

is slightly hygroscopic. It is highly soluble in water, and 40 per cent solutions are stable indefinitely and can be sterilized by heat. It is slightly bitter, but small amounts may be mixed with the food of animals without impairing their appetite or digestion. The guinea pigs tolerate a daily dosage by mouth of 300–400 mgm. over long periods. The experiments indicated that in many of the animals 'Promin' either had prevented the establishment of lesions or had caused their eventual disappearance. In the vast majority of the animals in the treated group that had lesions, the histopathological characteristics of the disease process apparently were modified favourably. The failure to demonstrate lesions of tuberculosis in a considerable number of the animals that were treated, and the further fact that the disease in the treated animals was with few exceptions minimal and non-progressive, indicate that the action of the drug was significant. Encouraged by the animal experiments, 'Promin' has been used in the treatment of a few cases of tuberculosis in human beings. In man, unfortunately, much lower dosage relative to weight may soon produce toxic effects, particularly hæmolytic anæmia. In these few cases treated with 'Promin', it appeared that outstanding success has not been attained in man with any dosage which is well tolerated. In Great Britain, Tytler and Lapp<sup>4</sup> applied 'Promin' locally to superficial tuberculosis lesions in ten cases. The improvement in all cases was greater, or more rapid, than would have been expected by orthodox methods of treatment. These authors reported that Dr. G. T. Allerton, of Torquay, had been applying the drug to superficial lesions with much success.

In 1943, Kharash and Reinmuth reported on a derivative of N-(1-carboxyaethylaminoethylthiomethyl) designated as 'Kharash 1048'. This substance had shown an inhibitor effect on the development of experimental tuberculosis in guinea pigs (Hinshaw and Feldman<sup>5</sup>). More recently, Petter and Prenzlau<sup>6</sup> have described their results with diazone (the disodium formaldehyde sulpho oxylate derivative of 4-4" diaminodiphenylsulphone, a compound synthesized by Raiziss) in forty-four patients. All the patients received diazone for 120 days or more. The total daily dose was 1 gm. There appear to have been no serious reactions except some cyanosis and nausea in about one quarter of the patients. Signs of improvement were first noticed between the 45th and 125th days of treatment. In 60 per cent of the group, sputum became negative. The authors consider they observed marked improvement in 18 per cent and moderate improvement in 50 per cent of cases.

Thus 'Promin', diazone and other related compounds appear to possess in varying degree the striking power of restraining the development of experimental tuberculosis in guinea pigs; but it is recognized that experimentally induced tuberculosis in guinea pigs offers many contrasts with clinical tuberculosis in human beings, even though the causative organism is the same. Despite the lack of convincing evidence of the value of present chemotherapeutic substances in the treatment of human tuberculosis, further controlled clinical investigation is clearly desirable.

No review of progress in this sphere would be complete without reference to the observations made on antibiotic substances produced by micro-organisms such as penicillin, gramicidin, etc. The treatment with antagonistic organisms was initiated by Cantani

(1885), who employed, with reportedly favourable results, an organism designated as 'Bacterium Termo'. Later, many papers on that subject were published announcing varying degrees of success. Recently, two papers appeared on the subject, one by the present writer<sup>7</sup>, who obtained promising results *in vitro* with filtrate of culture of *Aspergillus Fumigatus* No. 367 N.C.T.C., grown on modified Czapek Dox medium, and a second published by Miller and Rekate<sup>8</sup>, who found that the growth of a strain of the tubercle bacillus was inhibited by a green mould of the penicillin group which accidentally grew on a culture of the tubercle bacillus stored in an icebox. The negative effect of penicillin upon *Mycobacterium tuberculosis* has been reported by Sir Howard Florey and his school<sup>9</sup>.

All possibilities for the treatment of the disease should be explored at the present time, when the number of clinical cases of tuberculosis is increasing daily in starving Europe. Even in Great Britain, where conditions of living are fairly good, Stocks<sup>10</sup> considers that for all forms of tuberculosis the cost of the War up to mid-1942 may be estimated at about 11,000 deaths. Research on the control and treatment of tuberculosis should be regarded as a matter of urgency at the present time, and it is difficult to understand why there has been no foundation of a separate institute for the study of tuberculosis.

However, as research continues and newer compounds are made available, what were perhaps previously considered to be futile efforts now assume a new importance and provide a measure of hope for believing that an effective chemotherapeutic agent will be eventually found.

<sup>1</sup> *Amer. Rev. Tuberc.*, 7, 1 (1923).

<sup>2</sup> *Bull. Johns Hopkins Hosp.*, 82, 77 (1938).

<sup>3</sup> *Amer. Rev. Tuberc.*, 41, 732 (1940).

<sup>4</sup> *Brit. Med. J.*, 2, 750 (1942).

<sup>5</sup> *Amer. Rev. Tuberc.*, 50, 202 (1944).

<sup>6</sup> *Amer. Rev. Tuberc.*, 49, 308 (1944).

<sup>7</sup> *Nature*, 154, 550 (1944).

<sup>8</sup> *Science*, 100, 172 (1944).

<sup>9</sup> Abraham *et al.*, *Lancet*, 251, 171 (1941).

<sup>10</sup> *Brit. Med. J.*, 2, 750 (1942).

## SOUTH-EASTERN UNION OF SCIENTIFIC SOCIETIES ANNUAL CONGRESS, 1945

THE fiftieth annual congress of the Union was held at Harpenden on July 7 at the invitation of the director of Rothamsted Experimental Station and by arrangement with the Harpenden Urban District Council. Before the presidential address was given the following sectional addresses were delivered: "Church Chests", by Edward Yates; "Trace Elements", by Dr. Winifred E. Brenchley; "Some New Weapons in the Geological Armoury", by P. Evans; "Country Planning", by C. S. Orwin; and "Fishing Research and the Overfishing Problem", by Dr. E. S. Russell.

Before the official business of the Union was transacted, Miss E. C. Busby, chairman of the Urban District Council, welcomed the congress. The new president, Dr. W. G. Ogg, director of Rothamsted Experimental Station, was then installed and gave an address entitled "Some Aspects of the Work at Rothamsted". Brigadier F. A. E. Crew presided. The presidential and sectional addresses will be pub-

lished in full in Vol. 50, 1945, of the *South-Eastern Naturalist and Antiquary*.

Dr. Ogg mentioned that the Rothamsted work can be divided into two broad sections, one on soils and plant nutrition and the other on plant pathology and insect pests. Field experiments still occupy a prominent place in the programme. An important but little-known branch of this work is formed by the experiments conducted on farmers' own land in various parts of Britain; these provide information about the efficiency of fertilizers over a wide range of soil types and climatic conditions. Although field experimentation of this kind is done extensively in certain other countries, much of it is not above the 'demonstration' level. The number of the Rothamsted 'outside' experiments, the length of time they have been in progress and the fact that modern statistical technique is used, make them a unique series.

Modern experimental technique in conjunction with tests of the validity and significance of results was developed at Rothamsted as a corpus of knowledge by Prof. R. A. Fisher. It is used in all laboratory and field work at Rothamsted, and though barely twenty years old is standard in agricultural experimentation throughout the Empire, and is being increasingly adopted by progressive countries elsewhere. Efficient sampling surveys are a recent development of this technique and have been applied to various war-time activities, notably the formulation of a fertilizer policy. Philosophically, the new technique is of interest because it enables several factors to be examined simultaneously; as Fisher pointed out, if Nature were asked only one question she would often refuse to answer until some other topic was discussed.

A broad base is characteristic of the Rothamsted work; for example, biology cannot be excluded even from the study of soil physics. The availability of soil moisture for plants is bound up with organic manuring, including the use of leys; and cultivation cannot be studied without reference to roots. Fundamental work has been done at Rothamsted on the relation of the nodule bacteria to their host plants, and, with an increased staff, microbiological studies are being extended to include mycorrhiza and other problems having a community interest in more senses than one. From their very nature, the botanical studies on weeds in arable and grass-land have long had this interest.

The pathological studies include the intricate relationships between viruses and their insect vectors, and the not less obscure problems of the relation between husbandry and fungal diseases. The population aspect of insect behaviour has been a feature of the entomological work. The study of pest outbreaks is regarded as an appreciation of the changes in insect numbers in a locality. A distributional outlook has recently been brought to bear on problems of slugs and earthworms.

Collaboration between chemist and biologist in the department dealing with insecticides has brought about some remarkable achievements, including the establishment of an 'insect zoo', by means of which healthy insects for testing purposes are on hand the greater part of the year. In conclusion, Dr. Ogg said he would like to mention his hopes for the Department of Pedology now being formed. Soil classification is still in its infancy; in particular, the understanding of tropical soils is far from satisfactory. In the new department attention will be given to Colonial as well as to domestic soils. In this department, as

in others, while preserving the best in the old we must have an adventurous outlook on the new.

In July 1946 the Union hopes to hold its jubilee congress of three or five days at Tunbridge Wells, the president-elect being Dr. Lancelot Hogben.

## CARNEGIE CORPORATION OF NEW YORK

THE annual report of the Carnegie Corporation of New York for 1944 includes the report of the president, W. A. Jessup, prepared before his death on July 9, 1944, and the report of the secretary and of the treasurer. The report of the president for the year ending September 30, 1944, compares the work of the Corporation and the college thirty years ago and now, and stresses the extent to which American colleges and universities have, with their responsibility for large endowments, found themselves engaged indirectly or directly in many forms of business; the ownership and control by the University of Chicago of the "Encyclopædia Britannica" and of the educational films of Eastman Kodak Co. and Electrical Research Products Inc. being an example. One leading mid-western university has reported contracts with Government agencies alone which involve the expenditure of more money than the university proper has ever before expended in a single year.

The U.S. Government, through its Office of Scientific Research and Development, is currently expending more than 125,000,000 dollars in research carried on chiefly by university scientific men. In recent years it has been a common practice for business and industrial organizations to unite in establishing foundations to enable them to work more effectively with the colleges and universities. A distinctive feature of these relations of the college and the university to the public is the fact that Government, industry, private donors and foundations tend to specify the purpose for which the money is to be expended. This tendency to delimit the use of money is so common that only the exceptional college president or trustee can discuss the future of his institution in terms other than those of itemized additions to its programme. The combined endowments of colleges and universities to-day, as reported to the U.S.A. Office of Education, are more than 1,686,000,000 dollars, as compared with the 166,000,000 dollars at the turn of the century. At the present time the income of the Carnegie Corporation is about 4,500,000 dollars, while the receipts of American colleges in 1940 exceeded 630,000,000 dollars. Comparatively, the educational importance of the Corporation, as expressed in income and assets, is thus less than a generation ago. The reduction in income of the Corporation and the consequent reduction in grants made places a heavy burden on the trustees in appropriating the available income, and an examination of the list of appropriations during 1930-32 shows many grants for purposes which are no longer largely aided by the Corporation.

The report of the secretary contains a complete list of appropriations voted during the year 1944 totalling 5,873,215 dollars, the largest single grant being 5,000,000 dollars to increase the endowment of the Carnegie Institution of Washington, making that Institution the most heavily endowed scientific research agency in the United States, if not in the world. Its total endowment is now some 32,000,000