should be observed on successive days, the angles being chosen so as to be between  $30^\circ$  and  $45^\circ$ . For instance, set the sextant successively to  $40^\circ$ , to  $40^\circ 20'$ ,  $40^\circ 40'$ , &c., and note the time when the sun's limb comes in contact with the object. The same distances will be found after twenty-four honrs, with a correction for ehange in the sun's declination. The sun's altitude should be observed before and after these observatious, and its magnetic bearing should be noted, as well as that of the mark. The altitude of the mark should also be observed, if practicable, either with the sextant or clinometer, but this is not essential. [J. E. H.]

## MAGNETISM.

On the voyage and sledge-journey, at all times when traveling, the *declination* or variation of the compass should be obtained by observing the magnetic bearing of the sun, at least once every day on which the sun is visible. On shipboard or in boats the azimnth compass is to be used; on land the small theodolite will be found preferable.

When afloat, no valuable observations of the magnetic *dip* and *intensity* are practicable. On the sledge-journey the dipcircle may be carried, and when halts are made longer than necessary to determine the place by astronomical observations, the *dip* and relative *intensity*, according to Lloyd's method, should be ascertained.

At winter quarters, in addition to the above-mentioned observations, those of *absolute horizontal intensity* should be made with the theodolite magnetometer, including the determination of moment of inertia. Also with the same instrument the absolute declination should be determined.

The least that the observer should be satisfied with is the complete determination of the three magnetic elements, namely, declination, dip, and horizontal intensity. At one period, say within one week, three determinations of each should be made.

It is advisable that the same observations be repeated on three snecessive days of each month during the stay at one place; and that on three days of each month, as the 1st, 1th, and 21st, or any other days, the variation of the declination-magnet be read every half hour during the twenty-four hours; also that the magnetometer, or at least a theodolite with compass, remain monuted at all times, that the variation of the needle may nunsn In record Not statio loaded peated obser

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