

## The Lister Institute.

THE thirty-third annual report was presented by the governing body at the annual general meeting of the Lister Institute of Preventive Medicine on May 18. In certain of the researches carried out by the Institute, the Medical Research Council, the Department for Scientific and Industrial Research, and the British Empire Cancer Campaign have co-operated by providing salaries or grants for the workers engaged: thus the Medical Research Council has provided the salaries of the staff of the National Collection of Type Cultures. On the occasion of the Lister centenary celebrations in April last, an address was presented from the governing body and staff by Sir James K. Fowler, in the absence of the chairman, Sir David Bruce.

Short abstracts of the scientific researches of the members of the Institute occupy the major part of the report, and are accompanied by a list of papers published during the year. A few only of these are selected for notice in the following account.

In the department of bacteriology, Prof. Ledingham has shown that the dermal reaction to vaccinia virus can be prevented by injection of Indian ink into the cutis, either before or with the virus. Presumably the ink stimulates the reticulo-endothelial system and increases the local defensive powers so that the virus fails in its attack on the tissues. A similar effect is obtained (in the rabbit) if the site of injection of the virus has been previously exposed to the X-ray or to infection by the streptococci of erysipelas. H. Schütze and S. S. Zilva have completed an investigation on the effect of diet upon the course of tuberculosis in animals: guinea-pigs on a diet restricted in quantity were found to be less resistant to the progress of an infection than the controls. In rats, sodium chaulmoograte was without influence on the lesions, but it appeared that a large excess of cod-liver oil or irradiation with ultra-violet light did inhibit their formation: the leucocytosis simultaneously produced is not the only agent in this inhibition, if concerned with it at all.

In the department of biochemistry, W. T. J. Morgan has prepared the  $\alpha$ - and  $\beta$ -methyl hexoside-diphosphoric acids from hexosediphosphoric acid, and is attempting to obtain the methyl hexoside from the former by means of Robison's bone enzyme. In collaboration with H. P. Marks he has shown that neither the mono- nor the di-phosphate will relieve the symptoms of hypoglycæmia in rabbits and mice following injections of insulin. R. Robison has continued his work on the phosphoric esters occurring in blood, and has found that these compounds account for nearly all the acid soluble phosphorus present in this fluid: at the same time a compound which does not contain phosphorus but reduces alkaline copper solutions has been isolated and is being examined. He has also found that the bone enzyme will produce phosphoric esters synthetically, under suitable conditions, from inorganic phosphate and glycerol, glycol, mannitol, glucose, etc. In further experiments on calcification *in vitro*, the same author has shown that deposition of calcium phosphate in rachitic bones occurs when so little as 5 mgm. calcium and 5 mgm. inorganic phosphorus per 100 c.c. are present in the surrounding solution, provided that phosphoric ester is also present: so little as 0.5 mgm. organic phosphorus per 100 c.c. has a significant effect, and the deposit increases proportionately to the increase in the ester present.

In the department of experimental pathology, the director of the Institute, Sir C. J. Martin, and

Elizabeth Lepper have continued their investigations on the protein error of indicators: in the case of horse-serum it was found that the serum-albumin diminished the colour of phenol red and neutral red, whilst the pseudoglobulin increased it. Prof. Korenchevsky has found that after thyroidectomy, rabbits show a more pronounced fall of body temperature on cooling, and much less increase on warming, than normal animals. Castration has similar but less-marked effects, but para-thyroidectomy is without influence. Thyroid feeding will restore the power of adjustment to normal, but in excess will cause a marked rise of temperature under conditions previously well borne.

Work on vitamins includes assays of cod-liver oils carried out by the Institute on behalf of the Health Committee of the League of Nations: Miss Hume and Miss Henderson Smith have developed a new technique for vitamin A, in which the test material is fed to the experimental animals from the commencement of the experiment, the amount given to different animals increasing in geometrical proportion. For vitamin D assay, Miss Soames and Miss Leigh-Clare have worked out a basal diet containing both vitamin A and phosphorus in adequate amounts. They have also found that the vitamin D content of cod-liver oils is more uniform than the vitamin A content, and have obtained agreement between the biological method of assay of vitamin A and the colorimetric titration by the method of Drummond and Rosenheim. Miss Leigh-Clare has also been unable to detect any vitamin D in the marine diatom *Nitzschia*, so that this organism cannot be regarded as the ultimate source from which the cod obtains the antirachitic vitamin stored in its liver oil. Miss Hume, Dr. Lucas, and Miss Henderson Smith have found that young rats and rabbits are protected from rickets when 0.2 gm. irradiated cholesterol in hardened cotton seed oil is daily applied to an area of depilated skin equal to about one square inch, lending support to the idea that vitamin D may be synthesised in the skin when ultra-violet rays fall upon it. T. Lumsden in experimental researches on cancer has found that the immunity of an animal to an homologous tumour is the result of two factors: antibodies in the blood serum and some excretion from the white blood corpuscles when they have extravasated and are subject to a low oxygen tension.

In the department of protozoology, Dr. Muriel Robertson has performed experiments on the parabasal body of the free-living flagellate *Bodo caudatus*: after treatment with acriflavine, a proportion of the organisms, otherwise appearing normal in their behaviour, were found to have lost the parabasal body, and in their progeny it is also absent. In studies on *Heteromita* it was found that, after nuclear division, the daughter cells sometimes failed to separate; the double individual which results from this non-separation gives a most realistic simulation of conjugation, so that it is not yet certain that the latter process occurs in this form.

In the department for the study and preparation of antitoxic sera, it has been found that with continued subcultivation in ordinary laboratory media the streptococcus tends to change its characteristics. Recent cultures are hæmolytic, virulent to mice, and appear 'rough' in broth medium, whereas the older cultures, into which the former tend to pass, are non-hæmolytic, less virulent, and 'smooth' in character. Their antigenic relationships are being investigated.