LETTERS TO THE EDITOR.

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A Method for the Detection of the Proximity of Ice at Sea.

THIS method has for its basis the varying alteration in the electro-conductivity of sea water in the neighbourhood of melting ice. The conductivity of such water is materially reduced, and is dependent on two separate factors: first, the fall in temperature, and, secondly, the dilution of sea water of high electro-conductivity with water derived from glacier ice of comparatively negligible conductivity.

With regard to the first factor, the fall in conductivity is approximately 2 per cent. per degree centigrade for every degree below 20° C., and with regard to the second factor, namely, admixture of ice-derived water with sea water, the fall in conductivity, as ascertained by direct reading with appropriate apparatus, is as follows:—

(Temperature of experiment throughout =17·8° C.)

Specific conductivity of sea water, as shown by the scale of the apparatus used, =42,000 reciprocal megohms.

With a dilution of 1 part of ice-derived water with 80 parts of sea water, decrease in conductivity is 1 per cent.; dilution of 1 in 50, decrease=3 per cent.; dilution of 1 in 25, decrease=7 per cent.; dilution of 1 in 10, decrease=12 per cent.

It is obvious that the presence of ice-derived water in increasing proportion in sea water will, with a continuous self-recording apparatus, show a continuous fall in the electro-conductivity readings, and will so furnish presumptive evidence of the approach of ice. It is possible, and even probable, that changes in the composition of the water would be more trustworthy than changes in the temperature. In any case, if the two effects were observed side by side, the results of each method would tend to eliminate any disturbing factor peculiar to the other, such as the presence of fresh estuarial water on the one hand, or, on the other, changes in the temperature due to other causes than the proximity of icebergs.

MYER COPLANS.

School of Medicine, The University, Leeds,
May 14.

Pinhole Images.

IN the last paragraph of his letter in NATURE of May 2, Mr. Edser alludes to several ways in which "pinhole" images of the sun's disc may be observed. It is not perhaps so generally known that such images are often produced in great numbers by the reflection of direct sunlight from a glass surface, or by its transmission through a glass plate.

My attention was directed to these images during the recent solar eclipse by observing that direct sunlight, reflected on to the ceiling of a room from a plate of ordinary unsilvered window glass, contained numerous overlapping, but well-defined, crescent-shaped images of the uneclipsed part of the sun's disc. Similar overlapping images could also be traced in the sunlight coming directly through a window pane and falling on the floor, but here the best results were obtained by first using a mirror to reflect the light, after having traversed the window pane, on to the ceiling. The mirror, it should be said, played no part in the production of the images.

These phenomena are not observable with perfectly flat glass, but only with the common kind of window glass, which has a noticeably irregular surface, and appreciably distorts the details of objects seen through it. For the most part a plate of this glass scatters the transmitted light, but here and there, distributed over its surface, are small isolated patches which can be regarded as truly plane-parallel. In the transmission of light these isolated patches act as "holes" relatively to the surrounding and light-scattering parts of the plate, and thus give rise to "pinhole" images. The images noted in the reflected light are obviously produced in a similar manner by regular reflection from any perfectly flat small patches scattered over a surface otherwise irregular. The uniformity in size of the images and their measured dimensions are in accordance with this explanation of their origin.

R. BEATTIE.

Manchester University, May 14.

Meteor-showers towards the End of May.

THE following meteor-showers become due during the last week in May:—

Epoch May 23, 16h. 30m. (G.M.T.), twenty-first order of magnitude. Principal maxima, May 24, 23h. 15m., and May 26, 20h. 5m.; secondary maximum, May 24, 7h. 20m.

Epoch May 27, 6h., third order of magnitude. Principal maximum, May 25, 10h. 30m.; secondary maximum, May 26, 4h. 5m.

Epoch May 29, 23h. 30m., twenty-fourth order of magnitude. Principal maxima, May 26, 4h. 5m., and May 28, oh. 50m.; secondary maxima, May 27, 3h. 10m., and May 29, 13h. 50m.

Epoch May 29, 19h. 30m., thirteenth order of magnitude. Principal maximum, May 31, 10h. 35m.; secondary maxima, May 29, 21h. 35m., and May 31, 18h. 20m.

May 20. JOHN R. HENRY.

THE BRITISH SCIENCE GUILD.

THE sixth annual meeting of the British Science Guild was held at the Institution of Electrical Engineers on Friday last, May 17; and was followed in the evening by a banquet, which was attended by a large and distinguished company, in the Galleries of the Royal Institute of Painters in Water Colours, with the Right Hon. Sir William Mather in the chair. Sir Norman Lockyer, chairman of committees of the Guild, was unfortunately prevented by ill-health from being present at either function. His absence from the banquet was exceptionally disappointing, as the day was his seventy-sixth birthday, and arrangements had been made to mark the appreciation of the members of the Guild of his services to science in general and the Guild in particular by a presentation of plate to him, and a separate token to Lady Lockyer in recognition of her energetic work for the Guild as honorary assistant treasurer and in other ways.

The commemorative gift to Sir Norman co1-