

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.