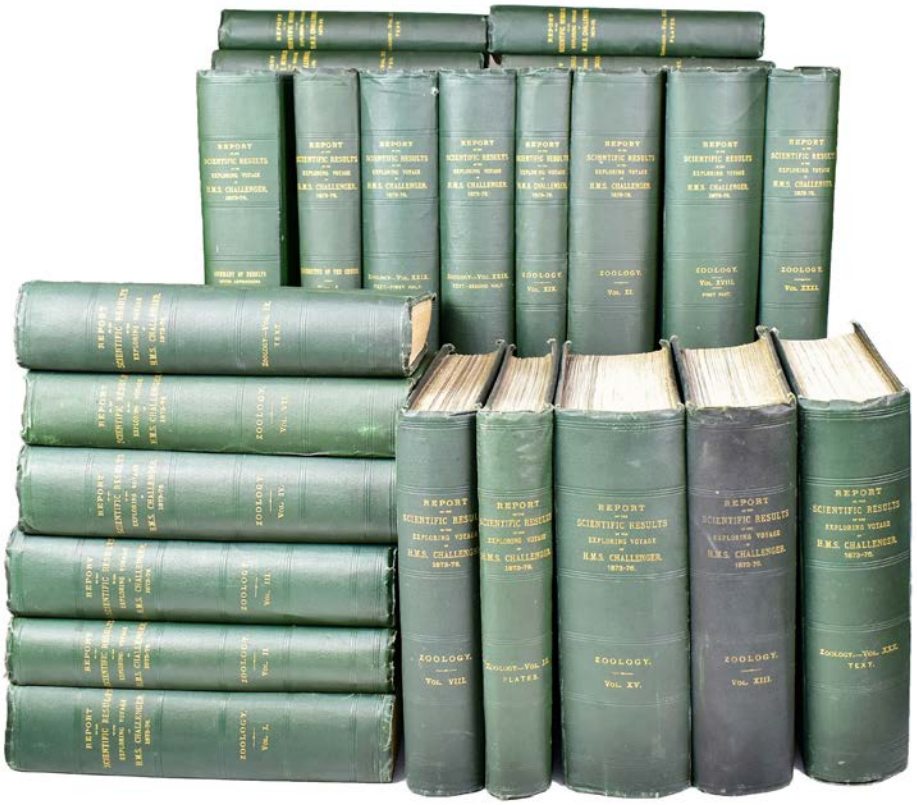
Report on the Scientific Results of the Voyage of the H.M.S. Challenger during the Years 1873-76, under the command of Captain George S. Nares...and Captain Frank Tourle Thomson.

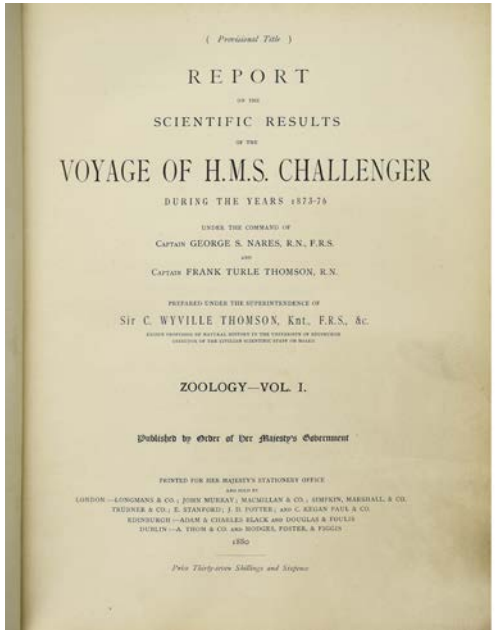
First Edition, London, Edinburgh etc.: H.M.S.O. for Longman & Co. [and others].1880-95, 4to(317 x 250mm.), 42 volumes bound in 50, original publisher's green cloth gilt, with over 3,280 plates, charts and maps, mostly lithographed, many tinted and many hand-coloured, some double-page and folding.

This 50 volume, 29,500 page report took 23 years to compile and publish.

At its completion, The Report discussed with full detail of text and illustrations the currents, temperatures, depths and constituents of the oceans, the topography of the sea bottom, the geology and biology of its covering and the animal life of the abyssal waters. The Challenger cruise had lain the cornerstone of scientific oceanography and begun its introduction to the wider scientific and lay community.It includes many observations of other natural history subjects including fauna of the countries visited and the following is a selection of some of the papers included in the volumes:
Birds , by P.L.Sclater,with 30 hand-col.plates; Bones of Cetacea, by W.Turner, with 3 plates; Collections of Eggs described by P.L.Sclater; Essay on the Green Turtle by W.K.Parker with 13 plates; Essay on Shore Fishes, with 32 plates and Deep Sea Fishes, with 73 plates, both by A.Gunther; Deep-Sea Fauna of New Zealand, by A.Hamilton.
Numerous paper slips are included in the volumes requesting authors to return completed scientific reports for publication.
Charles Wyville Thomson led the expedition but died of exhaustion from the journey and the preparation of the reports had to be supervised by Sir John Murray.
Many parts were published later as extracts from the original edition.
A choice set of this monument to seafaring naturalists and scientists.

Provenance: Royal College of Physicians and Surgeons Glasgow.
BM(NH) 11,p.716;Nissen BBI 2381;Nissen ZBI 4554;Spence 1198;Wood p.596.

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REPORT
ON THE
SCIENTIFIC RESULTS
OF THE
VOYAGE OF H.M.S. CHALLENGER
DURING THE YEARS 1873-76
UNDER THE COMMAND OF
CAPTAIN GEORGE S. NARES, R.N., F.R.S.
AND
CAPTAIN FRANK TURLE THOMSON, R.N.
PREPARED UNDER THE SUPERINTENDENCE OF
Sir C. WYVILLE THOMSON, Knt., F.R.S., &c.
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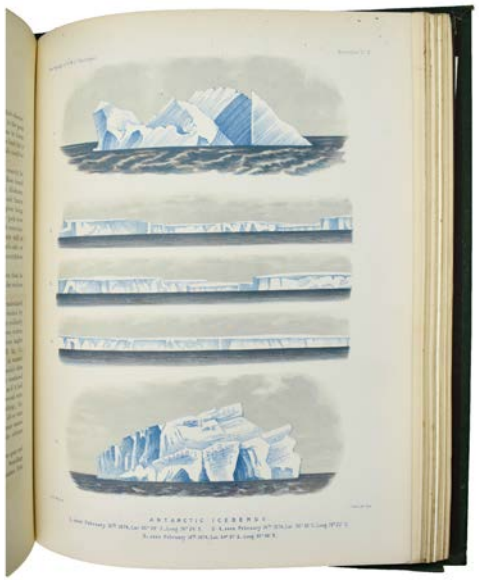


A WORK OF MAJOR SCIENTIFIC IMPORTANCE.

MOSELEY, HENRY NOTTIDGE

Working Manuscript Diary - Notice of Deepsea Fishes Collected during the Voyages of H.M.S. Challenger

Manuscript, 428pp, with 65 tipped in pages, 14 drawings inserted or pasted, 4 maps (3 manuscript), original green cloth, later half black leather, brass lock clasp, 4to, [1873-1876]

ORIGINAL SCIENTIFIC JOURNAL TAKEN ON THE CHALLENGER EXPEDITION.

Compiled by the naturalist H. N. Mosley, the journal gives an overview of his work aboard the H.M.S. Challenger. Commencing on the 8th of February 1873 at Tenerife "'from Feb 8th to 14 I visited the peak and made an excursion with Buchanan, Murray and Lord Campbell up to a height of 9000 feet ...'.

On the 14th they set off across the Atlantic, the first dredge recorded on the 17th.

The diary is a record of information regarding the day to day scientific research he is engaged in, including deep sea dredging, trawling and water depths, water sampling and temperatures, with detailed information regarding their finds and observations and with descriptions of marine and bird life encountered on the voyage.

On March 4th he writes "**This haul is extremely important as proving the existence of abundant life at great depths in mid ocean**."

When on land, recording and engaging in the collection of plants, fossils and specimens. 'April 4. Bermuda - During our two day stay I was engaged almost constantly in the collection of plants for Kew'. A significant amount of detail is given to the makeup of the sand and stone to the islands, particularly the moving sand banks in Bermuda. "...at Elbow Bay a cottage the chimney of which only is now to be seen above the sand."

On May 8th "I went for a tour in the United States returning to Bermuda by mail steamer... from New York, to join the Challenger arriving there on the 27th of May". Although unrecorded in the text of the journal, at the end of the journal a single leaf illustrated and inscribed 'and this is of a white man. I think Sir John Lubbock says that the N American Indians distinguish a white by putting a tall hat to him. Such a form of head gear must of course be astonishing to a savage at first'. Numerous notes are tipped in, usually containing references to the natural history of the islands visited or referencing previous voyages. These include Jukes' Voyage of the Fly, Fitzroy in the Voyage of the Beagle, Ross' Voyage to the Antarctic and Southern Regions, but none more so than Charles Darwin. Darwin is mentioned continually, as they reached Cape Verde on August 7th.

"The harbour is bounded by black hasatic cliffs with the limestone fossiliferous beds described by Darwin in his voyage and volcanic islands showing out in several places as a continuous white streak"

And again following Darwin to the South American islands of St Pauls Rock and Fernando de Narhorna on August 28th and September 1st. On St Pauls Rock's birds Moseley writes "Darwin visited the island in February, Moss in November and we in August. We all discovered the birds with eggs and young. The breedings therefore seems to go on all year round without intermission."

Moseley displays a degree of narrative, perhaps unacceptable in scientific ledgers today. After observing lava flows in the Prince Edward Islands and glaciers on Kerguelen Island, on the 13th of February he writes "Then the dusk water showed a sprinkling over of white dots which looked as if they had been snow flakes which by some extraordinary arrangement had fallen on the water and remained unmelted. We could make nothing of them at first. Then they got bigger and bigger and closer together and at once we saw we were amongst ice." He dedicates several pages to icebergs, their make up, the wildlife that relies on them and even the way light reflects off the surface of the ice to create the appearance of colours. Numerous illustrations and diagrams of icebergs are made to illustrate his observations and theories.

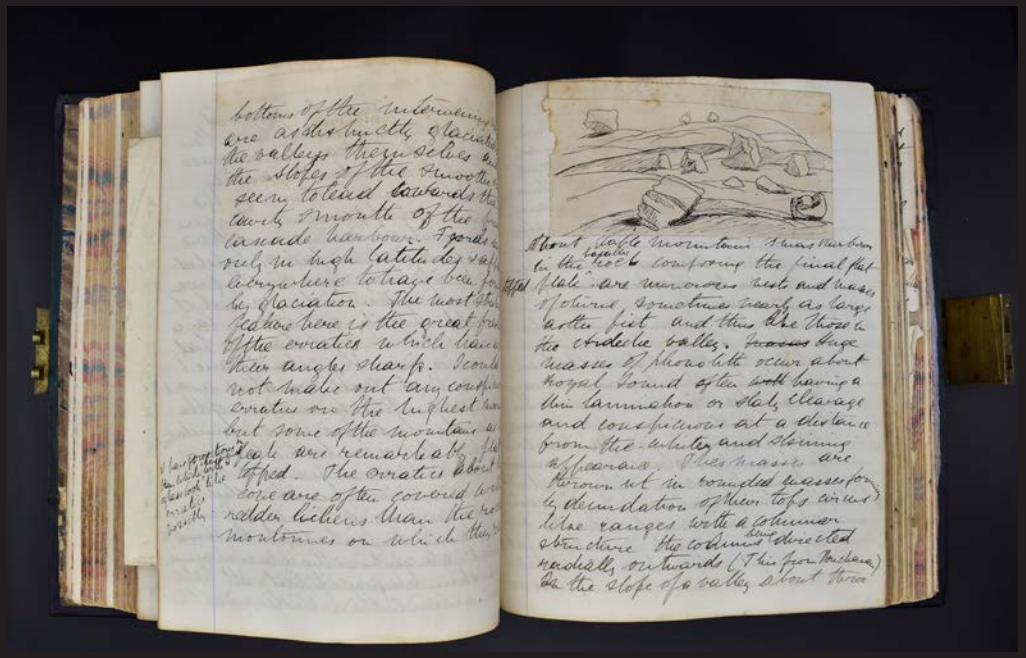
Although the voyage's primary aim was science under the sea, there was also attention paid to the land and the people the crew met. The same scientific approach for describing the flora and fauna was applied to the people he encountered. He notes the residents of Bermuda and some

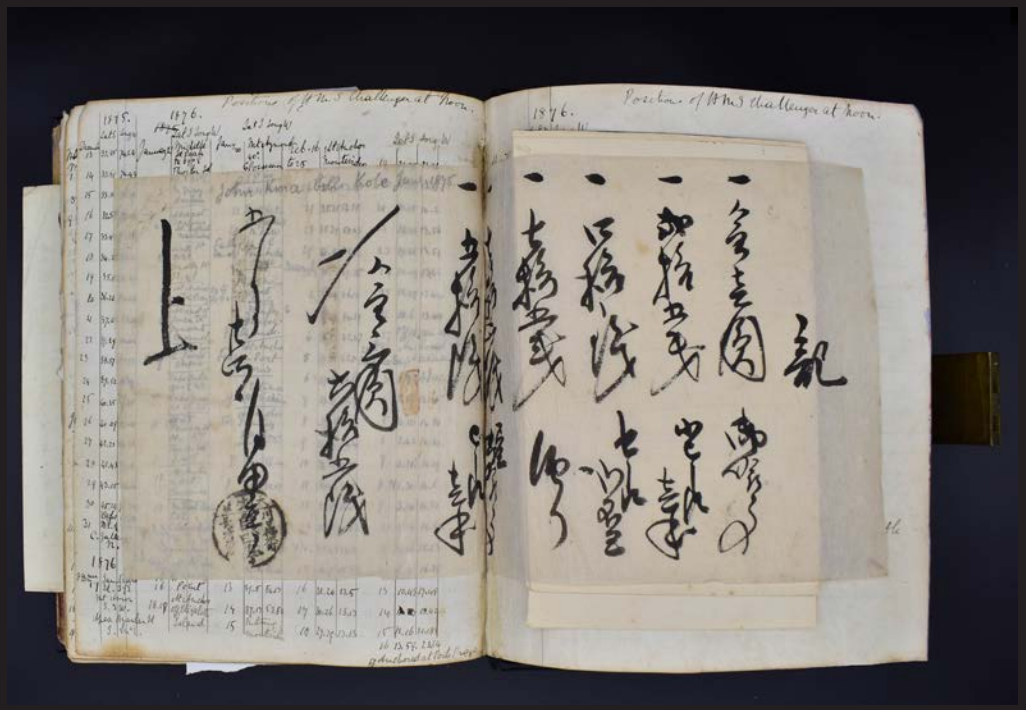
details of his guide on Cape Verde, but goes far more in depth in his report of the native people he encounters in Tonga, Papua New Guinea, Tahiti and Hawaii. On July 18th he described Tonga natives' appearance and the role of tattoo and scarifications as well as the language “The use of gesture among the Tongans is most marked and striking. The arms and head are thrown into all sorts of altitudes.” He illustrates their dress and dance with 4 tipped in drawings. Moseley spends a much longer time with the natives of Papua New Guinea, describing their religion, clothing, weapons and including a cheat sheet of words from English into Seimat, with words for numbers, tortoise shell [Bue Bu], woman [bibi], human skull [batu hama] and plantain [musa]. Charts and tipped in pages comparing the measurements taken of natives from the different New Guinea Islands. He also described his personal meetings. On March 3rd 1875 “The natives wondered at the whiteness of our legs and arms on lifting our clothes. They probably considered that we were naturally of the colour of our black quartermaster but painted white - his paint had washed off.” Of the inhabitants of Tahiti and Hawaii he wrote “With regard to expression both in Tahitians and Hawaians I saw nothing interesting… They show no wonderful forehead expression like the Tongans.” He included a manuscript map of Tahiti, along with maps of Juan Fernandez Islands, St. Vincent, St Tristan and Sambagoan.

H. N. Moseley [1844-1891] was educated in Oxford University, studying natural sciences. After four years of studying medicine, he was invited to join the expedition of the Eclipse to Ceylon (Sri Lanka) in 1871. His first experience of the tropics was a source of unbounded delight, frequently referred to in his conversation in later life. He not only did good service as a member of the expedition by making valuable spectroscopic observations in the neighbourhood of Trincomali, but made, as he was wont, the fullest use of his opportunities as a naturalist, travelled all over the island, and returned home with a miscellaneous collection, including a quantity of land Planarians. These last he worked out at Oxford,and produced an important memoir “On the Anatomy and Histology of the Land Planarians of Ceylon”; an admirable piece of work, and much appreciated by Professor Rolleston, by whom it was communicated to the Royal Society, appearing in the Philosophical Transactions for 1874.

A year later he was appointed to be one of the naturalists on the scientific staff of the Challenger Expedition.

Ostensibly the “Challenger” expedition was fitted out for the exploration of the greatest depths of the ocean, and in fact the programme was closely adhered to; but to Moseley, who never missed anything, the chief interest lay, not in the contents of the deep sea dredge, which, he tells us, soon grew wearisome in their monotonous sameness, but in the countries visited, where there were innumerable objects on land or on the littoral, neglected because supposed to be accessible or familiar. Nothing came amiss to him; if an object had been described before, he wished to verify the description, and often he added something to it. Then there were numbers of forms requiring closer study—these must be hunted up; there were islands rarely visited by man of which the fauna and flora were practically unknown; there were savage and barbarous races of man, whose primitive customs and implements, fast vanishing before the approach of western civilisation, must be recorded and collected. Whenever they arrived at a new place Moseley would ask his colleagues what they intended to work at, so that he might undertake what they did not care for. His anxiety was that the whole ground should be covered, and he was willing to leave all the more apparently interesting work to others, reserving for himself what they rejected. It came about that he did more work than anybody else on the expedition, though his friend, von Willemoes Suhm, might have run him close had he survived. No one





doubts now that Moseley's view of the expedition was correct, that the greatest opportunities were those of studying fauna, flora, and races of men, which, to use his own words, "are perishing rapidly day by day, and will soon be like the Dodo—things of the past. The history of these things once gone can never be recovered but must remain for ever a gap in the knowledge of mankind."

Throughout the voyage Moseley's keen eyesight, his powers of enduring fatigue, and the joviality with which he put up with every kind of discomfort or hardship in the pursuit of science, won the admiration of officers and men. When the ship was among the southern ice, he remained for hours in the foretop sketching the icebergs; a position peculiarly trying to a landsman, especially in such low temperatures. Always the first to land, he was very reluctant to leave any interesting spot, and he had the utmost confidence that if accidentally left behind, the ship would return for him. He was actually left behind at Kerguelen's land, having, as usual, stuck to his collecting to the very last. The ship was under sail and standing out of harbour before he was missed, and on searching the shore with glasses Moseley was seen resting quietly under a rock, his handkerchief tied to a stick to show his whereabouts, but not in the least discomposed by the thought of being left behind in so desolate a spot. The following extract of a letter from Lieut. Swire, R.N. shows the estimation in which he was held by his shipmates.

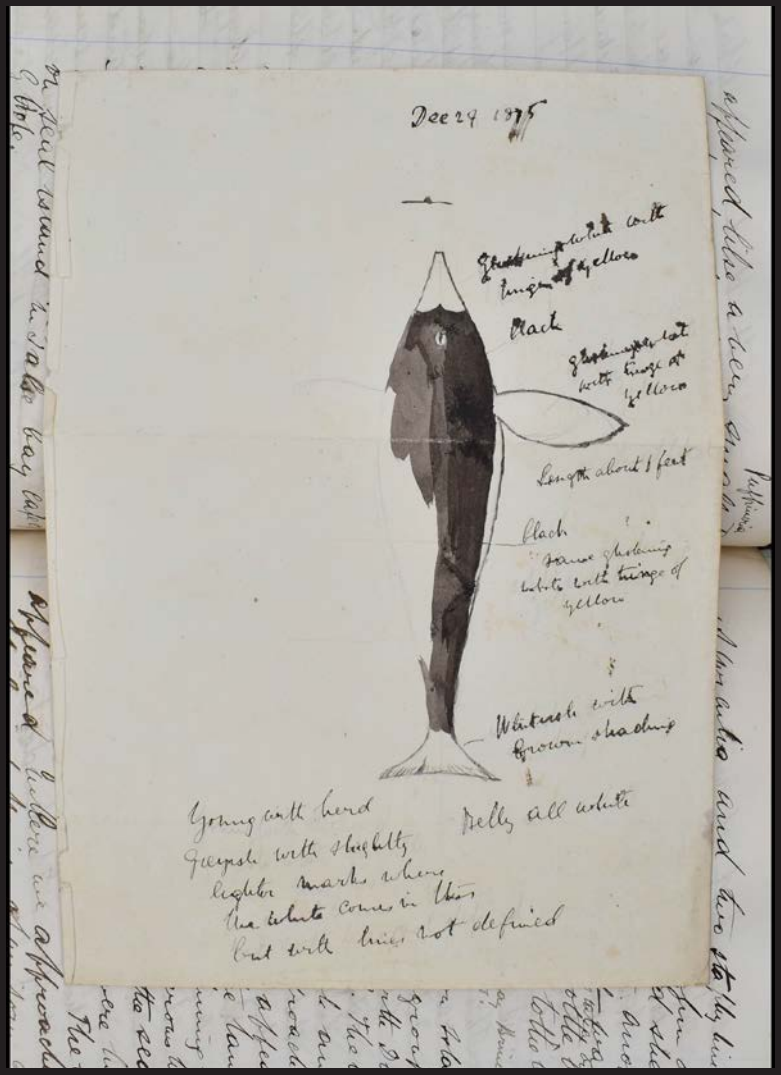
"He brought to his investigations ability and perseverance of no ordinary kind, backed by an originality of mind and an imperturbable good humour, which made him absolutely proof against all the shafts with which naval wit was never tired of trying the mettle of those whom we called our philosophers, and which enabled him at last to completely turn the tables on his funny friends ... Personally I always looked on Moseley as one of my greatest friends, and generally—I think I may say unanimously—he was regarded by us all as a thorough good fellow, and moreover one who was devoted to his work, and always ready to explain to us naval men the drift of what was being worked at by himself and his colleagues. ... I may mention that Moseley's generous devotion to his friends was strikingly exemplified when von Suhm was suffering from erysipelas, which eventually reached the brain, and killed him. Although the disease was understood to be extremely contagious, so much so that von Suhm was very carefully isolated under a screen on the main deck, Moseley could not be prevailed upon to keep away from his laboratory companion, whom he tended and comforted to the last."

On the "Challenger's" return to England Moseley was promptly elected to a fellowship at his old College, Exeter. Never, as Professor Ray Lankester has said, "was a College Fellowship better bestowed—that was in the good old days before Lord Selbourne's Commission."

He spent several years at Oxford, working out the results of the expedition, publishing during this time his highly important memoirs on the Milleporidae, Stylasteridae and Helioporidae, as well as his report on the true corals dredged during the expedition, the "Notes of a Naturalist on Board the "Challenger,'" and other papers.

His memoir on Peripatus capensis had been written during the voyage and had been published in the Philosophical Transactions for 1874. To show the importance of these works, the words of the late Professor F.M. Balfour: "By his discovery of a system of tracheal vessels in the Peripatus, Mr. Moseley gave a new clue to the origin of tracheae, and showed that the current views on this subject were untenable. His memoir on Peripatus constituted, at the same time, an important addition to our knowledge of the phylogeny of Arthropods. By his investigation on living corals he succeeded in assigning the true zoological position to a special group of these forms, whose systematic position had previously been extremely doubtful; he also discovered a new and hitherto unsuspecting method of formation of the skeleton of a large group of Hydrozoa."

In 1877 he visited North America, especially the NW Coast. Following the Challenger expedition, Moseley was elected as a Fellow of the Royal Society in 1879 and in 1881 became involved in the negotiations for the donation of the Pitt Rivers Collection which would form the Pitt Rivers Museum from 1884. Moseley was awarded the Royal Society's Royal Medal in 1887.



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St Vincent. C Verdes.

For ancient account of St Vincent see Capt Woods Rogers. Noble Voyages Vol 4 July 15th Sunday July 28.

MOSELEY, HENRY NOTTIDGE

A collection of three autograph letters, written on the H.M.S. Challenger from Henry Nottidge Mosely, two to Dr Rolleston and one to his mother.

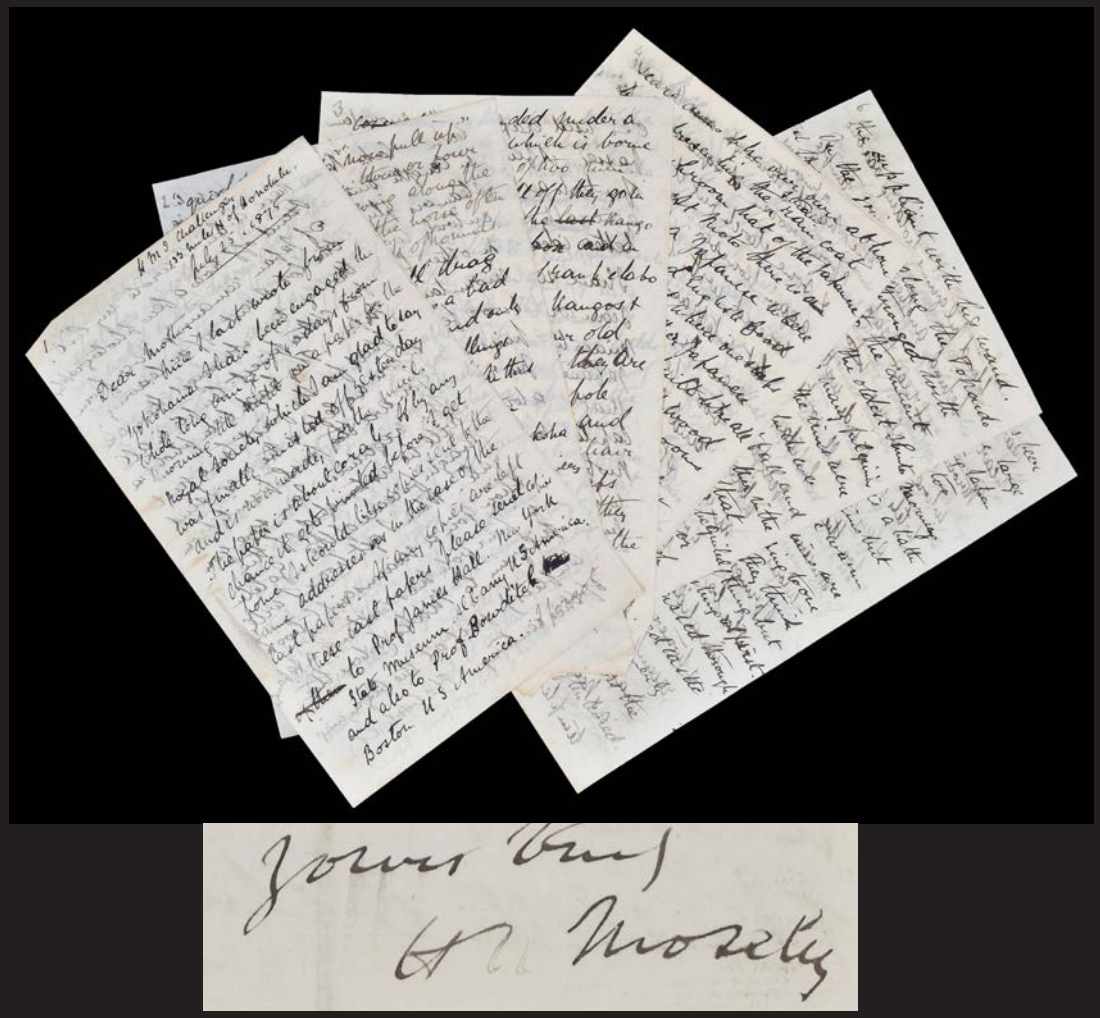
Dr. George Rolleston (1829-1881) was a physician and physiologist, who became the first Linacre Professor of Anatomy and Physiology at the University of Oxford, appointed in 1860. A man of great influence, he was a friend and instructor to H.N. Moseley, lead Naturalist of the Challenger expedition, who thanks Rolleston specifically in the preface of his book "Notes by a Naturalist on the "Challenger"". Rolleston was also a long-term friend and collaborator with the eclectic collector and archeologist Pitt-Rivers. Rolleston encouraged Pitt-Rivers to consider donating his collection to the University of Oxford, which later transpired with the aid of Moseley's negotiations.

The first letter to Dr Rolleston, written on September 25th, 1823 from Bahia, Brazil, discusses a delay due to one of the crew catching yellow fever. "There are no more cases as yet on board. I hope there may be none." and continues "I am very much relieved to hear that my paper is to be published. I think the drawing may well be left out." He talks of a new specimen he is yet to examine and a new animal he purchased from the quay for "two bob". "The sloth is climbing about the work room now." signed "H.N. Moseley". 8vo, 4pp, mailing folds.

The second letter addressed to Dr Rolleston was written on October 15th, 1823, from "530 miles west of Cape of G[ood] Hope." Moseley updates Rolleston on the sloth "...which I kept alive as a pet for some time." He continues with an inventory of a case which is to be sent to Rolleston from the Cape, which along with the sloth, also contains a pair of penguins, three heads and some skins. "I meant to have salted the skins but all our available salt was given to the Tristan people." He carries on with an important sentiment "It is wonderful when one has been travelling long distances as we have how soon the world begins to grow smaller and smaller in ones imagination... How one begins to realize that ones movements are restricted to a miserably small-spaced surface..." He continues with an idea which will form his 1877 journey to North America. "I propose that when I come back we make a voyage to South America together and explore the Amazons and Brazil". Unsigned, 8vo, 4pp, mailings folds.

The third, addressed to his mother, was written on July 25th, 1875, 133 miles N[orth] of Honolulu. He begins by telling her of his work, a report about corals, and instructions for its distribution. "If by any chance it gets printed before I get home I should like copies sent to the same addresses as in the case of the last papers." He describes his trip to Japan and his love for the country. "I made several journeys in Japan and it certainly was the most enjoyable place I everwas." These journeys included one from Kyoto to Yokohama, travelling in "Jinriksha", a two wheeled cart. Like in his diary, Moseley shows as much interest in the people and cultures of the land he visits as the flora and fauna of his research. He describes thee lattice wood and paper walls of the hotels he stays. "...if one is not careful one is apt to shove ones hand or finger through the wall of ones room. A square of paper and some starch put it all right again however... One always takes off ones boots before going into a house and leaves them outside at the street door." After visiting some places of historical interest in Kyoto he remarks "How wonderfully like our own superstitions and customs to those of this remote people." When travelling near Osaka, Moseley describes the local's reaction to seeing him. "... a great sight for the natives. I have got a considerable red beard now a make therefore an excellent tojin [foreigner]... The japanese never wear beards or moustaches and think them excessively ugly. It was amusing to watch the faces of the people as they glared at us... Everywhere the great idea was that we were a great sight which the children should on no account be allowed to miss." signed "H.N. Moseley", 8vo, 20pp., faint mailing folds.

Also included is a letter addressed to Moseley from Mr Tizard of the Hydrographic Department, from the 23rd Febuary, 1878.

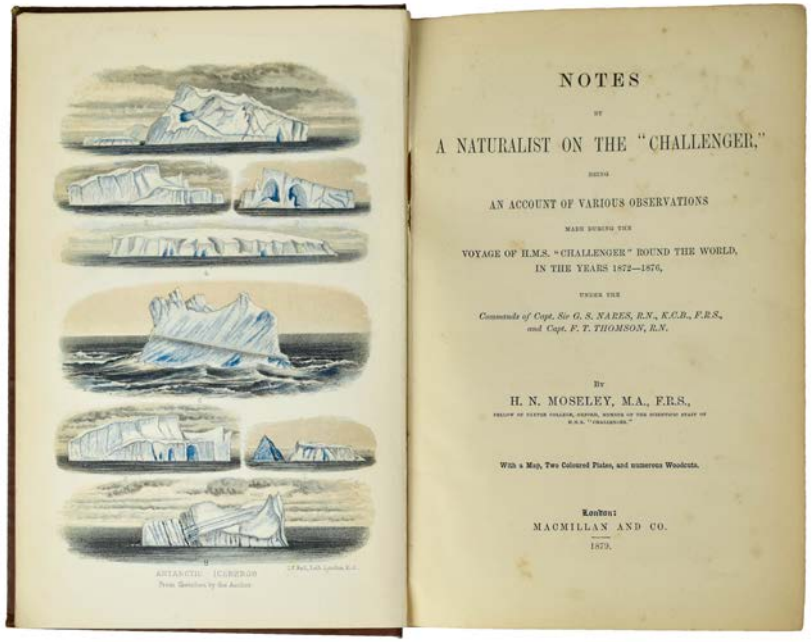


MOSELEY, HENRY NOTTIDGE

Notes by a Naturalist on the Challenger; being an Account of Observations made during the Voyage of H.M.S.Challenger round the World in the years 1872-1876. Under the Command of Capt. Sir G.S.Nares and Capt. F.T.Thomson.

FIRST EDITION, London, McMillan, 1879, 8vo, Publishers brown cloth, coloured frontispiece, col. plate and map, illustrations in text.

Interesting work by the leading naturalist of the voyage with descriptions of the natural history of :Teneriffe, St. Thomas, Bermuda; Azores, Madeira, Cape Verdes; St. Paul's Rocks and Fernando Do Norhona; Bahia; Tristan Da Cunha, Inaccessible Island; Nightingale Island; Cape of Good Hope; Prince Edward Island, The Crozet Islands; Kerguelen's Land; Heard Island; Amongst the Southern Ice; Victoria, New South Wales; New Zealand, The Friendly Islands, Matuku Island; Fiji Islands; New Hebrides, Cape York, Torres Straits; Aru, Ke, Banda, Amboina, Ternate; The Philippine Islands; China, New Guinea; The Admiralty Islands; Japan, The Sandwich Islands; Tahiti, Juan Fernandez; Chile, Magellan's Straits, Falkland Islands, Ascensions; Life on the Ocean Surface and in the Deep Sea. Zoology and Botany of the Ship.



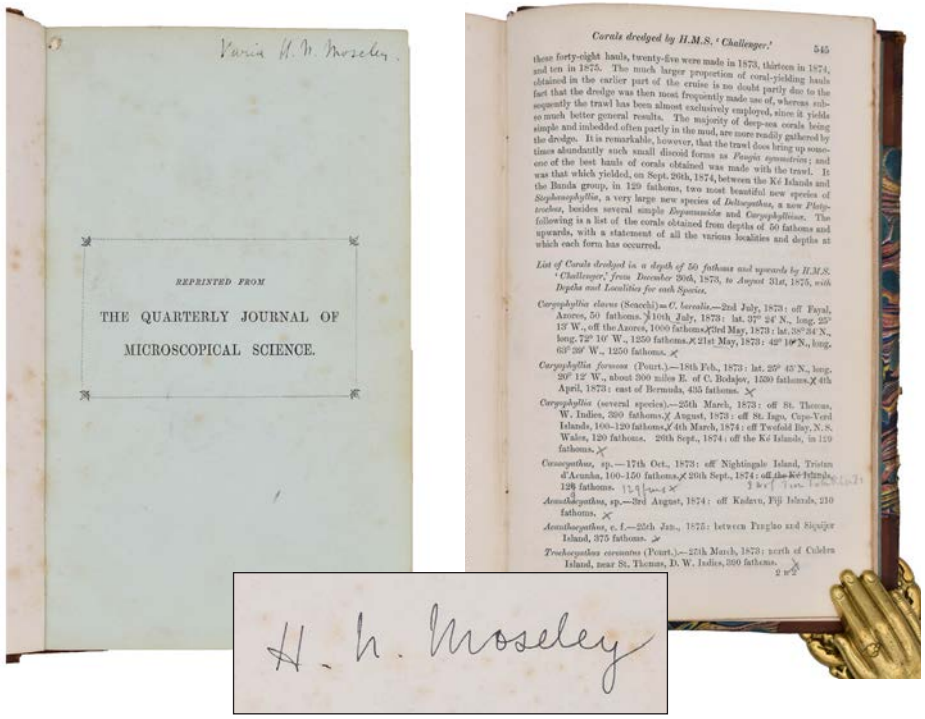
MOSELEY, HENRY NOTTIDGE

Varia [A Collection of Papers by H.N. Moseley]

ANNOTATED AUTHORS COPY, 14 works in one, ownership note ["H. N. Moseley"] to flyleaf verso, manuscript contents mounted to pastedown, 168pp., 5 coloured plates [1 folding], 8vo, half calf over marbled boards, black morocco label, slightly rubbed, [1871 - 1876]

A collection of papers, mostly concerning observations and discoveries made during the voyage of the H.M.S. Challenger. This was Moseley's personal copies and they are occasionally corrected with pencil marks. The final paper on coral is the most heavily annotated.

The collection contains *Notes on the Method of Application of Nitrate of Silver and Chloride of Gold in the Preparation of Certain Tissues for Miscroscopic Investigation*, for The Quarterly Journal of Microscopical Science, [1871];
On Certain Methods which may be Employed in the Investigation of the Development of the Frogs Egg, for The Quarterly Journal of Microscopical Science, [1871];
Some Remarks on the Nerves of the Cornea of the Rabbit and Frog, for The Quarterly Journal of Microscopical Science, [1871];
On the Circulation in the Wings of Blatta Orientalis and other Insects, and a New Method of Injecting the Vessels of Insects, for The Quarterly Journal of Microscopical Science, [1871];
Berichte der Kon. Sachs. Gesellschaft der Wissenschaften Mathematisch-Physische Classe, July, 1872;
On the Anatomy and Histology of the Land-Planarians of Ceylon, with some Account of their Habits, and a Description of two new Species, and with Notes on the Anatomy of some European Aquatic Species, for The Proceedings of the Royal Soceity, 1873;
On the Structure and Development of Peripatus Capensis, from the Proceedings of the Royal Society, 1874;



On the Structure and Relations of the Alcyonarian Heliopora caerulea, with some Account of the Anatomy of a Species of Sarcophyron; Notes on the Structure of Species of the Genera Millepora, Pocillopora, and Stylaster; and Remarks on the Affinities of certain Palaeozoic Corals, for The Proceedings of the Royal Soceity, 1875;
On Pelagonemertes Rollestoni, from the Annals and Magazine of Natural History, 1875; On a Young Specimen of Pelagonemertes Rollestoni, from the Annals and Magazine of Natural History, 1875;
Notes on Plants Collected and Observed at the Admiralty Islands, from the Linnean Society's Journal - Botany, [1876];
Preliminary Note on the Structure of the Stylasteridae, a group of Stony Corals which, like the Milleporidae, are Hydroids and not Anthozoans, for The Proceedings of the Royal Soceity, 1876;
On the Structure of a Species of Millepora Occuring at Tahiti, Society Islands., for The Proceedings of the Royal Soceity, 1876;
Preliminary Report to Prof Wyville Thomson on the True Corals Dredged by H.M.S. 'Challenger' in Deep Water, for The Proceedings of the Royal Soceity, 1876;

HOOKER, J.D.

The Journal of the Linnean Society - Botany [Botany of the H.M.S. Challenger]

FIRST EDITION, original wrapper bound in, H.N. Moseley's copy, ownership note [H.N. Moseley] to front free end paper, wrapper heavily annotated, occasional annotations throughout, 4 plates (one hand coloured), 8vo, quarter maroon morocco, cloth backed boards, [1876]

A collection of papers written by the scientists on board the H.M.S. Challenger for The Journal of The Linnean Society. This volume was the personal copy of lead naturalist, H.N. Moseley, with occasional marginal notes and edits in Moseleys' hand.

The contributions include: *On Marine Algae of St. Thomas and the Bermudas, and on Halophila Bailonis, Asch.*, Moseley, 1873;
Notes on the Vegetation of Bermuda by H.N. Moseley, 1873;
Notes on Fresh-water Algae obtained at the Boiling Springs at Furnas, St. Michael's, Azores, and their Neighbourhood. By H.N. Moseley, 1874;
Note on the foregoing Communication. By W.T. Thiselton Dyer, 1874;
Notes on some Collections made from Furnas Lake, Azores, containing Algae and a few other Organisms. By W. Archer, 1874;
Notes on Plants collected at St. Vincent, Cape-Verdes (July 27th to August 4th, 1873). By H.N.Moseley, 1874;
Enumeration of Algae collected at Cape-Verde Islands by H.N. Mosesley... By Prof. G. Dickie, 1873;
Notes on Plants Collected at St. Paul's Rocks. By H.N. Moseley, 1874;
Enumeration of the Algae Collected at St. Paul's Rocks by H.N. Moseley... By Prof. G. Dickie, 1874;
Notes on Plants Collected at Fernando de Noronha (Sept. 1st and 2nd, 1873). By H.N. Moseley, 1874;
Enumeration of Algae from Fernando de Noronha, collected by H.N. Moseley, By G. Dickie, 1874;
Enumeration of Algae from 30 fathoms at Barra Grande, near Pernambuco, Brazil, collected by H.N. Moseley... By G. Dickie, 1874;
Algae from Tristan d'Acunha, collected by H.N. Moseley. By George Dickie, 1874;
Algae from Inaccessible Island, near Tristan d'Acunha, collected by H.N. Moseley, By George Dickie, 1874;
On the Botany of Marion Island, Kerguelen's Land, and Yong Island of the Heard Group., By H.N. Moseley, 1874;
List of Plants collected by H.N. Moseley, on Kerguelen's Land, Marion Island, and Yong Island. By Prof. Oliver, 1874;
Algae collected by H.N. Moseley, at Simon's Bay, C.G.H., Seal Island, Marion Island, Kerguelen's Island, and Heard Island in 15 to 20 fathoms, By George Dickie, 1875;
Enumeration of Fungi collected during the Expeditionof H.M.S Challenger. By the Rev. M.J. Berkeley, 1875;
Further notes on the Plants of Kerguelen, with some remarks on the Insects. By H.N. Moseley, 1875;
The Musci and Hepaticae collected by H.N. Moseley, By William Mitten, 1875;
Notes on Plants Collected and Observed at the Admiralty Islands, March 3 to 10, 1875 by H.N. Moseley;
On the Polynesian Ferns of the 'Challenger' Expedition. By J.G.Baker, 1875;
On some Orchidaceae collected by Mr. Moseley, of the 'Challenger' Expedition, in the Admiralty Islands, Ternate, and Cape York, one of which forms the Type of a new Section of the Genus Dendrobium. By Prof. H.G. Reichenbach, 1876;
On Edgaria, a new Genus of Cucurbitaceae. By C.B. Clarke, 1875;
Contribution to the Botany of the Expedition of H.M.S. 'Challenger' - Algae, chiefly Polynesian. By Professor George Dickie, 1876;
On the Plant yielding Latakia Tobacco. By W.T. Thiselton Dyer, 1876;
Notes on the Flora of Marion Island. By H.N. Moseley;
The Lichens of the 'Challenger' Expedition... by The Rev. J.M. Crombie.

ILLUSTRATED LONDON NEWS / THE GRAPHIC

A Collection of Leaves on the H.M.S. Challenger

A collection of 15 leaves from contemporary newspapers Illustrated London News and The Graphic, mostly illustrated, loose, folio, 1872-76

The Challenger Expedition was of huge public interest with new of the voyages' progress frequently appearing in news papers. The collection includes:

The Voyage of H.M.S. Challenger: St. Paul's Rocks, from the East - The Voyage of H.M.S. Challenger: The Challenger made East to St. Paul's Rocks, pp.411-412, Illustrated London News, November 1, 1873;

H.M.S. Challenger, pp.572, Illustrated London News, December 14, 1872;

The King of Portugal Visiting H.M.S. Challenger, including accompanying text, pp.167-170, The Graphic, February 22, 1873;

The Ocean Depth Exploring Voyage - H.M.S. Challenger at Anchor in Royal Sound Kerguelen Land - Grave Island, Royal Sound, Kerguelen Island, accompanying text on verso, pp.503-504, The Illustrated London News, May 30, 1874;

H.M.S. Challenger's Scientific Ocean Surveying Expedition - Off Cape Challenger, the Most Southern Extremity of Kerguelen Island - Among the Icebergs of the Antarctic, accompanying text on verso, pp.505-506, Illustrated London News, November 28, 1874;

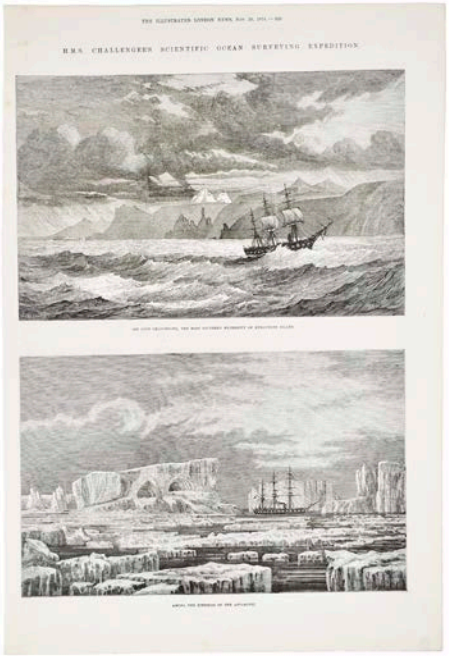
The Challenger in Ice and Snow - H.M.S. Challenger in a Snowstorm - The Challenger Among Icebergs, pp.544, accompanying text pp. 538, Illustrated London News, June 6, 1874

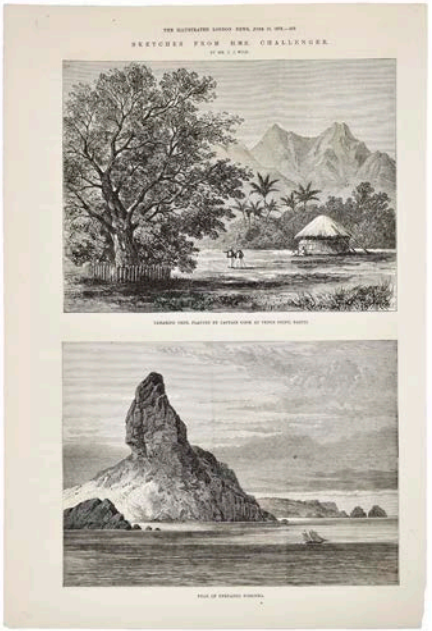
The Voyage of the H.M.S. Challenger - Village in Wild Island, Admiralty Islands - Village on D'Entrecasteaux Island, Admiralty Islands, accompanying text on verso, pp.577-580, Illustrated London News, June 19, 1875;

Sketches from H.M.S. Challenger, by Mr J. J. Wild : Christmas Harbour, Kerguelen Island, p.553, Illustrated London News, June 10, 1876;

Sketches From H.M.S. Challenger by Mr J. J. Wild - Tamarind Tree, Planted by Captain Cook at Venus Point, Tahiti - Peak of Fernando Noronha -- The Challenger at Cumberland Bay, Juan Fernandez - The Challenger at Desolation Island, Magellan Strait, including accompanying text, pp.555-558, Illustrated London News, June 10, 1876;

The "Challenger" Expedition - Penguins at Inaccessible Island, Tristan D'Acunha - Sailors of H.M.S. "Challenger" Having Tea at a Tea-House near Yokohama, Japan, pp.555-556, The Graphic, December 2, 1876.


H.M.S. CHALLENGER'S SCIENTIFIC OCEAN SURVEYING EXPEDITION


SKETCHES FROM H.M.S. CHALLENGER.

HENDERSON, JOHN HANNAM

Log of the proceedings of H.M.S. Challenger... Commencing 17th May 1867 Ending 17th April 1868

Manuscript log book, manuscript decorative title, photograph of the H.M.S. Challenger pasted in, 202pp., 8 manuscript maps (7 tipped in), contemporary half calf, marbled boards, corners and spine a little rubbed, folio (320 x 215mm), 17th May 1867 - 17th April 1868

A detailed account of Henderson's responsibilities as a midshipman on board the H.M.S. Challenger. The first month spent making preparations in Sheerness Dockyard, Kent, sailing for Portsmouth on the Thursday the 24th of May 1866, and from there heading to Madeira 6 days later, the route shown in a manuscript map. On June 12 the Challenger left Madeira to embark on a voyage to Sydney, via Rio de Janeiro, arriving 5 months later. Once arriving in Sydney, the Challenger made numerous smaller voyages to New Zealand, the local islands and around Sydney, remaining in the South Pacific for two years. Henderson's responsibilities during this journey include ship maintenance tasks such as changing rigging, releasing studding sails, building a quarterdeck awning, but also include more domestic jobs like cleaning, mending clothes and aiding provisioning the ship when at anchor in a bay. Long ocean voyages are dangerous and this is no exception. Henderson writes on Tuesday 18th September "8.0am Departed this life George Brown aged 18 years." The manuscript maps include the route from Madeira to South America and across to Africa, and the next leg of the journey from the Cape of Good Hope to Sydney. From Sydney, the Challenger sailed for Auckland, arriving a week later and remaining for a month. From Auckland, they circumnavigated the island, with a manuscript map showing half of the route. A manuscript plan of the coast of Australia is tipped in, covering from Broken Bay to Botany Bay, including Port Jackson. The others consist of a plan of Auckland, a sea chart of the route taken between Sydney and Auckland, and a coastal chart of Queensland. A good insight into life on board the H.M.S. Challenger a decade before the famous oceanographic expedition.

[Bound with]

Log of the Proceedings of H.M.S. "Liverpool" Captain Rowley Lambert Kept By John Hannam Henderson, Commencing May 1st 1863

Manuscript log book, manuscript decorative title, 215pp., 8 manuscript maps, 1 tipped in drawing, occasional light foxing, May 1st 1863 - July 1865

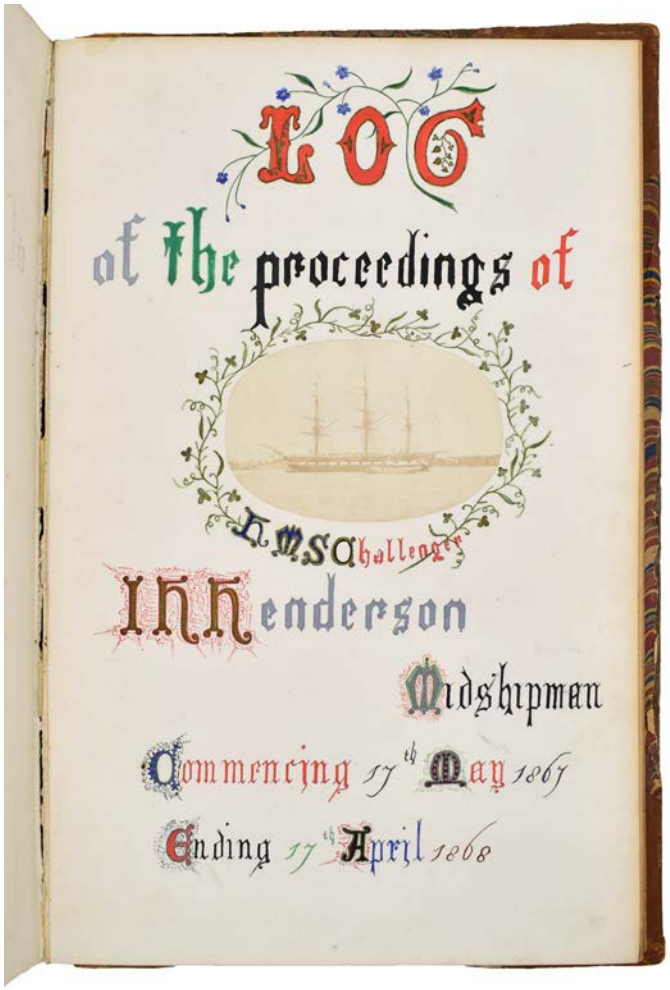
A detailed account of the midshipman's responsibilities on the H.M.S. Liverpool. First accounting a circumnavigation of Britain before commencing on a return voyage to Cuba, stopping at Bermuda, Haiti, Jamaica, Monte Christie and Matamore, Pennsylvania. The tipped in charts show the routes from Plymouth to Bermuda [with Canada, NewFoundland and Africa in the margins], the route from Bermuda to Port Royal, Jamaica, the route around Haiti, the route from Jamaica to Rio de Horte and the route from Matamore to Cuba. A drawing of The Bass and a chart of Caithness, showing the route around the north-eastern point of Scotland during the first voyage recorded, along with 3 plans of bays on the British coast.

[Bound with]

Log of the Proceedings of H.M.S. "Liverpool" Captain Rowley Lambert Kept by John Hannam Henderson, Commencing July 1865 Ending April 1866

Manuscript log book, manuscript decorative title, 78pp., 11 manuscript maps, occasional light foxing, 25 July 1865 - 16 April 1866.

A continuation from the previous log book, the H.M.S. Liverpool cruises with the H.M.S. Octavia and Constance from Plymouth to Spithead before embarking on a series of small expeditions around the British Isles, including several in Ireland. The final voyage is from Plymouth to Gibraltar and back to Plymouth. The 11 charts illustrate the various routes the H.M.S. Liverpool took.



HAECKEL, ERNST

Kunstformen der Natur

FIRST BOOK EDITION, 100 chromolithograph plates, 35 printed tissue guards (as issued), accompanying text, 51pp. Supplement with title page at the rear, printed publishers green cloth, top board and spine titled and illustrated, Leipzig, for Bibliographischen Instituts, 1904

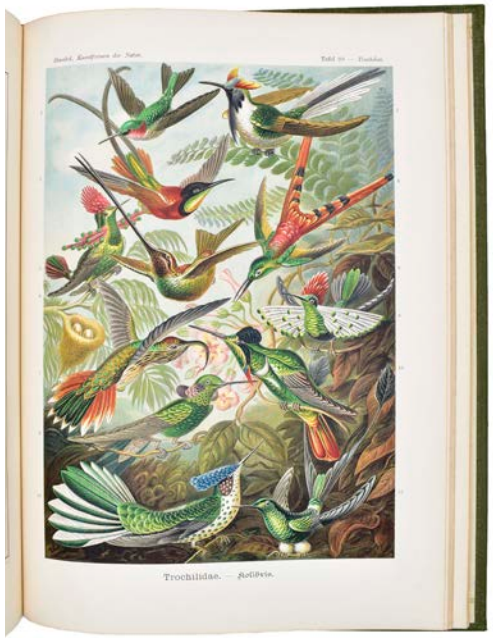
FIRST EDITION OF A SUPERBLY ILLUSTRATED LANDMARK STUDY OF MARINE LIFE.

The published collection of artwork by German zoologist, and gifted artist, Ernst Haeckel. The work contains 100 detailed, multi-coloured depictions of the natural world, especially of minute marine invertebrates, many of which were first identified and described by him. According to Haeckel scholar Olaf Breidbach, the work was "not just a book of illustrations but also the summation of his view of the world." The overriding themes of the Kunstformen plates are symmetry and level of organisation. The subjects were selected to embody these to the full, from the scale patterns of boxfishes to the spirals of ammonites to the perfect symmetries of jellies and microorganisms, while images composing each plate are arranged for maximum visual impact.

Haeckel's important work includes four reports from the groundbreaking Challenger Expedition: Medusae, Siphonophora, Deep-Sea Keratosa, and Radiolaria. Haeckel's work on Radiolaria, single-celled creatures with strikingly intricate, often geometric, crystalline skeletons, made them popular objects for amateur Victorian microscopists.

This work is exceptionally influential. The thorough scientific exploration of the world's oceans carried out by the Challenger expedition lay the foundations for the science of oceanography. More than 4,500 new species of marine life were recorded, and scientists were finally able to prove that life did indeed exist in the ocean's depths. The hundreds of crates of specimens were painstakingly studied and illustrated by experts worldwide, like those by Ernst Haeckel below, and formed the basis for the marine collections at the Natural History Museum in London. The Kunstformen der Natur would go on to influence the Art Nouveau artistic movement.

[Nissen ZBI, 1787; cf. Hill 1664., Breidbach, Olaf. Visions of Nature: The Art and Science of Ernst Haeckel. 2006]



MARINE MICROSCOPIC SLIDES

Nine Marine Microscopic Slides from the Challenger Expedition

Glass Slides with Paper Labels:

Diatomaceae. Ooze Collected by the Challenger. 2330 Fathoms (1875), Paper Label.

Sounding H.M.S. Challenger. Aug.30th, 1875. Lat 7 x 35' N. Lon.147 x 47W. 2900 fathoms. Paper Label.

Fomminfera from Challenger. CJW 2/79. 7 x 45N 144 x 20E. Paper Label.

Globingerina, H.M.S. Challenger. Lat. 21 x 15 S. Long. 4 x 2 N. 1990 Fathoms. Paper Label.

H.M.S. Challenger. Mid. Pacific. 2425 Fathoms. Obj. Dark Field. Paper label.

Diatomo Ooze. H.M.S. Challenger. 1950 Fathoms. Southern Ocean 3/8/74. Paper Label.

Challenger Station 338. 1990 Fathoms. Globigerina 21 x 15 S. 14 x 2 W. 21 March '76

Diatomo Arasura Sea. Challenger 10/9/74

Diatomaceae. Challenger Station 157. Depth 1950 fms. Lat. 53.55 S.Long. 108.35 E. Date 3/3/74.

A very scarce collection of Microscopic Slides displayed in a Blue Cloth Folding Case, [300 x 220mm], Gilt Morocco Descriptive Label.

This interesting collection of samples and soundings from the Challenger Expedition in 1874/76 are Specimens from some 350 locations (stations) and were brought back and distributed to the world's foremost experts for examination. Various labels, mostly in manuscript.

The HMS Challenger expedition amassed a huge number of specimens during its three-year voyage around the world. In the introduction to his scientific reports, Charles Wyville Thomson, chief scientist on board, wrote:

"After the contents of the ship had been finally cleared out at Sheerness (near London), we found, on mustering our stores, that they consisted of 563 cases, containing 2270 large glass jars with specimens in spirit of wine, 1,749 smaller stoppered bottles, 1860 glass tubes, and 176 tin cases, all with specimens in spirit; 180 tin cases with dried specimens; and 22 casks with specimens in brine."

It rapidly became obvious that, despite large stores of bottles and spirits, there was neither the materials, nor the personnel, to arrange the preservation, storage and inspection of every specimen. Bringing specimens to the surface from great depths exerted severe changes in temperature and pressure, this left some useless for anatomical examination. Others were lost during the preservation process.

It became obvious that Microscopic Slides would be a good way of preserving many specimens from the ocean beds for further examination.

MITCHELL, WILLIAM FREDERICK (BRITISH, 1845-1914)

H.M.S. 'Challenger' on Expedition 1872-76

Signed 'W.F. Mitchell' (lower right)

A very fine Watercolour heightened with bodycolour, (125 x 210cm.), Displayed in a Contemporary Gilt Frame.

William Frederick Mitchell (1845–1914) was a prolific marine artist, commissioned to paint many naval and merchant ships. He lived most of his life near Portsmouth and painted pictures of Royal Navy and merchant ships for their officers and owners. He also illustrated Brassey's Naval Annual. His preferred medium was watercolour and his ship portraits are distinctive for their precision.

Mitchell's works are numbered and run to more than 3,500. His autobiography claims Queen Victoria, Edward, Prince of Wales, the German Emperor, and the Grand Duke Michael Mikhailovich of Russia to be among his patrons. Many of his works can be found in the collection of the National Maritime Museum Collection in Greenwich.

Mitchell's Watercolours of HMS Challenger are probably the finest images of the ship. Usually she is viewed in rough seas or in the Arctic.