CROP ECOLOGY AND PLANT BREEDING FOR DISEASE RESISTANCE

SINCE its first meeting in 1951 the conference of plant breeders in East Africa has increased greatly in scope and stature. This change is a reflexion of its official title: Specialist Committee on Agricultural Botany. Although breeders and pathologists predominate, attendance at the recent meeting included physiologists, ecologists and other workers associated with crop research in Kenya, Uganda and Tanganyika. Throughout this formative period the Committee has been stimulated and guided by the chairmanship of Sir Joseph Hutchinson, director of the Cotton Research Station, Namulonge, who is shortly to take over the Drapers professorship in agriculture at Cambridge. This Committee is now an established part of inter-territorial co-ordination of agricultural research and, as such, provides a valuable forum for discussion and the initiation of policy on problems of plant breeding, pathology and crop research.

On January 22 and 23 the Specialist Committee met for the sixth time, the meeting being held at the headquarters of the East African Agriculture and Forestry Research Organization (Muguga, Kenya) at the invitation of the director, Dr. E. W. Russell. Some forty people attended, representing the Departments of Agriculture of the three territories, the Empire Cotton Growing Corporation, the Tanganyika Agricultural Corporation and the East African Agriculture and Forestry Research Organization itself. Visitors from certain other organizations and from other countries were also present.

The meeting took the form of talks by individual research workers followed by informal discussion; the two main topics were crop ecology and breeding for disease resistance. In the first of these, Dr. M. A. Keay (Makerere College) reviewed the need for direct observation to replace preconceptions and inferences from gross vegetational studies, as the basis for sound planning and advice. H. L. Manning and H. G. Farbrother explained their study of leaf area expansion and water losses in cotton crops, from which it had been possible to phase cropping to coincide with the greatest expectation of satisfactory rainfall. The correlation of rainfall with maize yields in western Kenya was described by J. Glover; the optimum rainfall had been deduced and actual yields could now be predicted. In the case of water studies in

coffee, Dr. H. C. Pereira explained that there were special advantages arising from the perennial deep-rooting habit of the crop and the high water-storage capacity of East African coffee soils. In the general discussion which followed, the main conclusion was that a greater degree of direct observation was now needed in crop ecology, but that it was already a great advance to be able to discuss the water balances of individual crops, water being the limiting factor over most of East Africa.

In discussing breeding for disease resistance, Dr. G. M. Wickens used the contribution of plant pathology in cotton breeding to illustrate the essential need for a research pathologist in breeding projects. The particular difficulties recently encountered in breeding for stem rust resistance in wheat in Kenya were then described by H. C. Thorpe, the main trouble being the lack of fundamental knowledge of the pathogen and the mode of origin of new races. Coffee rust and the work of the special rust research station at Lisbon were reviewed by R. W. Rayner. The status in East Africa of tropical maize rust was described by Dr. H. H. Storey, who showed how research and breeding initiated before the disease reached East Africa had provided local maize with resistant genes obtained from Central America. The role of chemistry in disease control was briefly reviewed by Prof. R. L. Wain, of Wye College (University of London). Discussion followed, from which the most important conclusion reached was the need to seek the highest level of disease resistance since moderate resistance could apparently be overcome more easily.

Other subjects discussed were the need for increased physiological research on coffee, difficulties over ratoon stunting in sugar cane, policy in work on cassava, and the co-operative maize trials in the three territories. Between sessions the visitors toured the laboratories at Muguga and met other members of the staff of the East African Agriculture and Forestry Research Organization. The close of the meeting was marked by a special tribute to the chairmanship of Sir Joseph Hutchinson and his work for agricultural research in East Africa, and by the good wishes of all those present for his impending move to Cambridge. The Committee will miss him, but it may indeed be said that the Committee has 'come of age'.

G. E. DIXON

THE METEOROLOGICAL OFFICE

REPORT FOR 1955-56

THE appearance of the annual report of the Meteorological Office* is a noteworthy event. Several indexes, for example, the circulation of such journals as *Weather*, show that there is now a considerable informed public ready to take an interest in what three thousand of our citizens do with three million pounds—slightly less than 0.1 per cent of Britain's annual budget—to provide one of the most

essential services of a modern State. In sixty pages there is abundant food for thought for any who are concerned with the relation between the functions of a government and the maintenance of a technical-scientific organization. Scientists will ask for evidence of that liveliness of mind and productivity in original research which will ensure that such a service is not likely to lapse into a care-and-maintenance organization with correspondingly limited duties and responsibilities. This annual report will not disappoint them.

* Annual Report of the Director of the Meteorological Office for the year April 1, 1955, to March 31, 1956. Pp. 60+4 plates. (London: H.M. Stationery Office, 1956.) 3s. 6d. net.

To an increasing extent a modern government finds itself the employer of a cadre of scientists over an ever-widening field. In the establishment of officers such as the Master of the Ordnance of Tudor times, the Astronomer Royal in 1675, the Director of the Geological Survey in 1835, we trace the growing needs. This annual report reminds us that in 1955 the Meteorological Office celebrated the centenary of its foundation under the Board of Trade. For long, however, there was a tendency to regard the universities and scientific societies as the fount of research in meteorology, a state of affairs which was dispelled at an earlier date in some other sciences such as geology. Therein the interchange of ideas stemming from the researches of the officers of the Survey and the holders of university appointments has for many decades proved fruitful.

In meteorology the same could scarcely be said, for far too little attention to the subject was given by the universities, and a count of chairs shows that even to-day there is much room for improvement. Before 1900 the Royal Meteorological Society was very largely composed of amateurs with other means of livelihood; and at the same time the Meteorological Office, with its small staff and extremely limited resources, could give but little opportunity for research. The more praise should be given to that small group who, fifty years ago, were advancing the subject. Some of them are still with us, and will be among the first to appreciate the wonderful opportunities the Office now provides for those who choose to study, after the manner of Shaw, the air and its ways.

The development of air transport has emphasized the need for knowledge of the vagaries of the tenuous yet formidably complex gaseous envelope in which we not only live but also move with ever-increasing speed; a speed demanding a corresponding acceleration of the rate of growth of knowledge, and a rate of publication which appears now to follow an exponential law.

This annual report provides cheering evidence that under the present director and his twenty-four senior officers the Meteorological Office is valiantly maintaining a remarkable level of activity, not merely in the upkeep of essential services—among which we can still include the ancestral photographic thermograph at Kew, in continuous operation since 1868—but also in research. This is perhaps the most inspiring note in the report. In spite of the heavy and incessant pressure of the endless routine demands, and the occasional ill-informed criticism of those whose efforts to forecast the behaviour of a fluid of changeable qualities in turbulent motion cannot always take account of all the variables, the Office is doing much to fulfil some of the functions which the universities have tended for one reason or another to neglect. For it remains an astonishing fact that established posts in meteorology are named in the calendar of but five British universities. Even if a few ostensible practitioners of other subjects spare a little energy for the study of the behaviour of the atmosphere, this cannot be enough. Moreover, the Meteorological Office has taken on much of the burden of research in a way which cannot but provide an encouragement to its own personnel; the stimulus to be found in the team-spirit of a lively university department of physics.

To what extent this is a consequence of the times, with its concentration of funds and expensive equipment under Government control, and how much is

due to the inspiring example of Sir Graham Sutton and the many senior officers who kept the flag flying in the lean years between the wars, it would not be easy to say. Suffice it to direct attention to the remarkable range of activities comprehended among the three thousand staff. The clamorous battery of teleprinters flooding the observations hour by hour into Dunstable; the electronic computation devices now being developed to cope with this staggering assemblage of material; and the enormous range of the demand for specialized types of forecasts are associated with but one branch, even if some still think that the Office exists for little else than the day-to-day estimate of the behaviour of the next depression. There are now twenty-one branches (what has happened to M.O.5?) to deal with other problems. The cutting-down of the lag associated with the temperature readings transmitted by a radio-sonde; the measurement of light-intensity; the chances of easterly squalls on the airfields of Nigeria; the probable catch of water in a Highland valley devoid of rain-gauges; an admirable library service; and the generous advice and assistance with instrumental equipment for the young leaders of enterprising expeditions are but a few of the ways in which the advancement of science is stimulated. Moreover, commercial firms benefit enormously, and very cheaply, from this quiet and unostentatious public service: that, too, is a matter deserving of thought. Lastly, research is now being promulgated within university departments with the aid of grants from the Meteorological Office. This annual report gives a very cheerful impression of the developing relationship between the various institutions responsible for our national scientific accomplishment; and a subtle and enlivening touch is added in the list of papers and articles which the staff of the Office have themselves produced. It makes good reading, and scientists everywhere will extend their congratulations.

GORDON MANLEY

THE NATIONAL SCIENCE FOUNDATION

SIXTH ANNUAL REPORT

THE sixth annual report* of the National Science Foundation, covering the year ended June 30, 1956, in the main follows the pattern of the last two reports. The chairman's foreword is now accompanied by a statement from the director, Dr. A. T. Waterman, which, stressing the grave shortage of scientists and engineers and the need for fundamental research as well as for better general equipment for research, suggests that the most urgent task is to create an awareness and understanding in the citizens of the United States of the fundamental and critical nature of these problems. Dr. A. T. Waterman's report is again in two parts, but between his review of recent developments affecting the scientific community and his survey of the Foundation's own activities during the year, there is a photographic sample of those activities. Appendixes again occupying almost half the report list the personnel of the Board, advisory panels and committees of the Foundation, the basic research grants and fellowships

* National Science Foundation. Sixth Annual Report for the Fiscal Year ended June 30, 1956. Pp. xvii+189. (U.S. Government Printing Office, Washington 25, D.C.) 75 cents.