

ions. There is a slight evidence of the formation of SO_4^{2-} ions at 200°C . as the 981 line characteristic of the SO_4^{2-} ion and the maximum at 452 attributed by Woodward and Horner to the same ion are just barely detectable in the microphotometric curves of the Raman spectra of the acid at that temperature.

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¹ *Jap. Jour. Phys.*, 1929, 5, 119.

² *Phys. Zeit.*, 1931, 32, 212.

³ *Proc. Roy. Soc.*, (A), 1934, 144, 129.

⁴ *Ind. Jour. Phys.*, 1933, 8, 123.

Space-Group of the Stable Modification of The Crystals of *m*-Nitrobenzoic Acid.

CRYSTALS of the stable modification of *m*-nitrobenzoic acid belong to the monoclinic prismatic class. They have been examined by the rotation and oscillation method using copper K radiation. The dimensions of the unit cell are: $a = 10.41 \text{ \AA}$, $b = 10.70 \text{ \AA}$, $c = 13.22 \text{ \AA}$, $\beta = 91^\circ 12'$. This gives an axial ratio in good agreement with that obtained from crystallographic data (Groth, IV, p. 475).

Oscillation photographs were taken about the a , b and c axes at suitable small angles and a large number of planes identified. Planes ($h0l$) for which h is odd are halved and (010) is also halved. The space-group is thus C_{2h}^2 . The number of molecules per unit cell is four showing that the molecules are asymmetric. The *ortho* and the *para* compounds are under investigation.

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A Method for the Determination of the Cross-section of Molecules of Soluble Amphipathic Substances.

SOLUTIONS of substances whose molecules have both the hydrophilic and the hydrophobic groups (called "amphipathic" by G. S. Hartley¹) show activated accumulation as shown by the work of the present author as well as of others.^{2,3,4,5,6} The solute

molecules accumulated at the surfaces of such solutions, show a reluctance to get back into solution. This fact can be taken advantage of, for measuring the absolute area occupied by the accumulated molecules; the details have been given in a former communication.³ It can now be shown that the accumulated molecules can be collected by sweeping with a barrier. Such sweepings are found to be more concentrated than the rest of the solution. By measuring the quantity of the sweepings and the change in concentration, the number of molecules which were present at the surface can be calculated. In a typical experiment the cross-section of benzopurpurine 10B works out to be of the order of 30×10^{-16} sq. cm. This method is capable of wide application as it can be adopted in all those cases where activated accumulation is exhibited.

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¹ Hartley, *Aqueous Solutions of Paraffin-chain Salts*, 1936, p. 44.

² Doss, *Curr. Sci.*, 1937, 4, 405.

³ —, *Proc. Ind. Acad. Sci.*, 1936, 4, 97.

⁴ —, *Curr. Sci.*, 1937, 5, 645.

⁵ McBain and Wilson, *J. Amer. Chem. Soc.*, 1936, 58, 380.

⁶ Florence, Myers and Harkins, *Nature*, 1936, 138, 406.

Investigation on Rice.

THE question of quality in rice—the most important cereal food of India—has been receiving attention from several workers. We began our study of the problem seven years ago and attempted to correlate quality with the physico-chemical properties of rice. Part of this work has been published¹ and a paper dealing with further work will be presented before the Tenth International Congress of Chemistry at Rome. I have already stressed the view^{2,3} that rice is to be looked upon as a colloidal system intermediate between the lyogel and the xerogel. Important colloidal changes take place in the rice kernel during the later stages of the maturing of paddy. The lyogel loses water and there is a drift towards the xero state,