On the Absorption Spectra of Mercury, Cadmium, Zinc and Other Metallic Vapours.

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1. INTRODUCTION.

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In 1907 it v.as pointed out by R. W. Wood¹ that in the absorption spectrum of ncn-luminous mercury vapour there is a heavy band at $\lambda = 2536 \cdot 72 \text{ A}'.\text{U}$, and a less sharply-defined one at $\lambda = 2350 \text{ A}^\circ.\text{U}$. In a later paper by Wood and Guthrie² dealing with the same subject, no mention is made of the absorption band at $\lambda = 2350 \text{ A}^\circ.\text{U}$.; but it is stated that with dense mercury vapour there is a fairly strong band at $\lambda = 2338 \text{ A}^\circ.\text{U}$. and another very broad one at $\lambda = 2140 \text{ A}^\circ.\text{U}$. From the work of Kirschbaum³ and others it is known that light of wave-length $\lambda = 1849 \text{ 6} \text{ A}^\circ.\text{U}$. is strongly absorbed by mercury vapour.

The absorption band at $\lambda = 2536 \cdot 72$ A°.U. has been shown by Wood to be asymmetrical. It is sharply defined on the shorter wave-length side; but which increasing vapour density it gradually spreads out towards the red end of the spectrum. With low vapour densities it consists of two bands he one at $\lambda = 2536$ A°.U. and the other at $\lambda = 2539$ A°.U. The band at $\lambda = 2338$ A°.U., which is probably the same one as that originally given by Wood at $\lambda = 2350$ A°.U., does not appear to have been examined in detail. In regard to the band noted by Wood at $\lambda = 2140$ A°.U., especially as it was obtained with high vapour densities, it appeared to the writers that it might be connected with the absorption observed by Kirschbaum at $\lambda = 1849 \cdot 6$ A°.U. Some experiments were made by us to test this view and also to study the character of the absorption band at $\lambda = 2338$ A°.U. and these will be described in what follows.

II. ABSORPTION SPECTRUM OF MERCURY.

In the first experiments the light from a quartz mercury arc lamp was projected through an evacuated clear fused quartz tube containing

¹R. W. Wood. Ast. Phys. Jl. Vol. XXVI, p. 41, 1907. ²Wood and Guthrie. Ast. Phys. Jl. Vol. XXV^{**} No. 1, p. 213, 1909. ³Kirschbaum. Electrician. Vol. 72, p. 10⁻¹, 1914.