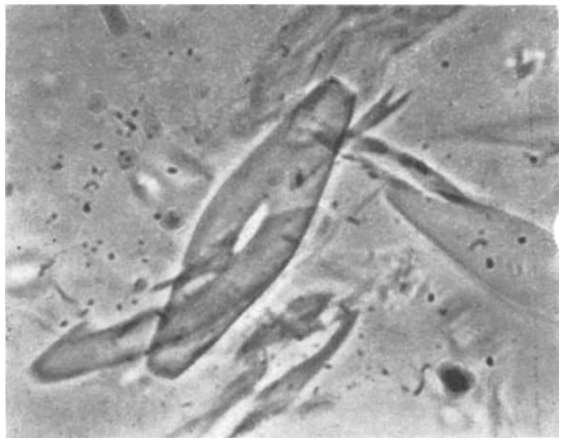

saturated ammonium sulphate, *p*H 7·1. The precipitate is centrifuged off and dissolved in the minimum of water. Solid ammonium sulphate is added up to slight turbidity (*p*H is then 6·4 6·6). Very thin needle-like crystals separate within an hour.

The crystals increase in size after standing (see photomicrograph). This crystalline material is homogeneous in the ultracentrifuge. Prolonged electrophoresis at μ 0·10, *p*H 7·6 reveals a very small amount of impurity separating from the main gradient.

The fraction isolated is the first crystalline component isolated from fish myogen. Preliminary steps are being undertaken to examine its enzymatic properties. Tests for aldolase and *d*-3,glyceraldehyde-phosphate-dehydrogenase gave negative results.

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Occurrence of Plasmalogens in Vegetable Phosphatides

The plasmalogens[1,2] are a group of phospholipids containing a higher fatty aldehyde in the molecule. Until recently, the only recognized structure for these compounds was that of acetals of α-glyceryl-phosphoryl-ethanolamine[3]. Klenk and Böhm[4] have now extended the group to compounds containing serine instead of ethanolamine, and I[5] have also obtained evidence of the existence of plasmalogens with a base other than ethanolamine. There seems every reason to expect that the plasmalogens will be found to show structural similarities to a number of the classical phospholipids.

So far, plasmalogens have only been reported as constituents of animal phosphatides, where their distribution is very uneven. Thus muscle phosphatides contain about 10–12 per cent of fatty aldehydes ('plasmals'), brain phosphatides about 8–10 per cent, liver phosphatides 1 per cent and egg lecithin less than 0·1 per cent[2]. The accepted type of plasmalogen contains about 56 per cent of plasmal. Through the kindness of Messrs. J. Bibby and Sons, Ltd., Liverpool, I have had the opportunity of examining specimens of total phosphatide fractions from groundnut and soya bean. The method of Feulgen and Grünberg[6] for plasmalogen estimation had to be slightly altered since the vegetable phosphatides proved to be only partially soluble in acetic acid. The samples were dissolved in 1 ml. of light petroleum (boiling point 40–60° C.), which was shaken overnight with the Feulgen and Grünberg reagent. The standard (palmitaldehyde) and blank determinations were, of course, modified in the same way. The colour was afterwards extracted in each case into chloroform. Both the vegetable phosphatides contained aldehyde equivalent to about 7 per cent of palmitaldehyde. Groundnut phosphatides have been shown to contain both ethanolamine and serine[7] and soya bean phosphatides to contain ethanolamine[8,9], so that there is no reason to suppose that the aldehyde found is not present as the conventional type of plasmalogen.

Vegetable phosphatides have been far less intensively studied than animal phosphatides. The present findings, therefore, are not only of significance in extending the known distribution of the plasmalogens, but also as providing further evidence of some common phospholipid patterns between animals and plants.

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Jan. 7.

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Cytochrome *c* and *in vitro* Formation of Bile Pigments

This communication describes the attempted *in vitro* conversion of cytochrome *c* to bile pigments, using coupled oxidation with ascorbic acid[1], and forms part of a systematic study of the relationship of chemical structure to bile pigment formation[2,3].

Cytochrome *c* is of particular interest in this problem, since Theorell[4] has shown that its hæm is deeply embedded in the protein. Two iron–imidazole linkages confer its hæmochrome structure, while side-chains 2 and 4 are also firmly attached to protein through cysteine residues[5], endowing the molecule with great stability to acid and alkali, and a non-separable prosthetic group. Cytochrome *c* does not react with oxygen or carbon monoxide, and it is possible to remove its iron atom without breaking the attachment of hæm to protein.

Bigwood and Thomas[6] and Lemberg and Wyndham[7] have obtained spectroscopic evidence for verdohæmochrome arising in the preparation of cytochrome *c*, but bile pigment formation has not been investigated.

In the present research, cytochrome *c* was prepared according to Keilin and Hartree[8] with iron content 0·34 per cent and absorption spectrum of ferricytochrome *c* 564·2 and 529·2 mμ. 50 ml. cytochrome solution (≡ 10 mgm. or 7 mgm. hæmatin) was incubated with 100 mgm. ascorbic acid in Petri dishes in air at 37° for 2 hr. No change of colour