

## CORRESPONDENCE.

*To the Editors of 'The Observatory.'*

### *The Green Flash.*

GENTLEMEN,—

It appears that the explanation of the green flash is still discussed as if it had never been satisfactorily settled. The late Mr. Whitmell by careful observation arrived at the correct solution many years ago (see *Observatory*, xlii. p. 124).

My own observations at sea and on land leave no doubt whatever as to its being due to ordinary atmospheric dispersion.

If one observes the Sun with an achromatic telescope when it is rather low in the sky, it is found to be edged with green above and red below, due of course to the effect of differential refraction of the atmosphere. It is this upper fringe of green at the limb which is the cause of the phenomenon.

On a land horizon, and watched with a telescope, the green fringe is seen to get stronger as the Sun descends, and naturally as the body of the Sun disappears behind some distant hill the green colour is the last to be seen. As Mr. Whitmell long ago pointed out, a red flash may sometimes be seen when the lower limb of the Sun emerges into clear sky from a dense cloud near the horizon.

But under these conditions the Flash, whether red or green, is generally less conspicuous than when seen on a sea horizon,

\* *Monthly Notices of R. A. S.*, Dec. 1924.

† Qualitatively, at any rate; the mean northward drift of the faculæ is about 14° per annum.

partly because refraction and dispersion rapidly increase towards the lower sea horizon, and partly from another cause. At sea there is often a layer of air in contact with the water which causes mirage effects: distant objects on the horizon are reflected from it. These conditions cause an enhancement of the Flash, because the green segment of the Sun is reflected and reversed upon itself, producing a lenticular patch of green light of appreciable width.

The planet Venus, when setting in the sea, affords an interesting demonstration of this reflecting stratum of air. When quite close to the horizon, as seen in binoculars, a second Venus suddenly appears, rising up at the same speed as the planet is descending: they meet, and instantly vanish, turning green at the last moment as the red in the spectrum is cut out by the horizon\*.

I may remark further that the dispersion takes place between the horizon and the outer limits of the atmosphere, not between the horizon and the observer. Otherwise one would see the complete spectrum instead of only the blue or green end of it.

Highbroom,  
Ewhurst, Guildford,  
1926, Oct. 29.

I am, Gentlemen,  
Yours faithfully,  
J. EVERSHED.