members of the governing body. There was much to do, and in developing both fundamental and applied research for the improvement of crops, he saw a satisfying task for his colleagues and himself. There must be the closest integration of science and agriculture, and the facilities which have been provided for the Institute gave the greatest opportunity for those engaged in contributing to scientific knowledge and in breeding improved varieties of crops.

The new premises of the Institute are situated on Anstey Hall Farm, Trumpington, some $2\frac{1}{2}$ miles to the south of Cambridge, and adjacent to the headquarters of the Eastern Province of the National Agricultural Advisory Service. The situation is not only appropriate for a research station that is to devote its attention to the arable crops of the driest parts of England, but it also makes possible the continued close liaison with the School of Agriculture of the University, as well as ensuring easy association with other University departments. Consequently the Institute is able to contribute to the teaching in the University, while it also has the inestimable benefit of close association with the research workers in various University departments.

The Trumpington premises have been planned so that the laboratories, offices, glasshouses and all other facilities are situated on the site being used for growing the plant-breeding material. This centralization is of the greatest value in work of this kind. It has the virtue of every worker having his field-material continually under his day-to-day care, with the consequent efficient organization of time and labour. It is no longer a major expedition to visit material growing in the field, the laboratories do not suffer from isolation from the living material, while there is the easiest transition from field-investigations to laboratory work. The unification, and the ensuring of the integration of field- and laboratory-work, are essential for the proper organization of research work devoted to the study of the behaviour of cultivated plants in the field with special reference to their improvement.

The buildings comprise a main and an ancillary block, the former housing the offices, library, main laboratories and other services, and the latter including the implement sheds, soil sterilizing and potting rooms and glasshouses. The two blocks are served by a concrete road and are separated from one another by part of the experimental plots, being situated a quarter of a mile apart. All parts of the premises are consequently of easy access, and there is a minimum of transport of materials involved.

The main building has interesting features from the point of view of the organization of scientific research work devoted to a wide range of problems in a number of different plant species. In the first place, except for the facilities provided in the ancillary buildings, which are largely concerned with the glasshouse work, the whole of the working requirements are provided under the one roof. The building is of two stories, to comply with local planning requirements, although there is a basement laboratory under a portion of the south wing for housing controlled-climate chambers and refrigeration cabinets. The ground floor is, except for a conference and lecture room, devoted entirely to laboratories, a specially constructed fire-resistant seed store, a threshing room and a sugar-beet tare house: the whole layout having as its main objective the centralization of the main servicing

departments in connexion with each crop section. This distribution has made it possible to devote the first floor primarily to private rooms, administrative offices and library, but there are also research laboratories for biochemistry, serology and cytology, and a large cereals room.

Although each crop section is provided with its own laboratory, it has been found necessary to provide in addition service laboratories such as cytology, chemistry, pathology and physiology for use by all sections, as well as the common facilities for controlled-climate growth, frost-hardiness testing, and germination tests. This means that there are essentially two kinds of laboratories—crop sectional and common service—to ensure adequate facilities for the different lines of investigation and the various crops included in the programme of the Institute. These developments are necessary to deal with the scientific techniques that must be incorporated in plant-breeding work involving the improvement of the important economic characters of crop plants.

Plant breeding is a slow process compared with some other branches of research work, and it can be very consuming in labour as well as time. Apart from the use of controlled-climate chambers for special purposes, and to increase the number of generations that can be handled in a given period of time, much can be done to economize in time and effort by the use of glasshouses, which are virtually essential for some aspects of plant breeding. The Institute is accordingly provided with standard heated glasshouses for the various crops, and it is possible thereby to continue certain investigations during the winter months. Special light-alloy glasshouses are being erected for the sugar beet programme, which is concerned particularly with the study of artificial polyploidy and other breeding techniques as well as the possibilities of developing beets resistant or tolerant to virus yellows disease. These glasshouses comprise two separate blocks; one is for studying breeding techniques and consists of four banks of air-conditioned compartments which can be used for controlled pollination and seed production of breeding material; the other block includes an insectary for raising aphids, an inoculation chamber, a fumigation chamber, and growing-on houses, the whole being designed to allow work on breeding for tolerance or resistance to virus yellows to continue throughout the year. Extra artificial illumination is provided for winter work, while the houses can be cooled in summer by blinds and water irrigation on the roofs.

The existing facilities provided at the Institute by these buildings and extra land are commensurate with the new responsibilities of the greatly expanded programme of research being undertaken. There is provision for expansion of the staff and of the work to cater for the requirements of plant breeding research on all the important arable crops of Britain.

OBITUARIES

Prof. R. W. Wood, For.Mem.R.S.

WITH the death on August 11 of Prof. R. W. Wood at the age of eighty-seven, science has lost one of the last links with the great experimental physicists of the past century. Though his principal contributions to science lay in the field of physical optics, Wood was a man of extraordinary versatility. An artist of no mean ability, a musician and, above all,

a teller of stories (not all suited to Victorian drawing-rooms), he had a keen sense of humour and an impish wit which made him the best of companions. Wood's "Physical Optics", now in its third edition, and his little satirical book of poems, illustrated by himself, "How to Tell the Birds from the Flowers", have both been best-sellers for many years.

Wood was a great traveller. Sabbatical years seemed to recur at very close intervals, and Wood's visits to Europe became almost an event in the scientific world. He never failed to bring with him something original and ingenious; and, of course, a fund of new stories. Like his great friend, C. V. Boys, Wood was essentially an experimenter who loved to do everything for himself. A craftsman in the laboratory arts and a manipulator of the very highest dexterity, Wood found it difficult to entrust any substantial part of his experimental work to others. When he embarked on an experiment, everything was sacrificed to its consummation in the shortest possible time. All apparatus and equipment, regardless of its normal purpose, was ruthlessly sacrificed to the end in view; and it only took some fifteen seconds to smash a perfectly good electric light bulb and extract the leadglass stem if Wood happened to be in a hurry for a bit of sealing-in glass.

Wood was born in Concord, Mass., in 1868, and was educated at Harvard and the University of Berlin. He became professor of experimental physics at Johns Hopkins University in 1901, where he took charge of Rowland's machines for ruling diffraction gratings and initiated the production of blazed echelette gratings for use in the infra-red. His published papers, which exceed 250 in number, cover a wide field and include experimental work in physical optics, on interference and diffraction and a study of the groove form and intensity distribution in gratings. He made extensive observations of the optical properties of the vapour of sodium at low pressure in which he observed the fluorescence and resonance spectra. Similar observations were made with the vapour of iodine. He studied the use of infra-red and ultra-violet photography of terrestrial objects and also their application to a study of the moon. These are only a few examples, chosen almost at random, of the many fields in physical optics in which he worked with such distinction. He was one of the really great experimenters with an almost uncanny flair for choosing the simplest and best method of attack. He seemed always to know what would work.

Wood received many honours, including Rumford Medals given by the American Academy of Arts and Sciences and the Royal Society, the Ives Medal and the Draper Medal of the U.S. National Academy of Science for his contributions to astrophysics. He was a foreign member of the Royal Society and was awarded honorary degrees by many of the leading universities of Europe. In 1892 he married Gertrude Ames, of San Francisco.

T. R. MERTON

Lord Horder, G.C.V.O.

In his long life of eighty-four years, which came to an end on August 13, Lord Horder witnessed and participated in a revolutionary change in the science of medicine and in the organization of its service to the public. In any age he would have been successful, for he was endowed with that indefinable gift for recognition of disease, great skill in clinical examination and sympathy with human suffering which

characterize the ideal physician. To these talents he added scientific knowledge and experience. Up to the present century the diagnostician's tools were limited to a few simple instruments to assist the otherwise unaided senses in the examination of the heart, lungs, eyes and larynx. Horder, trained as a pathologist, was able to add to the examination of the patient's body the examination of the patient's blood, his cerebrospinal fluid, his secretions and excretions. He was one of the first to bring the laboratory to the bedside, to foster and promote clinical pathology. It is little wonder that he soon became the most sought-after physician of his time.

Horder's early research work is recorded in contributions to the annual reports of the Medical Officer of the Local Government Board. In the report for 1906-7, he published a paper "On a Study of the Micro-organisms associated with Rheumatic Fever and Malignant Endocarditis". In the report for 1907-8 he contributed a paper with F. W. Andrewes "On the Behaviour of the Leucocytes in Relation to Infection by and Vaccination against the Pyogenic Cocci", and with M. H. Gordon reported "On an Investigation of Protective Agents in Meningococcus Infections". His chief contribution to clinical medicine was a paper on 150 cases of infective endocarditis in the *Quarterly Journal of Medicine* of April 1909, in which he stated that with care a positive blood-culture of one or other of three types of streptococci could be obtained in 90 per cent of cases. In 1907 he edited Abel's "Laboratory Handbook of Bacteriology"; he wrote on pleurisy in Allbutt and Rolleston's "System of Medicine" in 1909; and in 1910 he published his "Clinical Pathology in General Practice", in which he included an account of vaccine therapy. He edited the second edition of the "British Encyclopædia of Medical Practice", published in 1950, and in 1953 published "Fifty Years of Medicine", an expanded version of his Harben Lectures delivered at the Royal Institute of Public Health and Hygiene in December 1952, which are partly autobiographical.

Horder served on the Minister of Health's Advisory Committee during 1935-39, and during the Second World War rendered conspicuous service as chairman of a committee appointed to inquire into the health conditions of air-raid shelters, and also as medical adviser to Lord Woolton at the Ministry of Food.

He promoted many good causes. For example, physical medicine, industrial hygiene, eugenics, cremation and noise and smoke abatement owe much to his advocacy. In particular, the combating of two scourges of mankind, rheumatism and cancer, concerned him. He was chairman of the Empire Rheumatism Council from its inception in 1936 until 1953. As chairman of the Scientific Advisory Committee of the British Empire Cancer Campaign he rendered great service, and he largely instituted a clinical review and follow-up of all cancer cases in London hospitals. Only last year he attended an international cancer conference at São Paulo, Brazil.

"Those whom the gods love die young." Lord Horder gave a new interpretation of the aphorism, for up to the day of his death his mental powers were unabated, and he was still young in spirit, in enthusiasm, and in love for mankind and for the profession which he adorned.

ARTHUR MACNALLY