EDITORIALS.

LEPROSY RESEARCH AND THE LEPROMIN TEST

Within the last few years there has appeared in *Leprosy in India* a series of articles written by Dharmendra and Lowe and one or two other collaborators on the Lepromin Test. We reprint below the last of this series which summarises the previous articles. The fact that the mycobacterium of leprosy has not yet been cultured outside the human body renders difficult the study of the biological, antigenic and immunological features of this organism. No satisfactory serological test has yet been evolved either to help diagnosis or to estimate resistance. The lepromin skin test of Mitsuda, the chief use of which has been its specific negative results in lepromatous cases, is the only test we have.

The antigen originally used was leproma ground up and suspended in saline, but this could not be satisfactorily standardised. Dharmendra has now described a method by which the mycobacteria can, by grinding up the lepromatic chloroform. be obtained separate from each other and free from tissue debris. After drying, the resulting powder can be used to make up a uniform suspension accurately standardised by weight.

With this antigen it is now possible to read the results within 48 hours instead of having to wait for two or three weeks, a most important improvement when the test is being put to mass use. Another interesting observation is that the reactivity of the antigen is enhanced by prolonging the soaking of the mycobacteria in chloroform. The explanation suggested is that the lipoid material surrounding the organisms is removed and the proteins inside their substance can thus be more rapidly set free and act immediately on the tissues. No suggestion is made as to the nature of this lipoid material; is it part of the mycobacterial body, is it an organised capsule, or is it a substance secreted by the organisms or produced by them from the surrounding tissues by an enzyme, a substance in which they lie embedded, the ' gloea ' of the old leprologists?

Another interesting point brought out is that the reaction-producing porti
fractions being active; also that this protein when injected into the skin produces not only a local reaction in a non-lepromatous case, but also focal reaction in distant lesions. This is taken as evidence of allergic action; in any case it is significant as showing that lesions throughout the body can be activated by a specific substance set free from the bodies of lepra bacilli.

The same author (Dharmendra) in another article reviewed in this issue suggests that the reason why sulphonamide drugs are not useful in leprosy is the high lipoid content of the mycobacteria, and that the outer " waxy " layer prevents access of drugs to the interior. He suggests the preparation of lipophilic sulphonamides so as to overcome this difficulty.

With the above in mind, what about the iodides? These are well known to produce reaction even in small doses. How is this reaction produced if not by lipolytic action which sets free mycobacteria from their surrounding lipoids? A combination of sulphones or other similar derivatives with minute doses of iodide might be worthy of trial under carefully regulated conditions.

Another use of the lepromin test, not mentioned in the series of papers referred to above, is in distinguishing organisms suspected of being M.lepra. Ota and Nitto* claim to have obtained multiplication of Hansen's bacillus in fowls through six series after injecting suspensions of leproma mixed with kieselgur, trypan blue and potassium iodide into the breast muscles. He also claims to have confirmed his results not only by histological examination but also by the lepromin test. Emulsion of liver taken from one of the sixth series of fowls gave skin reactions similar to those of control injections of suspension of leproma prepared by the ordinary Mitsuda technique.

Dharmendra and Lowe's paper should be carefully studied by all those in a position to make investigations, especially into such questions as the incidence of types, immunity and hereditary predisposition.

EXPERIMENTAL TREATMENT.

Reports continue to appear of trials with various drugs. On pp. 22 and 32 are conflicting accounts of results from the use of penicillin. There are also encouraging results from the intraveonous use of a sulphonamide preparation which is highly soluble with a low pH of 6 or 7, and therefore not caustic (p. 27). In searching for an effective remedy for leprosy the following points are worthy of consideration. Recovery of even a moderately advanced lepromatous case would necessarily be slow. A fairly high blood concentration of the drug might be necessary; the drug must therefore be non-toxic, or of very low toxicity so that it can be tolerated in a high enough concentration over a long period. If, as was found by Faget and his colleagues in the case of promin, there is less toxicity when given intravenously than

* *Int. Jl. Lep.* (1941) 9, 299.

orally, then the drug must be freely soluble and non-irritant. To ensure complete and permanent recovery it would be necessary that either every bacillus should be eliminated from the body or else that resistance to infection should be raised as shown by a positive lepromin test. The results given by Faget (see page 25) are so far the most encouraging.