

LETTERS TO THE EDITOR.

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Effects of Lightning upon Electric Lamps.

In the last number of NATURE, Prof. Wood calls in question the reality of the remarkable phenomenon revealed by Mr. Webb's photographs, attributing the results obtained to a motion of the camera during exposure; laying special stress on the alleged fact that "a lamp close to the camera, and a distant lamp, show the trails on the same scale."

To this I reply that the fact is just the reverse, as is well shown in Fig. 4, which exhibits nine lamps which are situated in order of sequence along a strongly curved shore, the pictures of four lying to the left and of five to the right of that of the near lamp. It will be seen that there is a regular diminution of scale in these pictures as we pass from left to right, corresponding to the increase of length of the chords of the bay. I would remind the reader that at the conclusion of his letter (p. 343), Mr. Webb expressly states that on a subsequent occasion he actually saw a stream of electricity descending from an arc lamp towards the earth. This was a momentary appearance, obtained by so placing himself as to be protected in a measure from the glare of the lightning.

From my communications with Mr. Webb, and from the photographs themselves, I am satisfied that the camera was lying at rest, except perhaps as regards the fifth flash of the picture Fig. 6, which may possibly have struck while Mr. Webb was in the act of removing the camera; a point about which I have written to make inquiry. Should such prove to be the fact, I would withdraw my "digression" (p. 344) relative to the flash in the middle of Fig. 6.

G. G. STOKES.

Cambridge, February 24.

Stockholm International Conference on the Exploration of the Sea.

UNDER this title there appeared in NATURE, during November and December last year, several letters from some eminent British biologists containing criticisms of the resolutions of the Stockholm Conference. The principal objections to the conclusions at which the Conference arrived are:—

(1) *That the Conference has not elaborated any definite programme of biological work.*

I fully agree with Prof. Herdman that the biological part of the programme needs further development before it can be put into execution. The Conference has only drawn up the outlines of that part of the programme which regards fishery experiments, marking of fishes, &c., so far as they can be considered applicable to all parts of the area concerned. It is evident that, while the instruction for hydrographic work, deep-sounding, &c., will hold as well for the shallow depths of the southern parts of the North Sea as for the 2000-3000 metres depths of the Norwegian Sea, the character of the biological research and the fishery experiments will be somewhat different in the eastern and western parts of the North Sea, in the Barents Sea, and in the Baltic. It must be left to the specialists and the fishery authorities of each country to propose detailed rules for the experimental and statistical work as regards the most appropriate manner of investigation of the adjacent areas. It will be for the Governments to take care that the initiative thus taken is duly considered and made useful in the organisation of the co-operation, either by instituting the Central Bureau and Council at once, or—as an introductory step to this—by assembling the Commission mentioned under the head H of the Resolution. The most urgent thing at present is to ascertain if the different Governments agree in principle to the idea of co-operation or not. The Swedish Government some months ago communicated to the Governments of the North Sea powers and Russia, that it accepted the programme of the Stockholm Conference, and is resolved, in case of agreement on the part of the other Governments interested, to ask from the Riksdag the funds necessary to carry it out. On the same occasion, the Swedish Government requested the Hydrographic Commission to work out a detailed programme for the Swedish part of the investigation, and to calculate the costs. An abstract of this plan will shortly be published in the *Scottish Geographical Magazine*.

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The meteorological work is not mentioned in this plan, otherwise than by reference to the detailed instruction contained in section A of the Resolution. The plan of the biological work and fishery experiments is illustrated by two maps. The annual costs are calculated at 3170*l.*, or with deduction for ships, coal, &c., 1000*l.* It must be well borne in mind that this plan is liable to alteration, and does not represent what we are to do, but what we propose to do, in case the co-operation is realised. To the note of the Swedish Government concerning the co-operation proposed by the Stockholm Conference, favourable replies have been received from the Norwegian and the German Governments.

(2) *That the Conference has not recommended to the Governments concerned the use of sea-going, well-equipped steamers for investigations of this kind.*

The necessity of having sea-going ships for such purposes will scarcely need recommendation. Several of the Governments in question, as Russia, Denmark, Norway, Sweden, have already procured, or made arrangements for procuring, steamers excellently fitted for the co-operative work. But the number and size of such ships must be left to the decision of each Government.

(3) *That the area to be investigated ought to have been extended to some part of the Atlantic proper.*

This seems to me to be the most serious objection hitherto raised. It seems, in fact, indispensable to keep some account of the state of the Atlantic W. of the Channel, and S. of the Wyville Thomson and Faroe Iceland ridge.¹ On the other hand, it must be agreed that, if a certain limit must be fixed, the Strait of Dover and the two ridges above-mentioned constitute the only natural boundary for a co-operation of the North Sea powers.

(4) *That the Central Bureau and laboratory proposed by the Conference is unnecessary, and might be substituted by some more elastic organisation.*

When listening to the proceedings of the Seventh International Geographic Congress at Berlin last year, I noticed that international co-operation was recommended almost in every case as the best method of attacking geographical problems. Resolutions were passed to such purpose regarding seismological, hydrographical, meteorological problems, antarctic explorations and others. It struck me that nobody seemed to take into account the difficulties combined with the starting and conducting of such co-operative work. I know that there are such difficulties, and I consider that in the present case the difficulties already existing are irrelevant if compared with those which will arise in future, when the organisation shall commence its work. If we only want as much as possible of scientific work of various kind to be done, the elastic (collegial) organisation which Mr. Allen recommends will do; but if we desire unity of work and practical results, we certainly must have a central institution at the head of the co-operation. It is a characteristic fact that this proposal emanated from delegates of most of the countries represented at the Conference. Without entering upon the state of things in other countries, of which I am no judge, I am sure that the prevailing circumstances with regard to fishery matters in my own country are such that we ought gratefully to accept the proposals of the Conference with regard to a central organisation.

(5) *That the Central Bureau, &c., will interfere with the freedom of the specialists and impede the originality of the scientific work at the biological stations.*

It seems not unlikely that the manifold labour of calculating and statistical work incumbent on the Central Bureau will occupy the time of the officials of that Bureau to such an extent that little time will be left for original scientific research on their part; but I cannot realise the possibility that such will be the case with the specialists belonging to the biological stations now existing. The co-ordination of the international research with their scientific work will, of course, be based upon free mutual agreement, wherein all advantages will be on the side of the biologists. Suppose that Mr. A., director of the marine station of X, studies the biology of the halibut, and that Mr. B., of the station Y, is specialist upon the cod or the plaice. Both communicate their wish to get scientific material from the North Sea and Norwegian Sea to the Central Bureau, which requests Messrs. A. and B. to elaborate each a detailed

¹ The position of the British and Danish lines (see the map of the Conference protocols, of which a reproduction has appeared in the *Geogr. Journal*, December 1899) is chosen so as to fulfil this purpose to a certain degree.