

Immunological exhibits also included the effect of insects in causing allergic symptoms in human beings (Dr. A. W. Frankland), a survey of the fungal spore and pollen content of the air (Miss E. D. Hamilton), immunology in agar cells (Dr. J. G. Feinberg, Dr. R. A. Grant and Miss H. Grayson), and gel diffusion methods for immunological assay (Miss B. J. Hayward).

The traditional use of dock leaves to allay the pain of nettle stings has led to the search for an antagonist of 5-hydroxytryptamine in dock-leaf extracts. The presence of such an antagonist and its action was demonstrated on *in vitro* preparations of smooth muscle (R. J. Brittain and Dr. H. O. J. Collier). The effect of drugs on the movements of the pig roundworm (*Ascaris* sp.) was recorded by means of a kymograph technique (Dr. L. G. Goodwin). The apparatus section included a light-scattering photometer (Dr. A. B. Taylor), a device for rapidly collecting samples of insects such as bees (L. Bailey), and apparatus for testing soil and plant tissue for mineral deficiencies (Dr. G. P. L. Miles).

Visitors were able to test their taste-threshold to phenylthiourea, which depends upon a single autosomal gene (Dr. H. Kalmus). The present writer, like one of his children, was unable to detect any flavour even in the strongest solution provided; his wife could distinguish something, but his other two children responded violently and vulgarly to its bitter taste. In contrast, all members of the family were able to appreciate the delicious home-made wine which formed an exhibit in the hobbies section (H. W. Appleton).

The hobbies of professional biologists are by no means without interest, but have not previously been represented in a London Branch *Conversazione*. The series of colour photographs of British orchids (J. H. P. Sankey), oil paintings (Dr. J. R. Busvine), drawings of caddis-flies (Dr. N. E. Hicken) and of flowers (Miss D. Potts), in particular, reached a high standard of artistry. Nevertheless, it is by the standard of the biological exhibits that the *Conversazione* should be judged. Throughout, they showed imagination and skill.

J. L. CLOUDSLEY-THOMPSON

## WORLD HEALTH ORGANIZATION REPORT FOR 1956

**I**N his annual report on the work of the World Health Organization for 1956\*, Dr. M. G. Candau, the director-general, reviews the beneficent work of the Organization during the past few years and discusses plans for the future.

Considering malaria first, he recalls the recommendation made by the eighth World Health Assembly, held in Mexico, that eradication of malaria, not its mere control, should be the aim, and that an expert committee, which met after the conference of malariologists held in June 1956, drew up a realistic guide for the planning and carrying out of programmes of eradication of the disease. This policy of eradication was adopted because, in addition to long-range economic considerations, the *Anopheles* mosquitoes

which are the vectors of malaria became resistant to the insecticides used for their control. Research, which must always back up field work, has shown that, in some instances, mosquitoes resistant to DDT can be controlled by insecticides of the benzene hexachloride type, but that, in some parts of Greece, the mosquitoes are resistant to both these groups of insecticides and, wherever this occurs, other methods of control have to be devised. Preliminary studies promoted by the World Health Organization have shown that the distribution to peoples of salt-containing antimalarial drugs has given encouraging results. Two other antimalarial problems under investigation, both of them important in Africa, are the sorption of insecticides by the mud walls of houses, and the behaviour of the chief vector of malaria in Africa, *Anopheles gambiae*.

The section of the report devoted to malaria is especially interesting because it is illustrated not only by photographs of antimalarial work in Iraq and Mexico, but also by four valuable maps, which show at a glance the distribution of antimalarial activities in Europe, Africa, Asia and North and South America and the progress to date, so far as the latest information permits, of control and eradication programmes. These maps show, for example, that eradication is practically or fully achieved in the western United States and the Californian region, in Puerto Rico, Northern Chile, French Guiana, parts of Venezuela and British Guiana, in the greater part of Ceylon and, in Europe, in Italy, Corsica, Sardinia, Cyprus and Crete. Elsewhere the vigorous campaigns assisted by the World Health Organization are likely, in due course, to rid the world of a disease which is still one of the major menaces to mankind.

This cannot be done, however, without the research work which is, the director-general rightly insists, "the real backbone through which the Organization is striving to promote World Health". It is also a basic function of the World Health Organization to pool all available scientific and technical knowledge, to appraise this knowledge constantly and to study how best it can be applied to problems of public health wherever they occur. Malaria is not by any means the only disease transmitted by insect vectors, and the general problem of the resistance of vectors of disease to insecticides has been tackled by a survey of research. Experts appointed by the World Health Organization have visited more than one hundred laboratories concerned with this problem and the gaps in our knowledge have been defined. Co-ordination of the work of several scientific institutes has developed basic methods of measuring the susceptibility or resistance of vector populations—for example, the lice of man—with the result that the World Health Organization is now able to advise the best method of control, and there has in consequence been a betterment of the control of typhus fever, which is transmitted by lice.

In a different field of work a series of projects initiated by the World Health Organization and its experts has greatly advanced the control of rabies. The efficacy of hyperimmune serum has been demonstrated, and field trials in Iraq on the use of serum in persons exposed to rabies, in Spain on the local treatment of wounds inflicted by animals suffering from rabies, in Malaya and Israel on new vaccines for the control of rabies in animals, and in France and the United States on the standardization of the potency of vaccines and sera, have all contributed

\* Official Records of the World Health Organization No. 75: The Work of WHO 1956—Annual Report of the Director General to the World Health Assembly and to the United Nations. Pp. xi+233+16 pages of photographs. (Geneva: World Health Organization; London: H.M. Stationery Office, 1957.) 6 Swiss francs; 10s.; 2 dollars.

much to the control of this disease. An important recent step has been the institution of an international standard serum and a reference vaccine.

This is part of one basic task of the World Health Organization, that of providing medical science with units of measurement, a task which involves much intensive research, under the guidance of expert committees, in laboratories all over the world. Wherever vaccines are concerned, strictly controlled field trials are needed to relate the results of tests made on animals to those expected in man, and work of this kind has shown, as a result of a long series of studies, undertaken by the World Health Organization during 1952-56, that a dry smallpox vaccine can be prepared, which is stable at 45° C. for two years at least. This dry vaccine should improve the control of smallpox in hot countries, and an international reference standard for it is now being prepared.

Among other subjects discussed by the director-general are the psychobiological development of children and endemic goitre. For the treatment of goitre it has been found that iodates are more effective than iodides, and that sodium iodate has a very low toxicity. The World Health Organization therefore appointed experts to assist countries in Latin America in the production of iodized salt for their peoples.

Another aspect of the work of the Organization is concerned with the work of international centres or laboratories which exist for the study of influenza, poliomyelitis, treponematoses, leptospirosis, brucellosis and other bacterial and virus diseases, as well as for biological standardization and blood-grouping. The study of poliomyelitis has shown that, in countries with a high incidence of the paralytic form of this disease, the use of a vaccine is an effective method of reducing its serious effects. Prospects for the control of leprosy have been improved by the discovery of the sulphone drugs, and recent reports confirm that BCG vaccination has a real effect in reducing the incidence of tuberculosis, although, to control the disease, this must be combined with case-finding and treatment.

The director-general emphasizes that, in all work on communicable diseases, thorough and comprehensive planning is necessary. The application of a new method of control, or the adaptation of an established technique, needs careful pilot studies if success is to be ensured. It is realized, too, that technical knowledge and methods are not enough; success will depend on administration, training of personnel, sound technical application and financial support. The organization of public health services is being governed increasingly by the concept of integrated services, rather than by that of services separately provided for specific, limited fields. These integrated services are, for example, being applied in nutrition, maternal and child health and in health education.

More recently the Organization has been concerned with atomic energy in relation to health. The aspects of this general problem being studied are training, the collection and distribution of information on the medical problems that arise and on the medical uses of radioisotopes, the study of health problems arising from the disposal of radioactive waste, international work on the distribution of radiation standards and, related to these, on codes of practice and specifications for the preparation of radioisotopes for medical use, and the stimulation and co-ordination of research on the health aspects of radiation.

An important part of the report describes the work being done in each of the six regions into which the World Health Organization divides the world. There is a detailed list of the numerous projects in operation during the year, and the human aspect of all this work is shown by the excellent photographs selected from typical projects in many parts of the world. To some readers these photographs will tell, more graphically than words can, how widespread, effective and beneficent is the work of the Organization.

G. LAPAGE

## INSTRUMENTS FOR MICRO-METEOROLOGICAL MEASUREMENTS

FOR measuring the variations of temperature, humidity, and wind speed near the ground and in growing crops special apparatus is necessary. The spatial rates of change are large compared with those at the height of 4 ft. at which the ordinary screen readings are taken, and on this account specially small apparatus is necessary. Much work has been done on this subject in recent years at Rothamsted Agricultural Experimental Station, and Mr. H. F. Long has recently described the apparatus devised and its properties (*Quart. J. Roy. Meteor. Soc.*, 83, 202; 1957).

Temperature measurements are made with small resistance thermometers of either the thermistor or nickel wire type. The latter are more stable for purposes of continuous recording. The nickel wire elements used for measuring dry- and wet-bulb temperatures and in the 'hot bulb' anemometer were wound on plastic bobbins 1 mm. in diameter, 3 mm. total diameter with the wire, and 10 mm. long. Still smaller elements 0.8 mm. in total diameter and 5 mm. long were made for measuring the temperature of potato leaves by fitting them into holes made in the leaves with a hypodermic syringe. The elements used for measuring air temperature were protected from radiation by small half-cylinders of copper gauze painted white.

The fact that, at about 10° C. in air which is not too dry, the dew-point is roughly the mean of the dry- and wet-bulb temperatures is used by suitable circuit arrangements for obtaining a rough record of dew-point. Two such sets at different heights balanced against each other give a very sensitive measure of dew-point differences and also enable the times of dew formation, of particular importance to the Rothamsted workers in connexion with fungus disease of potatoes, to be determined very accurately.

For measuring wind speed in the range 5-70 cm./sec. a 'hot bulb' anemometer is used. This has two nickel wire resistance thermometers, one of which is heated by an electric heater. Cooling by the wind tends to equalize the temperatures of the heated and unheated bulbs, and the out-of-balance current in the central galvanometer of a Wheatstone bridge containing the two elements gives a measure of wind speed. Full details of the construction of the instruments and their calibration and degree of accuracy are given in the article. The instruments might well have applications in industrial processes in which accurate readings of temperature, humidity, and air flow are needed.