

angles to the first, shows a reversal of these dimensions.

In consequence of these observations, classification of fibres according to their apparent tip thickness becomes a matter for careful consideration as to whether such variations are real, or are associated with fibre twist of a concentrated character at a particular point, or due to both twist and variation of ellipticity of the cross-sectional contour.

Miss A. L. Walker carried out most efficiently the measurements recorded.

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#### Presence of Formaldehyde in Dew

LAST year we reported the presence of formaldehyde in rain-water<sup>1</sup>. We have observed that the amount of formaldehyde in freshly collected rain-water varies from 0.00015 to 0.001 gm. per litre.

Recently we analysed ten samples of dew collected at Allahabad, which is a comparatively dry place. The amount of dew collected was small and was about 10 c.c. in each case. In every sample of dew collected so far, formaldehyde could be detected at once by Schryver's test. On carrying out comparative experiments, we could estimate approximately the amount of formaldehyde present in dew. The amount of formaldehyde in dew is appreciably greater than that present in rain water. In most of the samples of the dew analysed the amount was approximately 0.0015 gm. per litre.

It appears that formaldehyde in dew comes from air in contact with grass, leaves, soil, etc. It is well known that almost all organic substances in the wet condition when exposed to light and air form formaldehyde. The origin of this formaldehyde has not yet been satisfactorily explained. We are of the opinion that organic substances, which are rich in energy, when exposed to light and air, are oxidised by atmospheric oxygen to carbon dioxide and water. The freshly-formed carbon dioxide appears also to be rich in energy, and with water can undergo photosynthesis to formaldehyde in presence of light more readily than ordinary carbon dioxide present in the atmosphere. That is why formaldehyde is more easily detected in the photo-oxidation of organic substances, which give out energy in their oxidation, than in the case where ordinary carbonic acid or bicarbonate solutions are exposed to light. In some cases, however, such as the photo-oxidation of glycine, formaldehyde, apart from photosynthesis, may also be obtained as a direct product of its photo-oxidation; but in the majority of cases in the photo-oxidation of organic substances, formaldehyde is likely to be produced from the photosynthesis of the energy-rich carbon dioxide and water which are products of photo-oxidation in presence of sunlight. The formaldehyde produced in this way will be present in the air which comes in contact with organic matter present on the surface of the soil, wet leaves, grass, etc.

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#### Constitution of Dehydro-Ascorbic Acid

SOME time ago<sup>1</sup> we found that by the action of a copper acetate solution upon ascorbic acid, a dehydro-ascorbic acid is formed, which has the formula  $C_6H_6O_6$ , that is, it has two hydrogen atoms less than ascorbic acid. The determination of the free hydroxyl groups according to Zerewitinoff, shows for the dehydro-acid only two hydroxyls, in contrast to the original acid which gives four. One of the two hydroxyls removed by oxidation is the enolic hydroxyl, which is responsible for the reducing power of ascorbic acid.<sup>1</sup>

The dehydro-ascorbic acid is most likely an inner peroxide; which would account for its oxidative qualities.

According to Micheel and Kraft<sup>2</sup>, oxidation of ascorbic acid to dehydro-ascorbic acid should lead to the formation of a new hydroxyl group. This is erroneous.

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<sup>1</sup> P. Karrer, H. Salomon, K. Schöpp, R. Morf, *Acta Helv.*, **16**, 181; 1933. *Vierteljahresschr. Züricher Naturforsch. Ges.*, **78**, 9; 1933.

<sup>2</sup> Micheel and Kraft, *Z. physiol. Chem.*, **215**, 215; 1933; and *NATURE*, **131**, 274, Feb. 25, 1933. Compare also P. Karrer, G. Schwarzenbach und Schöpp, *Acta Helv.*, **16**, 304; 1933.

#### Role of the Solvent in Electrolytic Dissociation

IN a letter to *NATURE* of April 22, Dr. A. R. Martin has discussed the interpretation to be placed on the experiments of Hughes and Hartley<sup>1</sup> on the effect of small additions of water on the electrical conductivities of salts in methyl alcohol and acetone.

We have recently completed a series of determinations of the conductivities of lithium chloride in water-ethyl alcohol mixtures extending from pure water to pure alcohol, and the results have some bearing on this question. We find that the electrical conductivity at infinite dilution varies very nearly inversely with the viscosity of the solvent, that is,  $\Lambda_0\eta$  is constant, in solvents containing up to about 20 mol. per cent alcohol. As the proportion of alcohol is increased,  $\Lambda_0\eta$  then decreases continuously to its value in pure alcohol. This adds further support to the view, previously based on measurements of the partial vapour pressures<sup>2</sup>, and of the molar volumes and molar refractivities<sup>3</sup> of lithium chloride in these solvents, that, until more than about 20 mol. per cent of alcohol is present, the ions remain solvated almost entirely by water, but as the proportion of alcohol is further increased, alcohol molecules enter the 'solvation sheath' of the ions to a steadily increasing extent. In the case of potassium iodide,  $\Lambda_0\eta$  increases appreciably with the first additions of water, but it afterwards decreases and for the greater part of the concentration range the curve follows the same course as that of lithium chloride.

In connexion with Dr. Martin's remark that the extent of dissociation is determined by the free energies of the ions and undissociated molecules in the solvent, and that the solvation of an undissociated molecule may be a factor comparable with the solvation of an ion in these quantities, an extreme case, recently investigated by Hamilton and Butler, is of some interest<sup>4</sup>. It was found that zinc chloride, although a typical strong electrolyte in water and