

### ULTRA-VIOLET BAND SYSTEMS OF THE HgI MOLECULE

In continuation of our recent work on the band systems of the diatomic molecules HgCl<sup>1</sup> and HgBr,<sup>2</sup> a reinvestigation has been made to systematise the analysis and interpretation of the known ultra-violet band systems of HgI. Emission bands in the two regions between  $\lambda$  3100- $\lambda$ 2800 and between  $\lambda$  2800- $\lambda$ 2650 designated as systems C and D by Wieland,<sup>3</sup> have been measured and analysed. They form the two components of a  ${}^2\pi \rightarrow {}^2\Sigma$  electronic transition with the common final  ${}^2\Sigma$  state. The (0,0) bands of the two systems are at  $\nu$  32785 and 36295 respectively. The first of these values agrees with that obtained by Wieland, but the second indicates, according to the newly obtained analysis, a shift of the system origin by about 160 cm.<sup>-1</sup> towards the violet from that suggested by Wieland<sup>4</sup> as a result of his experiments on the fluorescence of HgI. The interval between the components is found as 3510, which is in conformity with the corresponding values of 3934 and 3889 obtained for HgF<sup>5</sup> and HgCl<sup>1</sup> band systems.

The following vibrational constants are determined for the D system obtained in emission

$$\nu_e = 36269.2 \quad \omega_e' = 178.0 \quad x_e' \omega_e' = 1.14$$

$$\omega_e'' = 125.7 \quad x_e'' \omega_e'' = 1.10$$

Full details of the analysis will be published elsewhere.

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### OESTROGEN POTENCY OF THE DEFATTED CASTOR-SEED

It was shown<sup>1</sup> that the oestrogens of the ovary are in combination with a protein and that the complex exhibits feeble lypolytic activity. It was thought of interest to investigate other lipases also. This note deals with the castor seed lipase.

Castor-seeds (*Ricinus communis* Linn.) crushed, and defatted by ether and further powdered to a 40-mesh, was found to possess hypolytic activity (13.4 c.c. of 0.1 N alkali for 0.2 gm. of the material, when tested on olive oil substrate). The material after digestion with papain at 40° C. (pH 5.0) for 20 hours, with a view to liberate the active principles from the protein complex, was saturated with NaCl and thoroughly extracted with ether. Ether is removed by evaporation and the oily residue taken up by olive oil and the solution employed for biological assay.

A group of ten ovariectomised female rats was used. 0.3 c.c. of olive oil solution was injected in each of the ten rats subcutaneously. A few rats were injected with 0.3 c.c. of castor oil to see whether castor-oil has any oestrogen potency. In eight out of the ten nucleated

cells and cornification was observed. The number of leucocytes in the smears was considerably reduced although in no case it was found to disappear completely. Castor oil, however, fails to induce any response.

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### THE CUPRIC-AMMINO SULPHATES

THE cupric-ammino sulphates have been studied by a large number of workers. A Bouzat<sup>1</sup> has reported the existence of the penta-, tetra-, and bi-ammino compounds, and he has given the methods of isolation of these. Other workers, H. Rose,<sup>2</sup> D. I. Mendeleef,<sup>3</sup> W. R. Hodgkinson and C. C. Trench,<sup>4</sup> and F. Ephraim,<sup>5</sup> have studied the ammino compounds by various methods.

An attempt has been made in this laboratory to study the cupric ammino sulphates. The method employed consisted in the electrical conductivity measurements of solutions of cupric sulphate, of varying concentrations of ammonium hydroxide, and also of mixtures of the cupric sulphate with varying concentrations of ammonia. It was found that the mixture was much more conducting than either constituent, and the conductivity values were even greater than the sum of the conductivities of the constituents. In a graph the percentage difference between the sum of the conductivities of the constituents and the observed conductivity of the mixture was plotted against the concentration of ammonia. The graph gave a periodic curve with maxima points corresponding to 2 NH<sub>3</sub>, 4NH<sub>3</sub>, 5 NH<sub>3</sub> and 6NH<sub>3</sub> for a molecule of CuSO<sub>4</sub>; showing the existence of bi-, tetra-, penta-, and hexa-ammino compounds of cupric sulphate. Thus we observe that the conductivity data not only support the existence of the well-known amines, but also give the evidence of the existence of a new ammino compound, viz., hexa-ammino cupric sulphate which was previously unknown, and has for the first time been recognised in this investigation. Detailed procedure of the study of the hexamine compound will be duly communicated.

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