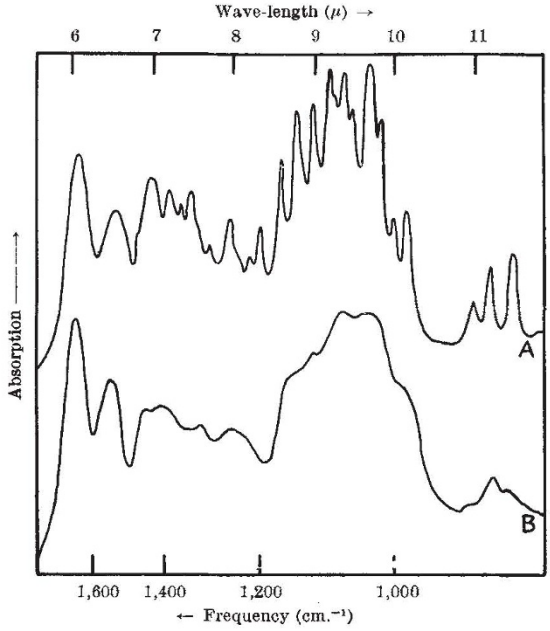

Fig. 1. *A*, lactose–casein dry mixture; *B*, lactose–casein, freeze dried from aqueous solution

It is probable that this interaction of casein with sugars forms the first stage in the series of reactions studied by Lea and his co-workers[4] in relation to the browning of milk.

Since the carbohydrate absorption bands in the 1,050 cm.$^{-1}$ region are generally associated with the C—O stretching and the O—H bending vibrations, it seems likely that the carbohydrate and protein molecules are held together by a hydrogen-bonding mechanism. Such interaction would be expected to affect the carbohydrate bands in this region of the spectrum as well as in the more usually studied 3μ region.

The spectra were obtained with a double-beam Grubb Parsons *S3A* infra-red spectrometer fitted with a rocksalt prism. Samples were examined in potassium bromide disks, and similar results were also obtained using the 'Nujol' mull technique with the same samples.

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Separation of the Isomers of Benzene Hexachloride by Reversed-Phase Paper-Partition Chromatography

A simple and rapid paper chromatographic method was required for separating mixtures of isomers of benzene hexachloride. The paper chromatographic method of Moynihan and O'Colla[1], further developed by O'Colla[2] and Mitchell[3], gives a satisfactory separation, but the acetic anhydride, used as the stationary phase, is an unpleasant reagent to handle. The use of 'Vaseline'-impregnated strips has been previously described for the separation of DDT derivatives[4], and there was some evidence that separation of isomers of benzene hexachloride could be achieved by the application of a similar technique[5]. The method has been adapted as follows.

Whatman No. 1 filter paper strips were washed overnight by allowing distilled water to travel down the strips as in chromatography in order to remove an inorganic halide contaminant present in the paper. The strips were then dried, dipped in a 5 per cent ethereal solution (w/v) of Paraffinum Molle Album, drained and dried. The mixture of the isomers in acetone solution was applied as a small spot near the top of a strip. The mobile phase, consisting, by volume, of 70 per cent methanol and 30 per cent distilled water, was allowed to descend the strip in the normal way. The strip was left at laboratory temperature for 18 hr., during which time the solvent had travelled approximately 40 cm.

The strip was dried and the positions of the isomers detected by dipping it in redistilled monoethanolamine, heating at 100° for ½ hr. and then dipping in a 0·1 *N* solution of silver nitrate acidified with concentrated nitric acid (10 vol. silver nitrate solution : 1 vol. acid). On exposure to ultra-violet light (*c.* 254 mμ) brown spots appeared corresponding to the positions of the isomers. It was essential to remove all the monoethanolamine before dipping in silver nitrate solution, otherwise a background colour developed which masked the spots. The alpha-, beta-, gamma- and delta-isomers moved with mean R_F values of 0·33, 0·00, 0·40 and 0·58 respectively. The method of detection was sensitive to less than 5 μgm. of the alpha-, gamma- and delta-isomers, but was less sensitive in the case of the beta-isomer, 5 μgm. of which was only just detectable.

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η-Tocopherol (7-Methyltocol): a New Tocopherol in Rice

Recent publications have confirmed the existence of two previously unknown natural tocopherols in the lipid fractions of cereal grains (ε- and ζ-tocopherols) and have described methods for their separation by paper chromatography[1–3]. Thus six of the seven possible tocol structures produced by methylation of the tocopherol chroman nucleus have been identified, and it was of interest to search for the remaining tocopherol (7-methyltocol) among natural sources. In a comprehensive study of the vitamin E content of various foodstuffs, Harris,