

National Oceanographic Library – Archive

## Dr David Edgar Cartwright, FRS Collection

<b>Archive Location</b>	<b>Archive A – Individual Collections</b>
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**Dr David Edgar Cartwright, FRS 1926-2015.** After graduating in Natural Sciences at Cambridge University and in Mathematics at London University, David Cartwright worked from 1954 to 1973 as a researcher in Marine Physics at the National Institute of Oceanography, Wormley, Surrey. His subjects were initially sea waves and the motion of ships, but later developed into tides, surges and variations in sea level. During a year at the Scripps Institute of Oceanography at La Jolla, California, he and Walter Munk revolutionised the whole concept of tidal spectroscopy and prediction, which later extended to the analysis of storm surges in sea level. Soon after its formation in 1973, he was appointed Assistant Director of the Institute of Oceanographic Sciences, Bidston, where his team developed a pioneering programme of tide measurements in the Atlantic Ocean, from pressure variations on the ocean floor to topography of the ocean surface measured by satellites. On retirement from the Institute of Oceanographic Sciences in 1987, he accepted a Senior Research Associateship at the NASA-Goddard Space Flight Centre in the USA, where he pursued his interest in satellite altimetry and where, with Richard Ray, he made the first near-complete mapping of the tides in the global ocean from the US Navy's GEOSAT spacecraft. He was also a leading figure over several years in the international scientific planning team for the highly successful TOPEX/POSEIDON satellite, launched by the USA and France in 1992.

While working at the leading edge of modern oceanic tide research, David Cartwright became increasingly aware of and interested in the long and neglected history of the science. On his retirement from NASA, he was in a unique position to write such a history: *Tides a scientific history*, (Cambridge, 1999).

He was elected an honourable Member of the Royal Society of New Zealand in 1964 and a fellow of the Royal Society in 1984. His book *Tides: a Scientific History* was published in 1999.

<b>Item</b>	<b>Box</b>
<b>Papers of early classical references to Tides</b>	
Diels, H: Doxographi Graeci, collegit, recensuit, prolegomenis indicibusque, Berolini (New York), 2 pages from DG Reliquaire, pp. 382-383, 1879.	1
La theorie des marees au XII siècle, pp. 112-125 in, <b>Duhem, P</b> : Le systeme du moude, Tome III, Chapter III, Paris, 1915. 549pp, with attached notes.	1

La theorie des marees et l'astrologie: Les premieres connaissances des Hellenes sur le phenomene des marees, pp. 367-293 in, <b>Duhem, P</b> : Le systeme du moude, Tome II, Chapter XIII, Paris, 1914.	1
La theorie des marees selon les Arabes, Abou Masar, pp. 369-385 in, <b>Duhem, P</b> : Le systeme du moude, Tome II, Chapter XIII, Paris, (1913-1917).	1
Encyclopedia Britannica Vol. 2, 15 <sup>th</sup> ed., 1980, Astrology, pp. 219-223.	1
Encyclopedia Britannica, 15 <sup>th</sup> ed., 1980. Strabo, pp. 713-714.	1
Endros, Von A.: Die gezeiten, seiches und Stromungen des meeres bei Aristoteles, pp.355-385 in, Mathematisch-Physikalische Klasse: Sitzungsberichte, Verlag der K.B. Akad. der Wissenschaften, 1915.	1
Hamilton, HC: The geography of Strabo, G. Bell & Sons, pp. 258-263, 1854.	1
Tidal work and knowledge before the time of Newton, pp. 386-401 in, Harris, RA: Manual of tides – Part 1, Washington DC, USCGS, 1898.	
Hawkes, CFC: Pytheas: Europe and the Greek explorers, a lecture delivered at New College, Oxford on 20th May, 1975, 8th J.L. Myres Memorial Lecture, Blackwell Myer Memorial Fund, 1977, 46p.	1
Part II Aristarchus of Samos on the sizes and distances of the sun and moon, pp. 299-317 in, <b>Heath, T</b> : Aristarchus of Samos, the ancient Copernicus, Dover Pubs, 1981, 425pp.	1
Herodotus: <i>The alluvial delta – once a gulf of the sea, parallel to the 'Red Sea': evidence from shells and efflorescence of salt</i> , translation by H Cary, London, G. Bell and Sons, 1908, p. 98. With Greek text attached (Bohn's Classical Library)	1
Huntingford, GWB: The periplus of the Erythraean sea, by an unknown author: with some extracts from Agatharkhides "On the Erythraean sea", London, The Hakluyt Society, pp. xiv-15; 18-21; 44-47; 108-111; 176-181, 1980.	1
Jones, CW (editor): Bedae Opera de Temporibus, On the Harmony of the sea and the moon, Mediaeval Academy of America, 1943. Extracts translated by Mark Haywood, School of Classics, University of Liverpool, 3 p. of typed manuscript 1983.	1
Jones, CW (editor): Bedae: Opera de Temporibus, Cambridge Mass, The Mediaeval Academy of America, pp. xiii; 125-129; 232-235; 362-365, 1943.	1
Jones, HL (translator): The geography of Strabo Vol. 1, Heinemann, 1917, pp 17; 19; 201; 203; 205. The geography of Strabo Vol. 3, Heinemann, 1923, pp 142-155. The geography of Strabo Vol. 8, Heinemann, 1932, pp 452-453; 495 (Loeb Classical Library).	1

Kathiawar, C.: Sites on the coast, Ancient India, Vol. 18 & 19. pp. 178-180, 1962-1963.	1
Laird, ES: Tides (ocean), up to Newton in, (History of the Geosciences: an encyclopedia, Garland, 1996) (article for encyclopaedia.	1
Lubbock, JW: On the tides, Philosophical Transactions of the Royal Society, Vol. 127, pp 97-140, 1837.	1
M'Crindle, JW (translator): The invasion of India by Alexander the Great as Described by Arrian: Curtius, Diodoros, Plutarch and Justin, Constable & Co., pp. 162-165; 258-260, 1896, with notes on other editions.	1
Moule, AC: The Bore on the Ch'ien-t'ang River in China, T'oung Pao (Annual review), Vol. 22, No.3, pp. 135-188, 1923, with attachment Tide Times, 24 <sup>th</sup> September A.D. 1056, p. 154, 2 photocopies.	1
Meteorology, pp.483-494 in, Needham, J: Science and civilisation in China, Vol. 3 Mathematics and the sciences of the heavens and the earth, Cambridge University Press, 1959.	
Paton, WR: Polybius: the histories, pp. 293; 305-311; 323. Vol. 6, William Heinemann; G. P. Putnam's Sons, 1927. Attached article on Pytheas, pp. 828 in, (Encyclopedia Britannica).	1
Posidonius, (article on) Oxford Classical Dictionary, p. 868, 2nd ed., 1970.	1
Panikkar NK: The concept of tides in ancient India, Indian Journal of History of Science, 6, pp. 36-50, 1971.	1
Pliny the Elder: Natural history, Vol.1, preface and Books I-II / with an English translation by H. Rackham, 1942-1963, pp. 124-129; 342-349 (Loeb Classical Library).	1
Rizvi, Saiyid Samad Hussain: Ancient Indian traditions about tides of the ocean, [1980?], 7p. (photocopy of typed manuscript).	1
Sarton, G: Introduction to the History of Science, Williams & Wilkins Co, pp.559; 568, 1927, with added notes on back of p. 559.	1
Macrobius: commentary, pp. 214-216 in, Stahl, WH (translator): Macrobius: commentary on the dream of Scipio, New York, Columbia University Press, 1952, pp. xi, 278 pp.	1
Webster, EW (translator): Meteorologica, pp.364b-369a in, Ross, WD (editor): The works of Aristotle, Vol. 3, Oxford University Press, 1931.	1
Wiedemann, E: Uber al kindi's schrift uber ebbe und flut, Annales der Physik, 67, pp. 374-387, 1922, attached rough translation by David Cartwright, 1998.	1

Wiedemann, E: Beitrage zur geschichte der naturwissenschaften, pp.1; 34-37 in, Sitzungsberichte der Physikalisch-Medizinischen Sozietat zu Erlangen, Bd. 44, 1913 (the whole paper occupies pp. 1-40).	1
Wright, JK: The geographical lore of the time of the Crusades: A study in the history of medieval science and tradition in Western Europe, New York, American Geographical Society, 563 pp. 1925. American Geographical Society Research Series No. 15, pp. 18-19; 190-197, 1925.	1
Yang, Z; Emery, KO & Xui, Yui: Historical developments and use of thousand-year-old tide-prediction tables, Limnology and Oceanography, Vol. 34, No.5, pp. 953-957, 1989.	1
<b>Notes and correspondence</b>	
Eleven pages of hand written notes on various references including; Riddle, E: A treatise on navigation, and nautical astronomy, 1824.	1
One page chart of yearly tidal changes with calculations attached.	1
Copy of email from Duncan Agnew University of California, San Diego, 7 September 2000, from colleague at NASA about how mysterious tides in the 17 <sup>th</sup> Century.	1
<b>Miscellaneous Historical Papers</b>	
Association D'Océanographie Physique publication scientifique No.15: Bibliography on tides 1665-1939 (copy includes pages up to 1866), Geofysisk Institutt, 1955, pp. 6-33.	2
Bowditch, N: American practical navigator: an epitome of navigation, Vol. 1, 1984 ed., Defense Mapping Agency Hydrographic/Topographic Center, Publication No. 9, 1984, pp. i-vi.	2
Brush, SG and Landsberg, HE: The history of geophysics and meteorology: an annotated bibliography, New York, Garland, 1985, pp. 100-101; 274-277.	2
Cartwright, DE and Smith, ND: Buoy techniques for obtaining directional wave spectra, pp. 111-136 in, International Buoy technology symposium, Washington, DC (1964), Washington, Marine Technology Society, 1964.	2

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Cartwright, DE: An unusual tidal mode west of Scotland, reprinted from Convegno internazionale sul tema fisica dei mari, (Physics of the sea), held Trieste, 13-16 October, 1971, pp. 91-95, 1974.	2
Clerke, AM: (Biography of) Richard Dunthorne (1711-1775), p. 235 in, Dictionary of National Biography, vol. 16, 1888.	2
Cliver, EW, Liebowitz, RP, Silverman, S: Why history? p.385 in, EOS, vol. 77 (40), 1996.	2
Cook, A: J.-D. Cassini et ses collegues anglais, Sur les traces des Cassini, Astronomes et observatoires du sud de la France, Congrès national des societies historiques et scientifiques, Nice, Oct. 1996, pp.129-135.	2
Cordoliani, A: Les manuscripts de comput ecclesiastique de l'abbaye de Saint-Gall du VIIIe au XIIe siècle, in, Zeitschrift fur Schweizerische Kirchengeschichte, Vol. 49, pp. 161; 168-177, 1955.	
Darwin, GH: Tide pp. 938-961 in, Encyclopaedia Britannica, 11 <sup>th</sup> ed., Vol. 26, 1911 and Encyclopaedia Britannica: Note on the publishing history of the article "Tide" in the Encyclopaedia Britannica GWP to DEC 1 October 1988, 2 pages.	2
Chapter 1: The ancient world & Chapter 2: The middle ages pp. 3-38, in, Scientists and the sea 1650-1900: a study of marine science, Deacon, M, 2 <sup>nd</sup> ed., Ashgate Press, 459 p., 1997.	2
Robert's tide-predicting machine in, The Engineer, pp. 447-448; 450, December 19, 1879.	2
Gillet, A.: Une histoire des marees, Belin, 1998, information leaflet.	2
Healy, MJR: A critical table of two-decimal logarithms, reprinted from Applied Statistics, Vol. 16, p. 86, 1967.	2
Hisard, P: Un episode peu connu de la guerre dans le Pacifique, Rendez-vous Manqué avec la Maree, MET-MAR, Vol. 144, pp. 34-43, 1989.	2
Hughes, Paul: Implicit Carolingian tidal data, Early Science and Medicine, Vol. 8, No. 1, pp. 1-24, 2003.	2
Hughes, Paul: [Biography of] Dessiou, Joseph Foss (1769-1853), Dictionary of National Biography.	2
The pronounciation of Edmond's or Edmund's* name and that of his comet in, International Halley Watch Newsletter, No. 3, pp. 3-4, 1983.	2

Ishiguro, S.: An electronic analogue method for tides and storm surges, and some applications to the north sea, pp. 265-269 in, Proceedings of the Symposium on Mathematical-Hydrodynamical Methods of Physical Oceanography, September 1961, Hamburg, Institut für Meereskunde, 1962.	2
Jones, JE: From astronomy to oceanography: a brief history of Bidston Observatory, Ocean Challenge, Vol. 9, no. 1, pp 29-35, 1999.	2
Jong, T. de and Soldt, WH van: The earliest known solar eclipse record redated, Nature, Vol. 338, pp. 238-240, 1989.	2
Poincare, Henri [edited by Newman, JR]: Mathematical creation, pp. 14-17 and Newman, JR: Laplace, pp.44-48 in, Kleine, M: Mathematics in the modern world, San Francisco, W.H. Freeman, 1968.	2
McClintock, FL: The voyage of the 'Fox' in the Arctic seas, a narrative of the discovery of the fate of sir John Franklin and his companions, London, John Murray, 1860, title page and frontis piece together with a geological map of the Arctic Archipelago with the line of junction of the Atlantic and Pacific tides & Haughton, S.: On the tidal of streams of the artice archipelago, pp.396-399.	2
McKiernan, Patrick L.: Tarawa: the tide that failed, in, United States Naval Institute Proceedings, pp. 38-49, 1962.	2
Maskelyne, N.: Observations on the Tides in the Island of St. Helena: in a Letter from the Rev. Nevil Maskelyne, A. M. F. R. S. to Thomas Birch, D. D. Secretary to the Royal Society, in, Proceedings of the Royal Society of London, Vol. 52, pp. 586-593, 1762.	2
Monk, W: Obituary for Frank Snodgrass (1920-1985) in, Eos, Vol. 66, pp. 753, 1985.	2
Neugebauer, O.: The study of wretched subjects, Isis, Vol. 42, p. 3, 1951.	2
Parker, Bruce: The tide predictions for D-Day, Physics Today, Vol. 64, no.9, pp. 35-40, 2011 and draft copy?	2
Roberts, E: Preliminary note on a new Tide-Predicter, Proceedings of the Royal Society of London, Vol. 29, pp. 198-201, 1879.	2
Roberts, GK: Scientific academies across Europe pp. 227-251 in, Goodman, D. and Russell, CA: The rise of scientific Europe, 1500-1800, Milton Keynes, Hodder and Stoughton/Open University, 437 pp., 1991.	2
Rossiter, JR: The history of tidal predictions in the United Kingdom before the Twentieth Century, Proceedings of the Royal Society of Edinburgh. Section B. Biology, Vol. 73, no.2, pp. 13-23, 1972.	2

Sager, G: The tides as an oceanographic factor in the historical development of the North-Central Europe, pp. 13-23 in, Premier Congres international d'histoire de l'oceanographie, Monaco, 1966, 1968 (Bulletin de Institut océanographique, special No. 2).	2
Shoolbred, JN: Tides in the River Mersey: half-tide level at Liverpool, pp. 161-164 in, British Association for the Advancement of Science Report for (1875)	2
Sixth International Congress on History of Oceanography, 15-20 August 1998, Quingdao, China (second circular), information brochure.	2
Thomson, W: The tide gauge, tidal harmonic analyser, and tide predictor, Excerpt minutes of Proceedings of the Institution of Civil Engineers, Vol.115, session 1880-81, Part iii, London, Institution of Civil Engineers, pp. 1-74, 1881.	2
The Time-Ball of St Helena, in, Nautical Magazine, Vol. 4, pp. 658-661, 1835.	2
Woodworth, PL: Three Georges and one Richard Holden: the Liverpool tide table makers, extract from Transactions of the Historic Society of Lancashire and Cheshire, Vol .151, pp. 19-51, 2002.	2
Zabell, SL: Buffon, Price and Laplace: scientific attribution in the 18 <sup>th</sup> Century, Archive for History of Exact Sciences, Vol. 39, pp. 173-181, 1988.	2
<b>Notes and correspondence (Miscellaneous papers of historical interest)</b>	
Six loose pages (copies) in Latin of luna information showing latitudes?	2
1 map showing tides and waves of the world, no date given.	2
2 copies of, Map of the world illustrating the principal features of the land and co-tidal lines, 1863.	2
3 photographs, including the tide recording installation at Portmagee Bridge, County Kerry, (May 1973-May 1974).	
Card with image and text "Observatory, on which the time ball was formerly exhibited", whereabouts unknown.	2
Letter from Paul Hughes (John Moores University Liverpool) to David Cartwright, dated 27 <sup>th</sup> December 1999. Discussing an article Paul is writing asking for it to be critiqued.	2
Catalogue print out of Jeremiah Dixon (1726-1782) biography.	2

1 Page of notes on D-Day Bathymetric Survey (1943).	2
1 Page of notes on Port of London tidal observations 1801-1837 seen in Royal Society Archives, 2 <sup>nd</sup> June 1981.	2
3 Pages of hand written bibliographical notes including AT Doodson, The analysis of high and low waters.	2
A note sent to David Cartwright from George GWP with a note, book details: Lubbock, JW: Account of the "Traite sur le flux et reflux de la mer" of Daniel Bernoulli; and a treatise on the attraction of ellipsoids. London, Knight, 1830, plus bound with 2 other books from Bernard Quaritch catalogue 1249, received 27 <sup>th</sup> April 1998.	2