

to ensure it being brought back to the same position, a stop, *D*, was clamped to the other supporting tube.

The angular aperture of the condensing lens is much greater than that of the collimator and this should, theoretically speaking, ensure the uniform illumination of the collimator objective even if not in exact adjustment. However it was feared that the spark gap might not always return to exactly the same place, and besides, the spark terminals were parallel to the slit, which is open to objection. The whole apparatus was therefore remodelled, the terminals and holders being shortened, made more compact and placed transversal to the slit. Then, with the condensing lens, they were mounted on a brass plate swinging between centres rigidly attached to one of the supporting tubes. When not in use it was simply tilted up out of the way, and when brought down again was absolutely certain to come back to the original position, so that when once in adjustment it would stay in adjustment. To render the illumination more uniform a small piece of finely ground glass was placed about midway between the spark and the condensing lens, a position which extended trial showed to be best.

After these changes in slit, slit diaphragms and comparison apparatus, there was no further displacements of the spectral lines in adjacent spectra made one after the other, even with considerable mal-adjustment of camera focus, so long as the telescope and spectroscope were stationary. Any movement of telescope and spectroscope however, was at once followed by a displacement of the lines, undoubtedly due to flexure of the spectroscope.

Flexure of the Spectroscope.—Flexure of the parts was the greatest difficulty encountered. Owing to the design of the instrument the prism box has no adequate support. It is fastened by a single screw to the rotating table, which carries the grating or the single prisms, and which from its nature cannot be rigid. It is further secured by two rods reaching down from the box and clamping to the edge of the divided circle, which is a thin ribbed plate of brass not sufficiently stiff to furnish much support

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