method, especially as the sun is the body most frequently observed.

It may be also of interest to notice an additional use of the Brent Tables. These are constructed on formula (1), Table III. giving the value of C for every degree of latitude from 0° to 70°, and of declination from 0° to 60°. Now (2) may be written in the form

$$2h = \frac{1}{C}\frac{dl}{dh}.$$

So that if we wish to find during what time observations may be taken so that an error dh in the estimated longitude will not produce more than an error dl in the latitude, we have, if t be expressed in time,

$$t = \frac{15}{C}\frac{dl}{dh}.$$

Thus in the above example, suppose it were required to find during what time observations should be taken, so that an error of a second of time in the estimated longitude would not produce more than an error of a second of arc in the latitude, we have

$$t = \frac{15}{1·23} = 12\text{m. } 11\text{s.}$$

In cases where the latitude and declination are of the same name and do not differ by very much, this time is very small, but when of different names in high latitudes t is considerable.

J. WHITE.

H.M.S. *Hawke*, Mediterranean Squadron.

Magnetism of Rock Pinnacles.

OWING to my absence from home, I have only just seen the letters of the Rev. E. Hill, M.M.S., and James Heelis, in NATURE of August 2 and 9, on the above subject. The writers have apparently overlooked the very interesting report by Profs. Rücker and Thorpe, published in the Brit. Assoc. Report for 1889, p. 586, in which it is shown that "all the principal masses of basalt in the kingdom form centres of magnetic attraction," and that "the Malvern Hills, though composed of diorite in which magnetic polarity can barely be detected, produce deviations of twenty minutes of arc at a distance of one mile from their axis."

The mineral magnetite is an original constituent of basic igneous rocks; and, owing to the action of gravity on this heavy mineral whilst the magma which contained it was still in a fluid or plastic condition, or to some other cause, it has sometimes segregated into masses, or has become more or less concentrated, in certain parts of igneous rocks. Two very interesting papers on gabbros, in which remarkable concentrations of magnetite have been observed, have quite recently been read before the Geological Society—one by Sir Archibald Geikie and Mr. Teall, and the other by Mr. Alfred Harker—in which the concentration observed in these rocks is accounted for in different ways. Rocks in which a local concentration of magnetite has taken place must have a very powerful effect on the magnet even at a distance.

In addition to original magnetite, basic rocks, especially those of igneous origin, contain secondary magnetite, and magnetic pyrites, formed by aqueous and other agents, out of the unstable minerals of which the original rocks were built up. Serpentine, for instance, usually contains secondary magnetite formed out of the mineral olivine, one of the principal constituents of the peridotite from which serpentine was derived.

Owing to the presence of the above original and secondary minerals, small hand-specimens of ordinary igneous rocks—even those in which special segregation of magnetite has not taken place—will generally be found, when examined, to attract a magnet more or less powerfully.

A suitable instrument for testing hand-specimens may be formed by attaching a small horse-shoe magnet to one arm of a chemical balance. After the equilibrium of the balance has been restored, place the hand-specimen under the magnet and raise it carefully. The balance will dip unmistakably towards the specimen if it contains an appreciable amount of magnetite.

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Aurora.

IN Barrhead, Renfrewshire, on Friday (14th), at 9.15 p.m., I witnessed the finest aurora I have observed for years. The luminous arch extended from south-west to north-east, and shortly reached the zenith. The rapid fluctuations in the streamers were remarkable. There were no coloured bands. The moon, nearly full, was shining, rendering the appearance less vivid. In about fifteen minutes the auroral light began to wane.

Tynron, Dumfriesshire, September 18. J. SHAW.

BRIGHT PROJECTIONS ON MARS' TERMINATOR.

THE appearance of bright spots on the surface of Mars has been long familiar to observers of this planet. An idea of the ease with which they may be observed can be gathered from the following words of Schiaparelli, our highest authority on Martian questions.

"It would not be difficult to find a series of hypotheses which would explain satisfactorily the appearance of the polar and other white spots by attributing them in some way to the evaporation of the supposed seas, and to the atmosphere of the planet whose existence is indisputable. But I consider it more useful to point out that these different white spots are, of all the species of appearances on *Mars*, the easiest to observe. They require only an instrument of moderate power and a very persevering attention. The . . . . peculiarities concerning these spots show that they offer a field for the most interesting investigations, whose importance in the study of the physical constitution of Mars is obvious; and in this field useful work could be done by those observers who are not able to decipher the much more difficult details of the canals and their doubling."

Now the appearances of some of these spots in different positions on the planet's disc have been observed at times to undergo rapid changes in brightness, and it was, if we do not err, the distinguished observer just quoted who first pointed out the tendency of some of these bright regions to increase relatively in brightness as the terminator of the planet was approached.

Observations of more recent date than those just referred to, have, however, made us acquainted with other surface phenomena connected, perhaps, in some way with, but of more importance than, the bright spots, and these are the bright prominences or projections at the terminator.

It must be remembered, nevertheless, that bright projections may be of two kinds, optical and real.

The former is an effect of contrast. It may be brought about by the approach of a very bright spot to the terminator where the adjacent darkness tends to give it the appearance of a projection, or, in other words, it is the result of pure irradiation. As a somewhat parallel example may be mentioned the "drop" seen at the transits of Venus. That numbers of such spots have been seen at various times, can easily be shown by a brief examination of the records. Terby, for instance, in 1888, on several nights watched three such points, which, as they approached the western edge of the disc, became very bright, and before passing behind the planet, projected beyond the edge of the disc, as was the case with the polar cap. At Mount Hamilton, also, numerous similar observations at various times have been made.

The second kind of bright projection is that due to the physical peculiarities at the surface of the Martian globe itself, and may correspond to elevated highly illuminated regions. These were first observed at the Lick Observatory in 1890, at the Observatory at Nice, and at the Arequipa Observatory in 1892. The first prominences observed this year were seen on June 26 at Mount Hamilton, and since then have been more or less constantly watched.

To give the reader an idea of what actually is seen at the telescope when such a projection is under observation, an instance or two may not be out of place.