

THE BATHYMETRIC SOUNDINGS OF THE OCEANS (*)

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It was only during the second half of last century that ocean sounding commenced to make any progress. Before the era of steamship navigation, and of the invention of machines for deep sea sounding as auxiliaries to laying submarine telegraph cables, but very vague information was available as to ocean depths mainly for lack of the means to obtain it.

Without mentioning isolated attempts made during past centuries, by seamen and by scientists, to measure the ocean depths, (the study of which attempts is not without a certain historical interest) or soundings made near the coasts in waters which are, relatively speaking, not very deep, we will limit ourselves herein to a simple recapitulation of the comparatively recent work which has contributed to greater knowledge of the deeps and of the configuration of the abysses.

As early as in 1854 Lieutenant M. F. MAURY, of the United States Navy, had assembled, on a chart of the North Atlantic, all ocean sounding then known in this area. This first bathymetric chart of the Atlantic showed about 180 soundings. An idea of these soundings may be formed by examination of their distribution in depth. This distribution is approximately as follows :

Soundings of less than 1000 fathoms	38
from 1000 to 2000	» 45
from 2000 to 3000	» 79
from 3000 to 4000	» 14
from 4000 to 5000	» 2
over 5000	» 4

It was about this period that the BROOKE's sounding machine, which was a valuable aid to oceanic research, was invented and perfected. Bathymetric sounding was then given a fresh impetus by the laying of submarine telegraph cables. The work of DAYMAN, then the expeditions of the *Bulldog* and *Porcupine* under the leadership of the pioneers of Oceanography, greatly contributed to develop the methods of measurement and to improve the quality of the results obtained by the use of piano-wire and more suitable deep-sea sounding machines.

An historical resumé of observations taken on the high seas in all the seas of the world (particularly with reference to temperatures) from 1749 to 1868, with their geographical positions and the names of the observers may be found in the paper by Joseph PRESTWICH, published in the "*Phil. Trans.*" of the Royal Society, 1874, pages 587 to 674. These observations are all earlier than those of the *Challenger*, and a planisphere attached to the paper gives their distribution over the surface of the ocean. Out of a total of 1200 observations, 548 lie in the oceans of the northern hemisphere, 522 in those

(*) Monograph presented to the General Assembly of the International Union of Geodesy and Geophysics in Stockholm, August 1930.

of the southern hemisphere and 133 in enclosed waters. (Mediterranean, Red Sea, and the Sea of Okhotsk).

In 1881, on the occasion of the fiftieth anniversary of the British Association for the Advancement of Science, Captain Sir Frederick EVANS, Hydrographer of the British Navy, in a pamphlet entitled "A Review of Oceanic or Maritime Discovery, Exploration and Research as made in the half century 1831-81" set forth the progress made till then in the different branches of coastal and high sea hydrography; several pages are devoted to oceanic soundings. He expresses himself thus:

"The voyage of the *Challenger* (1872-6) mainly designed for sounding at "great depths, and which in its course traversed many seas; ably supplemented as it was by that of the exploratory German ship of war *Gazelle* (1874-6); the sounding cruises of ships of the United States in the Pacific "Ocean, and in the Caribbean and other waters adjacent to their Atlantic "shores; that of H. M. S. *Valorous* from Ireland to Baffin Bay and back "in 1875, and again in the seas between Norway and Greenland by the "Norwegian ship of war *Vöringen* (1876-8), combined with the works above "related, have enabled us to form a clear generalization of the profound "depths, of the comparative shallows and also of the nature of the surface "features and animal life of the beds of the three great Oceans.

"When graphically rendered on charts by contour lines of equal soundings, "the surface of the Ocean beds presents extensive plateaux, varied with gentle "undulations, generally ranging from 17,000 to 12,000 feet below the sea sur- "face. The great Southern Sea, on its unbroken stretch round the globe, is "shallower than the seas in the northern hemisphere; neither does this sea, "so far as we now know, present those occasional abyssal depths found in "the northern oceans. The greatest recorded depth in the Atlantic 23,250 feet, "and in the Pacific of over 25,000, are respectively north of St. Thomas "Island in the West Indies, and east of Yeso Island, Japan".

Some years later in 1886 Sir John MURRAY began to draw up the first general bathymetric chart of the oceans which is included among the documents attached to the "*Reports of the Challenger Expedition*", Summary of Results, chart 1A, 1B, 1C.

On this chart all soundings of over 1000 fathoms were entered up-to-date by Dr. BARTHOLOMEW until towards the end of last century (1895). Drawn up in three sheets on a scale of 1:40,000,000, equal area projection, it contained about 6000 soundings over 1000 fathoms, distributed as follows:—

North Atlantic	South Atlantic	Indian Ocean	North Pacific	South Pacific
1873	627	1003	1266	1200
2500		2466		
5969				

With regard to depth, their distribution was approximately as follows:—

from 1000 to 2000 fathoms	2516	}	5969
from 2000 to 3000 "	2912		
from 3000 to 4000 "	491		
from 4000 to 5000 "	46		
over 5000 "	4		

In 1893 the Reichs Marine Amt of Berlin published a small synoptic chart of ocean depths, entitled: "Weltkarte zur Uebersicht der Meerestiefen"; general soundings only are shown thereon with a view to tracing depth contours.

A new edition of Dr. BARTHOLOMEW'S chart, reduced and brought up-to-date, was published in an "Address to the Geographical Section of the British Association" reproduced in the "Scottish Geographical Magazine" for October, 1899.

It was at this time also that Dr. SUPAN drew up his chart of oceanic depths on a scale of 1:80,000,000, which was published in the "Pettermanns Mitteilungen", Gotha, Justus Perthes, 1899, Taf. 12.; and that Prof. Gerhard SCHOTT made a partial chart of the Atlantic Ocean and of the Indian Ocean on a scale of 1:30,000,000, which was published at Jena in 1902.

The same year the VIIth International Congress of Geography at Berlin decided to draw up a large size General Bathymetric Chart of the Oceans in 24 sheets on a scale of 1:10,000,000 at the Equator. The PRINCE OF MONACO undertook to draw up this chart, the plan of which was studied and discussed by the Wiesbaden Committee (15-16 April, 1903).

The work which, was started in the month of June 1903, was confided to seven draughtsmen (MM. TOLLEMER, LEBAS, LEVEQUE, MORELLI, NORMAND, BATAILLE and BOLZÉ) who divided the work between them under the direction of Sub-Lieutenant Ch. SAUERWEIN, A. D. C. to the PRINCE OF MONACO.

The documents which they utilized consisted mainly of British Admiralty Charts from which a selection of soundings was made for transfer to the draft of the General Bathymetric Chart. Thus this work was very rapidly done, and it was completed by a few soundings recently obtained by cable ships and various exploring ships. The chart was thus considered to contain all soundings taken up to the month of July, 1903. It was lithographed and printed, and then presented to the Académie des Sciences of Paris on 11th January, 1904. Professor J. THOULET then laid it before the VIIIth. International Congress of Geography, which was held at New York from 8th to 13th September, 1904.

A second edition of the PRINCE OF MONACO'S General Bathymetric Chart of the Oceans was commenced in July 1910 under the direction of Lieutenant H. BOURÉE on the lines laid down by the second Committee which met at Monaco 1st. April 1910 (*Cf. Bulletin de l'Institut Océanographique de Monaco*, N° 175). The first sheets of this new edition were published on 1st. May 1912.

The PRINCE OF MONACO'S chart was drawn up on MERCATOR projection. For the estimate of volume and in order to eliminate a source of error in the estimates of surfaces pointed out by Prof. A. PENCK on the BARTHOLOMEW chart, Dr. Max GROLL, after having analysed about 15,000 soundings, published in 1912 a chart of oceanic depths on an equal area projection on the scale of 1:40,000,000; and, in 1915, a second edition of the wall chart brought up-to-date, on a scale of 1:20,000,000. The method of plotting this chart is described in the "*Veröff. d. Inst. f. Meereskunde*", N. F. Reihe, A. Heft 2 - Berlin, E. S. Mittler & Sohn, 1912, and was reviewed by Prof. G. SCHOTT in

"*Zeitschr. d. Ges. Erdk.*", 1913, page 392. On it, deep-sea soundings were revised and selected, and account was taken of the abundance of new material collated at the beginning of the present century since the time of BARTHOLOMEW's chart. The GROLL chart is in three sheets; the Atlantic sheet is on the LAMBERT cylindrical equal area projection; that of the Indian Ocean is on the LAMBERT azimuthal equal area projection with 20° South and 80° East as tangent point; that of the Pacific Ocean is plotted on the LAMBERT azimuthal equal area projection with 0° and 160° West, as tangent point. The paper by Dr. Erwin KOSSINA, entitled "Die Tiefen des Weltmeeres", published in 1921 in the "*Veröff. d. Instituts für Meereskunde*," N. F. Reihe A. Heft 9, is based on the GROLL chart, but completed by the soundings of the *Möwe* in the Atlantic, the Indian Ocean and the Pacific, in 1912-1913, and by other more recent oceanic soundings.

In the meantime, the Cabinet Scientifique of the PRINCE OF MONACO continued the publication of the other sheets which constitute the second edition of the General Bathymetric Chart of the Oceans on the scale of 1:10,000,000 at the Equator. The last sheets issued were published under the date 1st July 1927. Four printed pamphlets give a list of the documents consulted in drawing up each sheet and a list of new soundings forwarded by various authorities since the 1st edition was drawn up (*).

The new outlook opened up by modern methods of echo-sounding in the study of bathymetric depths in all the oceans of the world have led several International Conferences which deal with questions common to Oceanography and Hydrography, to recommend that these new soundings should be systematically centralised and brought to the knowledge of all interested parties — navigators and oceanographers.

The general charts published by the various Hydrographic Offices certainly endeavour to attain this last-mentioned aim but, owing to lack of homogeneity in the sources of information, to the fact that this information is scanty and lacks general centralisation as well as to the discontinuity of the charts, the latter still fall far short of giving that complete impression of the whole which is necessary for general study.

It is for these reasons that the International Hydrographic Conference, held at Monaco in April 1929, instructed the International Hydrographic Bureau to centralise oceanic echo-soundings and to keep the General Bathymetric Chart of the Oceans up-to-date, the second edition of which chart the Cabinet Scientifique

(*) From a statistical point of view it is interesting to note that the second edition of the General Bathymetric Chart of the Oceans (1922-1927) shows more than 17,800 soundings, distributed in depth as follows:—

from 200 to 1000 metres,	4475 soundings	from 5000 to 6000 metres,	1663 soundings
» 1000 to 2000 »	2925 »	» 6000 to 7000 »	173 »
» 2000 to 3000 »	2915 »	» 7000 to 8000 »	69 »
» 3000 to 4000 »	2800 »	» 8000 to 9000 »	24 »
» 4000 to 5000 »	2804 »	over 9000 »	8 »

In 1928, the Hydrographic Department of the Imperial Japanese Navy published Chart No 6080 showing the bathymetric depths of the Adjacent Seas of Japan. This chart is drawn on a scale similar to that of the General Bathymetric Chart of the Oceans.

of the PRINCE OF MONACO has just completed (*Cf.: Hydrographic Bulletin* N° III, Monaco, 1928, pp. 63-67). By a Circular-Letter to its Members, this Bureau requested that all new oceanic soundings be sent to it in the form of convenient tables giving the exact geographical positions of the soundings and all the conditions under which they were taken (nature of apparatus, sea-temperature, velocity of sound used, etc.). Plotting sheets on a scale which permits the soundings to be inserted without overlapping to the degree of accuracy provided by observations in the open sea, have been prepared by the International Hydrographic Bureau for the purpose of systematically recording new soundings. Sheets supplied by the Japanese Hydrographic Office were used for this purpose; these sheets have a system of meridians and parallels on the MERCATOR projection, the scale being 10.16 cms (4.2 ins) to a degree of longitude, *i.e.* approximately 1.8 $\frac{m}{m}$ (0.075 in.) per sea-mile (about 1:1,000,000), at the Equator.

This scale is amply sufficient for the insertion, with adequate accuracy, of the details of the oceanic soundings. Each of the plotting sheets, of the handy size of 100×65 $\frac{m}{m}$ (39.4×25.6 ins.), covers an average area of from 4 to 6 degrees of latitude by 10 degrees of longitude, and the necessary oceanic portion embraces about 650 working sheets which together constitute the collecting sheet for the oceanic soundings throughout the whole world.

Recording of new soundings is thus a fairly easy matter; but it is of first importance to be able to compare these new soundings with those already taken near the same positions. The Bureau was thus led to plot the soundings already known, on the collecting sheets, and to do this with the desired accuracy it was necessary to refer to the original sources of the soundings. All the Bathymetric Charts mentioned earlier are, in fact, plotted on relatively small scales and soundings taken from the 1:10,000,000 scale chart of Monaco, for example, could not be inserted on larger-scale sheets (to a scale of 1:1,000,000) without gross errors of position being introduced. Thus it is necessary to consult the original documents which give the positions of the soundings by latitude and longitude in order to extract from the observation made and from the material in our possession all that is useful, without which later comparison is impossible or would only introduce a series of errors.

Though, on the official charts published by the Hydrographic Offices, the soundings are inserted with all needful accuracy, after each has been submitted, at its very source, to meticulous analysis and sifting by the Office, it does not appear that the same care has been taken on the general bathymetric charts enumerated above; it seems rather as though more attention has been given to a generalisation of the whole with a view to drawing in the main outlines and approximate depth contours. New soundings, inserted after the others, are often but indirectly connected to the preceding systems; successive compilations by reduction or increase of scale have thus caused an accumulation of errors. Even on the 1:10,000,000 charts we have found errors attaining 10 sea-miles; conversions of units have not always been made on an uniform basis and accurately — there also we have noted appreciable errors reaching hundreds and sometimes even thousands of metres.

As we have already pointed out above, the origin of the soundings inser-

ted on the various general bathymetric charts so far published does not always appear very clearly. It is only since the 2nd Edition of the General Bathymetric Chart of Monaco that the source has been clearly stated in the pamphlets which accompany it; these give the positions of new soundings by latitude and longitude.

Moreover, the majority of these positions are taken from the "*List of Oceanic Depths*", etc. published regularly by the British Admiralty since the year 1888. These lists contain soundings recorded with all the authority desirable, for they have mostly been taken either by surveying vessels, or by special research ships and by British cable ships provided with all the instruments necessary for this kind of work. The French "*Annales Hydrographiques*" and the German "*Annalen der Hydrographie*" also contain similar oceanic soundings, thus affording an abundant source of material. In particular the Bathymetric Chart of Monaco, 2nd edition, appears to include a selection of the various oceanic soundings published by different Hydrographic Authorities since the year 1904 only.

The International Hydrographic Bureau had no difficulty in procuring these official original lists, thanks to the kind co-operation of the Hydrographic Offices of its States Members. But a large number of original oceanic soundings — and by no means the least interesting — were published in Reports or Memoranda relative to various scientific explorations of the sea, often organised independently of the Hydrographic Offices, and these are not so easily obtainable as the "*Lists of Oceanic Depths*".

However the number of these voyages of exploration is not very great, if we limit ourselves to taking those only which have added to our knowledge of bathymetry into account, and the International Hydrographic Bureau has considered it advantageous to draw up a chronological list of these voyages and to take note of the Reports or Memoranda dealing therewith, and of the passages where their original sounding work is recorded.

With the help of the documents in the Library of the International Hydrographic Bureau, a provisional chronological list of oceanic exploration expeditions since the year 1800 has been drawn up; this list will be found below (*). A list of cable ships capable of taking accurate deep-sea soundings, and a list of war-ships which have taken part in bathymetrical work, have also been added. These lists, which we have endeavoured to make as complete

(*) Great Britain has published a repertory of British oceanic explorations entitled: "Chronological list of the Officers conducting British Maritime Discoveries and Surveys, together with the Names of the Vessels employed from the earliest time until 1900".

This repertory has proved most useful to the Bureau and it is greatly to be desired that countries which have published, or which have in their archives, similar documents, will forward them to the International Hydrographic Bureau.

Likewise, the Hydrographic Department of the British Admiralty has issued various special publications dealing with the search for dangers reported in the South Pacific, etc. (*Search for Reported Dangers in the South Pacific*, etc.) carried out by British Surveying Vessels. These publications give a list of the original oceanic soundings taken by vessels during their cruises. The International Hydrographic Bureau will endeavour to collect in its library all similar publications issued by the various national Offices with a view to bringing the General Bathymetric Chart of the Oceans up-to-date.

as possible, nevertheless contain many gaps. In publishing these lists in an international Review, it is considered that readers of the "*Hydrographic Review*" and Institutions and Offices interested in this question, might possibly, each insofar as he or it is concerned, supply the Bureau with the means of completing and correcting them.

Expeditions which have not taken oceanic soundings should be crossed off the list, those which took oceanic soundings should be maintained thereon and, for these latter, a note concerning the publication or the memorandum where the original soundings may be found, might suitably be added for reference.

The International Hydrographic Bureau will keep these lists up-to-date by means of all suitable data forwarded to it on this subject and will endeavour to centralise in its archives all documents necessary for keeping the General Bathymetric Chart of the Oceans up-to-date.

Any historical tabulation of oceanic soundings would be incomplete if a list of the greatest depths obtained in ocean abysses were not also collated, as well as a list of independent shoals, *unconnected with apparent lands, islands or archipelagos*, rising abruptly in the middle of these abysses.

The name of the vessel or of the explorer who discovered them or sounded them out often remains attached to them and these names reveal deep-sea operations the original traces of which it would be well to preserve. The historical documents in the possession of the International Hydrographic Bureau are unfortunately still too incomplete for us to consider that the provisional lists annexed are perfect; to complete these data, however, we count on the collaboration of the readers of this Review and on the co-operation of those in a position to consult the oceanographic and hydrographic records of the various national Institutions or Offices.

When a general bathymetric chart of the oceans, such as that of Monaco, is examined in detail, it is found that very many uncertainties still exist in certain regions with regard to depth contours. Deep-sea soundings are very thick on the most frequented shipping routes, on the courses of submarine cables and on the itineraries of exploring vessels. Large gaps occur, leaving distances of as much as 1230 sea-miles between two soundings. In other regions, particularly in the Pacific, many doubts still exist concerning the position, and even the existence, of dangers.

Before closing we remind readers that the International Hydrographic Bureau has published, and keeps up to date by means of information forwarded to it, a list of and historical notices on all dangers of doubtful position or existence reported in the oceans (Special Publication N° 20, Monaco, 1928). This document, with the annexed charts, in conjunction with the General Bathymetric Chart of the Oceans, may serve to direct new oceanographic research towards those parts which are, as yet, unexplored or insufficiently known and be of value in drawing up programmes for future voyages of exploration to the great benefit of nautical and hydrographic science.

MONACO, June 1930.

APPENDICES.

- (A) Chronological List of *Oceanic Explorations* from the year 1800.
- (B) Cable ships which have contributed deep sea soundings.
- (C) War-vessels which have contributed deep sea soundings.
- (D) List, arranged by oceans, of *Principal Oceanic Deeps*.
- (E) List, arranged by oceans, of *Principal Oceanic Shallows*.

IMPORTANT NOTICE. — Parties interested in those lists and who find errors or omissions therein are kindly requested to inform the INTERNATIONAL HYDROGRAPHIC BUREAU.

The International Hydrographic Bureau would be particularly pleased to be informed of omissions or errors in depths and in the positions of soundings which appear in lists (D) and (E), with supporting references in order that they may be placed on the Bureau's records.



(A.)- CHRONOLOGICAL LIST OF OCEAN EXPLORATIONS FROM THE YEAR 1800*
 LISTE CHRONOLOGIQUE DES EXPLORATIONS OCÉANIQUES DEPUIS 1800*

1800	<i>(Foundation of the Spanish Hydrographic Office).</i>			
1800-04	<i>Le Géographe</i>	Fr.	Cap. BAUDIN - F. PÉRON.	Voyage aux Terres Australes.
	<i>Le Naturaliste</i>	Fr.		
	<i>Le Casuarina</i>	Fr.		
1801-03	<i>Investigator</i>	G.B.	W. FLINDERS.	Southern Lands.
1803-06	<i>Néva</i>	R.	Ad. KRUSENSTERN - HORNER - LISIANSKY.	Voyage round the World.
	<i>Nadeshda</i>	R.		
1804-06	<i>Panther</i>	G.B.	Capt. COURT.	Red Sea.
1804-06	<i>Assaye</i>	G.B.	Lt. MAXFIELD.	Red Sea.
1806	<i>La Sirène</i>	Fr.	DE LA POIX DE FREMINVILLE.	Spitzberg.
1806	<i>Resolution</i>	G.B.	W. SCORESBY.	Spitzberg.
1807	<i>Ptchela</i>	R.	POSPELOFF.	Novaya Zemlya.
1808	<i>Snow Swan</i>	G.B.	J. LINDSAY - Messrs. ENDERBY.	Antarctic.
	<i>Otter</i>	G.B.		
1810-12	<i>Fredericksteen</i>	G.B.	Capt. Francis BEAUFORT.	Mediterranean Sea.
1810-22	<i>Esk</i>	G.B.	William SCORESBY.	Greenland - Spitsbergen & Northern Seas.
	<i>Baffin</i>	G.B.		
	<i>Resolution</i>	G.B.		
1815-18	<i>Rurik</i>	R.	Otto VON KOTZEBUE.	Southern Seas & Bering Strait
1816	<i>(Foundation of the U. S. Coast and Geodetic Survey - Washington).</i>			
1816	<i>Eurydice</i>	G.B.	WAUCHOPE.	
1817	<i>(Fondation du Service Hydrographique de la Marine, Paris).</i>			
1817	<i>Alceste</i>	G.B.	Clarke ABEL.	
1817	<i>Cybele</i>	Fr.		India, Cochin China.
	<i>Golo</i>	Fr.		
1817-18	<i>Dorothea</i>	G.B.	D. BUCHAN.	North Spitsbergen.
1817-20	<i>L'Uranie</i>	Fr.	DE FREYCINET-DUPPEREY.	Hémisphère Sud.
	<i>La Physicienne</i>	Fr.		
1817-21	<i>Aid</i>	G.B.	W. H. SMYTH.	Mediterranean.
1818	<i>Trent</i>	G.B.	John FRANKLIN - BEECHEY.	Spitsbergen & Arctic.
	<i>Dorothea</i>	G.B.	BUCHAN - FISHER.	Spitsbergen & Arctic.
	<i>Isabella</i>	G.B.	Sir John ROSS - Sir Edw. SABINE.	N. W. Passage - Baffin Bay.
	<i>Alexander</i>	G.B.	William Edward PARRY.	Arctic Regions.
1819	<i>Otkrytié</i>	R.	WASSILIEFF.	Arctic Ocean.
	<i>Novaja Zemlja</i>	R.	LAZAREFF.	Arctic Ocean.
	<i>Borodino</i>	R.		Around the World.
1819-20	<i>Durance</i>	Fr.		Java - Manilla.
	<i>Rhône</i>	Fr.		
1819-20	<i>Hecla</i>	G.B.	W. E. PARRY - Sir Edw. SABINE.	N.W. Passage - Lancaster Sound.
	<i>Griper</i>	G.B.	CLAVERING - M. LIDDON.	Baffin Bay.
1819-20	<i>Hersilla</i>	U.S.A.	James SHEFFIELD.	Antarctic.
1819-21	<i>Vostok</i>	R.	Fabian BELLINGHAUSEN.	Peter I. and Alexander I. Lands.
	<i>Mirnyi</i>	R.	Michael LAZAREFF.	
	<i>Leven</i>	R.	D. E. BARTHOLOMEW.	Cape Verde Islands.

(*) This list has been completed with information kindly supplied by. Prof. Rafael de Buen.

Cette liste a été complétée avec les renseignements obligeamment fournis par le Prof. Rafael de Buen.

1820	<i>HMS. Andromache.</i>	G.B.	E. BRANSFIELD.	South Shetlands.
1820-30	<i>Discovery</i>	G.B.	J. M. GUY.	Persian Gulf.
1821	<i>Eliza & Dove</i>	G.B.	POWELL.	Antarctic.
1821-22	<i>James Monroe</i>	U.S.A.		Antarctic.
1821-23	<i>Hecla</i>	G.B.	W. E. PARRY.	N. W. Hudson Bay.
	<i>Fury</i>	G.B.	G. F. LYON.	
1821-24	<i>Novaja Zemlja</i>	R.	F. LITKE - ANJOU - WRANGEL	Novaya Zemlya - Kolyma.
1822		G.B.	SABINE.	Caribbean Sea.
1822-24	<i>Jane</i>	G.B.	JAMES WEDDELL.	Antarctic.
	<i>Beaufoy</i>	G.B.		
1822-25	<i>La Coquille</i>	Fr.	DUPPEREY, D'URVILLE, BÉRARD & BLOSSEVILLE.	Autour du monde.
1822-28		R.	IVANOFF.	Petchora - Kara Sea.
1823	<i>Griper</i>	G.B.	DOUGLAS CHARLES CLAVERING - Edw. SABINE.	Spitsbergen - East Greenland
1823-24		R.	F. L. VON WRANGEL.	Kolyma.
1823-26	<i>Predpriatie</i>	R.	KOTZEBUE - Emil LENZ.	Around the World.
	<i>Seniavine</i>			
1825-28	<i>Blossom</i>	G.B.	F. W. BEECHY.	Cape Horn - Pacific, Bering - Point Barrow.
1825-28	<i>Lion</i>	G.B.	JOHN FRANKLIN - RICHARDSON.	Arctic America.
	<i>Reliance</i>	G.B.		
	<i>Dolphin</i>	G.B.		
	<i>Union</i>	G.B.		
1826-29	<i>Astrolabe</i>	Fr.	DUMONT D'URVILLE - BLOSSEVILLE.	Autour du Monde.
	<i>Zélee</i>	Fr.		
1826-31	<i>Eden</i>	G.B.	W. F. W. OWEN.	Africa & S. E. America.
1826-36	<i>Adventure</i>	G.B.	KING.	Indian Ocean.
	<i>Beagle</i>	G.B.	FITZROY (Adm. Robert) - DARWIN	
1827	<i>La Chevrette</i>	Fr.	FABRÉ.	Indes - Batavia - Bourbon.
1827	<i>Hecla</i>	G.B.	W. E. PARRY.	Spitsbergen - towards the North Pole.
1827	<i>(Foundation of the General Administration of Hydrography at St-Petersburg).</i>			
1827-29	<i>La Bayonnaise</i>	Fr.	G. DE TREMELIN.	Amérique - Asie.
1827-31	<i>Moller</i>	R.	STANJIKOWITCH.	Voyages de Circumnavigation
	<i>Seniavin</i>	R.		
1828-31		Dan.	GRAAH-WAHL.	North Atlantic - East Green- land.
1828-30	<i>HMS. Chanticleer</i> ...	G.B.	HENRY FOSTER - WEBSTER.	South Atlantic.
	<i>Pagoda</i>	G.B.		
	<i>Beagle</i>	G.B.	R. FITZROY.	South America.
1829	<i>Pacific</i>	U.S.A.	JAMES BROWN.	Antarctic.
1829-33	<i>Victory</i>	G.B.	JOHN ROSS - JAMES CLARK ROSS.	North Magnetic Pole.
1830	<i>(Foundation of the U. S. Hydrographic Office, Washington).</i>			
1830-32	<i>La Favorite</i>	Fr.	LAPLACE.	Indes - Bourbon.
1830-32	<i>Princesse Louise</i>	Germ.		Circumnavigation.
1830-32	<i>Tula</i>	G.B.	JOHN BISCOE - MESSRS. ENDERBY.	Antarctic.
	<i>Lively</i>	G.B.		
1830-33	<i>Palinurus</i>	G.B.	R. MORESBY.	Red Sea.
1830-33	<i>Benares</i>	G.B.	T. ELIWON.	Red Sea.

1830-33	<i>Seraph</i>	U.S.A.	PALMER - PENDLETON.	Around the World.
	<i>Annawan</i>	U.S.A.		
1831-32		Fr.	BÉRARD.	Méditerranée.
1832-34	<i>Hopefull, Rose</i>	G.B.	John BISCOE - Messrs. ENDERBY.	Antarctic.
1832-35	<i>Novaja Zemlja</i>	R.	W. BRANDT-KLOKOFF	
1833			KEMP.	
1833	<i>La Lilloise</i>	Fr.	J. DE BLOSSEVILLE.	Groenland oriental.
1833-39	<i>Palinurus</i>	G.B.	S. B. HAINES.	Oman Sea.
1834-36	<i>Benares</i>	G.B.	R. MORESBY.	Maldive Islands.
	<i>Royal Tiger</i>	G.B.	POWELL.	Maldive Islands.
1835-36	<i>La Recherche</i>	Fr.	TRÉHOUART - BRAVAIS - MARTINS.	Groenland oriental-Islande.
	<i>La Bordelaise</i>			
1835-36	<i>Starling</i>	G.B.	H. KELLETT.	Pacific.
1836		G.B.	WAUCHOPE.	
1836-37	<i>Terror</i>	G.B.	G. BACK.	Hudson Strait.
1836-39	<i>La Vénus</i>	Fr.	A. DU PETIT THOUARS - DE TES- SAN.	Autour du Monde.
1836-39	<i>La Bonite</i>	Fr.	VAILLANT - DARONDEAU.	Océan Indien - Pacifique.
1836-46	<i>Sulphur</i>	G.B.	BELCHER.	Pacific.
1837-40	<i>Astrolabe</i>	Fr.	DUMONT D'URVILLE - JACQUINOT	Terre Louis-Philippe
	<i>Zéléé</i>	Fr.	- VINCENDON DUMOULIN.	Antarctique.
1837-40	<i>Artémise</i>	Fr.	LAPLACE.	Circumnavigation.
1838	<i>Sirius</i>	G.B.		Transatlantic.
	<i>Great Western</i>	G.B.		
1838-39	<i>Eliza Scott</i>	G.B.	John BALLENY.	Antarctic.
	<i>Sabrina</i>	G.B.		
1838-39	<i>Iemissei</i>	R.		Novaya Zemlya.
	<i>Spitzbergen</i>			
1838-40	<i>La Recherche</i>	Fr.	BRAVAIS - MARTINS.	Laponie - Spitzberg.
1838-40		G.B.	Rev. J. H. PRATT.	Indian Ocean.
1839-40	<i>Vincennes</i>	U.S.A.	U. S. EXPLORING EXPED.	South Pacific - Antarctic.
	<i>Peacock</i>	U.S.A.	Ch. WILKES.	
	<i>Porpoise</i>	U.S.A.		
	<i>Sea Gull</i>	U.S.A.		
	<i>Flying Fish</i>	U.S.A.		
1839-41	<i>Erebus</i>	G.B.	James Clark ROSS.	British Antarctic Expedition.
	<i>Terror</i>	G.B.	Francis CROZIER.	Victoria Island.
1840-41		G.B.	FORBES.	Aegean Sea.
1840-41		Fr.	AIMÉ.	Méditerranée occidentale.
1841-46	<i>Fly</i>	G.B.	J. P. BLACKWOOD.	S. W. Pacific.
1843-46	<i>Samarang</i>	G.B.	Adm. Sir E. BELCHER.	Mediterranean - Atlantic.
1845	<i>Medina</i>	G.B.	Adm. T. SPRATT.	Mediterranean & Archipelago.
1845	<i>Pagoda</i>	G.B.	T. MOORE.	
1845-51	<i>Erebus</i>	G.B.	John FRANKLIN.	N. W. Passage.
	<i>Terror</i>	G.B.	Francis CROZIER.	Artic Regions.
	<i>Herald</i>	G.B.	W. KELLETT.	Pacific.
	<i>Pandora</i>	G.B.	T. WOOD.	Pacific.
1846-47	<i>Rattlesnake</i>	G.B.	Owen STANLEY, DAYMAN.	
1847-49	<i>Atcha</i>		Ed. LENZ.	
1847-50	<i>Rattlesnake</i>	G.B.	Owen STANLEY.	S. W. Pacific.
	<i>Volage</i>	G.B.	T. GRAVES.	Mediterranean.
1848	<i>Thunder</i>	G.B.	E. BARNETT.	
1848-49	<i>Enterprise</i>	G.B.	James Clark ROSS.	N. W. Passage.
	<i>Investigator</i>	G.B.	LEMESURIER Mac CLURE, E. BIRD	
1848-51	<i>Herald</i>	G.B.	Henry KELLETT, Rochfort MAGUIRE	Pacific & N. W. Passage

1848-51	<i>Plover</i>	G.B.	T. E. M. MOORE.	Search ship for Sir John Franklin.
1849-50	<i>North Star</i>	G.B.	JAMES SAUNDERS.	Northern Greenland.
1850	<i>U.S.S. Taney</i>	U.S.A.	Lt. J. C. WALSH.	North Atlantic.
1850-54	<i>Investigator</i>	G.B.	MacCLURE - Sir A. ARMSTRONG.	Bering Strait & N. America.
	<i>Enterprise</i>	G.B.	R. COLLINSON.	Arctic Regions.
1850-54	<i>H.M.S. Assistance</i> ..	G.B.	E. BELCHER.	Searchships for Sir J. Franklin
	<i>Resolute</i>	G.B.	H. KELLETT.	
	<i>Intrepid</i>	G.B.	T. L. MacCLINTOCK.	
	<i>Pioneer</i>	G.B.	Sherard OSBORN.	
	<i>North Star</i> ..	G.B.	W. J. S. PULLEN.	
1850-55	<i>Advance</i>	U.S.A.	Dr. Elisha KENT KANE.	Arctic.
	<i>Rescue</i>	U.S.A.		
1850-64		Norv.	Michael Sars - G. O. Sars.	Norwegian Coast.
1851	<i>USS. John Adams</i> .	U.S.A.	Capt. S. BARRON.	North Atlantic.
1851	<i>Pandora</i>	G.B.	DRURY.	North Atlantic.
1851-53	<i>U.S.S. Dolphin</i>	U.S.A.	LEE - BERRYMAN.	North Atlantic.
1851-55	<i>Spitfire</i>	G.B.	L. A. B. SPRATT.	Mediterranean.
1852	<i>U.S.S. Congress</i>	U.S.A.	J. J. PARKER.	
1852	<i>Herald</i>	G.B.	DENHAM.	Atlantic & S. W. Pacific.
1852	<i>Phœnix</i>	G.B.	E. A. INGLEFIELD.	Search ships for Sir J. Franklin
	<i>Breadalbane</i>	G.B.	BELLOT.	
1852-54	<i>Plover</i>	G.B.	MAGUIRE.	Bering - Point Barrow.
1852-56	<i>Torch</i>	G.B.	W. CHIMMO.	S. W. Pacific.
1852-60	<i>Herald</i>	G.B.	H. M. TENHAM.	S. W. Pacific.
1853-56	<i>Rattlesnake</i>	G.B.	H. TROLLOPE.	Bering Strait.
1854-55	<i>U.S. Coast & Geo-</i> <i>detic Survey</i>	U.S.A.	Dir. Prof. BACHE - CRAVEN - DUNSTERVILLE - RODGERS - BROOKE - M. F. MAURY.	
	<i>Lightning</i>	G.B.	B. J. SULLIVAN.	Baltic.
1855	<i>USS. Vincennes</i>	U.S.A.	BROOKE - John RODGERS.	North & West Pacific.
1856	<i>La Reine Hortense</i> ..	Fr.	Prince BONAPARTE - DE LA ROCHE PONCIÉ.	Islande - Groenland - Jan Mayen.
1856	<i>Foam</i>	G.B.	Lord DUFFERIN.	Jan Mayen - Spitsbergen.
1856-57	<i>Le Phare</i>	Fr.	VINCENDON-DUMOULIN.	Détroit de Gibraltar.
1856	<i>USS. Arctic</i>	U.S.A.	BERRYMAN.	Newfoundland to Ireland.
1856-63	<i>Medina</i>	G.B.	C. A. B. SPRATT.	Mediterranean.
1857	<i>Tartarus</i>	G.B.	A. L. MANSELL.	Mediterranean.
1857-59	<i>H.M.S. Cyclops</i>	G.B.	PULLEN & J. DAYMAN.	Newfoundland - Ireland - Red Sea.
1857-60	<i>Novara</i>	Autr.	VON VULLERSTORF.	Mediterranean.
1858	<i>H.M.S. Gorgon</i>	G.B.	J. DAYMAN.	Newfoundland - Azores - En- gland.
1858	<i>Cachelot</i>		SIENDENBURG.	Banda Sea.
1858	<i>Fox</i>		WALKER - MacCLINTOCK.	
1858	<i>Frithjof</i>	Sw.	Otto TORELL.	West Spitsbergen.
1859	<i>H.M.S. Firebrand</i>	G.B.	DAYMAN.	Bay of Biscay & Mediter- ranean.
1859	<i>Queen</i>	Dan.	KÜNDSÉN.	Iceland & Greenland.
1859	<i>Jan Mayen</i>	Norv.	Elling CARLSEN.	King Charles Land.
1860-61	<i>H.M.S. Bulldog</i>	G.B.	Sir LEOP. MacCLINTOCK - G. C. WALLICH.	West Greenland - Labrador.
1860-61	<i>United States</i>	U.S.A.	Dr. Isaac ISRAEL HAYES.	North Greenland.
1860-62	<i>Yermak</i>	R.	P. VON KRUSENSTERN.	Kara Sea.

1860-63	<i>Firefly</i>	G.B.	A. L. MANSSELL.	Mediterranean.
1861	<i>Aeolus</i>	Sw.	Dr. Otto TORELL.	West Spitsbergen.
	<i>Magdalena</i>			
1861-62	<i>George-Henry</i>	U.S.A.	F. C. HALL.	Frobisher Bay.
1862	<i>Nuestra Senora del Triunfo</i>	Sp.	MARTINEZ.	Pacific.
	<i>Covadonga</i>			
	<i>Resolution</i>			
1862	<i>Porcupine</i>	G.B.	HOSKYN.	W. C. of Ireland.
1863	<i>Jan Mayen</i>	Norw.	Elling CARLSEN.	Spitsbergen.
1863-65	<i>Hydra</i>	G.B.	A. L. MANSSELL.	Mediterranean.
1864-69	<i>Monticello</i>	U.S.A.	C. F. HALL.	King William Sound.
1867-68	<i>Bibb</i>	U.S.A.	Comte POURTALÈS.	Florida - Cuba.
	<i>Corwin</i>		LOUIS AGASSIZ.	
1868	<i>(Foundation of the Deutsche Seewarte of Hamburg).</i>			
1868	<i>Hydra</i>	G.B.	SHORTLAND.	Bombay - Aden.
1868	<i>HMS. Gannet.</i>	G.B.	W. CHIMMO.	North Atlantic & Labrador.
1868	<i>Pomone</i>	Fr.		Bancs de Terre-Neuve.
1868	<i>Lightning</i>	G.B.	Wyville THOMSON, CARPENTER.	Feroë, etc...
1868	<i>Sophia.</i>	Swed.	Dr. A. E. NORDENSKJOLD.	Swedish Expedition to Spitsbergen & North Atlantic.
	<i>Joséphine</i>	Swed.		
1868-70	<i>Germania</i>	Ger.	KOLDEVEY - PAYER - A. PETERMANN.	Spitsbergen - Greenland.
	<i>Spitzberg</i>			
1868-71	<i>Newport</i>	G.B.	G. S. NARES.	Mediterranean & Red Sea.
1869	<i>Panther</i>	U.S.A.	Dr. I. I. HAYES.	Northern Greenland.
1869-70	<i>Porcupine</i>	G.B.	Wyville THOMSON & W. B. CARPENTER, Gwyn JEFFREYS.	Ireland - Bay of Biscay - Mediterranean.
1869-70	<i>Georg</i>	R.	SIDEROFF.	Petchora & Obi.
1869-70	<i>Diana</i>	G.B.	JAMES LAMONT.	Novaya Zemlya & Kara Sea.
1869-70	<i>Germania</i>	Ger.		East - Greenland.
	<i>Hansa</i>			
1870	<i>Varyag</i>	R.	Grand Duc Alexis ALEXANDROVITCH.	Novaya Zemlya.
1870	<i>Norna</i>		Marshall HALL.	Spain & Portugal.
1870	<i>Lydianna</i>	Swed.	A. G. NATHORST.	Spitsbergen.
1870	<i>Mercury</i>	U.S.A.	P. GIRAUD.	Atlantic.
1871	<i>Germania</i>	Ger.	A. ROSENTHAL.	Novaya Zemlya.
1871	<i>Shearwater</i>	G.B.	J. S. NARES.	Mediterranean West - Red Sea
1871	<i>Gladan</i>	Swed.	VON OTTER.	Western Greenland.
	<i>Ingegerd</i>			
1871-72	<i>Isbjorn</i>	Autr.	C. WEYPRECHT & PAYER, Adm. STERNEK VON EHRENSTEIN.	Spitsbergen & Novaya Zemlya.
1871-73	<i>Pommerania</i>	Ger.		Baltic & North Sea.
1871-73	<i>USS. Polaris</i>	U.S.A.	C. F. HALL.	Davis Strait.
1872	<i>(Fondation de l'Ufficio Idrografico de la Marine Royale Italiana à Gênes).</i>			
1872	<i>Freya</i>	Norw.	Johannes NILSEN.	Spitsbergen.
	<i>Lydianna</i>			
1872	<i>Hassler</i>	U.S.A.	L. AGASSIZ, Comte DE POURTALÈS	New York - San Francisco.
1872-73	<i>Gladan</i>	Swed.	Dr. A. E. NORDENSKJOLD.	Spitsbergen.
1872-74	<i>Tegettof</i>	Autr.	PAYER & WEYPRECHT.	Franz-Josef Land.

1872-75	<i>Shearwater</i>	G.B.	W. J. L. WHARTON.	Mediterranean & East Coast of Africa.
1872-76	<i>HMS. Challenger</i>	G.B.	G. S. NARES - TIZARD - Wyville THOMSON - MURRAY - BUCHANAN - SHUM - MOSELEY.	Around the World.
1873	<i>Diana</i>	G.B.	B. Leigh SMITH.	Spitsbergen - Arctic Regions.
1873-74	<i>USS. Tuscarora</i>	U.S.A.	Georg E. BELKNAP VON HERBST.	North Pacific.
1873-74	<i>Groenland</i>	Ger.	E. DALLMAN.	Antarctic.
1874	<i>Mirage</i>	G.B.	Marquis d'ORMONDE.	Spitsbergen.
1874-75		Fr.	MOUCHEZ, BOUQUET DE LA GRYE, HATT.	
1874-75	<i>Shearwater</i>	G.B.	Sir W. WHARTON.	Antarctic.
1874-76	<i>Gazelle</i>	Ger.	Freiherm VON SCHLEINITZ.	South Pacific & around the World.
1875	<i>HMS. Valorous</i>	G.B.	Capt. L. JONES.	North Atlantic - Davis Strait.
1875-76	<i>Proven</i>	Swed.	Dr. A. E. NORDENSKJOLD.	Novaya Zerklya, Ienissei.
	<i>Ymer</i>			
1875-76	<i>Vostok</i>	R.		
	<i>Samoyede</i>			
1875-76	<i>HMS. Alert</i>	G.B.	G. S. NARES, A. H. MARKHAM.	North Greenland.
	<i>Discovery</i>	G.B.	H. T. STEPHENSON.	Arctic Regions.
	<i>Alacrity</i>	G.B.	L. S. DAWSON.	Fiji Islands.
1876	<i>USS. Gettysburg</i> ...	U.S.A.		North Atlantic - Mediteran.
1876	<i>Hansteen</i>	Norv.	C. WILLS.	North Atlantic.
1876-78	<i>SS. Vöringen</i>	Norv.	Dr. H. MOHN - SARS - C. WILLS.	Norwegian Sea.
1876-78	<i>Elisabeth</i>	Ger.		Circumnavigation.
1877	<i>Essex</i>	G.B.		Atlantic.
1877-78	<i>Fylla</i>	Dan.		Greenland & Iceland Seas.
1877-79	<i>La Magicienne</i>	Fr.		
1877-84	<i>Louise</i>	Ger.	DALLMAN.	Russian Rivers & Kara Sea.
	<i>Neptune</i>			
1877-89	<i>USS. Blake</i>	U.S.A.	SIGSBEE, Alex. AGASSIZ.	Gulf of Mexico - North Atlant.
1878		Swed.	TORELL & A. E. NORDENSKJOLD.	Spitsbergen.
1878-79	<i>Véga</i>	Swed.	A. E. NORDENSKJOLD.	N. W. Passage - North Asia.
1878-84	<i>William Barentz</i>	Holl.	A. DE BRUYNE.	Barents Sea.
1879-82	<i>Jeanette</i>		G. W. DE LONG (GORDON- BENNET).	New Siberia - Antarctic Sea - - Wrangel Land.
	<i>Gulnave</i>			
1879	<i>Saratoga</i>	U.S.A.		Açores - Madeira - Canarias.
	<i>Wachusett</i>			
1879	<i>Ingolf</i>	Dan.	L. A. MOURIER.	Greenland - Iceland.
1879	<i>Rush</i>			Bering Sea.
1880	<i>HMS. Knight Er- rant</i>	G.B.	MURRAY - TIZARD.	Feroë Channel.
1880-81	<i>USS. Thomas Cor- win</i>	U.S.A.		
	<i>Rodgers</i>	U.S.A.		
	<i>Alliance</i>	U.S.A.		
1880-82	<i>Eira</i>	G.B.	B. L. SMITH.	Franz-Josef Land.
	<i>Hope</i>			
	<i>Kara</i>			
1880-82	<i>Drache</i>	Ger.		Baltic.
1881	<i>Coligny</i>	Fr.	C. F. MARTIAL.	Varanguer Fjord.
1881	<i>USS. Albert</i>	U.S.A.		North Pacific.
	<i>USS. Alaska</i>	U.S.A.		South Pacific.

1881	<i>USS. Ranger</i>	U.S.A.		Gulf of California.
1881-83	<i>Travailleur</i>	Fr.	Milne EDWARDS - L. V. PARFAIT.	Golfe de Gascogne et Atlan- tique Est.
	<i>Talisman</i>	Fr.	E. PERRIER.	
1881-84	<i>Lark</i>	G.B.	C. F. OLDHAM.	S. W. Pacific.
1881-84	<i>Irache</i>	Ger.		North Sea.
1881-85	<i>Washington</i>	It.	MAGNAGHI.	Mediterranean.
	<i>Vettor Pisani</i>	It.	PALUMBO.	Central Pacific.
1882	<i>HMS. Triton</i>	G.B.	T. H. TIZARD.	Feroë Channel.
1882	<i>Bjona</i>	Swed.	NATHORST.	Spitsbergen.
1882-83	<i>Romanche</i>	Fr.	COURCELLES SENEUIL-MARTIAL.	Cap Horn.
1882-83	<i>Poljarna Svesda</i>	R.	C. ADREYEFF.	Novaya Zemlya.
1882-83	<i>Pola</i>	Autr.	Comte WILCZEK.	Jan Mayen.
1882-83	<i>Dymphna</i>	Holl.	A. P. HOVGAARD.	Kara Sea - North Atlantic.
	<i>Varna</i>	Holl.	Dr. Mauritz SNELLEN.	
1882-83	<i>Moltke</i>	Ger.		
1882-85	<i>Dart</i>	G.B.	W. U. MOORE.	S. W. Pacific.
1883	<i>Sophia</i>	Swed.	NATHORST - NORDENSKJOLD.	Greenland.
1883	<i>Dacia</i>	G.B.	J. Y. BUCHANAN.	Cable Cadiz - Canaries.
1883-85	<i>USS. Explorer</i>	U.S.A.		Alaska.
1883-85	<i>Alert</i>	Can.		Hudson Bay.
	<i>Neptune</i>			
1883-86	<i>Hauch</i>	Dan.	C. F. DRECHSEL - J. PETERSEN.	Danish Seas.
1883-86	<i>USS. Enterprise</i>	U.S.A.	BARKER.	Around the World.
1884-87	<i>Fylla</i>	Dan.		Greenland.
1884-92	<i>Medusa</i>	G.B.	Yatch of Sir John MURRAY.	Scottish Lochs - Atlantic.
1885	<i>Le Bruat</i>	Fr.	L. V. MARQUIS.	Pacifique Sud.
1885-86		R.	Dr. Alex A. BUNGE.	New Siberia.
1885-87	<i>Holsatia</i>	Ger.		Mers allemandes.
1885-88	<i>Buccaneer</i>	G.B.	J. Y. BUCHANAN, John RATTRAY.	Gulf of Guinea.
1885-88	<i>Hirondelle</i>	Mo.	Prince ALBERT DE MONACO.	Méditerranée - Atlantique.
1886	<i>USS. Juniata</i>	U.S.A.	Cap. G. T. DAVIS.	North Atlantic.
1886	<i>USS. Essex</i>	U.S.A.	Com. T. F. JEWELL.	Indian Ocean.
1886-87	<i>HMS. Flying Fish</i>	G.B.		Indian Ocean.
1886-87	<i>Blanca</i>	Sp.	Prof. Odon DE BUEN.	Mediterr.-Atlantic.
1887	<i>Louise</i>	R.	A. J. VILKITSKI.	Novaya Zemlya.
1887	<i>La Chimère</i>	Fr.	CASPARI.	Atlantique Nord.
1887	<i>Jackal</i>	G.B.		
1887-99	<i>Egeria</i>	G.B.		Atlantic - Pacific - Indian.
1888	<i>USS. Blake</i>	U.S.A.	J. E. PILLSBURG.	West Indies.
	<i>USS. Trenton</i>	U.S.A.	Capt. FARGUHAR.	South Atlantic.
	<i>USS. Alliance</i>	U.S.A.	Com. G. W. PIGMAN.	South Atlantic.
1888	<i>HMS. Myrmidon</i>	G.B.		Banda & Arafura Seas.
1889	<i>SS. National</i>	Ger.	Victor HENSEN.	North Atlantic.
1889	<i>Fylla</i>	Dan.	C. F. WANDEL.	Davis Strait & North Greenland
1889	<i>USS. Thetis</i>	U.S.A.	H. T. STOCKTON.	Bering Sea.
	<i>USS. Dolphin</i>	U.S.A.	G. F. F. WILD.	North Atlantic.
	<i>USS. Adonis</i>	U.S.A.	J. J. HUNTER.	South Pacific.
1889-91	<i>Grampus</i>	U.S.A.		East Coast of the United States
1890	<i>Amphiaster</i>	Mo	Hermann FOL - ALBERT DE MO- NACO.	Méditerranée Ouest,
1890		Dan.	Otto PETERSON, Gustav EKMAN.	North Sea.
1890-91	<i>Tzschernomoretz</i>	R.	SPINDLERS, LEBEDINZEFF, AN- DRUSOFF.	Black Sea.

1890-96	<i>Pola</i>	Autr.	NATTERER.	Mediterranean - Red Sea.
1891	<i>USS. Alert</i>	U.S.A.	R. WAINWRIGHT.	Bering Sea.
1891	<i>Châteaurenault</i>	Fr.	NICOL.	Islande - Spitzberg.
1891	<i>La Champagne</i>	Fr.	BRYER.	Ouest de la Manche - Terre Neuve.
1891	<i>USS. Mohican</i>	U.S.A.	Com. C. S. COTTON.	North Pacific.
1891-92	<i>Hécla</i>	Dan.	C. H. RYDER.	Scoresby Sound - West Green- land.
1891-92	<i>Fleur de Lys I & II.</i>	Fr.	Prince HENRI DE BOURBON.	Spitzberg - Novaya Zemlya.
1891-95	<i>Kite</i>	U.S.A.	R. E. PEARY.	Northern Greenland.
	<i>Falcon</i>	U.S.A.		
	<i>Miranda</i>	U.S.A.		
1891-97	<i>Princesse Alice I</i> ..	Mo.	Prince ALBERT DE MONACO.	
1892	<i>Fasana</i>	Autr.	F. SCHEISGUT.	Atlantic.
1892	<i>Gjoa</i>	Norv.	Dr. Axel HAMBERG.	Spitsbergen.
1892	<i>La Manche</i>	Fr.	BIENAIMÉ - DE CARFORT.	Spitzberg - Jan Mayen.
1892-93	<i>Baloena</i>	G.B.	W. S. BRUCE.	Antarctic.
1892-95	<i>Dart</i>	G.B.	H. E. P. CUST.	South West Pacific.
1893	<i>USS. Monongahela.</i>	U.S.A.		West Indies.
	<i>USS. Petrel</i>	U.S.A.	Com. J. H. DAYTON.	North Pacific.
	<i>USS. Albatross</i>	U.S.A.		North Pacific.
1893	<i>Heimdal</i>	Norv.	HJORT.	Norwegian Sea.
1893-94	<i>Jason</i>	Norv.	C. A. LARSEN.	Antarctic.
1893-94	<i>Jackal</i>	G.B.		
1893-95	<i>Najesdnik</i>	R.	M. SHDANKO.	Barentz Sea.
	<i>Westnik</i>			
1893-96	<i>Fram</i>	Norv.	F. NANSEN, SVERDRUP, SCOTT, HANSEN.	Arctic.
1894	<i>Taurus</i>	Autr.	NATTERER.	Marmara Sea.
	<i>Sselanik</i>	Turc.	S. Hâfiz SULEIMAN.	
1894-95	<i>William Barentz</i> ...	Holl.		Spitsbergen.
1894-95	<i>Antarctic</i>	Norv.	G. E. BORCHGREVINK, L. KRIS- TENSEN.	Arctic.
1894-95	<i>Vitiaz</i>	R.	S. O. MAKAROFF.	Around the World.
1894-97	<i>Windward</i>	U.S.A.	A. ARMSWORTH, W. BRUCE.	Franz-Josef Land.
1894-97	<i>Waterwitch</i>	G.B.	J. W. COMBE.	South Eastern Pacific.
1894-98	<i>Pachtusof</i>	R.	Lt. SKURATOFF, A. J. VILKITSKI.	
1895	<i>Charente</i>	Fr.		Golfe d'Aden.
1895	<i>Caudan</i>	Fr.	DE KERGROHEN DE KERMADIO.	Golfe de Gascogne.
1895	<i>USS. Berrington</i> ...	U.S.A.		Archipelago & Asia.
1895-96	<i>Ingolf</i>	Dan.	KNUDSEN, C. F. WANDEL.	North Atlantic & Greenland.
1895-1902	<i>Andrei Pervoswanyi</i>	R.		Novaya Zemlya.
1896	<i>Drome</i>	Fr.	DE PONCELET.	Atlantique Nord.
1896	<i>Areliä</i>	Port.	DON CARLOS.	
1896	<i>Research</i>	G.B.	Darcy THOMSON.	Bay of Biscay.
1896	<i>Virgo</i>	Norv.	ARRHÉNIUS.	North-Atlantic.
1896	<i>Condor</i>	Chili		South Pacific.
1896	<i>Samojed</i>	R.	Prince GALITZINE.	Novaya Zemlya.
1896-97	<i>Express</i>	G.B.	W. MARTIN CONWAY.	Spitsbergen.
1896-97	<i>Virgo</i>	Norv.	S. A. ANDRÉE.	Toward the North Pole.
	<i>Svensksund</i>			
1896-99	<i>Penguin</i>	G.B.	A. M. FIELD.	South Western Pacific.
1897	<i>Victoria</i>	G.B.	A. PIKE.	Spitsbergen.
1897-98	<i>Kaiserin Augusta</i> ...	Ger.	Capt. S. KOELNER.	Yellow Sea.
	<i>Deutschland</i>	Ger.	Com. MULLER.	Yellow Sea.

1897-99	<i>Belgica</i>	Bel.	A. DE GERLACHE DE GOMERY, R. ADMUNDSEN.	Antarctique.
1897-99	<i>Stork</i>	G.B.	H. J. GEDGE.	Mediterranean, Red Sea, Mauri- tius.
1897-1909			Sir John MURRAY - PULLAR.	Scottish Lochs.
1897-1900	<i>Egeria</i>	G.B.	M. H. SMYTH.	Vancouver, and West Coast of South America.
1897-1900	<i>Rambler</i>	G.B.	H. E. P. CUST.	Western India, & West Coast of Africa.
1898	<i>Ivan de Cronstalt</i> ...	R.	S. O. MAKAROFF.	Ienissei.
1898	<i>Helgoland</i>	Ger.	H. RÜDGER.	Spitsbergen.
1898	<i>(Fondation du Musée Océanographique de Monaco).</i>			
1898-99	<i>Antarctic</i>	Swed.	NATHORST.	Spitsbergen.
1898-99	<i>Valdivia</i>	Ger.	Prof. Carl CHUN, Dr. G. SCHOTT.	Atlantic, Indian, Antarctic.
1898-99	<i>Fridthof</i>	Norv.		Franz-Josef Land.
1898-99	<i>Princesse Alice II</i> ...	Mo.	Prince ALBERT DE MONACO, J. RI- CHARD, J. BUCHANAN, W. S. BRUCE.	Açores - Spitzberg.
1898-1900	<i>Southern Cross</i>	Norv.	Carsten EGEBERG BORCHGREVINK	Antarctic.
1898-1902	<i>Windward</i>	U.S.A.	R. E. PEARY.	Arctic Seas.
	<i>Diana</i>			
1898-1902	<i>Fram</i>	Norv.	Prof. G. ISACHSEN - SVERDRUP.	Arctic - North America.
1899	<i>(Stockholm Conference).</i>			
1899	<i>Diana</i>	Can.	J. W. Mac CLURE.	Northern Greenland.
1899	<i>Antarctic</i>	Swed.	NATHORST.	Swedish Polar Expedition.
1899	<i>USS. Newark</i>	U.S.A.	Comd. C. F. GOODRICH.	East Coast of Argentine.
	<i>USS. Umbria</i>	U.S.A.		North Atlantic.
	<i>USS. New York</i> ...	U.S.A.		North Atlantic.
	<i>USS. Sterling</i>	U.S.A.		South Atlantic.
	<i>USS. Justin</i>	U.S.A.		South Atlantic.
	<i>USS. Oregon</i>	U.S.A.		South Atlantic.
1899	<i>USS. Nero</i>	U.S.A.	FLINT.	Sandwich - Philippines, La- drones.
	<i>USS. Thetis</i>			
1899	<i>Hertha</i>	Ger.	VON USEDOM.	Yellow Sea.
	<i>Iltis</i>	Ger.	Com. LANZ.	Yellow Sea.
1899-1900	<i>Svensksund</i>	R.	D. E. JADERIN - JAKIMOVITCH.	Spitsbergen.
	<i>Rurik</i>	R.		
1899-1900	<i>USS. Albatross</i>	U.S.A.	Alex AGASSIZ.	Pacific - Tropics.
1899-1900	<i>Siboga</i>	Holl.	Max WEBER.	Dutch Indies.
1899-1900	<i>Stella Polare</i>	It.	Duc DES ABRUZZES - Umberto CAGNI.	Mers Arctiques.
1899-1901	<i>Britannia</i>	G.B.	R. E. PEAKE.	Atlantic - South Pacific.
1899-1907	<i>Walwin</i>	G.B.	Norris WOLFENDEN.	North-Atlantic - Gibraltar.
	<i>Silver Belle</i>			
1899-1901	<i>Yermak</i>	R.	S. O. MAKAROFF.	Spitsbergen.
1900	<i>(Foundation of the Oceanographic Bureau at Bergen).</i>			
1900	<i>Tijuca</i>	Ger.	A. SIMONSEN.	Cape Verde Islands.
1900	<i>Antarctic</i>	Norv.	G. C. AMDRUP.	East Greenland & Chris- tian IX Land.

1900	<i>Albatross</i>	Ger.	J. P. MOSER.	West Japan.
1900	<i>Research</i>	G.B.		North Atlantic.
1900-1901	<i>USY. America</i>	U.S.A.	W. ZIEGLER.	Franz-Josef Land.
1900-02	<i>Sarja</i>	R.	E. V. TOLL.	New Siberia.
1900-04	<i>Michael Sars</i>	Norv.	J. HJORT, HELLAND HANSEN.	Bear Island - Spitsbergen.
1901	<i>Prinz Sigismund</i> ...	Holl.		West Coast - New Guinea.
1901	<i>Peake</i>	G.B.		Atlantic.
1901	<i>Belgica</i>	Bel.	Roald AMUNDSEN.	East Greenland.
	<i>Gjøa</i>	Norv.		
	<i>Laura</i>	Norv.		
1901	<i>(Christiana Conference).</i>			
1901-03	<i>Gauss</i>	Ger.	Erick VON DRYGALSKI.	Atlantique Austral - Indien.
1901-03	<i>Antarctic</i>	Swed.	LARSEN, Otto NORDENSKJOLD.	Antarctic.
	<i>Frithof</i>	Swed.		
1901-04	<i>Discovery</i>	G.B.	R. F. SCOTT, Sir Cl. MARKHAM, E. H. SHAKLETON.	Antarctic.
1901-05	<i>Pachtussow</i>	R.		
	<i>Iermak</i>			
1901-06	<i>Princesse Alice II</i> ..	Mo.	Prince DE MONACO.	Méditerranée - Atlantique.
1902	<i>Colonia</i>	G.B.		Pacific.
1902	<i>USS. Dolphin</i>	U.S.A.	Com. A. GLEAVES.	North Atlantic.
1902	<i>(Foundation of the International Council for the Exploration of the Seas, Copenhagen, Christiana Laboratories).</i>			
1902	<i>Rose-Marie</i>	Fr.	Dr. J.-B. CHARCOT.	Jan Mayen - Islande.
1902-03	<i>Tijuca</i>	Ger.	A. SIMONSEN - R. PESCH.	East Coast of South America.
	<i>Vitekind</i>	Ger.		
1902-03	<i>Morning</i>	G.B.	W. COLBECK - SCOTT.	National Arctic.
	<i>Terra Nova</i>	G.B.		Relief Expedition.
1902-04	<i>Scotia</i>	G.B.	Dr. W. S. BRUCE.	Scottish National Antarctic Exploration.
1902-13	<i>(Wissenschaftliche Meeresuntersuchungen).</i>			
1902	<i>(Foundation of the Centre of the Oceanographic Studies of Bergen. (Dr. HJORT).)</i>			
1902-05	<i>Belgica</i>	Bel.	Duc PHILIPPE D'ORLÉANS, A. DE GERLACHE, DE GOMERY.	Groenland oriental.
1902-04	<i>Poseidon</i>	Germ.		North & Baltic Sea.
1903	<i>Jackal</i>	G.B.		
1903-05	<i>Gjøa</i>	Norv.	R. AMUNDSEN.	North Magnetic Pole.
1903-05	<i>USY. America</i>	U.S.A.	W. ZIEGLER.	Franz-Josef Land.
1903-09	<i>Neptune</i>	Can.	Samuel BARTLETT.	Arctic America.
1904	<i>(Foundation of the Department of the Earth's Magnetism of the Carnegie Institution, Washington,</i>			
1904-05	<i>Le Français</i>	Fr.	Dr. J. B. CHARCOT.	Antarctique.
1904-06	<i>Albatross</i>	U.S.A.	Alex AGASSIZ	U. S. Fisheries.
1905	<i>(Foundation of the Institute für Meereskunde at Berlin).</i>			
1905-06	<i>Thor</i>	Dan.	A. SCHMIDT.	Danish Oceanography.
	<i>Caroline Koch</i>	Dan.		

1905-06	<i>Roosevelt</i>	U.S.A.	R. E. PEARY.	Arctic Ocean.
1905-08	<i>Galilee</i>	U.S.A.	PRATT & PETERS.	Pacific.
1905-13	<i>Açor</i>	Port.		Portugal.
1906	<i>Ile-de-France</i>	Swed.	Dr. Otto NORDENSKJOLD.	West Spisbergen.
1906	<i>Cruiser</i>	G.B.		North-Atlantic.
1906	<i>(Fondation de l'Institut Océanographique, Paris).</i>			
1906	<i>(Foundation of the Oceanographic Laboratory at Edinburgh).</i>			
1906-07	<i>Princesse Alice II...</i>	Mo.	G. ISACHSEN, A. HOEL, BOURÉE	Spitzberg.
	<i>Salvador</i>	Norv.		
	<i>Kvedfjord</i>			
1906-08	<i>Duchess of Bedford.</i>	Dan.	E. MIKKELSEN.	Beaufort Sea.
1906-08	<i>Planet</i>	Ger.	W. LEBAHN.	Pacific - Indian.
1906-09	<i>Danemark</i>	Dan.	L. MYELUS ERICHSEN.	N. E. Greenland - King Frederick VIII Land.
	<i>Alabama</i>		TROLLE, E. MIKKELSEN, J. T. BORG.	
1907	<i>Belgica</i>	Bel.	Duc d'ORLÉANS, DE GERLACHE.	Kara Sea.
1907	<i>Magnet</i>			Pacific - Indian.
1907-09	<i>Simrod</i>	G.B.	E. H. SHAKLETON, D. MAWSON.	Antarctic.
1907-09	<i>ealark</i>	G.B.		Atlantic - Indian.
1908	<i>(Inauguration du Musée Océanographique de Monaco).</i>			
1908	<i>(Fondation de l'Ufficio Idrografico del R. Magistrato alle Acque à Venise).</i>			
1908	<i>Svensksund</i>	Swed.	Baron GÉRARD DE GEER.	Spitsbergen.
1908	<i>Jacques-Cartier</i>	Fr.	Ch. BÉNARD, MOEVUS.	Océan Arctique - Novaya Zemlya.
1908	<i>USS. Daisy</i>	U.S.A.	B. CLEVELAND.	Antarctic.
1908-09	<i>Tjalfe</i>	Norv.	J. A. NIELSEN, JENSEN.	Western Greenland.
1908-09	<i>Roosevelt</i>	U.S.A.	R. E. PEARY.	Antarctic.
1908-10	<i>Princesse Alice II...</i>	Mo.	Prince DE MONACO.	Méditerranée - Atlantique.
1908-10	<i>Pourquoi-Pas ?</i>	Fr.	Dr. J.-B. CHARCOT.	Antarctique.
1908-11	<i>Thor</i>	Dan.	A. SCHMIDT.	Danish Oceanography.
	<i>Caroline Koch</i>	Dan.		
1908-14	<i>Adria</i>	Autr.		Mer Adriatique.
1909	<i>(Foundation of the Scripps Institution of Oceanography - La Jolla, California).</i>			
1909	<i>Belgica</i>	Bel.	Duc d'ORLÉANS.	Groenland oriental.
1909	<i>Fram</i>	Norv.	ISACHSEN.	Spitsbergen.
1909	<i>Montebello</i>	It.	MAGRINI - NICASTRO.	Adriatique.
	<i>107-S</i>			
1909	<i>Conqueror</i>	U.S.A.	W. A. BRUCE.	
1909-21	<i>Carnegie-I</i>	U.S.A.	J. PETERS - J. P. AULT.	Oceans.
1910	<i>(Fondation du Comité Thalassographique Italien - Roma).</i>			
1910	<i>Michael Sars</i>	Norv.	John MURRAY, Helland HANSEN, J. HJORT.	North Atlantic.
	<i>Fridjof</i>	Norv.		
1910-12	<i>Fram</i>	Norv.	Roald AMUNDSEN.	South Pole.
1910-13	<i>Terra Nova</i>	G.B.	Robert F. SCOTT.	Antarctic.

1910-14	<i>Ciclope</i>	It.	MANCINI - MAGRINI - VINCIGUERRA-DE MARCHI - SANZO.	Adriatique - Ionienne - Tyrrhénienne - Libye.
1911	<i>Ingolf</i>	Dan.		Atlantique Nord.
	<i>Anne</i>	Dan.		Atlantique Nord.
	<i>Agent Petersen</i>	Dan.		Atlantique Nord.
	<i>Florida</i>	Dan.		Atlantique Nord.
	<i>St. Thomas</i>	Dan.		Atlantique Nord.
	<i>Ste-Croix</i>	Dan.		Atlantique Nord.
1911-12	<i>Pangan</i>	Dan.		North Atlantic & Mediterranean.
1911-12	<i>Najade</i>		MISSION INTERNATIONALE.	
1911-12	<i>Kainan Maru</i>	Jap.	SHIRASE.	Antarctic.
1911-13	<i>Planet</i>	Ger.	LEBAHN.	Pacifique Sud
1911-13	<i>Möwe</i>	Ger.	WODARZ.	Atlantique - Indian.
1911-13	<i>Deutschland</i>	Ger.	W. BRENNKE, Wilh. FILCHNER	Antarctic.
1911-13	<i>Alexander Agassiz</i>	U.S.A.	SCRIPPS INSTITUTION.	Pacific.
1911-14	<i>Aurora</i>	G.B.	Sir Douglas MAWSON.	Antarctic.
1911-15	<i>Hirondelle II</i>	Mo.	Prince DE MONACO.	Méditerranée - Atlantique.
1912	<i>Armauer Hansen</i> ...	Norv.	Helland HANSEN.	Norwegian Sea.
1912			SHIRASE.	Antarctic.
1912-13	<i>Pourquoi-Pas ?</i>	Fr.	Dr. J.-B. CHARCOT.	Atlantique Nord.
1912-14	<i>Grampus</i>	U.S.A.	BIGELOW.	East Coast of the United States, Maine & Florida.
1912-14	<i>Sainte-Ana</i> ,,,.....	R.		Mer de Kara.
1913	<i>Margarethe</i>	Dan.	J. SCHMIDT.	Azores - Bermudas.
1913	<i>Sylvana</i>	Fr.	L. GAIN - POLIGNAC.	Atlantique.
1913		R.	VILKITSKI.	Nicholas II Land.
1913	Soundings in Lake Tanganyika		(Cap. JACOBS).	
1914	<i>Bache</i>	U.S.A.	BIGELOW.	Maine & Florida.
1914	<i>Taimir, Vaigatch</i> ...	R.		North Siberia.
1914	<i>(Foundation of the Spanish Oceanographic Institute at Madrid).</i>			
1914	<i>(Foundation of the U. S. Coast Guard Patrol) (International Ice Patrol).</i>			
1914	<i>Miami</i>	U.S.A.	US. ICE PATROL.	North Atlantic.
1914	<i>(Foundation of the Suisan Koshuyo (Imperial Fisheries Institute) Tokyo).</i>			
1914-15	Canadian Fisheries Expeditions.			
1914-15	<i>Vasco Nunez de Balboa</i>	Sp.		Méditerranée Occidentale.
1914-16	<i>Endurance</i>	G.B.	E. SHARLETON.	South Pole.
	<i>Aurora</i>	G.B.		
1914-20	<i>Poseidon</i>	Ger.		North Sea.
1916-1918	<i>Hernan Cortes</i>	Sp.		Atlantique.
	<i>Río de la Plata</i>	Sp.		Atlantique.
	<i>Primer de Meira</i> ...	Sp.		Atlantique.
1918	<i>Maud</i>	Norv.	AMUNDSEN.	N. W. Passage.
1919	<i>(Fondation de l'Institut Thalassologique de Finlande).</i>			
1919	<i>(Foundation of the Tidal Institute of Liverpool).</i>			

1919	<i>(Fondation de l'Institut Géophysique de Trieste).</i>			
1919-21	<i>Farm</i>	Norv.	Adolph HOEL.	Spitsbergen.
	<i>Jan Mayen</i>			
1919-22	<i>Dana</i>	Dan.	Joh. SCHMIDT.	North Atlantic - Mediter.
1920-21	<i>Giralda</i>	Sp.		Atlantic - Gibraltar - Mediter.
1920	<i>Merlin</i>	G.B.		Atlantic.
1920	<i>Perche</i>	Fr.	Dr. H. HELDT.	Méditerranée Ouest.
1920-21	<i>Pickle</i>	S.A.		South Africa.
1920-26	<i>Poseidon</i>	Ger.		North & Baltic Sea.
1921	<i>(Foundation of the International Hydrographic Bureau - Monaco).</i>			
1921	<i>Petrel</i>	Fr.		G. de Gascogne.
1921	<i>Alpheios</i>	Gr.	KRYSSANTHIS - HONDROS.	Méditerranée Ouest.
	<i>Tremiti</i>	It.	MAGRINI - SANZO - DE BUEN.	Egée - Mer Noire.
1921-22	<i>Orvet</i>	Fr.	G. A. PRUVOT.	Méditerranée Ouest.
1921-28	<i>Tanche</i>	Fr.	RALLIER DU BATY - BELLOC.	Manche-Atlantique Nord.
	<i>Pourquoi-Pas ?</i>	Fr.	Dr. J.-B. CHARCOT.	
1922	<i>Quest</i>	G.B.	M. F. WIL.	Antarctic.
1922	<i>Alidade</i>	Fr.	MARTI.	Marseille - Philippeville.
1922	<i>Cassiopee</i>	Fr.	LE DANOIS.	Atlantique Nord.
1922	<i>Averroes</i>	Sp.		Algeciras.
1922-23	<i>Marsigli</i>	It.	F. VERCELLI - SANZO.	Détr. Messine.
1922-24	<i>Armauer Hansen</i>	Norv.		North Atlantic.
1922-24	<i>Maud</i>	Norv.	H. V. SVERDRUP - AMUNDSEN.	North Siberia.
1923	<i>Almirante Lobo</i>	Sp.		Atlantique - Méditerranée.
1923	<i>Arleaux</i>	Can.	GHILCRIST - GARDNER.	Terre-Neuve.
	<i>Prince</i>			
1923	<i>Cinco de Outubro</i>	Port.		Portugal.
1923-24	<i>Ammiraglio-</i>		NOVARO.	
	<i>Magnaghi.</i>	It.	VERCELLI - SANZO.	Mer Rouge.
	<i>Generale - Arimondi.</i>			
1923-25	<i>Beautemps Beaupre.</i>	Fr.	MARTI.	Algérie.
1923-26	<i>Principe Alberto de</i>			
	<i>Monaco</i>	Sp.		Sud Espagne - Malaga.
1923-26	<i>Ville-d'Ys</i>	Fr.	RALLIER DU BATY - LE DANOIS.	Terre-Neuve - Atlantique N.
1923-27	<i>Sir James Clark Ross</i>	Norv.	LARSEN.	Antarctic.
1924	<i>San Giorgio</i>	It.	ALESSIO-CICOGNA.	Atlantique.
	<i>San Marco</i>			
1924	<i>Atair</i>	Arg.		Mar del Plata.
1924	<i>Hernan Cortes</i>	Sp.		G. de Viscaye.
1924		U.R.S.S.	J. SCHOKALSKY.	Mer Noire.
1924	<i>Michael Sars</i>	Norv.		Greenland West.
1924	<i>Berlin</i>	Ger.		North Atlantic.
1924	<i>Persee</i>	U.R.S.S.	MESIATZEV.	Barentz Sea.
1924-27	<i>Dana</i>	Dan.	Joh. SCHMIDT - TANING.	North - Atlantic.
1924-27	<i>Tampa</i>	U.S.A.	ICE PATROL.	North - Atlantic.
	<i>Modoc</i>			
1924-28	<i>Explorer</i>	G.B.		North - Atlantic.
1925	<i>Pelikan</i>	Holl.		East Indian Archipelago.
	<i>S. K. 2 - 8 - 9</i>			
1925	<i>Marques de la Vic-</i>			
	<i>toria</i>	Sp.		Nord Espagne.
1925	<i>Sainte Jeanne d'Arc</i>	Fr.		Terre-Neuve.

1925-26	<i>Discovery</i>	G.B.	STENHOUSE - DR. STANLEY KEMP.	Antarctic.
1925-26	<i>Tadorne</i>	Fr.	DR. BELLOC.	Madère - Canaries.
	<i>Hébé</i>	Fr.		
1925-26	<i>Engageante</i>	Fr.	LE MOALIGOU.	Manche - Atlantique Nord.
1925-27	<i>Meteor</i>	Ger.	SPIESS - A. MERZ.	South Atlantic.
1925-27	<i>Quintin Roosevelt</i> ...	Fr.		Atlantique Nord.
1925-28	<i>Estafette</i>	Fr.	LE GALL.	Atlantique Nord.
	<i>Sentinelle</i>	Fr.		
1925-28	<i>Albacora</i>	Port.	DR. A. RAMALHO.	Madeira - Portugal.
1925-30	<i>George-Bligh</i>	G.B.		North Sea.
1925-30	<i>Eystrasalt</i>	Swed.		Baltic & North Sea.
	<i>Skagerak</i>			
1926	<i>Arcturus</i>	U.S.A.	WILLIAM BEEBE.	North Atlantic - Pacific.
1926	<i>Zinnia</i>	Bel.		Mer du Nord.
1926	<i>Proserpine</i>	Sp.		Nord Espagne.
1926	<i>Triton</i>	Holl.		North Sea.
1926-27	<i>Morild</i>		DR. J. T. RUUD.	
1926-27		Norv.	NIELSEN.	Antarctic.
1926-28	<i>Johan-Hjort</i>	Norv.	DR. OSCAR SUND.	Norway - North Atlantic.
1926-28	<i>Zieten</i>	Ger.		North & Barentz Sea.
1926-28	<i>Java</i>	Holl.		Indes Néerlandaises.
	<i>S. K.</i>			
1926-28	<i>Fylla</i>	Dan.		North - Atlantic.
	<i>Thor</i>			
	<i>Island Falk</i>			
	<i>Japetus Steenstrub.</i>			
1926-29	<i>William Scoresby</i> ...	G.B.	MERCER - J. E. HAMILTON.	South Georgia.
1927	<i>Garry</i>	G.B.		North Atlantic.
	<i>Godetia</i>			
1927	<i>Città di Milano</i>	It.	ROMAGNA - MANOIA.	Spitzberg.
1927	<i>Augusta</i>	Ger.		North Atlantic.
1927	<i>Larch</i>	Can.		Labrador - Hudson.
	<i>Stanley</i>			
1927	<i>Arras</i>	Fr.	T. SCHWERER	Atlantique Nord.
	<i>Surveillante</i>		Y. LAHALLE.	
	<i>Vaillante</i>		Lt. DYÈVRE.	
	<i>Caliorne</i>			
1927-28	<i>Eduardo-Dato</i>	Sp.		Nord Espagne.
1927-29	<i>Norvegia</i>	Norv.	RÛISER LARSEN.	Antarctic.
1927-29	<i>Discoverer</i>	U.S.A.	U.S. COAST & GEODETIC SURVEY.	Hawai - California.
	<i>Pioneer</i>			
1928	<i>Armauer Hansen</i> ...	Norv.	HELLAND HANSEN - WILFR. EKMAN.	Atlantic North.
	<i>Arnulf</i>			
	<i>Kirkholmen</i>		THOR IVERSEN.	
1928	<i>V. I. 2</i>	Holl.		North Sea.
1928	<i>Gazda</i>	Pol.		Baltic Sea.
	<i>Pomorzanin</i>			
	<i>Tryton</i>			
1928	<i>San Miguel</i>	Port.		Azores - Madeira.
1928	<i>Marion</i>	U.S.A.	U.S. COAST GUARD.	Baffin Bay.
1928	<i>Surveyor</i>	U.S.A.	U.S. COAST & GEODETIC SURVEY.	North Pacific.
1928	<i>Godthaab</i>	Dan.	RÛIS CARTENSEN.	Davis - Baffin.
1928	<i>Flinders</i>	G.B.		North - Atlantic.
1928	<i>Meteor</i>	Ger.	SPIESS.	North Atlantic.
1928	<i>de Lanessan</i>	Fr.		Indo-Chine.

1928	<i>Poliarnaia Zvezda</i> ...	U.R.S.S.	PINGUIN.	North U.R.S.S.
1928	<i>USS. Pathfinder</i>	U.S.A.	U.S. COAST & GEODETIC SURVEY.	Soeloe Sea & Philippines.
	<i>Fathometer</i>			
	<i>Marinduque</i>			
1928-29	<i>Carnegie</i>	U.S.A.	J. PETERS - J. P. AULT.	Oceans.
1928-30	<i>Dana</i>	Dan.	Dr. Joh. SCHMIDT.	Around the World.
1928-30	<i>Vorovsky</i>	U.R.S.S.	L. RUDOWITZ.	Okhotsk - Bering Sea.
1929	<i>Laya</i>	Sp.		Nord Espagne.
1929	<i>Arcadia</i>	Can.	G. A. BUCHAND.	Saint-Lawrence.
	<i>Cartier</i>			
1929	<i>Krassin</i>	U.R.S.S.	SAMOILOVICH.	Arctic.
	<i>G. Sedov</i>			
1929-30	<i>Willebrord Snellius</i> .	Holl.	P. M. VAN RIEL - F. PINKE.	Indian Seas - Pacific.
1929-30	<i>Discovery</i>	G.B.	Sir Douglas MAWSON.	Antarctic.
1929-30	<i>Xauen</i>	Sp.		N. Espagne - Gibraltar - Méditerranée - Maroc.
1929-30	<i>Guide</i>	U.S.A.	U.S. COAST & GEODETIC SURVEY.	Hawai - North Pacific.

LIST OF ABBREVIATIONS

Arg.
Autr.
Bel.
Can.
Chil.
Dan.
Fr.
G.-B.
Ger.
Gr.
Holl.
It.
Jap.
Mo.
Norw.
Pol.
Port.
R.
U.R.S.S.
S.A.
Sp.
Sw.
Turc.
U.S.A.

Argentine.
Austria.
Belgium.
Canada.
Chile.
Denmark.
France.
Great Britain.
Germany.
Greece.
Netherlands.
Italy.
Japan.
Monaco.
Norway.
Poland.
Portugal.
Russia.
U.S.S.R.
South Africa.
Spain.
Sweden.
Turkey.
Etats-Unis d'Amérique.

LISTE DES ABBREVIATIONS

Argentine.
Autriche.
Belgique.
Canada.
Chili.
Danemark.
France.
Grande-Bretagne.
Allemagne.
Grèce.
Pays-Bas.
Italie.
Japon.
Monaco.
Norvège.
Pologne.
Portugal.
Russie.
U.R.S.S.
Afrique du Sud.
Espagne.
Suède.
Turquie.
United States of America.

(B) - CABLE SHIPS
which have contributed deep-sea
soundings.

(B) - NAVIRES POSEURS DE CABLES
ayant fourni des sondages
océaniques

NAME OF VESSEL NOM DU NAVIRE	OWNERS — ARMATEUR	DATE
<i>John Pender</i>	Eastern Telegraph Co	1878-1901 ; 1904
<i>Chiltern</i>	— —	1886-1897
<i>Electra</i>	— —	1887-1903
<i>Amber</i>	— —	1888-1906
<i>Mirror</i>	— —	—
<i>Clan Mac Neil</i>	— (Indian Ocean)	1900
<i>Retriever</i>	West Coast of America Telegr. Co	1880-1907
<i>Great Northern</i>	Eastern and South African Co...	1882-1897
<i>Scotia</i>	Telegraph Construction and Main- tenance Co	1883-1898
<i>Seine</i>	— —	1885-1899
<i>Britannia</i>	— —	1888-1907
<i>Cambria</i>	— —	1905-1907
<i>Colonia</i>	— —	1902
<i>Calabria</i>	— —	—
<i>Dacia</i>	India Rubber, Gutta Percha & Telegraph Works	1883-1905
<i>Buccaneer</i>	— —	1886-1906
<i>Silvertown</i>	— —	1889-1900 ; 1904-1906
<i>International</i>	— (North Atlantic).....	1883
<i>Minia</i>	Anglo American Telegraph Co...	1885-1907
<i>Anglia</i>	— —	1898
<i>Sherard Osborn</i>	Eastern Extension Telegraph Co.	1888-1907
<i>Magnet</i>	— —	1907
<i>Recorder</i>	Eastern Extension Telegraph Co.	1888-1907
<i>Duplex</i>	— —	1906-1907
<i>Norseman</i>	Western & Brazilian Telegr. Co.	1893-1907
<i>Viking</i>	— —	—
<i>Charente</i>	Gouvernement français	—
<i>Ampère</i>	— —	—
<i>Volta</i>	— —	—
<i>Portena</i>	Cie Française des Câbles Télé- graphiques	1897
<i>François Arago</i>	— —	1893-1904
(<i>ex-Westmeath</i>)		
<i>Pouyer Quartier</i>	— —	1911-1913
<i>Edouard Jéramec</i>	— —	1915-1916
.....	Sté Industrielle des Téléphones .	1904

NAME OF VESSEL NOM DU NAVIRE	OWNERS — ARMATEUR	DATE
<i>Patrick Stewart</i>	Indian Government — Indo-European	1902
<i>Duchess of Marlborough</i>	West Indian & Panama Co.....	—
<i>Grappler</i>	— (Antilles)	1899-1900
<i>Henry Holmes</i>	— —	1905-1907
<i>Roddam</i>	(R. E. Peake) - (Antilles)	1888
<i>Newfield</i>	Canadian Government	—
<i>Relay</i>	Central & South American Co.	1890-1892
<i>Mackay Bennett</i>	Commercial Cable Co.	1902
<i>Fee Cheu</i>	Chinese Government	—
<i>Monarch</i>	British Govt. G.P.O.....	—
<i>Lady Carmichael</i>	— —	—
<i>Oersted</i>	Great Northern Co	—
<i>Stere Nordiske</i>	— —	—
<i>Westmeath</i>	Henley's Co	—
<i>Faraday</i>	Siemens Bros & Co.	—
<i>Citta di Milano</i>	Pirelli & Co	—
<i>Newington</i> .....	.....	1902-1903
<i>Von Podbielski</i>	(Atlantique) - (Mer Noire).....	1902-1905
<i>Grossherzog von Oldenburg</i>.....	.....	1906-1908
<i>Stephan</i>	(Pacifique Ouest)	1905-1910-1911
<i>Norderney</i>	(R. Pech). (Mer Jaune)	1900-1926

(C) - WAR-VESSELS
which have contributed deep-sea
Soundings.

(C) - NAVIRES DE GUERRE
ayant participé à des Sondages
Océaniques

NAME OF VESSEL NOM DU NAVIRE	REGION — PARAGES	DATE
Great Britain Grande-Bretagne		
<i>H.M.S. Nassau</i>	South America	1869
<i>Essex</i>	Loanda-Rio	1877-1878
<i>Egeria</i>	Atlantic - Indian - Pacific.....	1887-1899
<i>Rambler</i>	— —	1888-1904
<i>Waterwitch</i>	— —	1894-1901
<i>Penguin</i>	Indian - Pacific.....	1890-1906
<i>Stork</i>	Indian - Atlantic	1888-1897
<i>Investigator</i> ...	Indian	1888-1907
<i>Dart</i>	Pacific	1888-1902
<i>Goldfinch</i>	—	1902-1905
<i>Sealark</i>	—	1905-1907
<i>Cruiser</i>	—	1906
<i>Mutine</i>	—	1907
<i>Fantome</i>	—	1907
<i>Alacrity</i>	—	1906
<i>Myrmidon</i>		
<i>Marathon</i>		
<i>Flying Fish</i> .		
<i>Sylvia</i>		
France		
<i>d'Entrecasteaux</i>	Atlantique Nord - Océan Indien.	1906
<i>Lavoisier</i>	Atlantique Nord	1907
<i>Isly</i>	Atlantique Nord	1909
<i>Manche</i>	(de Carfort) Jan Mayen & Spitz- berg	1892-1893
Germany - Allemagne		
<i>Fürst Bismark</i>	(S. Graf v. Moltke).....	1901
<i>Marburg</i>	(E. Zacharias). Mer Jaune	1902
<i>Edi</i>		1903
<i>Planet</i>	(W. Lebahn)	1906-1908 ; 1911-1913
<i>Zieten</i>	(Schmaltz). South Shetlands.....	1907
<i>Herzogin Sophie- Charlotte</i>	(F. Glund). Pacifique Sud	1908
<i>Möwe</i>	(Wodarz).....	1911-1913
<i>Emden</i>	Autour du Monde	1927-1929
<i>Berlin</i>	Around the World	1928-1929
Netherlands-Pays-Bas		
<i>Bali</i>	Océan Pacifique	1906

NAME OF VESSEL NOM DU NAVIRE	REGION — PARAGES	DATE
Russia - Russie		
<i>Sainte-Ana</i>	Mer de Kara	1912-1914
<i>Andrei Pervosvanny</i> ...	(Dr. Breiffus). Mourmansk.....	
Japan - Japon		
<i>HJMS Kosyu</i>	Océan Pacifique	1917
<i>Mansyu</i>		1922-1927
<i>Yamato</i>		1924
U.S.A. - E.U.A.		
<i>USS Stewart</i>	Atlantic Ocean	1922
<i>Hull</i>	California	1922
<i>Corry</i>		
<i>Milwaukee</i> ...	Pacific Ocean - North Atlantic.	1923-1924-1925
<i>Stewart</i>	Philippines, China Sea	
<i>Cincinnati</i> ...	North Pacific.....	1924-1925
<i>Maryland</i>	California & Transpacific	1924-1925-1926
<i>Hull</i>	Pacific Ocean	1924-1925-1927
<i>Corry</i>		
<i>Hannibal</i>	North Atlantic	1924-1927 1924-1926-1927
<i>Niagara</i>		
<i>Raleigh</i>		
<i>Concord</i>	North Pacific.....	1925
<i>Canopus</i>	China Sea.....	1925
<i>Savannah</i>	North Pacific.....	1925
<i>Marblehead</i> ...	Transpacific & Atlantic	1924-1925-1927
<i>Trenton</i>	—	1925-1927
<i>Memphis</i>	—	1925
<i>Richmond</i>	Pearl Harbor - Shanghai.....	1925-1927
<i>Pennsylvania</i> ...	—	1925
<i>Colorado</i>	North Pacific.....	1925-1926-1927
<i>Lydonia</i>	North Atlantic	1926 1926
<i>Rochester</i>		
<i>Nokomis</i>	Caribbean Sea.....	1927
<i>Argonne</i>		
<i>Holland</i>	North Pacific.....	1927
<i>Pittsburg</i>		1297
<i>Destroyer Division 43</i> ..	Hainan Strait - G. Tonkin.....	1928
<i>Lexington</i>	Honolulu - San Diego.....	1928
<i>Milwaukee</i>	San Francisco - Honolulu	1928

(D). — PRINCIPAL OCEANIC DEEPS.

FOSSES OCÉANIQUES PRINCIPALES.

Name & origin. Nom et origine	Depth. Profondeur		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
NORTH ATLANTIC. ATLANTIQUE NORD					
—	3292	6020	49° 05' N.	14° 45' W.	S. W. Ireland.
—	2788	5099	44° 55' N.	4° 45' W.	G. Gascogne.
Peakes Deep	3284	6006	43° 02' N.	19° 40' W.	N. E. Açores.
Fosse de Monaco	3441	6293	30° 55' N.	25° 25' W.	S. Açores.
Moseley Deep { North	3318	6068	25° 10' N.	35° 10' W.	N. W. I. Cap Verd.
{ South.....	3314	6051	12° 15' N.	35° 50' W.	S. W. I. Cap Verd.
—	3548	6490	40° 04' N.	56° 48' W.	S. New Foundland (Terre Neuve).
Fosse de Chun.....	3318	6068	39° 43' N.	62° 56' W.	S. Nova Scotia (N ^{lle} -Ecosse).
—	3700	6766	38° 15' N.	62° 32' W.	
—	3550	6492	33° 07' N.	48° 43' W.	E. Bermudas.
Nares Deep.....	3825	6996	26° 32' N.	60° 05' W.	S. E. Bermudas.
Fosse de Porto - Rico (1882); U.S.S. <i>Blake</i>	4561	8341	19° 40' N.	66° 22' W.	N. Porto-Rico.
Fosse de Porto - Rico (1902), U.S.S. <i>Dolphin</i>	4662	8526	19° 39' N.	67° 40' W.	
ADJOINING SEAS. MERS ADJACENTES					
Vallée de l'Arctique.....	2650	4846	78° 27' N.	2° 18' W.	W. Spitzberg.
Arctic Basin (1927) (<i>Sir H. Wil-</i> <i>kins</i>).....	2975	5440	77° 45' N.	175° 00' W.	N. Ile Wrangell.
Mediterranean Sea Mer Méditerranée					
—	1678	3069	40° 32' N.	4° 40' E.	N. E. Baléares.
—	1723	3151	39° 22' N.	7° 22' E.	W. Sardinia.
Mer Tyrrhénienne.....	2040	3730	40° 16' N.	12° 24' E.	S. W. Naples.
Mer Ionienne.....	2408	4404	35° 44' N.	21° 44' E.	S. Matapan.
—	2113	3864	36° 06' N.	28° 38' E.	E. Rhodes.
Mer Noire	1225	2240	43° 36' N.	34° 39' E.	S. Crimée.
Mer Caspienne.....	517	945	38° 50' N.	50° 45' E.	South part (partie Sud)
Caribbean Sea Mer des Antilles					
Fosse du Yucatan.....	2575	4709	20° 34' N.	84° 36' W.	E. Yucatan.
Fosse du Grand Cayman.....	3428	6269	19° 00' N.	81° 02' W.	W. Jamaica.
Bartlett Deep	3508	6415	17° 42' N.	82° 53' W.	S. Cuba.
Fosse des Iles Vierges.....	2501	4574	17° 56' N.	65° 06' W.	E. Porto-Rico.
Antillas Basin.....	2844	5201	13° 25' N.	66° 25' W.	N. Caracas.
Sigsbee Deep	2119 (?)	3875	26° 10' N.	86° 07' W.	G. du Mexique.

Name & origin. Nom et origine	Depth. Profondeur		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
SOUTH ATLANTIC. ATLANTIQUE SUD					
Fosse de la Romanche (Tizard Deep) (1883-92) <i>Romanche</i>	4030	7370	0° 11' S.	18° 15' W.	S. W. Cap des Palmes.
<i>Gauss</i> (1901).....	3401	6220			
Buchanan Deep.....	3063	5602	12° 25' S.	2° 34' E.	W. Angola.
Fosse du Cap	2938	5373	33° 22' S.	5° 55' E.	W. Capetown.
—	3574	6537	3° 35' S.	21° 40' W.	N. W. I. Ascension.
—	3284	6006	19° 50' S.	24° 50' W.	E. Martin Vaz.
—	3279	5996	48° 30' S.	42° 25' W.	N.W. South Georgia.
Ex-Ross Deep (1843)	2187	4000	68° 34' S.	12° 49' W.	Weddell Sea.
INDIAN OCEAN. OCÉAN INDIEN					
—	2867	5243	4° 11' N.	83° 18' E.	S. E. Ceylan.
—	2930	5358	1° 22' N.	53° 19' E.	E. Somali.
—	2925	5349	7° 07' S.	52° 28' E.	S. Amirantes.
—	2925	5349	19° 22' S.	51° 54' E.	E. Madagascar.
Fosse de la "Valdivia".....	3135	5733	58° 00' S.	36° 00' E.	Antarctique.
Fosse des Kerguelen.....	2953	5440	40° 10' S.	60° 30' E.	N. W. I. Kerguelen.
Fosse de Sunda (1906), <i>Planet</i>	3828	7000	10° 05' S.	108° 05' E.	S. Java.
Wharton Deep	3532 (?)	6459	17° 50' S.	101° 35' E.	S. E. I. Keeling.
Jeffreys Deep.....	3084	5640	38° 49' S.	131° 07' E.	S. Australia.
ADJOINING SEAS. MERS ADJACENTES					
Red Sea—Mer Rouge.....	1290	2359	21° 08' N.	38° 06' E.	W. la Mecque.
Gulf of Aden.....	2750	5029	13° 39' N.	51° 37' E.	N. W. I. Socotra.
Andaman Basin.....	1991	3641	9° 55' N.	93° 50' E.	N. I. Nicobar.
Fosse de Mentawai	3097	5664	4° 15' S.	99° 55' E.	S. Mentawai.
Fosse de Florés.....	2831	5178	7° 47' S.	119° 33' E.	N. W. Florés.
Fosse de Moore.....	1700	3108	9° 29' S.	126° 20' E.	E. Timor.
Fosse de Weber, Mer de Banda.....	3557	6505	5° 56' S.	131° 23' E.	W. I. Kei.
NORTH PACIFIC OCEAN OCÉAN PACIFIQUE NORD					
Tusses des Aléoutiennes	4037	7382	51° 56' N.	170° 55' E.	S.W. I. Aléoutiennes.
Foscarora Deep (1874)	4655	8514	44° 55' N.	152° 26' E.	E. I. Kouriles.
Fosse des Liu-Kiu	4091	7481	24° 30' N.	127° 22' E.	S. I. Liu-Kiu.
FsFe Deep.....	3788	6927	16° 30' N.	132° 55' E.	E. Luçon.
Fosse de l'Emden (1927), <i>Emden</i> .	5900	10.790	9° 41' N.	126° 50' E.	N. E. Mindanao.
Fosse des Philippines { (1912), <i>Planet</i>	5352	9788	9° 57' N.	126° 50' E.	
—	4939	9032	5° 20' N.	127° 45' E.		S. E. Mindanao.
Fososisdes Palau	4450	8138	7° 40' N.	135° 05' E.	N. E. Palau.

Name & origin. Nom et origine	Depth. Profondeur		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
Fosse de Yap.....	3905	7141	9° 30' N.	138° 20' E.	E. Yap.
Nero Deep (1899), <i>Challenger</i> (1875).....	5269	9636	12° 30' N.	145° 50' E.	S.E. Guam-Mariannes.
—	5366	9814	11° 15' N.	142° 10' E.	S.W. Guam-Mariannes
Fosses des Iles Bonin { Nord.....	5438	9945	30° 50' N.	142° 22' E.	N. Ogasawara.
(Ogasawara) } Sud.....	4142	7575	23° 00' N.	145° 00' E.	S. E. Ogasawara.
Brooke Deep.....	3429 (?)	6271	14° 32' N.	159° 13' E.	N. Carolines.
Bailey Deep	3432	6276	25° 12' N.	172° 15' E.	N. Marshall.
Campbell Deep.....	3448	6306	4° 20' N.	167° 49' W.	W. I. Fanning.
Belknap Deep.....	3337	6103	13° 55' N.	154° 08' W.	S. E. Hawai.
Fosse de Renard	3023	5528	21° 42' N.	156° 20' W.	N. E. Hawai.
Murray Deep (1875), <i>Challenger</i> ...	3540	6474	29° 04' N.	155° 48' W.	N. Hawai.
California Deep.....	2661	4867	27° 48' N.	115° 45' W.	W. California.
Fosse de Manzanillo.....	2800	5121	18° 58' N.	105° 30' W.	S. W. Mexique.
Fosse d'Acapulco.....	2921 (?)	5342	15° 48' N.	98° 38' W.	
<i>ADJOINING SEAS.</i>					
<i>MERS ADJACENTES</i>					
Beaufort Sea.....	2561	4683	71° 58' N.	146° 53' W.	N. E. Pt. Barrow.
Mer du Japon	2030	3712	41° 30' N.	138° 12' E.	W. Tsugaru.
Mer de Chine Méridionale	2964	5420	18° 40' N.	120° 13' E.	N. W. Luçon.
—	2865	5239	13° 28' N.	119° 33' E.	S. W. Manille.
Mer de Soeloe.....	2657	4859	9° 18' N.	121° 27' E.	S. Panay.
Mer de Célèbes	3400	6217	5° 55' N.	123° 42' E.	S. W. Mindanao.
SOUTH PACIFIC OCEAN.					
OCÉAN PACIFIQUE SUD					
Fosse de Haeckel	3099	5667	32° 37' S.	72° 57' W.	W. Valparaiso (Chili).
Richards Deep (Atacama), <i>Relay</i> ...	4175	7635	25° 42' S.	71° 31' W.	S.W. Antofagasta (Chili)
Fosse de Krümmel	3755	6867	17° 45' S.	73° 14' W.	W. Arica (Chili).
Milne Edwards Deep (Pérou), <i>Alaska</i>	3368	6159	11° 51' S.	78° 54' W.	W. Callao (Perou).
Fossé des Kermadec (Aldrich Deep) (1895) <i>H.M.S. Penguin</i> .	5155	9427	30° 30' S.	176° 40' W.	E. I. Kermadec.
Tonga Trench, <i>Egeria</i>	5022	9184	23° 40' S.	175° 02' W.	S. Tonga.
Fosse N. E. Phœnix.....	3365	6154	1° 12' S.	168° 10' W.	N. E. Phœnix.
Fossé des N ^{les} -Hébrides.....	4139	7570	20° 34' S.	168° 42' E.	S. N ^{les} -Hébrides.
Fosse des Iles Salomon	3762 (?)	6880	11° 05' S.	161° 25' E.	S. San Cristoval.
Fosse du <i>Planet</i> (1910).....	4998	9140	6° 32' S.	153° 58' E.	S. Archipel Bismark.
Thomson Basin	2880	5267	40° 50' S.	157° 42' E.	Australia-N. Zealand.

(E). — PRINCIPAL OCEANIC SHALLOWS.
HAUTS FONDS OCÉANIQUES PRINCIPAUX

Name & origin. Nom et origine	Relative Depth. Profondeur relative		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
NORTH ATLANTIC OCEAN. OCÉAN ATLANTIQUE NORD					
Banc du Lavoisier	25/620	45/1130	63° 07' N.	16° 35' W.	S. E. Islande.
Louzy Bank or Outer Bailey (1920)	95/550	174/1000	60° 20' N.	12° 33' W.	S. W. Faeroe.
George Bligh Bank	260/550	476/1000	58° 51' N.	13° 40' W.	N. Rockall.
“Porcupine” Bank	82/270	150/500	53° 25' N.	13° 40' W.	W. Ireland.
—	350/1650	640/3000	51° 55' N.	15° 55' W.	W. Ireland.
—	722/1900	1320/3500	42° 40' N.	12° 05' W.	C. Finisterre.
Banc Joséphine (1869).....	82/1370	150/2500	36° 41' N.	14° 16' W.	W. Gibraltar.
Gorringue Bank (1876), <i>U.S.S. Gettysburg</i>	30/1100	55/2000	36° 32' N.	11° 36' W.	
Hayward Bank (1883)	362/1100	662/2000	34° 50' N.	11° 55' W.	
Banc de la Seine (1882)	81/1650	148/3000	33° 45' N.	14° 18' W.	
Dacia Bank (1883), <i>Orne</i> (1887), <i>Waterwitch</i> (1894)	50/1650	91/3000	31° 10' N.	13° 35' W.		N. E. I. Canarias.
Banc Conception (1883).....	88/820	161/1500	29° 58' N.	12° 48' W.	S.W. Cap Blanc du Sud (Mauritanie).
Banc Doric (1889).....	56/1420	102/2600	18° 57' N.	18° 15' W.	
Bom Félix Bank (1900), <i>Maceio</i> ...	65/1900	119/3500	19° 24' N.	20° 33' W.	N. E. I. Cap Verd.
Birkenhead Bank (1888)	86/1650	157/3000	16° 43' N.	19° 50' W.	E. I. Cap Verd.
Santa Rita Bank (1906)	77/1650	141/3000	16° 15' N.	20° 51' W.	
Minia Bank (1903).....	633/1100	1158/2000	53° 21' N.	35° 10' W.	N. E. New Foundland (Terre Neuve).
Faraday Bank (1882)	625/1650	1143/3000	49° 41' N.	29° 10' W.	E. New Foundland (Terre Neuve).
Laura Ethel Bank (1878)	36/2200	66/4000	46° 55' N.	38° 48' W.	
Milne Bank (1868-1921).....	63/2500	115/4600	43° 37' N.	38° 42' W.	
Bonnet Flamand (Flemish Cap). —	56/550	102/1000	46° 47' N.	44° 38' W.	
—	1073/2200	1962/4000	45° 05' N.	39° 18' W.	S. E. New Foundland (Terre Neuve).
Banc Sainthill (1832).....	100/2200	183/4000	42° 40' N.	41° 50' W.	N. Açores.
Chaucer Bank (1850)	48/1100	88/2000	42° 50' N.	28° 30' W.	
—	979/1650	1790/3000	43° 09' N.	20° 46' W.	N. E. Açores.
Banc du Cruiser (1907), <i>Cruiser</i> ...	575/1650	1052/3000	31° 15' N.	27° 25' W.	S. Açores.
Banc Princesse Alice (1895).....	24/1370	44/2500	37° 58' N.	29° 18' W.	S. W. Açores.
Banc Marsala (1877).....	80/1650	146/3000	33° 50' N.	34° 00' W.	
Plateau du Dolphin (1854).....	1225/1900	2240/3500	33° 21' N.	39° 10' W.	E. Rocher St.-Paul.
Prinzen Bank (*)	?/1650	?/3000	1° 22' N.	26° 38' W.	
Banc Passodnik (*).....	?/1900	?/3500	0° 55' N.	28° 45' W.	S. I. Cap Verd.
—	730/1900	1335/3500	6° 50' N.	22° 05' W.	
—	1600/2700	2926/5000	21° 34' N.	63° 23' W.	N. E. Porto Rico.
Banc Nichteroy (1881).....	52/1900	95/3500	5° 04' N.	45° 44' W.	E. Cayenne (Guyane)
ADJOINING SEAS. MERS ADJACENTES					
Méditerranée, Banc Skerki	4/270	8/500	37° 46' N.	10° 49' E.	N. E. Bizerte.
— Banc Medina	35/270	65/500	34° 54' N.	15° 10' E.	S. E. Malta.

(*) Shown on (donné par la) Carte Générale Bathymétrique des Océans - Edition 1912.

Name & origin. Nom et origine	Relative Depth. Profondeur relative		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
<i>Caribbean sea.</i> <i>Mer des Antilles</i>					
Pickle Bank (1840-1904) Schooner <i>Pickle</i>	10/1650	18/3000	20° 28' N.	80° 29' W.	S. Cuba.
Misteriosa Bank	8/1650	16/3000	18° 51' N.	83° 55' W.	
SOUTH ATLANTIC OCEAN. OCÉAN ATLANTIQUE SUD					
Banc de la Valdivia (1898)	488/1650	892/3000	25° 35' S.	5° 50' E.	N. W. Capetown.
Crête de Walfish, <i>Planet</i>	979/2200	1790/4000	32° 30' S.	0° 00'	W. Capetown.
—	731/2200	1337/4000	32° 48' S.	1° 42' E.	
—	120/2200	219/4000	31° 32' S.	11° 24' E.	
—	908/2200	1661/4000	20° 52' S.	33° 58' W.	
Plateau de Bromley	360/1650	658/3000	31° 10' S.	35° 15' W.	W. Martin Waz.
Nelson Bank	90/1900	164/3500	32° 40' S.	47° 25' W.	
Banc Garnet.....	28/550	51/1000	33° 05' S.	49° 25' W.	N. E. la Plata.
Sutlej Bank (1863)	72/2470	132/4500	37° 55' S.	50° 10' W.	
Banc Subra (1920).....	8/2470	15/4500	43° 50' S.	47° 30' W.	S. E. la Plata.
Rhine Bank.....	109/550	199/1000	55° 32' S.	53° 23' W.	
Burwood Bank.....	25/270	46/500	54° 15' S.	59° 27' W.	E. Cape Horn.
—	553/1650	1012/3000	61° 50' S.	37° 00' W.	
—	1261/2570	2306/4700	69° 30' S.	24° 30' W.	E. South Orkneys (Or- cades du Sud).
Banc Meteor (1926)	306/2470	560/4500	47° 55' S.	8° 55' E.	Weddell Sea. S. E. Capetown.
INDIAN OCEAN. OCÉAN INDIEN					
—	1401/2200	2562/4000	36° 40' S.	26° 05' E.	S. E. Port Elisabeth.
—	749/1370	1370/2500	33° 10' S.	35° 15' E.	S. E. Durban.
—	900/2200	1646/4000	36° 25' S.	52° 32' E.	S. E. Madagascar.
— (1906)	10/1100	18/2000	18° 10' S.	42° 17' E.	Canal du Mozambique.
Banc Saint-Lazarus	3.3/1100	6/2000	12° 06' S.	41° 26' E.	W. Comores.
Banc de la Zélée.....	5.5/1650	10/3000	12° 31' S.	46° 15' E.	E. Comores.
—	298/2200	545/4000	16° 34' S.	51° 00' E.	N. E. I. Sainte-Marie (Madagascar E.).
Rajah Rajaswaree Reefs (1876) ....	..... /2350	..... /4300	11° 27' S.	52° 03' E.	N. E. Madagascar.
(?) *	(512/2200)	(936/4000)	(9° 00' S.)	(52° 55' E)	N. E. Farguhar.
—	790/1900	1445/3500	6° 11' S.	54° 26' E.	S. E. Amirantes.
Banc Saya de Malha (Banc Poydenot).....	3.8/1650	7/3000	9° 45' S.	61° 24' E.	S. E. Seychelles.
Banc Nazareth, (1821) <i>Vizard</i>	12/1370	22/2500	14° 30' S.	61° 28' E.	
—	35/2200	64/4000	19° 32' S.	61° 48' E.	W. I. Rodriguez.
Owen Bank (1811).....	19/1650	35/3000	6° 48' S.	70° 15' E.	W. I. Chagos.
—	950/2200	1737/4000	13° 50' S.	88° 20' E.	S. E. I. Chagos.
Essex Bank (1886)	857/2200	1567/4000	10° 12' N.	55° 55' E.	S. E. Socotra.
(?) *	(298/1370)	(545/2500)	(6° 57' N.)	(74° 28' E)	Canal des 8 degrés.
Corona Bank (1869), <i>Gazelle</i> (1875)	10/2700	18/5000	12° 26' S.	118° 40' E.	S. Soemba.
Banc d'Artagnan (1865).....	5/1100	9/2000	13° 16' S.	120° 37' E.	S. W. Timor.
—	543/1650	993/3000	47° 25' S.	148° 18' E.	S. Tasmania.

(*) *Shown on (donné sur la) Carte Générale Bathymétrique des Océans - Edition 1912-13.*

Name & origin. Nom et origine	Relative Depth. Profondeur relative		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
NORTH PACIFIC OCEAN. OCÉAN PACIFIQUE NORD					
Mellish Bank	64/2200	117/4000	34° 00' N.	178° 12' E.	N. W. I. Ocean.
Anson or Clare shoal .....	.... /2000	.... /3700	17° 34' N.	124° 45' E.	E. Luçon.
—	689/2700	1260/5000	17° 22' N.	153° 09' E.	E. Mariannas.
—	777/2700	1421/5000	15° 53' N.	152° 04' E.	
Nero Bank I (1898).....	754/2700	1379/5000	21° 10' N.	163° 25' E.	
» II (1898).....	720/2700	1317/5000	19° 35' N.	160° 20' E.	
» III (1898).....	689/2700	1260/5000	17° 25' N.	153° 10' E.	S. Carolines.
» IV (1898).....	230/2700	421/5000	15° 40' N.	152° 06' E.	
Banc Colonia (1902).....	780/2700	1426/5000	16° 56' N.	150° 00' E.	S. Carolines.
Breakers-Brisants (1877), <i>Espiègle</i> (1883).....	.... /2300	.... /4200	4° 18' N.	136° 18' E.	S. Yap.
Banc Ianthe (1845)	3.8/2300	7/4200	5° 58' N.	145° 26' E.	S. Carolines.
Banc Nile (1860), <i>Manshyu</i> (1926)..	.... /2300	.... /4200	5° 32' N.	145° 42' E.	
Nisshin Bank	50/2300	91/4200	5° 25' N.	146° 52' E.	
Banc Hélène (1874), <i>Angers</i> (1893)	5/2300	9/4200	5° 33' N.	149° 03' E.	
—	13/2300	24/4200	4° 10' N.	150° 15' E.	S. E. I. Marshall.
Indiana Reef (1856).....	+ /2470	+ /4500	3° 20' N.	160° 18' E.	
Keats Bank (1873).....	5/2200	9/4000	5° 57' N.	173° 37' E.	S. E. I. Marshall.
Breakers reported-Brisants signa- lés (1921) .....	.... /2200	.... /4000	0° 40' N.	177° 25' E.	E. Gilbert.
Schjetnan Reef (1868), <i>Anna, Alert</i> (1880).....	+ /2200	+ /4000	16° 08' N.	178° 58' W.	S. W. Hawai.
Krusenstern Reef	+ /2200	+ /4000	22° 15' N.	175° 37' W.	
Wilder Bank (1919), <i>Capt. Li-</i> <i>siansky</i>	2.7/2200	5/4000	8° 17' N.	173° 25' W.	
Breakers reported-Brisants signa- lés (1901) .....	.... /2700	.... /5000	7° 28' N.	153° 40' W.	S. Hawai.
Brisants signalés, <i>Michelet</i> (1907) .	.... /2650	.... /4900	22° 28' N.	131° 08' W.	E. Hawai.
Banc Erben (1877).....	385/2200	704/4000	32° 54' N.	132° 33' W.	S. W. San Francisco.
Tuscarora Bank (1877)	976/2200	1785/4000	32° 25' N.	128° 15' W.	
—	996/1650	1821/3000	41° 30' N.	127° 06' W.	N. W. Cap Mendocino.
Banc Allaire (1916)	71/1900	130/3500	19° 20' N.	119° 18' W.	S. W. California.
Banc Oceana (1891)	63/2500	115/4600	8° 30' N.	115° 30' W.	W. I. Clipperton.
Banc Germaine (1916)	11/1900	20/3500	5° 05' N.	107° 38' W.	S. I. Clipperton.
ADJOINING SEAS.					
MERS ADJACENTES					
Mer de Béring, Bowers Bank	270/1650	494/3000	54° 25' N.	179° 08' E.	N. W. Tsugaru.
Mer du Japon	76/1650	139/3000	42° 18' N.	137° 28' E.	
Mer de Chine Méridionale.....					
Banc Vanguard N. E.	8.7/270	16/500	7° 30' N.	109° 55' E.	E. Cap St. Jacques.
Rifleman Bank, <i>Bombay Castle</i>	1.6/270	3/500	7° 56' N.	111° 42' E.	
Minerva Bank, <i>Rifeman-Sirius</i> (1904), <i>Waterwitch</i> (1912).....	28/270	51/500	10° 38' N.	110° 19' E.	
Récif Duperré(1861) <i>Manche</i> (1909)	+ /1100	+ /2000	(11°12'N.)	(110°42'E.)	
Macclesfield Bank (1701), <i>Penguin-</i> <i>Egeria</i> (1892)	7/1300	13/2400	15° 55' N.	114° 30' E.	E. Paracels.
—	430/2200	786/4000	15° 05' N.	116° 19' E.	
Scarborough Reef.....	146/2200	267/4000	15° 20' N.	117° 41' E.	
—	150/2200	274/4000	17° 16' N.	116° 40' E.	
Truro Bank (1857)	10/2200	18/4000	16° 19' N.	116° 43' E.	

Name & origin. Nom et origine	Relative Depth. Profondeur relative		Approximate position. Position approchée		Region. Parages
	Fathoms	Mètres	Latitude	Longitude	
SOUTH PACIFIC OCEAN. Océan Pacifique Sud					
Pactolus Bank (1885).....	67/1650	122/3000	56° 40' S.	74° 18' W.	W. Cape Horn.
Banc Ligua (1844)	28/1100	51/2000	32° 24' S.	72° 18' W.	W. Valparaiso.
Carnegie Ridge (1928).....	795/1800	1454/3300	1° 32' S.	82° 16' W.	W. Guayaquil.
—	32/2200	58/4000	5° 00' S.	83° 00' W.	S. W. Guayaquil.
Breakers-Brisants (1906-1928)	—	—	6° 45' S.	99° 45' W.	
Banc Filippo (1886).....	0/2200	0/4000	5° 31' S.	151° 49' W.	S. E. I. Malden.
Reported (Signalé en) 1915, <i>SS.</i> <i>Wairuna</i>	+ /2200	+ /4000	5° 30' S.	162° 00' W.	S. W. I. Malden.
Récifs Fabert (1887)	68/2200	124/4000	24° 07' S.	158° 33' W.	S. Archipel de Cook.
Banc de l'Orne (1874) <i>Fabert</i> (1887)	16/2200	29/4000	27° 42' S.	157° 44' W.	
Roches Haymet (1863), <i>Will</i> <i>Watch</i>	+ /2200	+ /4000	27° 11' S.	160° 13' W.	
Banc Wachusett (1899).....	5/2200	9/4000	32° 18' S.	151° 08' W.	
Récif Ernest Legouvé (1902)	+ /2200	+ /4000	35° 14' S.	150° 38' W.	S. I. Tubuai.
Récif Maria-Thérèse (1843)	+ /2200	+ /4000	37° 00' S.	151° 13' W.	
Reported (Signalé en) 1913 .....	.... /2470	.... /4500	41° 30' S.	148° 25' W.	N. E. I. Phoenix.
—	1520/3300	2780/6000	1° 20' S.	168° 18' W.	
Winslow Reef (1851), <i>Phoenix</i>	+ /2700	+ /5000	1° 40' S.	174° 50' W.	N. W. I. Phoenix.
Récif Carondelet (1903), <i>Aorangi</i> ...	+ /2700	+ /5000	5° 33' S.	173° 50' E.	S. W. I. Phoenix.
Banc Robbi (1888).....	2/1650	3/3000	11° 03' S.	176° 53' W.	N. Wallis.
Récif Antiope (1886).....	+ /2700	+ /5000	18° 14' S.	168° 20' W.	E. I. Tonga.
Beveridge Reef (1833).....	+ /2700	+ /5000	20° 02' S.	167° 49' W.	
Récif Buffon (1880)	+ /2700	+ /5000	20° 39' S.	169° 58' W.	
Harans Reef (1842)	+ /2700	+ /5000	21° 32' S.	168° 55' W.	
Gleaner Bank (1910) .....	.... /2700	.... /5000	22° 43' S.	173° 55' W.	
— .....	.... /3000	.... /5500	20° 52' S.	172° 20' W.	
Pelorus Reef (1861), <i>Egeria</i> (1889).	14/1650	26/3000	22° 51' S.	176° 26' W.	S. Tonga.
Récif Wolverine (1877)	37/1100	68/2000	25° 37' S.	179° 00' W.	S. Minerva Reef (Tonga)
Banc Star of Bengal	110/1650	201/3000	32° 22' S.	179° 05' W.	S. Kermadec.
—	64/550	117/1000	74° 45' S.	164° 20' W.	Ross Sea, Antarctique.
Bancs Turpie.....	15/2200	27/4000	11° 19' S.	175° 34' E.	N. W. Fidji.
Bancs Alexa (1896)	13/2200	24/4000	11° 40' S.	175° 30' E.	
Banc Charlotte (1788), <i>Alexander</i> ...	15/2200	27/4000	11° 47' S.	173° 13' E.	
Pandora Bank (1791), <i>Carola</i> (1883), <i>Koromo</i> (1898)	11/2200	20/4000	12° 11' S.	172° 05' E.	
Hazel Holme Bank (1896)	17/2200	31/4000	12° 49' S.	174° 03' E.	N. E. Arch. Bismark.
Récif Lyra (1826).....	+ /2200	+ /4000	1° 53' S.	153° 28' E.	
Bradley Reef (1791), <i>Beagle</i> (1875), <i>Novara</i> (1858)	+ /1100	+ /2000	6° 54' S.	161° 00' E.	N. E. Salomon.
Fairway Reef.....	+ /1100	+ /2000	21° 00' S.	161° 45' E.	W. N ^{lle} -Calédonie.
Kelso Bank.....	11/1100	20/2000	24° 18' S.	159° 30' E.	S. W. N ^{lle} -Calédonie.
Capel Bank	32/1100	59/2000	25° 16' S.	159° 15' E.	
Britannia Bank (1901).....	220/2200	402/4000	28° 01' S.	155° 37' E.	E. Brisbane (Austr.).
Middleton Reef	+ /1370	+ /2500	29° 28' S.	159° 04' E.	
Elisabeth Reef	+ /1370	+ /2500	29° 56' S.	159° 02' E.	
—	18/2200	33/4000	32° 28' S.	158° 42' E.	
(?) *	(290/1650)	(530/3000)	(32° 45' S.)	(177° 08' E.)	N. E. Auckland (N.Z.)
(?) *	(1000/2200)	(1829/4000)	(39° 15' S.)	(161° 00' E.)	E. Melbourne (Austr.)

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