With this voltage the line came out with strong intensity. When a field of 2·2 volts was used no radiation characteristic of magnesium was obtained.

3. No indication of the line $\lambda = 4571{\cdot}38$ Å.U. was obtained under electronic bombardment until the electrons possessed sufficient kinetic energy to cause the arc to strike. The arcing voltage was approximately 7·5 volts. This, by the quantum theory, corresponds to the frequency of the line $\lambda = 1626{\cdot}66$ Å.U., which is very close to $\lambda = 1621{\cdot}7$ Å.U., the last line in the series given by $\nu = (1{\cdot}5,\ S)-(m,\ P)$. With the vapour of mercury, zinc, cadmium, and magnesium, the arcing voltages appear to be connected by the quantum relation with the frequency $\nu = 1{\cdot}5$, S.

4. As the simplest Bunsen flame spectrum of magnesium vapour consists of the single line $\lambda = 2852{\cdot}22$ A.U., and as the vapour in the flame when emitting this radiation has been shown to be ionised, it would appear that the ionisation potential of magnesium vapour also follows the quantum theory law, and is given approximately by 4·28 volts.

5. Arguments have been presented in the paper which support the view that while the ionising potential for mercury, zinc, and cadmium may be deduced by the quantum theory by the use of the frequency represented by $\nu = (1{\cdot}5, S)-(2, p_2)$, in the case of magnesium, calcium, strontium, and barium the frequency which must be used is given by $\nu = (1{\cdot}5,\ S)-(2,\ P)$.

6. The absorption spectrum of non-luminous thallium vapour, with low densities, consists of a narrow sharp band at $\lambda = 3775{\cdot}87$ Å.U., and with high vapour densities of this band and somewhat diffuse ones at $\lambda = 3230$ Å.U. and $\lambda = 3000$ Å.U. Of these the line $\lambda = 3775{\cdot}87$ Å.U. is the first member of the second subordinate doublet series given by $\nu = (2,\ p_2)-(m,\ s)$, and $\lambda = 3230$ Å.U. is the second member of the second subordinate doublet series given by $\nu = (2, p_1)-(m, s)$. No sign of absorption was observed at $\lambda = 5350{\cdot}65$ Å.U., the first member of the second subordinate series $\nu = (2,\ p_1)-(m,\ s)$. The frequencies given by $\nu = (1{\cdot}5,\ S)-(2,\ p_2)$, and $\nu = (1{\cdot}5,\ S)-(2,\ P)$, have not as yet been located in the spectrum of thallium.

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