335° + 49°, and 351° + 38°. All these are swift and short, and generally devoid either of streaks or trains.

Bristol, July 31. W. F. DENNING.

P.S.—In 1885 and some other years I have seen, on about July 13, a very definite shower of bright streak-leaving meteors from the point 11° + 48°, and it is a very probable conjecture that this radiant represents the earliest manifestation of the stream of Perseids.—W. F. D.

Floating Eggs.

REFERRING to the remarks of Mr. E. E. Prince in NATURE, July 28, p. 294, on the above subject, I wish to add that the spawn found by me had "the light violet-gray tint" and crape-like appearance he describes. I am very much on the water in harbours frequented by *Lophius*, but never saw any of this spawn before.

We found it in a swirl of the tide off Bantry Bay, where the sea was over 40 fathoms deep, and in the midst of innumerable jelly-fish, which seem to congregate wherever the current is most swift. W. S. GREEN.

Carrigaline.

THE "METEOROLOGISKE INSTITUT" AT UPSALA, AND CLOUD MEASUREMENTS.

THE Meteorological Institute at Upsala has gained so much fame by the investigations on clouds which have been carried on there during the last few years, that a few notes on a recent visit to that establishment will interest many readers.

The Institute is not a Government establishment; it is entirely maintained by the University of Upsala. The *personnel* consists of Prof. Hildebrandsson, as Director; M. Ekholm and one other male assistant, besides a lady who does the telegraphic and some of the computing work.

The main building contains a commodious office, with a small library, and living apartments for the assistant. The principal instrument-room is a separate pavilion in the garden. Here is located Thiorell's meteograph, which records automatically every quarter of an hour on a slip of paper the height of the barometer, and the readings of the wet and dry thermometers. Another instrument records the direction and velocity of the wind.

This meteograph of Thiorell's is a very remarkable instrument. Every fifteen minntes an apparatus is let loose which causes three wires to descend from rest till they are stopped by reaching the level of the mercury in the different tubes. When contact is made with the surface of the mercuries, an electric current passes and stops the descent of each wire at the proper time. The downward motion of the three wires has actuated three wheels, each of which carries a series of types on its edge, to denote successive readings of its own instrument. For instance, the barometer-wheel carries successive numbers for every five-hundredth of a millimetre—760·00, 760·05, 760·1, &c.; so that when the motion is stopped the uppermost type gives in figures the actual reading of the barometer. Then a subsidiary arrangement first inks the types, then prints them on a slip of paper, and finally winds the dipping wires up to zero again.

An ingenious apparatus prevents the electricity from sparking when contact is made, so that there is no oxidation of the mercury. The mechanism is singularly beautiful, and it is quite fascinating to watch the self-acting starting, stopping, inking, and printing arrangements. We could not but admire the exquisite order in which the whole apparatus was maintained; the sides of the various glass tubes were as clean as when they were new, and the surfaces of the mercuries were as bright as looking-glasses.

The University may well be proud that the instruments were entirely constructed in Stockholm, by the skilful mechanic Sörrenson, though the cost is necessarily high. The meteograph, with the anemograph, costs £600, but the great advantage is that no assistant is required to sit up at night, and that all the figures wanted for climatic constants are ready tabulated without any further labour. But the Institute is most justly celebrated for the researches on the motion and heights of clouds that have been carried on of late years under the guidance of Prof. Hildebrandsson, with the assistance of Messrs. Ekholm and Hagström.

The first studies were on the motion of clouds round cyclones and anticyclones; but the results are now so well known that we need not do more than mention them here. Latterly the far more difficult subjects of cloud heights and cloud velocities have been taken up, and as the methods employed, and the results that have been obtained are both novel and important, we will describe what we saw there.

We should remark, in the first instance, that the motion of the higher atmosphere is far better studied by clouds than by observations on mountain-tops; for on the latter the results are always more or less influenced by the local effect of the mountain in deflecting the wind, and forcing it upwards.

The instrument which they employ to measure the

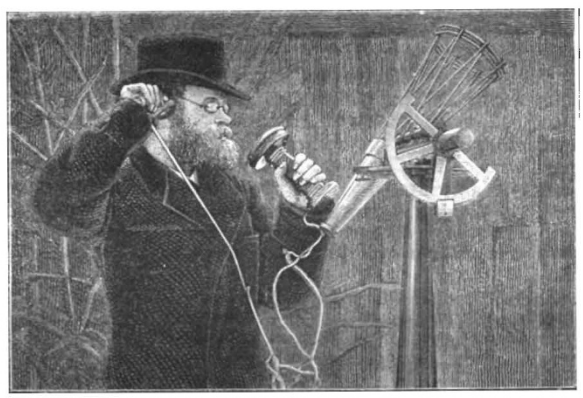

FIG. 1.—N. EKHOLM MEASURING CLOUDS.

This figure shows the peculiar ocular part of the altazimuth, with the vertical and horizontal circles. It also shows the telephonic arrangement.

angles from which to deduce the height of the clouds is a peculiar form of altazimuth, that was originally designed by Prof. Mohn, of Christiania, for measuring the parallax of the aurora borealis. It resembles an astronomical altazimuth, but instead of a telescope it carries an open tube without any lenses. The portion corresponding to the object-glass is formed by thin cross-wires; and that corresponding to the eye-piece, by a plate of brass, pierced in the centre by a small circular hole an eighth of an inch in diameter. The tube of the telescope is replaced by a lattice of brass-work, so as to diminish, as far as possible, the resistance of the wind. The vertical and horizontal circles are divided decimally, and this much facilitates the reduction of the readings.

The general appearance of the instrument is well shown in the figure, which is engraved from a photograph I took of M. Ekholm while actually engaged in talking through a telephone to M. Hagström as to what portion of a cloud should be observed. The lattice-work tube, the cross-wires in place of an object-glass, and the vertical circle are very obvious, while the horizontal circle is so much end on, that it can scarcely be recognized except by the tangent screw which is seen near the lower telephone. Two such instruments are placed at the opposite