## THE ROYAL SOCIETY OF CANADA

The spectra were recorded on Schumann plates made by the Adam Hilger Co. With the quartz spectrograph no difficulty grovented the securing of clear, sharply defined spectrograms, but with the fluorite spectrograph, the fluorescence of the prism and lenses produced a heavy general fogging of the plate. Since this did not occur with other arc sources of equal intensity in the visible region, it is possible that this may be due to the strong ultra-violet emission in the magnesium arc between 2700 A.U. and 3000 A.U.

Typical spectra are reproduced in Fig. 1. The upper spectrum is that of the magnesium spark in air, and below it is the spectrum of the magnesium arc in air, both taken with the quartz spectrograph. The lower illustration is the spectrum of the magnesium arc in vacuo taken with the fluorite spectrograph. Wave length scales are attached for reference.

It may be noted that as was observed by Saunders<sup>1</sup> an<sup>4</sup> as mentioned in the previous work, reversal was readily obtained with the arc in air at 2852 A.U. and 2026 A.U., the frequencies of which are given by  $\nu = (1.5,S) - (2,P)$  and  $\nu = (1.5,S) - (3,P)$ , while no reversals were obtained with the arc in vacuo.

The wave lengths with the quartz spectrograph were obtained from a calibration curve constructed by using the following prominent lines in the mercury arc and the zinc, cadium and aluminium sparks.

Mercury	Zinc	Cadmium	Aluminium
4046-78 A.U.	3076 A.U.	3260-1 A.U.	1990-57 A.U.
3650-31 "	2558.2 "	2748.68 "	1935-90 "
3341.70 "	2502 . 2 "	2573-15 "	1862-81 "
3131.66 "	2138.7 "	2313-88 "	1854-80 *
	2100.06 "	2288.12 "	
	2062.08 "	2265.04 "	
	2025-51 "	2194.71 "	
		2144-44 *	

The calibration curve for the fluorite spectrograph was obtained by measurement of the following prominent carbon, tin and lead vacuum arc lines.

<sup>1</sup> Saunders. Astro.-Phys. Jl. Vol. 43, No. 3. April, 1916.

68

ан - А А А К - К - К