

Letters to the Editor.

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Spectrum of the Sunlit Auroral Rays.

IN a letter in NATURE of Dec. 21, 1929, Prof. Vegard criticised some researches which Moxnes and I had published in the issue of Aug. 17, 1929. In my letter I pointed out that the results obtained were only preliminary, and that the measurements of the

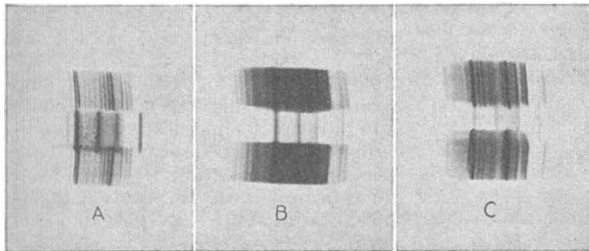


FIG. 1.—Spectrum of sunlit auroral rays (B) as compared with spectra of ordinary aurora in the earth's shadow (A) and (C). Plates Sonia EW.

intensities of the spectral lines were to be considered not as quantitative measurements, but only as qualitative indications of relative strength.

Hoping to get more spectra of sunlit auroral rays last autumn, we made an arrangement to obtain spectra of sunlit and non-sunlit auroral rays on the

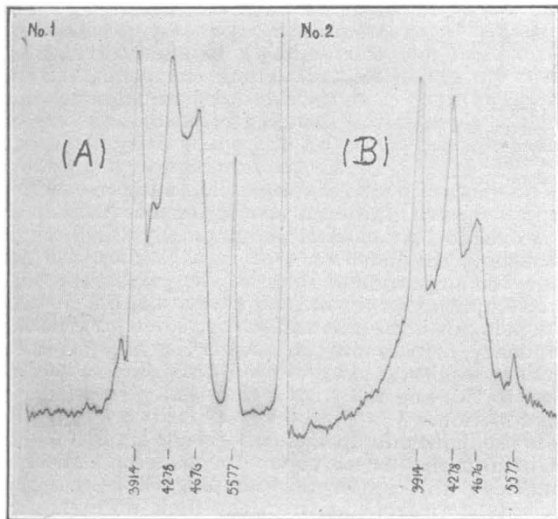


FIG. 2.—Photometric registrations of the spectra (A) and (B) made by Moxnes.

same plate—but no sunlit aurora rays were observed. We only obtained a spectrum of an ordinary aurora in the earth's shadow; but this spectrum is very interesting as compared with the spectrum already published of the sunlit auroral rays of Mar. 15–16 in so far as the aurora line 5577 A. has about the same strength on both plates. The nitrogen lines 3914 A. and 4278 A., however, are very much stronger on the plate of Mar. 15–16.

As the reproduced figure of the spectra in my No. 3148, Vol. 125]

letter published on Aug. 17, 1929, was not very convincing, I have had a better one made, where the spectra are reproduced direct from the plates. This is seen in Fig. 1, where A is the spectrum of the ordinary aurora of Mar. 15–16 in the earth's shadow, B the spectrum of the sunlit auroral rays of the same

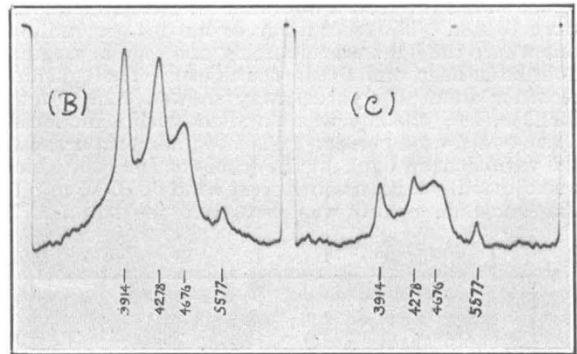


FIG. 3.—Photometric registrations of the spectra (B) and (C) made by Moxnes.

night, and C the spectrum of ordinary non-sunlit aurora from last autumn.

The auroral spectra are in the middle between comparison spectra of helium, and the auroral line 5577 A. is to the right, the nitrogen lines to the left.

In Fig. 2 are shown the photometric registrations of the spectra A and B made by Moxnes already published in my letter of Aug. 17, 1929. As Fig. 3 we reproduce new registrants made by Moxnes of the spectra B and C, and from these our previous conclusions seem to be considerably strengthened.

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The Photo-electric Recording of Daylight.

At the Conference of Empire Meteorologists in London last August we exhibited apparatus intended for use in the photo-electric recording of daylight. This has now been placed in position, the photometer being on the parapet of the flat roof of the Marine Biological Laboratory at Plymouth and the recorder in the laboratory.

The photometer contains a Burt vacuum sodium photo-electric cell mounted in a heavy gun-metal case, designed primarily for use in measuring submarine illumination. There is a stout glass window, above which is a sheet of double surface-flashed opal glass. This acts as an efficient diffusing surface and is set horizontally so as to measure vertical illumination. From the photometer case two rubber-insulated high-tension ignition cables, each 100 yards long, lead to the laboratory on the ground floor, being passed through cork discs—such as are used as floats for nets—to protect them from chafing. They are there connected to a 60-volt 'Exide' storage battery (five 10 v. type WJ plus one 10 v. type WJG) and to a Cambridge Instrument Co. 'thread recorder'. The accumulators maintain a steady 60-volt pressure as the photo-electric current is very small, and the batteries are mounted on paraffin wax.

The recorder has a scale with fifty divisions, corresponding in all to 5 micro-amperes, which happens to be close to the maximum current given by this particular photometer used in mid-winter noon sunlight. For more intense light the current is shunted to one-half or to one-fifth.

The sodium cell is sensitive mainly to blue light,