that this was not due to vagaries in fixation but probably reflected the condition of cells in different phases of the secretion cycle[2]. In some cells the reticulum was represented by many parallel lamellæ or canaliculi, whereas in other cases only a vestige of this structure was retained and the cytoplasm resembled an open network.

Examination of the nucleus showed that along the nuclear membrane were many granules of the kind described by Ludford[5]. At first sight the nucleolus appeared to consist of an anastomizing opaque reticulum, but careful examination revealed that the strands of the reticulum actually consisted of granular material.

When osmium-fixed, gelatine-embedded sections were examined with the ordinary light microscope and the results compared with those obtained in previous studies[2,3] it was found that: (1) buffered osmic acid renders the tissue so brittle that thin (3–4 μ) sections can rarely be obtained; (2) it preserves lipids; (3) there is no specific impregnation of mitochondria, Golgi apparatus or prozymogen bodies by the osmium. It may be emphasized here that the fact that lipids are preserved in osmium-fixed gelatine-embedded preparations does not signify that they are retained in *n*-butyl methacrylate-embedded material. It is quite probable that some lipids are lost in preparing material for the electron microscope, and that vacuoles in such material actually represent the site of this substance.

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Chemical Composition of Uredospores of Wheat Stem Rust (*Puccinia graminis tritici*)

ONE approach to the problem of controlling wheat stem rust is the study of the chemistry of the parasite. As part of an investigation into the chemical nature of wheat stem rust, a preliminary examination has been made of uredospores of *Puccinia graminis tritici*. When uredospores of mixed races are subjected to the action of 72 per cent sulphuric acid for 24 hr. at room temperature (23° C.) and then heated with 2 *N* sulphuric acid in a sealed tube immersed in boiling water for 16 hr., D-glucose, D-mannose and D-arabitol are liberated. These three substances were identified by paper chromatography using ethyl acetate – acetic acid – water (3 : 1 : 3)[1]. By means of a cellulose column and the same irrigating solvent, enough of each of these three components was separated in order to provide crystalline derivatives thus:

D-Arabitol pentaacetate,	m.p. 73° C.,	$[\alpha]_D^{23}$ + 37·4° (chloroform)
D-Mannose *p*-nitroanilide,	m.p. 221° C.,	$[\alpha]_D^{23}$ − 404° (pyridine)
1,2,3,4,6α-D-Glucose pentaacetate,	m.p. 108° C.,	$[\alpha]_D^{23}$ + 105° (chloroform)

The literature shows that glucose and mannose have been identified in uredospores of wheat stem rust by paper chromatography, but no crystalline derivatives were prepared and it was not possible to state whether they were the D- or the L-sugars[2]. So far as we are aware the work reported herein constitutes the first proof of the identity of D-glucose, D-mannose and D-arabitol in uredospores. The five-carbon sugar alcohol, D-arabitol, is seldom encountered in natural products, although it has been reported in lichens[3].

Quantitative analyses, using the method of Dubois *et al.*[4] for the sugars and of Lambert *et al.*[5] for D-arabitol, indicated that the uredospores contained 2 per cent D-glucose, 19 per cent D-mannose and 3 per cent D-arabitol on a dry-weight basis.

Work is in progress to ascertain the nature of the carbohydrate compound(s) from which the above three substances are derived.

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Seed Dressings for the Control of Wheat Bulb Fly

GOUGH[1] has referred to the serious damage caused by wheat bulb fly (*Leptohylemyia coarctata* Fall.) in Great Britain in 1953 and discussed various means of preventing or reducing attacks. Of the possible methods of chemical control, seed dressings seemed worthy of investigation; previous experiments had given conflicting but usually negative results. One of the possible reasons for this was the length of time between the date of sowing and the egg-hatching period, and we therefore laid down two field-experiments to study this time-factor. The seed dressings were: (1) a standard proprietary one containing 1 per cent of an organo-mercurial fungicide applied at 2 oz./bush.; (2) 40 per cent gamma-BHC containing 0·8 per cent of an organo-mercurial applied at 3 oz./bush.; (3) 40 per cent dieldrin containing 0·6 per cent of an organo-mercurial also applied at 3 oz./bush.

There were two sowing dates, an early one in October or November, and a late one in December or January. The six treatments, that is, three seed dressings × two sowing dates, were randomized among four blocks in exp. *A* (peat soil) and three blocks in exp. *B* (acid peat). Both fields had previously been cropped with potatoes and were known to have a very high population of wheat bulb fly eggs of the order of 3–5 million per acre.