(*c*) they give a red reaction to the 'syringin' test ; (*d*) they give a magenta spot with Ehrlich's reagent ; (*e*) they are negative to the hydrogen cyanide test ; (*f*) they are negative to the 'juglone' test ; (*g*) they show no fluorescence in 'juglone' tests ; (*h*) they lack raphides ; (*i*) they lack detectable amounts of glucitol and sedoheptulose ; (*j*) they give the '*Oxalis* reaction' to the cigarette and hot-water tests.

These characters have been compared with those of representatives of the other families tested. Other things being equal, it is assumed that those families which show the closest chemical correspondences are the most closely related.

Of twenty families (Myrothamnaceae, Platanaceae, Cunoniaceae, Eupteleaceae, Stachyuraceae, Eucommiaceae, Cercidiphyllaceae, Trochodendraceae, Buxaceae, Daphniphyllaceae, Coriariaceae, Pittosporaceae, Hydrangeaceae, Saxifragaceae, Bruniaceae, Tetracentraceae, Altingiaceae, Byblidaceae, Podostemaceae and Hydrostachyaceae) which have been included in an order Hamamelidales, representatives of the first fourteen have been tested.

On the basis of results of these tests, one may propose an order Hamamelidales including the Hamamelidaceae, Platanaceae, Myrothamnaceae, and perhaps the Cunoniaceae. This suggestion is based on preliminary work only, but at present there is no chemical evidence against, and much for, such a grouping.

If the sub-family Chrysobalanoideae be excluded, the Rosaceae form a homogeneous group, distinguished by the occurrence of glucitol and cyanogenetic compounds. The chemical evidence indicates that the Rosaceae and the Hamamelidaceae differ sufficiently to make it unlikely that they should be included in the same order ; however, there is no evidence against the view that the Hamamelidaceae are descended from rosalian ancestors.

Representatives of eleven amentiferous families (Garryaceae, Leitneriaceae, Casuarinaceae, Salicaceae, Myricaceae, Juglandaceae, Butulaceae, Fagaceae, Urticaceae, Ulmaceae and Moraceae) have been tested. The chemical evidence indicates that if the Garryaceae, Leitneriaceae and Juglandaceae be excluded, these families form a natural group. There is no evidence against the view that these families have been derived from hamamelidalian ancestors.

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BACTERIOLOGY

Bacterial Polyglycerophosphate

In a previous communication the presence in streptococcal culture supernatants of four serologically distinct red-cell sensitizing antigens was described[1]. One of these antigens, Hickey, which was found to be of wide distribution among the Gram-positive cocci, is almost certainly identical with the non-species specific antigen described by Rantz, Randall and Zuckermann[2]. The distribution of this antigen has been observed to resemble closely that reported by McCarty[3] for a glycerophosphate polymer isolated from various bacterial species, and it seemed possible that we were in fact dealing with the same compound. The polymer as isolated by McCarty had serological properties in that it was precipitated by certain streptococcal antisera—precipitation being inhibited markedly by synthetic polyglycerophosphate prepared by Dr. A. M. Michelson[4]. Glycerophosphate polymers have also been isolated from bacteria by Mitchell and Moyle[5] and by Baddiley *et al.*[6] ; but in neither of these cases were they investigated serologically.

Two samples of synthetic polyglycerophosphate (calcium salts) with average chain-lengths of 6 and 10–15 units respectively have generously been made available by Dr. Michelson, and their capacity to inhibit hæmagglutination by the Hickey serum has now been investigated. These tests were carried out with human Group *O* red cells treated for 2 hr. at 37° C. with a digest broth supernatant of the Hickey strain of *Streptococcus pyogenes*. Both compounds had marked hæmagglutination-inhibiting capacity—in the test system employed showing appreciable inhibitory activity in a concentration of 30 μgm. per ml. No inhibition of hæmagglutination by antisera specific for the other three streptococcal sensitizing antigens described was observed. (These latter tests were carried out with the 6-unit compound). Neither polymer was capable of precipitating with the Hickey antiserum nor of sensitizing red cells to hæmagglutination by it. Inhibition was also demonstrated with a mixture of α- and β-glycerophosphates (calcium salts, approx. 45 per cent α-) and with β-glycerophosphate (sodium salt). The inhibitory activity of the latter compounds was, however, relatively slight—that of the α-glycerophosphate mixture being of the order of one-fortieth, and that of β-glycerophosphate one two-hundredth, of that of the polymers.

These results would indicate, therefore, that the serologically active component of the Hickey sensitizing antigen is, like that of McCarty's precipitating antigen, a glycerophosphate polymer the activity of which is probably due to α-glycerophosphate residues. They suggest also the possibility that the serological specificity of other bacterial red-cell sensitizing antigens might also be due to polyol phosphate components.

I wish to express my gratitude to the Medical Research Council of Ireland for financial support.

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Production of Soluble Melanoid Pigments by *Streptomyces* in Gelatin and Glucose Media

During a taxonomic study of several *Streptomyces* cultures, most of which were isolated from soil, experiments were performed on the production of soluble melanoid pigments on two gelatin media—plain 15 per cent gelatin and 15 per cent gelatin plus 2 per cent glucose.