tuberculosis and certain pathogenic fungi and yeasts. Bacterial resistance to the antibiotic develops very slowly and no cross-resistance with other antibiotics has been reported. The sensitizing power of xanthocillin is said to be low.

The present trial with xanthocillin cream was carried out over a period of some months on a group of in-patients with a variety of eczematous and intertriginous eruptions, in all of which bacterial infection was thought to be playing a part. Most of these patients had already been treated with other antibiotics or with antiseptic applications; in some cases the eruption was symmetrical and permitted simultaneous comparison to be made between xanthocillin and other methods in routine use; these included iodochlorhydroxyquinoline, neomycin, and various other antibiotics.

At the same time xanthocillin cream was applied in the form of patch tests for 48 hours to the normal skin of 20 other subjects.

RESULTS

The patch tests carried out on normal skin were all negative and thus failed to show any primary irritant or toxic property in the cream.

When applied to the inflamed and eczematous skin there was no case in which aggravation of the eruption appeared to result. This in itself is encouraging, for

the patients being treated were those in whom non-specific aggravation from treatment is rather often seen.

As to the therapeutic efficiency of the cream it is not possible to give more than a clinical impression. There were some cases in which the cream was of no apparent benefit; there were some in which rapid and striking improvement was produced after other antibiotics had failed. Generally speaking, the impression was that xanthocillin cream produced results which were on a par with other treatments with which it could be compared.

One may sum up these results by saying that xanthocillin did not show irritant or other objectionable properties and that these preliminary results warrant a more extensive trial. If the antibiotic action which has been demonstrated *in vitro* is exerted also on the surface of the skin, xanthocillin cream should prove to be a very useful local application in suitable cases.

I am indebted to Dr. C. N. Brown, of the Distillers Company, for supplies of xanthocillin cream and for information regarding xanthocillin.

F. RAY BETTLEY, F.R.C.P.,
St. John's Hospital for Diseases of the Skin,
London.

REFERENCE

Rothe, W. (1954). *Dtsch. med. Wschr.*, 79, 1080.

Preliminary Communications

The Physiopathology of Acute Haemolytic Shock

This paper summarizes the results and conclusions derived from the observation of a number of cases of transfusion reaction in patients, and from about 1,000 experiments on animals and on ourselves.

Distilled water was injected intravenously into dogs (5 to 10 ml./kg. body weight) and into ourselves and patients suffering from anaemia (100 to 150 ml.), in all cases with no detectable effects. Intravenous reinjection of our own haemolysed blood (100 to 130 ml.) and haemolysed autotransfusion into dogs (2 ml./kg.) also had no detectable effect. Haemolysed blood of group O also can be safely injected into recipients of any other group.

Haemolysed blood of group A can be transfused into individuals of any other blood group, provided it is freed from its stroma; in experiments in dogs no haemolytic shock was found to occur after the transfusion of heterospecific blood, if this had been previously freed of stroma. Stroma itself, on the other hand, does produce shock. Experiments on ourselves showed that the injection of blood of a different group, containing stroma, causes haemolytic shock, while the same blood freed of stroma has no effect.

We consider haemolytic shock to be closely related to anaphylactic shock. Our investigations in this connexion gave the following results:—In both we observed the same serological effects: diminution of complement, of haemolysins, of agglutinin titre, and of bactericidal properties. The haematological effects were also identical: primary leucopenia followed by leucocytosis, granulocytopenia followed by granulocytosis, lowered

sedimentation rate of the red corpuscles, lowered Sabarés index, polycythaemia, eosinopenia, thrombocytopenia, and disturbance of coagulation. The biochemical changes, too, were the same: alteration of the refractive index, lowering of the polarographic wave, increase of the serum potassium level, fall in calcium level and alkali reserve, and diminished intestinal absorption of glucose. In some of the experiments hyperglycaemia was noted, and a fall in the cholinesterase level.

One attack of haemolytic shock affords protection against a subsequent one, and prophylactic histamine treatment has a similar effect. Physostigmine, on the other hand, aggravates the shock.

The consequences of haemolytic shock are the same as those of the anaphylactic variety: biliary obstruction, contraction of the peripheral capillaries, and an increase of lymph flow in the thoracic duct. The muscle fatigue which Eppinger observed in histamine shock is also to be seen in haemolytic shock.

The simultaneous injection into the carotid sinus of blood from another person and of the recipient's own plasma produces shock.

We are able to bring about conditioned reflexes in haemolytic shock as well as in histamine shock. In the former, both the pressor and the depressor reflexes are diminished. The heart damage observed is not the result solely of disturbance of the peripheral circulation, but also occurs in Starling's heart-lung preparation, even when an adequate venous in-flow has been ensured.

Drugs effective in anaphylactic shock (antazoline, calcium, procaine, nicotinamide, chlorpromazine) also alleviate haemolytic shock.

Cs. HADNAGY.

I. SZABÓ.

Second Medical University Clinic, Blood Transfusion
Centre, and Physiological Institute, University of Tirgu
Mures-Marosvásárhely, Rumania.