The Measurement of Ocean Currents.[1]

THE application of Bjerknes' circulation theory to the movement of water masses in the oceans has provided a method of increasing utility for the study of ocean currents. If the temperature and salinity of the ocean are given for several known depths at several positions, the difference in velocity of the current at the surface and the various depths can be computed and mapped. It is frequently possible to make observations down to a depth where it may be assumed that no appreciable current exists.

In 1914 a survey in the neighbourhood of the River St. Lawrence was carried out for the Canadian Government by Dr. Johann Hjort and the data obtained were worked up by Prof. Sandström, whose explanation of the theory and its application in hydrography has hitherto been the only work of the kind in the English language. It is not without interest that this neighbourhood is stated to be the first to be charted by a vessel employed solely for that purpose, and that this survey was conducted by Captain Cook immediately previous to his expedition of discovery to the South Seas and the Pacific, which resulted in the addition of Australia to the British Empire.

The U.S. Coast Guard in *Bulletin* No. 14 has published a full account of Bjerknes' theory and the method of its application by Lieut.-Commander E. H. Smith, who is in charge of the scientific work carried out by the Atlantic Ice Patrol, a service inaugurated after the loss of the *Titanic* to warn vessels passing south of Newfoundland of the position of the larger icebergs, of which the Patrol follows the drift. The account is based on a series of lectures by Prof. Helland-Hansen at Bergen, and the examples by which the practical application of the theory is illustrated are taken from observations by the Ice Patrol. It is of particular interest that " the currents calculated from the observational data collected in 1922 off the Grand Banks agree very closely with the drifts of the icebergs of that same year and region." Here the method shows every prospect of being of definite and immediate economic value.

The *Bulletin* contains two handy tables from Hesselberg and Sverdrup's formulæ, to allow for the effect of pressure at different depths upon the specific volume at atmospheric pressure, a correction which becomes necessary where considerable depths are investigated, as in this area. Taking this into account, the method of calculation employed, involving the calculation of the dynamic depth, is in the opinion of the writer not so simple as that employed by Sandström—both methods yielding the same final result.

It is noteworthy that the big German scientific expedition arranged by the late Prof. Merz, which is at present engaged in a very complete investigation of the physical conditions of the South Atlantic, has planned its route in such a way as to make full use of the application of this theory in determining the currents and consequent exchange of the water masses.

It is not unreasonable to hope that this method may provide the means of investigating fluctuations in the north-going current of warm Atlantic water which bathes the western coast of Great Britain and affects our climate and sea fisheries. H. W. H.

[1] " A Practical Method for Determining Ocean Currents," by Edward H. Smith, Lieut.-Commander U.S. Coast Guard. *Coast Guard Bulletin*, No. 14. Washington, 1926.

University and Educational Intelligence.

CAMBRIDGE.—Prof. A. C. Seward, in his address on resigning the office of Vice-Chancellor, announced the offer of 150,000 dollars from the Trustees of the Laura Spelman Rockefeller Memorial for the establishment of a chair of political science. The new Vice-Chancellor is the master of Sidney Sussex College, the Rev. G. A. Weekes. The late Disney professor of archæology, Sir William Ridgeway, bequeathed to the University his collections of Stone, Bronze, and Iron Ages, including his series of barbaric currency coins, his collection of barbaric jewellery and of articles of ancient pottery.

J. D. Cockcroft, St. John's College, and J. A. Ratcliff, Sidney Sussex College, have been elected to the Clerk Maxwell Scholarship.

LEEDS.—Mr. E. L. E. Wheatcroft has been appointed to the newly created chair of electrical engineering. Mr. Wheatcroft read mathematics and engineering at Cambridge. His practical training was gained in the works of the British Thomson Houston Company and, later, with the General Electric Company in America. He has had an extensive experience in certain phases of heavy electrical engineering (particularly in regard to problems relating to the generation and transmission of power), and has carried out a considerable volume of research work.

In making this appointment the University has in mind the desirability of developing the Department of Electrical Engineering. Compared with some parts of the country, Yorkshire has followed a progressive policy in the distribution of electrical power, and it is felt that this policy should be reflected in the attention paid within the University to the study of the scientific principles of electrical engineering.

LIVERPOOL.—By the will of Mr. Samuel Turner, who died on July 18, the residue of his property is bequeathed to the University " to be applied as the University authorities in their discretion may think fit for the furtherance and advancement of medical research into the diseases of phthisis and cancer, and any kindred diseases." The bequest will apparently amount to approximately 30,000*l.* but will not be available until after the death of Mr. Turner's widow.

LONDON.—The following free public science lectures are announced :—" The Philosophic Significance of Spiritual Values," Prof. G. Dawes Hicks (at University College, October 1) ; " Is Mind governed by Laws ? " Prof. C. Spearman (at University College, October 12) ; " The Motivating of Conduct," P. Hopkins (at University College, November 4) ; " Extreme Cold," Prof. W. H. Keesom (at Imperial College of Science, October 13) ; " The Interaction of Pure Scientific Research and Electrical Engineering Practice," Prof. J. A. Fleming (at Institution of Electrical Engineers, eight, beginning October 20) ; " Some Applications of Modern Science, Prof. E. V. Appleton and others (at King's College, seven, beginning October 7) ; " The Place of Mind in an Organic Theory of Nature," Prof. C. Lloyd Morgan (at King's College, three, beginning October 19) ; " Evil Spirits in Babylonian Religion," C. J. Gadd (at King's College, October 25) ; " Early Arabian Tribes," S. Smith (at King's College, December 10) ; Swiney Lectures on geology, Prof. W. T. Gordon (at King's College, twelve, beginning November 5) ; " The Present position of the Logic of Induction," Dr. C. D. Broad (at King's College, December 1).