The Water Pollution Research Laboratory is in close touch with much of the work of this kind which is carried out in Great Britain; but now that industry is taking an increasing part in the solution of its own problems, it is becoming possible to devote a bigger part of the resources of the organization to work of a more general and basic kind. The need for such work has become more important with the formation in 1948 of river boards with powers to lay down standards of quality of effluents which may be discharged into particular rivers. It is clear that before this can be done effectively, a river board must be able to predict, within reasonable limits, what will be the effect of discharging a given effluent on the general properties of a river—on its suitability, for example, for a domestic or industrial water supply or on its ability to support a fishery. To give an accurate answer to such a question requires much more information than is at present available on rates of oxidation of different substances in rivers, on the rate of absorption of oxygen by water from the air, on the effect of plants on the oxygen balance, on the long-continued effect of toxic substances on fish, and so on. This kind of long-range investigation is at present occupying a large proportion of the effort of the Laboratory. For example, a detailed study is being made of the conditions in the very polluted estuary of the Thames, some fifteen miles of which now contain no detectable oxygen in solution in dry weather. Here information is required on what the effect on this condition would be of changing various factors—for example, the input of oxidizable matter in sewage and industrial effluents, the temperature (which is appreciably raised by the discharge of cooling-water from power stations), and the fresh-water flow. Having studied, so far as possible, the components of the problem in the laboratory, the distribution of dissolved oxygen under present conditions has then to be predicted, taking into account the complex system of mixing and flow of fresh and salt water in an estuary. The validity of the data used in the calculations can be checked by comparing the predicted distribution of dissolved oxygen with the observed distribution; when it has been shown that the data used are reliable, it is then not unduly difficult to predict what changes will follow from altering any of the factors which affect the oxygenation of the water. On such information, it is hoped, future policy concerning the estuary will be based.

In collaboration with the Ministry of Agriculture, Fisheries and Food and the Freshwater Biological Association, a study has been begun of the effects of pollution on freshwater streams. Much of the information gained in the survey of the Thames Estuary—particularly on the factors which affect the oxygen balance—will be immediately applicable in this new work.

The present staff of the Laboratory includes chemists, physicists and biologists; usually these work in combined teams—an arrangement which is often of great mutual benefit. The new Laboratory was designed for a research staff (scientific officers and assistants) of about eighty-five; the present number is fifty-three. It has a floor space of about 40,000 sq. ft. and includes under one roof a three-storied block of which the top floor includes the library and office accommodation and the other two floors small-scale laboratories, and a single-storied wing containing four pilot-scale and associated analytical laboratories. One section of this wing is designed as a low-activity radiochemical laboratory. In this, work is being carried out on the removal of radioactive substances from water; this section also undertakes for the rest of the Laboratory work involving the use of radioactive tracers. Two of the pilot-scale laboratories are specially designed for work with fish, and these are provided with a separate unchlorinated water supply from a bore-hole. A feature of the Station is that up to 70,000 gallons of domestic sewage can be pumped daily from a sewer crossing the site for use in large-scale experimental work in plant built in the open. The services are in general simple and orthodox; but where advantageous, use has been made of modern techniques and materials. Each laboratory contains an electrical circuit, operated from a master clock, from which impulses can be taken at intervals of 1 or 30 seconds; these operate relays and are widely used for marking time-scales and for controlling automatic apparatus. Another feature which has proved generally acceptable is that on suitable walls of each laboratory there are permanent metallic studs to which 'Dexion' or similar frame-work can be attached without boring holes in the wall. Distilled water is prepared centrally, using an automatic gas-fired boiler and a set of strip-action condensers in 'Pyrex' glass. Waste waters from the laboratories are drained through polythene waste pipes.

There is a transport section to assist in field-work, and metal-working and wood-working shops are provided for the construction of prototype apparatus designed and used in the laboratories.

OBITUARY

Prof. E. Regener

Erich Regener, who died on February 27, was born in Schleussenau near Bromberg on November 12, 1881. He studied physics under E. Warburg in Berlin, worked from 1909 onwards with H. Rubens at the Physics Department of the University of Berlin, and became, in 1911, professor of physics and meteorology in the Landwirtschaftliche Hochschule, Berlin. In 1920 he was appointed director of the Physics Department of the Technical High-school at Stuttgart, which, under him as experimental physicist, and with P. P. Ewald as theoretical physicist, soon became a lively centre of learning and research.

Regener is perhaps best known for his work on the intensity of cosmic rays under water and in the upper atmosphere. He was a pioneer in both fields, and at one time held both the depth and height records for cosmic-ray measurements: 230 m. below the surface of Lake Constance and 25 km. up in the atmosphere. These two achievements revealed his great experimental skill and ingenuity in the design of apparatus. Regener also made many important contributions to atmospheric physics, particularly in the study of ozone and of the physics of the crystallization of water.

During the Hitler regime, Regener had to resign his post at Stuttgart as his wife was a non-Aryan. However, he found support from the more liberal Kaiser-Wilhelm-Gesellschaft, as director of a laboratory at Friedrichschafen for the investigation of the stratosphere. When, during the War, his laboratory was destroyed during an air raid, he built a small research station at Weissenau on Lake Constance, which, after the War, became part of the

Max-Planck-Gesellschaft. Both his children by his first wife (who died shortly after the War) had to emigrate as 'half-Aryan': his son Victor, also distinguished as a physicist, to the United States, and his daughter, married to the physicist Dr. Rathgeber, to Australia. After the War, Regener became a senator and vice-president of the Max-Planck-Gesellschaft.

Regener possessed exceptional personal charm and a wide liberal culture. He was both a good violinist and a keen yachtsman. His death means the loss to German science of a creative experimental physicist and one who, having weathered the devastation of the Hitler regime and of the War, afterwards did much to help to rebuild its great tradition.

P. M. S. BLACKETT

NEWS and VIEWS

Entomology at Rothamsted: Dr. C. B. Williams, F.R.S.

DR. C. B. WILLIAMS, who has been head of the Department of Entomology of Rothamsted Experimental Station since 1932, retires on June 30. From Birkenhead School he went to Cambridge, where he took a science degree and the diploma in agriculture, and then to the John Innes Horticultural Institution, where he was one of Bateson's first research students. Between 1916 and 1927 he studied pests of sugar-cane in the West Indies, and then pests of cotton in Egypt, where he was sub-director and then director of the Entomological Department of the Ministry of Agriculture. In 1927 he was appointed entomologist at the Amani Research Station in East Africa, where his work on locusts enhanced his already great interest in the migration of insects—a subject that has since continued to fascinate him and in which he has become one of the leading authorities. During 1929–32 he was Steven lecturer in agricultural and forest zoology in the University of Edinburgh, after which he was a visiting professor in the University of Minnesota before going to Rothamsted. In addition to continuing his studies on insect migration, at Rothamsted he has been concerned with problems of field ecology and the relation between weather and the activity of insects. He has been a pioneer in applying statistical methods to biology and has contributed much to knowledge on intra-generic competition and on the relative abundance of different species in wild populations of many kinds of organisms. Dr. Williams has been president of the Royal Entomological Society, the British Ecological Society and the Association of Applied Biologists. Aided by a grant from the Agricultural Research Council, he will continue his work on quantitative ecology at Kincraig, Inverness-shire.

Dr. Kenneth Mellanby, C.B.E.

DR. KENNETH MELLANBY, who is to succeed Dr. C. B. Williams, has until recently been principal of the University College, Ibadan. After taking the Natural Sciences Tripos at Cambridge, he did his first research at the London School of Hygiene and Tropical Medicine, starting to study insects and climate, a subject that has remained his main interest. In 1934 he was awarded the Wandsworth Fellowship and for two years worked on the tsetse fly in East Africa. Then, as the Sorby Research Fellow of the Royal Society, he went to the University of Sheffield, where he was appointed honorary lecturer in zoology. Here, in addition to studying the effects of environment on the behaviour of various insects, early in the War he undertook work on head lice and scabies. In 1943, as a major in the R.A.M.C., he conducted a casualty survey among prisoners-of-war in North Africa, and in 1944, as deputy field director of the Medical Research Council Scrub Typhus Commission, he went to South-East Asia, where he was particularly concerned with organizing preventive measures against the disease. On his return to the United Kingdom, he was appointed reader at the London School of Hygiene and Tropical Medicine, a post he relinquished in 1947 to become the first principal of the new University College, Ibadan, where he also held the post of professor of parasitology. Since 1953 he has again been working at the London School of Hygiene, studying the manner in which insects can be acclimatized to withstand extremes of temperature.

Geology in the British Museum (Natural History): Mr. W. N. Edwards

MR. W. N. EDWARDS, who has been keeper of geology at the British Museum (Natural History) since 1938, is to retire on June 30. From the Cambridge County School he went to Christ's College, Cambridge, and was appointed to the Museum staff in 1913 as a palæobotanist. He has travelled widely and collected fossil plants in many parts, and his published papers cover a varied range of palæobotanical subjects. In the Department of Geology he has been particularly active in forwarding the publication not only of monographs and scientific papers but also of popular handbooks. He was a secretary during 1939–44 of the Geological Society, and recently he received the Lyell Medal of the Society. He is president this year of Section C (Geology) of the British Association.

Dr. E. I. White

THE Principal Trustees of the British Museum have appointed Dr. Errol Ivor White to succeed Mr. Edwards as keeper of the Department of Geology. Dr. White has been deputy keeper of the Department since 1938. Educated at Highgate School and King's College, London, he entered the British Museum (Natural History) in 1922, when he was given charge of the fossil fishes under the late Sir Arthur Smith Woodward. He has since specialized on the ostracoderms, and has published numerous papers on primitive vertebrates. He has collected fossils extensively in the Anglo-Welsh basin, and has also taken part in expeditions to Madagascar and Spitsbergen.

The Smithsonian Astrophysical Observatory

IT is announced that the Smithsonian Institution and Harvard University will in future co-ordinate their programmes of astrophysical research. In pursuance of this policy, the headquarters of the Smithsonian Astrophysical Observatory will move to Cambridge, Mass., though some work will continue in the laboratories and workshops in Washington.