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Marine Memorandum No. 8 December 1971

THE MARINE SCIENCES IN SCIENTIFIC AMERICAN

Compiled by Ronald B. Linsky, director, sea grant program, University of Southern California

References below include title, author, year and month of publication, and page on which the article begins.

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ABYSS, ANIMALS OF THE, by Anton F. Brunn, 1957 Nov. 50.

ABYSS, THE CIRCULATION OF THE, Henry Stommel, 1958 July 85.

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AIRBORNE MAGNETOMER, THE, by Homer Jensen, 1961 June 151.

ALGAE AS FOOD, by Harold W. Milner, 1953 Oct. 31.

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CHANGING LEVEL OF THE SEA, THE, by Rhodes W. Fairbridge, 1960 May 70.

CIRCULATION, MODELS OF OCEANIC, by D.J. Baker, Jr., 1970 Jan. 114.

CIRCULATION OF THE ABYSS, THE, by Henry Stommel, 1958 July 85. CIRCULATION OF THE OCEANS, THE, by Walter Munk, 1955 Sept. 96.

CLEANING SYMBIOSIS, by Conrad Limbaugh, 1961 Aug. 42.

CLOUDS, TRADE-WIND, by Joanne Starr Malkus, 1953 Nov. 31.

COELACANTH, THE by Jacques Milot, 1955 Dec. 34.

CONFIRMATION OF CONTINENTAL DRIFT, THE, by Patrick M. Hurley, 1968 Apr. 52.

CONTINENTAL DRIFT, by J. Tuzo Wilson, 1963 Apr. 86.

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CONTINENTAL DRIFT AND EVOLUTION, by Bjorn Kurten, 1969 Mar. 54.

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CONTINENTAL SHELF, THE, by Henry C. Stetson, 1955 Mar. 82.

CONTINENTAL SHELVES, THE, by K.O. Emery, 1969 Sept. 106.

CONTINENTS, THE ORIGIN OF, by Marshall Kay, 1955 Sept. 62.

CORALS AS PALEONTOLOGICAL CLOCKS, by S.K. Runcorn, 1966 Oct. 26.

CORIOLIS EFFECT, THE, by James E. McDonald, 1952 May 72.

CRAB, BIOLOGICAL CLOCKS AND THE FIDDLER, by Frank A. Brown, Jr., 1954 Apr. 34.

CROMWELL CURRENT, THE, by John A. Knauss, 1961 Apr. 105.

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CURRENT, THE PERU, by Gerald S. Posner, 1954 Mar. 66.

DEEP-OCEAN FLOOR, THE, by H.W. Menard, 1969 Sept. 126.
DEEP SCATTERING LAYERS, THE SEA'S, by Robert S. Dietz, 1962 Aug. 44.
DEEP-SEA LAYER OF LIFE, THE, by Lionel A. Walford, 1951 Aug. 24.
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DISCOVERIES IN NITROGEN FIXATION, by Martin D. Kamen, 1953 Mar. 38.
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ELECTRIC LOCATION BY FISHES, by H.W. Lissman, 1963 Mar. 50.
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ESTUARY, THE LIFE OF AN, by Robert M. Ingle, 1954 May 64.
EVOLUTION, CONTINENTAL DRIFT AND, by Bjorn Kurten, 1969 Mar. 54.
EVOLUTION OF BEHAVIOR IN GULLS, THE, by N. Tinbergen, 1960 Dec. 118.
EXPLORING THE OCEAN FLOOR, by Hans Pettersson, 1950 Aug. 42.

FIDDLER CRAB, BIOLOGICAL CLOCKS AND THE, by Frank A. Brown, Jr., 1954 Apr. 34. FISH, THE ICE, by Johan T. Ruud, 1965 Nov. 108. FISHES, AIR-BREATHING, by Kjell Johansen, 1968 Oct. 102. FISHES, ELECTRIC, by Harry Grundfest, 1960 Oct. 115. FISHES SWIM, HOW, by Sir James Gray, 1957 Aug. 48. FISHES, THE SCHOOLING OF, by Evelyn Shaw, 1962 June 128. FOOD, ALGAE AS, by Harold W. Milner, 1953 Oct. 31. FOOD FROM THE SEA, by Gordon A. Riley, 1949 Oct. 16. FOOD RESOURCES OF THE OCEANS, THE, by S.J. Holt, 1969 Sept. 178. FRACTURES IN THE PACIFIC FLOOR, by Henry W. Menard, 1955 July 36. FREEZING, DESALTING WATER BY, by Asa E. Snyder, 1962 Dec. 41. FRESH WATER FROM SALT, by David S. Jenkins, 1957 Mar. 37.

GEOLOGICAL OBSERVATORY, THE LAMONT, by George W. Gray, 1956 Dec. 83. GEOLOGICAL SUBSIDENCE, by S.S. Marsden, Jr., and S.N. Davis, 1967 June 93. GREAT LAKES, THE AGING, by Charles F. Powers and Andrew Robertson, 1966 Nov. 94. GREEN TURTLE, THE NAVIGATION OF THE, by Archie Carr, 1965 May 78. GULLS, THE EVOLUTION OF BEHAVIOR IN, by N. Tinbergen, 1960 Dec. 118. GULLS, VISUAL ISOLATION IN, by Neal Griffith Smith, 1967 Oct. 94.

HAGFISH, THE, by David Jansen, 1966 Feb. 82.
HOMING SALMON, THE, by Arthur D. Hasler and James A. Larsen, 1955 Aug. 72.
HOW FISHES SWIM, by Sir James Gray, 1957 Aug. 48.
HURRICANES, by R.H. Simpson, 1954 June 32.
HURRICANES, THE ORIGIN OF, by Joanne Starr Malkus, 1957 Aug. 33.

ICE FISH, THE, by Johan T. Ruud, 1965 Nov. 108. ISLANDS IN THE ARCTIC, ICE, by Kaare Rodahl, 1954 Dec. 40.

LAMONT GEOLOGICAL OBSERVATORY, THE, by George W. Gray, 1956 Dec. 83.

LAMPREY, THE SEA, by Vernon C. Applegate and James W. Moffett, 1955 Apr. 36.

LAST OF THE GREAT WHALES, THE, by Scott McVay, 1966 Aug. 13.

LEARNING IN THE OCTOPUS, by Brian B. Boycott, 1965 Mar. 42.

LIFE OF AN ESTUARY, THE, by Robert M. Ingle, 1954 May 64.

LIFE OF THE ANTARCTIC, THE OCEANIC, by Robert Cushman Murphy, 1962 Sept. 186.

LIFE, THE DEEP-SEA LAYER OF, by Lionel A. Walford, 1951 Aug. 24.

LIVING UNDER THE SEA, by Joseph B. MacInnis, 1966 March 24.

LOCATION BY FISHES, ELECTRIC, by H.W. Lissmann, 1963 Mar. 50.

LUMINESCENCE OF LIVING THINGS, THE, by E. Newton Harvey, 1948 May 46.

MAGNETISM OF THE OCEAN FLOOR, THE, by Arthur D. Raff, 1961 Oct. 146.
MAGNETOMETER, THE AIRBORNE, by Homer Jensen, 1961 June 151.
MAN-OF-WAR, THE PORTUGUESE, by Charles E. Lane, 1960 Mar. 158.
MAN, THE OCEANS AND, by Warren S. Wooster, 1969 Sept. 218.
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NAVIGATION OF PENGUINS, THE, by J.E. Emlen and R.L. Penney, 1966 Oct. 104. NAVIGATION, THE, OF THE GREEN TURTLE, by Archie Carr, 1965 May 78.

OCEAN FLOOR, EXPLORING THE, by Hans Petterson, 1950 Aug. 42. OCEAN FLOOR, MINERALS ON THE, by John L. Mero, 1960 Dec. 64. OCEAN FLOOR, THE MAGNETISM OF THE, by Arthur D. Raff, 1961 Oct. 146. OCEAN FLOOR, THE RIFT IN THE, by Bruce C. Heezen, 1960 Oct. 98. OCEAN, THE ANTARCTIC, by V.G. Kort, 1962 Sept. 113. OCEAN, THE ARCTIC, by P.A. Gordienko, 1961 May 88. OCEAN WAVES, by Willard Bascom, 1959 Aug. 74. OCEANIC LIFE OF THE ANTARCTIC, THE, by Robert Cushman Murphy, 1962 Sept. 186. OCEANIC LIFE, THE NATURE OF, by John D. Isaacs, 1969 Sept. 146. OCEANIC RIDGES, THE ORIGIN OF, by E. Orowan, 1969 Nov. 102. OCEAN'S FLOOR, 1949 Dec. 44. OCEANS, THE, by Roger Revelle, 1969 Sept. 54. OCEANS, THE ATMOSPHERE AND THE, by R.W. Stewart, 1969 Sept. 76. OCEANS, THE CIRCULATION OF THE, by Walter Munk, 1955 Sept. 96. OCEANS, THE ORIGIN OF THE, by Sir Edward Bullard, 1969 Sept. 66. OCTOPUS, LEARNING IN THE, by Brian B. Boycott, 1965 Mar. 42. OYSTERS, by Pieter Korringa, 1953 Nov. 86.

PACIFIC FLOOR, THE, by Robert S. Dietz, 1952 April 19.

PACIFIC FLOOR, FRACTURES IN THE, by Henry W. Menard, 1955 July 36.

PACIFIC RISE, THE EAST, by Henry W. Menard, 1961 Dec. 52.

PACIFIC, THE TRENCHES OF THE, by Robert L. Fisher and Roger Revelle, 1955 Nov. 36.

PENGUINS, by William J.L Sladen, 1957 Dec. 44.

PENGUINS, THE NAVIGATION OF, by J.E. Emlen and R.L. Penney, 1966 Oct. 104.

PERU CURRENT, THE, by Gerald S. Posner, 1954 Mar. 66.

PHALAROPE, THE, by E. Otto Hohn, 1969 June 104.

PHYSICAL RESOURCES OF THE OCEAN, THE, by Edward Wenk, Jr., 1969 Sept. 166.

PLANKTON AND MAN, WHALES, by Willis E. Pequegnat, 1958 Jan. 84.

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PORTUGUESE MAN-OF-WAR, THE, by Charles E. Lane, 1960 Mar. 158.

RED SEA HOT BRINES, THE, by E.T. Degens and D.A. Ross, 1970 Apr. 32. RIFT IN THE OCEAN FLOOR, THE, by B.C. Heezen, 1960 Oct. 98. REFLECTORS IN FISHES, by E. Denton, 1971 Jan. 64.

SAILING YACHTS, THE STUDY OF, by H.D. Herreshoff and J.N. Newman, 1966 Aug. 60. SALMON, THE HOMING, by Arthur D. Hasler and James A. Larsen, 1955 Aug. 72. SALMON, THE SWIMMING ENERGETICS OF, by J.R. Brett, 1965 Aug. 80. SALPA, by N.J. Berrill, 1961 Jan. 150. SALT, FRESH WATER FROM, by David S. Jenkins, 1957 Mar. 37. SALT-WATER AGRICULTURE, by Hugo Boyko, 1967 Mar. 89. SAND, by Ph. H. Kuenen, 1960 April 94. SARGASSO SEA, THE, by John H. Ryther, 1956 Jan. 98. SCHOOLING OF FISHES, THE, by Evelyn Shaw, 1962 June 128. SEA, ANIMAL SOUNDS IN THE, by Marie Poland Fish, 1956 Apr. 93. SEA-FLOOR SPREADING, by J.R. Heirtzler, 1968, Dec. 60. SEA, FOOD FROM THE, by Gordon A. Riley, 1949 Oct. 16. SEA LAMPREY, THE, by Vernon C. Applegate and James W. Moffett, 1955 Apr. 36. SEA, LIVING UNDER THE, by Joseph B. MacInnis, 1966 Mar. 24. SEA, SEISMIC SHOOTING AT, by Maurice Ewing and Leonard Engle, 1962 May 116. SEA, THE CHANGING LEVEL OF THE, by Rhodes W. Fairbridge, 1960 May 70. SEA, THE SARGASSO, by John H. Ryther, 1956 Jan. 98. SEAL, THE WEDDELL, by Gerald L. Kooyman, 1969 Aug. 100. SEA'S DEEP SCATTERING LAYERS, THE, by Robert S. Dietz 1962 Aug. 44. SEISMIC SHOOTING AT SEA, by Maurice Ewing and Leonard Engel, 1962 May 116. SHARKS, THE BEHAVIOR OF, by Perry W. Gilbert, 1962 July 60. SHARKS V. MEN, by George A. Llano, 1957 June 54. SOUNDS IN THE SEA, ANIMAL, by Marie Poland Fish, 1956 Apr. 93. SQUID, THE, by H.B. Steinbach, 1951 Apr. 64. SQUID, THE NERVE IMPULSE AND THE, by Richard Keynes, 1958 Dec. 83. SUBMARINE CANYONS, by Francis P. Shepard, 1949 Apr. 40. SUBMARINE CANYONS, THE ORIGIN OF, by Bruce C. Heezen, 1956 Aug. 36. SUBSIDENCE, GEOLOGICAL, by S.S. Marsden, Jr., and S.N. Davis, 1967 June 93. SYMBIOSIS, CLEANING, by Conrad Limbaugh, 1961 Aug. 42.

TECHNOLOGY AND THE OCEAN, by Willard Bascom, 1969 Sept. 198. TELEVISION, UNDERWATER, by W.R. Stamp, 1953 June 32. TEREDO, THE, by Charles E. Lane, 1961 Feb. 132. THE ATMOSPHERE AND THE OCEANS, by R.W. Stewart, 1969 Sept. 76. THE NATURE OF OCEANIC LIFE, by John D. Isaacs, 1969 Sept. 146. THE ORIGIN OF THE OCEANS, by Sir Edward Bullard, 1969 Sept. 66. THE PHALAROPE, by E. Otto Hohn, 1969 June 104.

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THERMAL POLLUTION AND AQUATIC LIFE, by John R. Clark, 1969 Mar. 18.
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