As a natural consequence of this work, we extended our researches to the action of ammonia on 2 : 3-anhydro 4 : 6-benzylidene α-methylmannoside and 2 : 3-anhydro 4 : 6-benzylidene α-methylalloside. The former, on treatment with ammonia, gives a quantitative yield of *3-amino 4 : 6-benzylidene α-methylaltroside*, m.p. 188°, $[\alpha]_D + 88{\cdot}9°$ in chloroform ($c = 0{\cdot}517$). When the benzylidene residue is removed from the above substance by means of 1 per cent hydrochloric acid, *3-amino α-methylaltroside hydrochloride* is obtained in 76 per cent yield. The substance has m.p. 209° with decomposition, $[\alpha]_D -$ 149° in water ($c = 1{\cdot}028$), and is identical with the "methyl epiglucosamine hydrochloride" prepared by Fischer, Bergmann and Schotte[2], who record m.p. 210–211° with decomposition, and $[\alpha]_D - 147°$ in water. Fischer's "methyl epiglucosamine" has since been proved to be 3-amino α-methylaltroside by Freudenberg, Burkhart and Braun[3].

In analogous fashion, 2 : 3-anhydro 4 : 6-benzylidene α-methylalloside gives a quantitative yield of *2-amino 4 : 6-benzylidene α-methylaltroside*, m.p. 168°, $[\alpha]_D + 104{\cdot}7$ in chloroform ($c = 1{\cdot}346$). The above was in turn converted into *2-amino α-methylaltroside*, m.p. 193°, $[\alpha]_D + 107°$ in chloroform ($c = 1{\cdot}109$), in 70 per cent yield. The position assigned to the amino group in the above case has not yet been definitely proved, but from analogy with the action of alcoholic caustic potash and sodium methoxide solution on 2 : 3-anhydro 4 : 6-benzylidene α-methylalloside, there can be little doubt that the amino group is in position 2.

Full details of the above transformations will be published shortly.

G. J. ROBERTSON.
W. H. MYERS.
W. E. TETLOW.

Chemical Research Laboratory,
The University,
St. Andrews.
Nov. 7.

[1] Mathers and Robertson, *J. Chem. Soc.*, 1076 (1933); Robertson and Griffith, *J. Chem. Soc.*, 1193 (1935); Oldham and Robertson, *J. Chem. Soc.*, 685 (1935).
[2] *Ber.*, **53**, 541 (1920).
[3] *Ber.*, **59**, 714 (1926).

A New Synthesis of Aromatic Arsenic Compounds

IN the course of a systematic study of reactions between aryl diazonium chlorides and chemical elements, it has been found that aromatic arsenic compounds may be prepared by warming a diazonium chloride under acetone with arsenic powder and chalk. With benzene-diazonium chloride there is obtained a water-soluble product from which triphenylarsine sulphide has been obtained by precipitation with hydrogen sulphide.

The reaction with arsenic is therefore analogous to that with antimony[1], which yielded triarylstibine dichlorides and other aromatic antimonials. However, when antimony powder is used, the reaction sets in at 0°, but with arsenic powder there is no reaction in the cold. There is a similar difference in degree of reactivity with the elements tellurium and selenium[2], which follow antimony and arsenic in the Periodic Table.

The reaction with bismuth powder has also been investigated, but, although the bismuth is attacked when the mixture is heated, aromatic bismuthines do not seem to be formed. They may, however, be unstable under the conditions of the reaction.

Attention has already been directed to the theoretical significance of these reactions[3], and of the reactions with metals such as mercury and silver, which may be attacked by free chlorine atoms but would not be affected if the decomposition of the aryl diazonium chloride took either a molecular or an ionic course. A still more striking example of the reactivity of the chlorine has now been found; gold powder is also attacked by benzene-diazonium chloride under acetone kept neutral with chalk, and auric chloride is formed in considerable quantities.

In contrast, it is rather curious that thallium metal seems to be inert, for aromatic thallium compounds can easily be prepared.

The scope of this new synthesis of aromatic arsenicals is under investigation in these laboratories.

W. A. WATERS.

University Science Laboratories,
Durham.
Nov. 15.

[1] Makin and Waters, *J. Chem. Soc.*, 843 (1938).
[2] Waters, *J. Chem. Soc.*, 1077 (1938).
[3] Waters, NATURE, **140**, 466 (1937); *J. Chem. Soc.*, 2007 (1937).

Alimentary Exudative Diathesis

DURING the work on K-avitaminosis in chicks, it is often observed that in some animals large amounts of transparent fluid accumulate, for example, in the subcutaneous connective tissue. It has now been possible to produce this symptom systematically by using a diet from which the protein has been very thoroughly extracted by alcohol.

The accumulations of fluid may be found in all parts of the body, but most frequently on the breast and abdomen. They are located in the subcutaneous connective tissue or under the skin and in some cases under the fasciæ of muscles. Intra-peritoneal accumulation is rare.

The fluid has the same composition as blood plasma, and it often clots when being removed by a pipette. In some cases the coagulation has already taken place *in vivo*.

Simultaneously with the accumulation of fluid, hyperæmia, slight hæmorrhage and accumulation of leucocytes occur in connective tissue, chiefly in fat tissue under the skin, in mesenteric fat or in fat tissue on the serosa of the gizzard. A similar condition may also, but less frequently, be seen in muscle tissue. Other tissue has not been observed to be affected. The changes resemble a sterile inflammation. It has not been possible to propagate any micro-organism from the inflamed tissue or from the fluid.

The fluid is supposed to originate by exudation from such inflamed tissue in which the capillary wall is rendered abnormally permeable. The degree of permeability is such that the plasma may escape while the erythrocytes are only passing through to a limited extent.

When chicks weighing 100–130 gm. are fed the basal diet, 50–80 per cent of them will show the symptom after 6–30 days. The exudates often disappear in about a week, even if the food is not changed, and some of the animals get several attacks during the experiment.

Addition of hesperidin together with ascorbic acid to the diet does not prevent the symptom, and it is therefore not likely that the disease is due to deficiency in Szent-Györgyi's vitamin P.