ABSTRACT FOR THESIS ENTITLED

SHIFTS OF ARC LINES AT VARIOUS PRESSURES IN MAGNETIC FIELD

Several investigators had unsuccessfully tried to correlate the data of pressure shift of an arc line with the effect of a magnetic field on a line at one pressure. The author has sought to find a variation of the pressure shift of arc lines when a magnetic field is applied simultaneously with each of several pressures.

A heavy permanent magnet offered approximately a 8800 gauss field. The pressure chamber of stainless steel was wholly non-magnetic. Brass electrodes were used. The author availed himself of 4800 volts A.C., 8400 volts A.C. and 150 volts D.C. supplied by a Jarrell-Ash Varisource. The Tesla coil-like ignitor of the source was indispensable for work at high pressure because there was no adjustment of the electrodes from the outside of the pressure chamber. The Jarrell-Ash 3.4 Meter Fixed type Spectrograph was used in the first and second order. The plate lines were microphotometered with a Moll Microphotometer.

Generally, in order to detect shifts of one line, each of the 4 Hartmann diaphragm windows was used for successive exposures while the spectrograph was kept at one racking. Each of these 4 resulting exposures of one line was run successively through the microphotometer. The recording light beam was adjusted for each of the successive runs so that the 4 traces if they were traces of a line which did