From this time the size of refractors has continually increased, recent advances being well shown in the following short list:—

Date.	Aperture. inches.	Focal length. feet.	Observatory.
1839.....	15	22·5	Poulkova.
1863.....	18·5	27·0	Evanston, Ill.
1871.....	26	32·5	Washington.
1882.....	30	42·0	Poulkova.
1888.....	36	57·8	Lick.
1897.....	40	62·0	Yerkes.

It would seem that we have arrived at a somewhat worse position than that at the time of the Dollonds. It is difficult now to obtain glass for even the same size object-glass as already attained, and the focal length has reached just half the 123-foot telescope of Huyghens.

The position is also aggravated by engineering considerations. The tube of the Yerkes refractor is 65 feet long and is housed in a dome of 90 feet diameter, weighing 140 tons. In addition to this, signs of flexure due to the weight of the glass are becoming apparent, so that a practical limit to the possible size of an object-glass has been reached. T. Lewis.

CORRESPONDENCE.

To the Editors of 'The Observatory.'

The Green Flash at Sunset and Sunrise.

Gentlemen,—

I place on record four observations of the "green flash" made on recent voyages to and from Australia:—

No. 1. *S.S.* '*Ascanius.*' *Sunset.*—I watched the Sun setting very intently for some minutes; at the instant of sunset I had decided that there was nothing to record of a positive nature, but on turning away I got the distinct impression of a tiny greenish segment. I am unable to say whether this was a subjective or objective phenomenon, though I suspect that it was the former and that I perceived an after-image, complementary in colour to the reddish Sun I had been watching closely.

No. 2. *S.S.* '*Ascanius.*' *Sunset.*—Light low-lying clouds, very red Sun, no flash seen.

No. 3. *R.M.S.* '*Morea.*' *Sunset.*—Observation No. 1 had warned me to avoid fatiguing my eyes, so I remained in the shade until a companion called to me that the Sun had nearly set. I looked at

the last remaining segment through a small hole in a card, which both diminished the intensity of the light (as the aperture was smaller than the pupil of my eye) and obviated the glare from the surrounding sky. For rather more than half a second the disappearing edge looked green, the colour intensifying as it became smaller. The duration was much longer than that associated with a flash, and, as it constituted about one quarter of the whole period of observation, the question of retinal fatigue can hardly enter into this record.

No. 4. *R.M.S.* '*Morea*.' *Sunrise.*—I hoped to avoid the possibility of retinal fatigue by an observation at sunrise. On the morning in question only a light bank of clouds lay on the horizon, and these were scarcely noticeable when the Sun was up, so that there was practically no preliminary glare in the sky. At the instant of sunrise the edge of the Sun was unmistakably green, it remained so for an appreciable time (about three-quarters of a second I should estimate), when it assumed the usual golden-yellow colour.

I have no reason to question the objective nature of the phenomenon observed in Nos. 3 and 4, and accept the explanation that it is due to the favourable refraction of the predominant green region of the spectrum. It is possible that the reason why doubt has been cast upon records of the green flash is that the colour may arise in the two different ways suggested above, and that the observer has not always been careful to avoid the possibility of retinal fatigue, as was the case in my observation No. 1.

I am, Gentlemen,
Yours faithfully,
W. G. Duffield.

University College, Reading,
1914, Oct. 22.

OBSERVATORIES.

Reports of Observatories for 1913.

The following reports are mainly summarized from those given in the *Vierteljahrschrift* of the *Astronomische Gesellschaft*, which reached this country in July, just before the outbreak of the war:—

Bamberg.—Dr. Hartwig reports that although the weather of 1913 could not be commended for constancy of good observing conditions, in transparency it marked a considerable improvement on the preceding year, so that the variable-star measures which form a large part of the work of the observatory were much more successful and numerous than before. His assistant, Dr. Zinner, spent 168 nights on this work, with the 10-inch refractor, making