

LETTERS TO THE EDITOR.

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Stockholm International Conference on the Exploration of the Sea.

THE publication of a portion of the report of the Stockholm Conference in NATURE of November 9 (p. 34) shows, I suppose, that the matter is now open for discussion by scientific men; and it is certainly desirable in that case that marine biologists and others interested in Fisheries investigation should express their opinions on the resolutions, and especially the recommendation, of the delegates. I feel sure that those gentlemen who attended the Conference and took part in drawing up the report will not consider such discussion ungracious, or that we who criticise are in any way wanting in appreciation of their labours. It is because we recognise the great importance which this report, with its series of resolutions, ought to have that we think it worth while to urge that some parts of it should receive careful re-consideration.

Although one may cordially approve of many of the resolutions passed by the delegates, still the report is certainly in some respects a disappointing document; and there is internal evidence to show that this is the result of compromises which were perhaps inevitable, but which have probably led to the omission of what might have been a valuable programme of work.

Last summer, when the arrangements for the Conference were announced, hopes ran high, and it was very naturally and confidently anticipated that the report, when issued, would contain strong recommendations to the Governments concerned involving the use of sufficient boats and men to carry out a definite scheme of biological investigation during a definite period. For surely what we need most at the present time in the interests of more exact fisheries knowledge is the nearest possible approximation to a census of our seas—beginning with the territorial waters. Most fisheries disputes and differences of opinion are due to the absence of such exact knowledge.

If anything approaching a census or a record of trustworthy fisheries statistics had been taken fifty years ago, it would now be invaluable to fisheries inspectors, superintendents and local authorities, as well as to biologists. Our successors will justly reproach us if with our increased knowledge and opportunity we let the twentieth century commence without inaugurating a scheme of practical work which will give us the desired statistics.

The Stockholm report unfortunately says nothing to the point in regard to all this. In place of asking for boats and men, it urges—in the only recommendation of the Conference ("Résolutions textuelles," p. 12, C)—the establishment of a "central bureau," in which the work will apparently in large part be that of a physico-chemical laboratory.

I hope I shall not be misunderstood in this. I do not undervalue the importance of hydrographic work in its connection with the fisheries (and I am only considering it in that connection at present) as carried on of late years, chiefly by the Scandinavians; but it is curious how in this report the obvious, primary, biological investigations are passed lightly over and the secondary physico-chemical work in the central bureau is strongly recommended. Part of the report is called a programme of work, but it contains no definite programme of biological work. I suppose it may be said, all that will be arranged in time at the central bureau, but in the meantime an opportunity is lost. If nothing but an International Committee and a central bureau is asked for, probably that (at most) is all that will be obtained, and it is not all that is necessary. In my opinion, what we want at the present time is not conferences, or committees, or a central bureau, so much as boats and men, and work at sea.

W. A. HERDMAN.

Croxteth Lodge, Liverpool, November 16.

P.S.—I see Mr. Allen's letter in to-day's NATURE. On the whole he seems to regard the report with more favour than I do; but on most points we are in agreement. It is certainly curious to omit the English Channel and the Irish Sea from an investigation in the interests of the British fisheries.

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The Meteors of Biela's Comet.

WITH your permission I should like to call attention to the possibility of a return of the Andromedes meteors on or about November 23. A consideration of the period of the shower, as deduced from all its known returns, had some time back led me to the conclusion that this year was more likely to be favoured with it than last. The fact that it was not seen last year is, as far as it goes, in support of my contention. But, of course, the stream may take less than a year to pass the point of the intersection of the orbits, in which case the earth may very possibly not pass through it at this return of the meteors.

E. C. WILLIS.

South Radwello, Norwich Lodge, Ipswich.

MR. WILLIS'S inference that some Biela meteors may be visible this year seems quite in accordance with the historical facts of the stream. The parent comet was observed between 1772 and 1852, and its mean period from twelve revolutions was 6.71 years. If this also represents its mean orbital time since 1852, perihelion would occur in September 1899. But the last four observed returns from 1826 to 1852 averaged 6.62 years, which would indicate perihelion at the end of January 1899. On the whole it seems highly probable that when the earth crossed the comet's orbit in November 1898 it was too far in advance of the cometary nucleus for any meteoric shower to result. It also appears likely that at the meeting, now imminent, of the earth and cometary orbit, the former will encounter a section of the stream too far in the wake of the comet for it to be very thickly strewn with its material. However, this remains to be seen. The apparition of a fine shower of these meteors on November 23, 1892, sufficiently proves that the period of thirteen years intervening between the rich displays of 1872 and 1885 did not exactly represent two returns of the same part of the meteoric group. In 1872 the earth passed through a section of the stream following the comet, while in 1885 it encountered a part preceding the comet. Intervals of twenty years (equivalent to about three periodical revolutions of the comet) seem favourable to recurrences of the meteoric shower as it was observed in 1798 and 1838 (including two periods of twenty years) and in 1872 and 1892. I think the next brilliant return of the meteors will certainly occur in 1905, and that a minor display is very likely to be visible in 1899. If so, the meteors will appear in the early evening of November 24 next, the longitude of the node being $242^{\circ}2$.

According to the investigations of Schulhof and Abelmann, the planet Jupiter will greatly disturb this meteoric stream in about March 1901 and cause a minus displacement of the node to the extent of $6^{\circ}2$. This means that in 1905 the shower will make its apparition on about November 18.

November 15.

W. F. DENNING.

RECENT DEVELOPMENTS OF WIRELESS TELEGRAPHY.

THE efficiency of the system of wireless telegraphy developed by Mr. Marconi has recently been put to some striking tests, with results which are in every respect satisfactory. During the yacht races for the America Cup, descriptive reports of progress were sent by wireless telegraphy from the *Grande Duchesse*, on which Mr. Marconi had his apparatus installed; and as many as four thousand words were transmitted by this means over distances up to thirty miles in the course of a single afternoon.

The method of sending the reports of the yacht races is described by the *Scientific American* to have been as follows:—"The foremast of the *Grande Duchesse* carried an auxiliary mast of sufficient length to give the desired vertical height of 120 feet to a wire, which reached from a short yard on the mast to the table of the operating room below, on which the sending and receiving apparatus was placed. A similar wire was suspended from the foremast of the Bennett-Mackay cable steamer, which was anchored near the Sandy Hook lightship, the starting and finishing point of the races, and also from a mast at the Navesink Highlands. The cable ship and the Highlands had temporary cable connections with New York.

The *Grande Duchesse* accompanied the yachts over the course, and the momentary details of the race, as observed from her decks, were flashed to the cable ship, from which they were sent over the cable to New York, and thence telegraphed throughout the world."

Before leaving the United States Mr. Marconi gave some demonstrations of his system to naval officers and technical experts appointed to report upon its value in naval warfare. With the instruments he had available, perfect communication was kept up between the cruiser *New York* and the battleship *Massachusetts* when the vessels were thirty-five miles apart; and messages were exchanged over a distance of ten miles with a torpedo boat travelling at full speed.

An even more striking demonstration of the utility of wireless telegraphy was given as we went to press last week. It appears from a letter communicated by Major Flood Page to the *Times*, that when Mr. Marconi left New York he cabled to the office of his company in London that he would speak to the Needles from the steamship *St. Paul* on their arrival in English waters. The vessel was expected to pass the Needles about 10 or 11 o'clock on Wednesday morning, and Major Flood Page arrived there on the previous evening, when all arrangements for communication were made. On Wednesday morning, he writes:

"We sent out our signals over and over again, when, in the most natural and ordinary way, our bell rang. It was 2.45 p.m. 'Is that you, *St. Paul*?' 'Yes.' 'Where are you?' 'Sixty-six nautical miles away.' Need I confess that delight, joy, satisfaction swept away all nervous tension, and in a few minutes we were transcribing, as if it were our daily occupation, four cablegrams for New York, and many telegrams for many parts of England and France, which had been sent fifty, forty-five, forty miles 'wireless,' to be despatched from the Totland Bay Post Office."

Upon the vessel itself a *Transatlantic Times* was printed by the ship's compositor, and the subjoined extract from this novel newspaper is of interest in connection with that given above:

"Through the courtesy of Mr. G. Marconi, the passengers on board the *St. Paul* are accorded a rare privilege—that of receiving news several hours before landing. Mr. Marconi and his assistants have arranged for working the apparatus used in reporting the yacht race in New York, and are now receiving despatches from their station at the Needles. War news from South Africa and home messages from London and Paris are being received. The most important despatches are published on the opposite page. As all know, this is the first time that such a venture as this has been undertaken. A newspaper published at sea with wireless telegraph messages received and printed on a ship going 20 knots an hour! This is the 52nd voyage eastward of the *St. Paul*. There are 375 passengers on board, counting the distinguished and extinguished. The days' runs have been as follows:—November 9, 435; November 10, 436; November 11, 425; November 12, 424; November 13, 431; November 14, 414; November 15, 412; 97 miles to Needles at 12 o'clock, November 15. Bulletins:—1.50 p.m. . . . First signal received, 66 miles from Needles. 2.40.—'Was that you, *St. Paul*?' 50 miles from Needles. 2.50.—Hurrah! Welcome home! Where are you? 3.30.—40 miles. Ladysmith, Kimberley, and Mafeking holding out well. No big battle. 15,000 men recently landed. 3.40.—At Ladysmith no more killed. Bombardment at Kimberley effected the destruction of one tin pot. It is felt that period of anxiety and strain is over, and that our turn has come. 4.0.—Sorry to say the U.S.A. cruiser *Charleston* is lost. All hands saved."

In addition to the messages above-mentioned, the *Times* states that passengers availed themselves of the instruments to send greetings to friends in England and America, and when the *St. Paul* was forty miles from shore in one case arrangements were completed by a passenger for a supper party in town upon the night of the arrival of the American Line express at Waterloo Station.

This interesting development of wireless telegraphy solves the problem of the communication of a ship with the shore, so far as ocean liners are concerned; for there should be no difficulty in installing the necessary apparatus, or in training officers to work it. Now that such results have been obtained, advantage should be taken of the system as a means of communication whenever opportunity affords.

SOME RECENT WORK OF THE MARINE BIOLOGICAL ASSOCIATION.

ONE of the most important tasks which can be undertaken by the staff of a sea-side laboratory is the exact description of the relations between the fauna of the neighbourhood and the external conditions. Excellent anatomical work can be performed, as it is habitually performed in all the various marine stations which now exist, by naturalists who are unable to live continuously at the sea-side. In many cases a short visit to a suitable locality will enable an anatomist, aided by the knowledge and experience of skilled residents, to collect in a short time material for the most complete study of a species from the anatomical point of view. But many complicated problems connected with the breeding of marine animals, and others, equally complex, which arise from even the most superficial study of their distribution, can only be solved by continued observation extending in many cases over years; and such observations can only be conducted by resident naturalists, with the resources of a properly equipped laboratory at their command.

It is well known that officers of the Marine Biological Association have for years been engaged in the study of questions connected with the breeding of fishes and other marine animals. The last number of the Association's *Journal* contains a report of some 180 pages, illustrated by sixteen charts, which shows that Mr. Allen, the Director of the Plymouth Laboratory, is fully alive to the need for continuous and careful study of the way in which the fauna of the neighbourhood is distributed.

The report deals with the strip of sea-bottom which runs from a point just west of the Eddystone Lighthouse to the Start, at a depth of from about 28 to about 35 fathoms.

A careful description of the nature of the sea-bottom throughout this area is given, and a useful suggestion is made as to the possibility of a uniform nomenclature, by which descriptions of the character of a sea-bottom may be made more clearly intelligible than they are at present.

The bottom deposit is washed through a series of sieves, with apertures varying from 15 millimetres to 0.5 mm.; and a distinct name is given to the material which rests upon each of these sieves, if the deposit is washed through them in order. Six kinds of material are thus recognised, from "stones," which will not pass through a sieve with perforations of 15 mm. diameter, to "medium sand" which remains on a sieve with a mesh of 0.5 mm. The material which passes through apertures of 0.5 mm. diameter is separated into two portions by being shaken up in sea-water. Anything which settles in one minute is spoken of as "fine sand," anything which remains in suspension after one minute is spoken of as "silt."

When a deposit has been separated in this way into constituents of different degrees of fineness, the various constituents are dried and weighed, and the weight of each, expressed as a percentage of the total weight of the sample of deposit, is given for each locality.

This method of describing the texture of a sample of the sea-bottom is simple, and not very laborious. The general adoption of such a method would certainly make it easier than it is at present to compare descriptions by various writers.