more or less in the same position in coumarin.

A detailed discussion of the results in relation to the molecular structure of coumarin and to the pyrone ring will be shortly published elsewhere.

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The Spectra of Iodine V and I. VI.

THE spectrum of a highly condensed discharge through the vapour of iodine contained in very narrow capillary tubes has been photographed on Ilford special rapid plates by using a Quartz Littrow Spectrograph. A half-kilowatt transformer yielding about 30,000 volts in the secondary, was made use of and an auxiliary spark gap of length about a centimetre and a condensing capacity of 0·07 microfarads helped to increase the excitation.

The spectrum thus obtained contained many lines, which could be very easily suppressed by including a small series inductance in the exciting circuit, and could thus be assigned to the higher spark spectra of iodine. An examination of the data thus obtained revealed a prominent pair apparently due to I V in the region λ 3200–λ 2400. Use is also made of the list of Iodine lines recently published by Bloch and others.[1] Several lines, which included the characteristic regularities expected of the spectrum of I V could be selected and a term scheme developed, corresponding to that of Te IV[2] elucidated by Rao. The intervals $5p^2\ {}^2D_{1\frac{1}{2}}$–$^2D_{2\frac{1}{2}}$ and $5p^2\ {}^2P_{\frac{1}{2}}$–$^2P_{1\frac{1}{2}}$ were found to be 3073^{-1} cm. and 3328^{-1} cm. respectively. Many of the expected terms due to 5p, 6p; $5p^2$, 5d and 6s configurations were identified. The largest term $5p\ {}^2P_{\frac{1}{2}}$ yielded an ionisation potential of 31·6 volts for I V.

An investigation of the regularities to be expected in the lines of I VI was also undertaken in order to enable a useful classification of the lines due to Prof. Bloch referred to above. The very important intervals $5p\ {}^3P_0$–$^3P_1$ and $5p\ {}^3P_1$–$^3P_2$ are 3595 and 10430 wavenumbers respectively. As many as thirteen terms due to I VI could be identified. Further investigation of the spectrum of iodine is in progress and the results will be communicated shortly.

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[1] *Jour. de Phy. et Radium*, 1937, **8**, No. 9.
[2] *Proc. Roy. Soc.*, 1931, A, **133**, 220.

The Third Spark Spectrum of Krypton Kr. IV.

HIGHLY condensed discharges through Krypton gas at various pressures were photographed by using a large Quartz Littrow Spectrograph. Adopting the usual methods of varying the intensities of excitation, such as the variation of the capacity, inductance and length of the auxiliary series spark gap, the lines due to Kr IV were easily identified.

Following the analysis of Se II,[1] and Br III,[2] carried out in these laboratories the fundamental multiplets, 5s ^4P–5p ^4D, and 5s ^4P–5p ^4P in Kr IV were located. These led to the evaluation of the 5s, 5p and a number of the md terms. The difference $5p\ {}^4P_{1\frac{1}{2}}$–$^4P_{2\frac{1}{2}}$ is $348\cdot1$ cm.$^{-1}$. A few of the important lines are,

5s $^4P_{2\frac{1}{2}}$–5p	$^4D_{3\frac{1}{2}}$	38310 cm.$^{-1}$
$^4P_{1\frac{1}{2}}$–	$^4D_{2\frac{1}{2}}$	38225 ,,
$^4P_{\frac{1}{2}}$ –	$^4D_{1\frac{1}{2}}$	38146 ,,

Full details of the analysis will be published shortly.

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[1] *Proc. Roy. Soc.*, 1935, A, **149**, 56.
[2] *Ibid.*, 1937, A, **161**, 38.

Critical Temperatures of Liquids.

USING the surface tension measurements of Ramsay and Shields (1893), it has been shown that the calculated critical temperatures of liquids agree fairly with those observed.[1] Combining van der Waals' relation (1894) for the variation of surface tension with temperature and Macleod's equation (1923), and neglecting the vapour density in comparison with the density of the liquid, it follows that $\rho_\theta = \rho_0 \left(1 - \frac{\theta}{\theta_c}\right)^{3/10}$, where ρ_θ is the density of the liquid at an absolute