

LETTERS TO THE EDITOR.

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The Hydrography of the Faeroe-Shetland Channel.

IN that portion of the programme of international investigation of the North Sea (as finally drawn up by the conference at Copenhagen last July) which provides for a coordinated series of hydrographic cruises at intervals of three months, it falls to Scotland to investigate the Faeroe-Shetland Channel and adjacent waters. It was important that the work should be begun as soon as possible, and especially so in order that the sea-temperatures, &c., should not go unrecorded in this abnormal season; but it would have been impossible to begin at so short notice had not Dr. Hjort, the director of the Norwegian investigation, helped by the loan of apparatus and by permitting his hydrographic assistant, Mr. Helland-Hansen, to come over and inaugurate the work. The Admiralty gave the use of H.M.S. *Jackal*; Lieutenant and Commander Sharpe and Mr. Helland-Hansen were conjointly responsible for the observations, and the report will be drawn up by Mr. Helland-Hansen, who has sent me the preliminary account which follows. The *Jackal's* course lay from the Moray Firth to Lerwick, thence in a north-easterly direction nearly to the Norwegian coast, then west to the Faeroes, thence to Fair Isle and out into the North Sea again; and it was so planned as to give, over each of the more important areas, double and approximately parallel lines of observations. Between August 25 and September 1, hydrographic observations were taken at twenty-six stations, and in addition surface-temperatures were taken every hour. A small number of plankton samples was collected also, but not to the extent that will be done on future cruises.

D'ARCY W. THOMPSON.

The Cruise of H.M.S. "Jackal," August, 1902.

The following short account is only a preliminary one and is given with some reservation, as the time has not yet permitted to draw the final results. In some weeks, however, we shall know the results of the investigations of the Norwegian fishery steamer *Michael Sars* from the neighbouring seas during the same period, and then we shall be able to work out the material from the *Jackal* very completely.

The best result from the *Jackal* expedition is, perhaps, that for the time in question we shall be able partially to solve the problem, equally important to hydrographers and biologists, of the quantity of Atlantic water entering the North Sea and the Norwegian Sea. Many years ago, and by different investigators, it was demonstrated that a large quantity of Atlantic water moved to the north between the Faeroes and Shetland (the Gulf Stream), and also that Atlantic water to the north and north-east of Scotland flowed in a south-westerly direction into the North Sea. Now we have undoubtedly found some unknown details of great importance.

(1) *The Gulf Stream is in the Faeroe-Shetland Channel divided from beneath by a deep wedge of cold and less salt water coming from the north.* The influence of this cold water is traced even to the surface. Thus we have really two parallel branches of the Gulf Stream from the Faeroe-Shetland Channel to the north. This fact may be shown by the following table. Station xii. (61° 2' N., 1° 10' W.) is situated near Shetland, and station xvi. (61° 47' N., 6° 4' W.) near the Faeroes. The temperatures and salinities at, for instance, 300 metres' depths—stations xiii. (61° 12' N., 2° 5' W.), xiv. (61° 25', 3° 24' W.) and xv. (61° 35' N., 4° 39' W.)—are very typical.

Stations.

Depth in metres.	xii.		xiii.		xiv.		xv.		xvi.	
	Tem. °C.	Salin. ‰	Tem. °C.	Salin. ‰	Tem. °C.	Salin. ‰	Tem. °C.	Salin. ‰	Tem. °C.	Salin. ‰
0	11.3	35.33	11.2	35.31	9.5	34.96	8.9	34.98	9.2	35.19
40	10.8	35.32	10.7	35.31	10.0	35.07	8.4	35.11	8.7	35.17
100	9.4	35.32	9.4	35.31	ca.	ca.	8.2	35.20	8.5	35.19
200	Bottom		8.9	35.32	6.3	35.10	7.7	35.20	Bottom	
300			8.5	35.32	3.6	34.97	6.9	35.14		
400					3.6	34.97	6.4	35.09		
500			6.6	35.17	1.2	34.95				

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As the cold water from the north and the warm water from the south have very different influences upon organic life, the discovery of such a division of the Gulf Stream will probably be of importance in understanding the distribution of the organisms.

(2) *In August comparatively little Atlantic water enters the North Sea in the surface between Scotland and Shetland.* The influx of Atlantic water chiefly takes place close to the coast of Scotland, at a distance of about twenty to forty nautical miles away from the coast. [Further away, at about eighty miles' distance, the surface-water seems to move in a northerly direction. This cannot be certainly decided, however, until a minute examination of the hydrodynamic conditions has taken place.]

(3) *Another branch of Gulf Stream-water enters the North Sea between Shetland and Norway.*

(4) In the north-western part of the North Sea we find at the bottom (below thirty to forty fathoms from the surface) a layer of remarkably cold and salt water; it is much saltier than the surface-water. It is too salt to be Arctic water and too cold to be summer water from the Atlantic Ocean. I think it probable that this bottom layer consists of Atlantic water that has been at the surface in winter time. Our hydrographical observations, then, seem to indicate that the influx of Atlantic water into the North Sea in winter time takes place to a much greater extent than in summer time. To find the laws of the variations of this influx, however, we must have autumn and winter observations.

The regions where the *Jackal* collected her material this year were previously incompletely explored. I have only now had an opportunity to compare our observations with those found in Mr. H. N. Dickson's excellent paper on "The Circulation of the Surface-Waters of the North Atlantic Ocean" (published 1901). Unfortunately, Mr. Dickson's observations are limited to the surface. It seems as if the influx of the cold water from the north and the east Icelandic Polar current this year were much stronger than in, e.g., 1896. In the western part of the channel, the surface-temperatures this year were about 1°-1½° C. lower than in 1896, and the Gulf Stream seems to have been narrower. This may probably be connected with the unusually cold weather of this year.

B. HELLAND-HANSEN.

Matriculation Requirements in Scottish Universities.

IN reference to a remark made in my address published in NATURE last week, Prof. A. Gray tells me that matriculation in the Scottish universities is no longer the simple matter it was in my time. Before entering on his qualifying course of study, every candidate for a degree in arts or science must now pass a preliminary examination.

JOHN PERRY.

Royal College of Science, London, October 27.

The Neglect of Anthropology in British Universities.

THE recent publication in NATURE (August 28, p. 430) of an abstract of Prof. Haddon's presidential address to the Anthropological Institute, affords an opportunity of bringing before the scientific public, by way of contrast, a concise statement of what is being at present done in Britain to forward anthropological science.

Of all the universities in Britain, two only attempt systematic teaching in this subject, viz. Oxford and Cambridge, while in a third, viz. Aberdeen, there has existed since 1899 a society having for its object the promotion of anatomical and anthropological research. In Oxford there is a poorly paid professorship of anthropology, but in Cambridge even this scanty recognition is not vouchsafed to the subject, for in that University there are two lectureships of but 50*l.* a year each, established in 1899 and 1900 respectively for five years. One of these lectureships is devoted to physical anthropology and is attached to the School of Human Anatomy. The other, held by Prof. Haddon himself, is for ethnology, and covers the wide field of all relating to the industries, customs and beliefs of primitive peoples, now in many cases approaching extinction, and the loss by disinterestedness of their primitive customs and unwritten records. It cannot be expected that any real advance in these branches of science can be made in Britain while they are so pitifully starved, and while the men holding mere precarious appointments are not deemed worthy of their hire.