of the Sun which is above the red flames (whether chromosphere or corona). It is possible the green line, which was the stronger, may be due to some substance in the highest portion of this envelope; and the F line, which continued during the whole of totality, to moderately cool hydrogen somewhat nearer to the Sun's surface. It is clear that the same spectrum will be obtained, during the middle of totality, from light proceeding from points anywhere apparently in the neighbourhood of the Sun, and even from that reflected from clouds, as the whole atmosphere is then illuminated by light of this peculiar kind, so that the spectroscope does not appear to me capable of giving any conclusive evidence as to the extent of this luminous envelope.

Oxford, Jan. 13th, 1871.

Solar Eclipse, Dec. 22, 1870. By William Stainer, Navigating Sub.-Lieut. H.M. Gunboat Pigeon.

Went on shore to visit the astronomers, and was fortunate enough to observe the eclipse of the Sun during its totality with a $2\frac{3}{4}$-inch inverting telescope belonging to Mr. James Buckingham, C.E. I distinctly saw a rim of light around the dark body of the Sun, extending to about $\frac{1}{30}$th of the Sun's diameter from the edge. I also saw three permanent shoots of light extending about $\frac{1}{10}$th of the Sun's diameter from the Sun's edge; one on the N.E., one on the S.E., and one on the S.W., besides several smaller ones between, they were reddish, close to the edge, and yellowish towards the extremity. The diameter of the rays of light was about $\frac{1}{3}$rd of their length; the interval that elapsed during the visibility of the corona was from five to ten seconds. *Saturn* I also observed distinctly below the Sun at a distance of twice its diameter. The telescope through which I made the observations was the finder of Mr. James Buckingham's large 9-inch telescope for photographing the corona; the Sun being kept directly on the cross-wires of the telescope by clockwork.

The Spanish observers, including the Astronomer Royal of Madrid, who were about a mile distant, saw nothing whatever of the corona during the Sun's totality, which at this place was $2^m\ 9^s$.

Solar Eclipse, December 22, 1870, *observed at San Antonio, near Puerto de Sta. Maria.* By the Rev. S. J. Perry.

Being prevented by a course of lectures, and by pressing observatory work, from attending the January meeting of the

R. A. S., I think I shall best conform to the desires of the Fellows of the Society, by bringing under their notice a few short notes on some of the more salient points connected with our late observations of the total eclipse.

1. Form of the Corona. Approximately quadrilateral; outline not very well defined. Greatest in extent over the two sets of red prominences; in the north-west quadrant it was discernible to a distance of about seven-eighths of the lunar diameter. No streamers or curves, but only a glow of light fading off, as it receded from the Sun; this uniform appearance was, however, broken by four or five slight darker gaps radial to the limb. The streamers seen at Lord Lindsay's station, where the sky was clear, were perhaps too delicate in structure to be visible through our clouds of cirrus. Further evidence seems required to establish the fact, that even these streamers are due to our atmosphere.

2. Within the Corona, but surrounding the chromosphere, is a narrow band of silvery white, whose width is about one-tenth of the solar diameter. The intensity of the light appeared to be uniform throughout this band, whereas it faded off in the corona as it got further from the Sun.

3. Duration of the Corona. I did not see the corona before totality commenced, as I was wholly engaged with my spectroscope; but from notes taken for me by Lieut. P. H. Worgan, of H.M.S. "Lee," I find that the end of totality was observed at $12^h\ 17^m\ 12^s$, G.M.T., and the disappearance of the corona at $12^h\ 17^m\ 52^s$. This interval is, I think, too long by a few seconds, but it could scarcely have been less than 35^s. This phenomenon was very striking, easy of observation, and quite unexpected at the moment.

4. Nature of the Corona. My own spectroscopic observations are merely negative, no bright or dark lines, with possibly a faint glimmer; but these observations, continued on different parts of the corona during about two-thirds of totality, are of little weight, as the light of the corona, rendered exceedingly feeble by the intervening cirro-stratus, could not be expected to penetrate through my three compound prisms. The bright lines seen on the dark body of the Moon by Capt. Maclear, R.N., show that we must receive with great caution any observations of bright lines in the corona, which are coincident with those of the chromosphere, especially when the bright lines of the prominences are dispersed by intervening clouds and atmosphere.

These remarks refer merely to my own personal impressions. The position of the place of observation is

Lat.	36° 37′ 13″, N.
Long.	$24^m\ 45^s$, West of Greenwich.