Examination of the distribution of these different types of end groups in nucleic acids from related strains of the viruses may show differences not apparent in the gross composition of the nucleic acids.

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## Detection of Free Hydroxyl Radicals during the Oxidation of Cellulose in Air

IT is well known that when dyed cellulose fabrics are printed with pastes containing the reducing agent sodium sulphoxylate formaldehyde, and steamed, in order to produce a white design on a coloured ground, the white parts of the pattern are sometimes weakened[1,2]. The weakness is due to oxidation of the cellulose at the printed places, and it has been shown that the oxidation occurs only when the fabric is left in humid conditions for some hours after the steaming operation and before the residual printing paste is washed off. During this period the unused reducing agent undergoes oxidation by atmospheric oxygen, and this reaction is accompanied by one in which the cellulose is oxidized. The simultaneous oxidation of sodium sulphoxylate formaldehyde and cellulose, in the absence of the printing adhesives, has recently been investigated in these laboratories. In some of these experiments cellulose fabric was impregnated with a solution of neutral sodium sulphoxylate formaldehyde to which naphthalene-1-sodium sulphonate had been added. The impregnated fabric, after storage in a moist atmosphere for several hours, was made alkaline and treated with an excess of diazotized sulphanilic acid, whereupon a pink colour developed. This pink colour can only have arisen by the coupling of the diazonium compound with a naphthol derived from the naphthalene sulphonate, and it is difficult to conceive any way in which hydroxyl groups can have been introduced into the naphthalene sulphonate except as free hydroxyl radicals (cf. Weiss and Stein[3,4]). No evidence, either of the oxidation of cellulose or of the presence of free radicals, has been obtained when sodium bisulphite, sodium bisulphite formaldehyde, or alkaline sodium sulphoxylate formaldehyde are oxidized on cellulose in this manner. Neutral sodium sulphoxylate formaldehyde is also oxidized quite readily on glass fabric, but without formation of hydroxyl radicals.

It appears, therefore, that free radicals are involved in the oxidation of cellulose under the conditions used in these experiments, and that the radicals can only be detected when both the sodium sulphoxylate formaldehyde and the cellulose are undergoing oxidation simultaneously.

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## Electrophoretic Separation on Filter Paper of the Soluble Liver-Cell Proteins of the Rat using Borate Buffer

THE electrophoretic analysis by the ordinary Tiselius apparatus of the soluble proteins isolated from rat liver has already been described[1–3]; but the constituent components reported by these authors differed one from the other.

In order to find a convenient method with consistent results, an electrophoretic separation on filter paper of the soluble proteins of liver cells of the rat was attempted in a way similar to the well-known method for serum proteins. This communication deals with such a separation of the soluble proteins obtained by homogenization and differential centrifugation from livers of healthy rats.

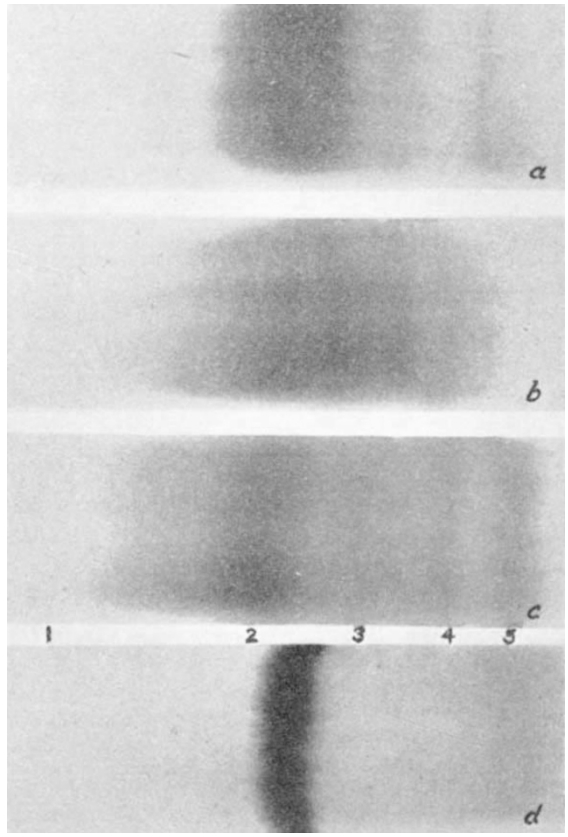


Fig. 1. Electrophoretic separations on filter paper of the soluble liver cytoplasmic proteins of the rat. The strips were stained using naphthalene black. (*a*) Veronal buffer *p*H 8·6, $\mu$ 0·1. (*b*) Phosphate buffer *p*H 8·0, $\mu$ 0·1. (*c*) Borate buffer *p*H 8·6, $\mu$ 0·18. The five bands are numbered from 1 to 5 in order of mobility. (*d*) Material used 48 hr. after preparation (borate buffer)