reputation second to none for applying soil-conservation measures.

Australia, New Zealand and South Africa have learnt much in recent years from the United States, and with varying success have adapted American principles of soil conservation to their particular circumstances. The mechanics of soil conservation—that is, the prevention of water and soil from running downhill—are essentially the same everywhere; but environmental and social conditions in different regions require that soil-conservation measures should be integrated in different patterns. The art and science of soil conservation consist in building up a pattern of land use that will fit the physical, economic and social environment. All three Dominions have adopted the idea of the American soil-conservation district as the social unit for soil-conservation planning, but in different forms. It is still too early to say with how much success their plans will ultimately be crowned, but these embryonic experiments in applied human ecology deserve most careful attention.

In the British Colonial territories, too, the problems of soil conservation peculiar to tropical conditions are being tackled with increasing vigour and imagination. Whereas until recently most territories relied mainly on mechanical methods of erosion control, there is to-day a general awareness that these are only a means to an end, and that soil conservation must be integrated into systems of husbandry that will enhance the fertility of the soil. A few years ago the goal of many Colonial agricultural policies was at best to maintain soil fertility. Now it is to increase fertility; and with increased fertility should come increased stability, both of the soil and of society. This latter goal is still far from attainment; but those who control British Colonial policy seem to be gradually awakening to the importance of fundamental scientific studies for the conservation of the tropical environment. The work of W. S. Martin, who showed that grass fallows could have a dramatic effect on the restoration of soil fertility, the improvement of soil structure and resistance to erosion, promises to revolutionize the basis of arable agriculture in East Africa. Attention is also being paid to methods for improving pastures and controlling grazing, and to the proper role of fire in tropical agriculture. Many of these problems require expert knowledge of the structure of native societies for their solution.

To be effective, conservation measures in the tropics, as elsewhere, have to be applied on a regional scale, which involves co-operative or communal action, and may involve drastic modifications in land utilization. One of the great difficulties in the Colonies has been to secure co-ordinated action throughout a region. Responsibility for the welfare of the land is divided among many authorities whose interests do not always coincide. There is, indeed, need for conservation education and propaganda not only among native and European farmers, but also at high administrative levels. Native peoples, in Africa at any rate, often have a tradition of communal land ownership that should facilitate the enforcement of legislation designed to secure effective co-operative action in the control of soil erosion.

Several British Colonies and Protectorates have already enacted legislation to enforce soil-conservation measures or to regulate land use and conditions of land tenure for the purpose of conserving the soil. The trend of recent legislation has been towards the setting-up of regional authorities on the pattern of the American soil-conservation districts. Indeed, the invention of the soil-conservation district is probably America's greatest contribution to the promotion of soil conservation throughout the world. The authors of the Food and Agriculture Organisation booklet, with unnecessary modesty, make little reference to it; though they do state the astonishing fact that within the last ten years more than 1,000,000,000 acres—more than half the total land area of the United States—have been brought under the control of soil-conservation districts.

G. V. JACKS

THE COLONIAL MICROBIOLOGICAL RESEARCH INSTITUTE, PORT OF SPAIN, TRINIDAD, B.W.I.

IN 1945 Sir Robert Robinson and Prof. J. L. Simonsen, acting on behalf of the Colonial Products Research Council, paid a visit to the West Indies to acquaint themselves with the tasks in which scientific research could assist these and other tropical territories of the Commonwealth. From the observations they made in the Colonies which they visited, they concluded that almost every branch of science could be called upon to take a share in raising the prosperity of these lands; but that a special claim could be made for microbiology, of which only the most urgent medical aspects had been receiving attention in the past.

The Colonial Office accepted their conclusions and made funds available for the foundation of a Colonial Microbiological Research Centre to be situated within the tropics.

Port of Spain, Trinidad, was decided on as a suitable location. It was approved that the centre should devote its energies to fundamental research in microbiology; to the application of the results of its investigations; and to assisting agricultural and other industries in improving their products. Further, it was approved that the new Institute should form a centre for postgraduate training in microbiology. Afterwards, it was decided that a branch of the new centre should devote itself to the maintenance of a collection of micro-organisms which could be made freely available to interested institutes and to research workers in tropical and temperate climates.

To meet the needs of the new centre a building was designed, which, in addition to a library, comprises six laboratories, three for microbiological and one for biochemical research. One laboratory is reserved for the type culture collection, and one for the preparation of culture media.

A special room is provided for the cleaning-and sterilization of glassware. Adjoining, and communicating with, the biochemical laboratory is a balance room; another room is provided for photomicrographic work, in which an electron microscope may eventually be set up, should this prove desirable. For the cultivation of micro-organisms requiring temperature of 18° C. and below for maximum growth, a special room has been provided, which is maintained constantly at this temperature. In addition, the building houses three offices, a cafeteria, a first-aid room and a store-room.

The whole building is air-conditioned and will be maintained at a temperature of 25·5° C. (78° F.) and

a relative humidity of 60 per cent. The air-conditioning plant is housed in a penthouse on the roof of the one-storied laboratory building.

Since some of the investigations which the new centre is expected to undertake may eventually be adopted by industry, it was felt to be important to incorporate a pilot plant in the design of the institute. The pilot plant, when completed, will house, in addition to a complete fermentation plant of 400 gallons capacity with a separate distillation unit, a boiler house, a gas plant, an air compressor unit and a machine shop. From the pilot plant, gas, steam and compressed air will be supplied to the various laboratories, through underground pipe systems. All equipment for the pilot and air-conditioning plants are of British design and manufacture.

In view of the acute housing shortage throughout the West Indies and in Port of Spain in particular, it was agreed that housing facilities should be provided for the scientific staff within the grounds of the Institute. To this end a block of four flats has been erected within the six acres of grounds belonging to the Institute. A bungalow for the engineer has also been erected there.

The construction of the various buildings was commenced early in 1947 and has by now progressed so far that the Institute is to be opened officially on July 5, when Lord Hankey, chairman of the Colonial Products Research Council, has consented to perform the ceremony in person.

Invitations to attend the ceremony have been sent to Governments of the various Colonies, to Governments with Colonial possessions in the tropics and to the Governments of the neighbouring Central and South American States.

It is hoped to make the opening an occasion for informal discussions, among the delegates, of microbiological problems, particularly such problems as are met with under tropical conditions.

OBITUARIES

Prof. W. T. David

THE sudden death on May 22 of Prof. W. T. David has removed from the University of Leeds a man of real distinction with a vivid personality. For twenty-six years he was professor of engineering and administrative head of the Engineering Departments.

David was born in Laugharne in 1886 and was educated at St. David's County School. After a brilliant career at University College, Cardiff, he went to Trinity College, Cambridge, where he specialized in a study of infra-red radiation from flame gases and related combustion phenomena under the inspiration of the late Prof. B. Hopkinson. This field of research ultimately became his abiding interest. In 1912 he was appointed H.M. Inspector of Schools on the technological side; during the First World War he became inspector of gun ammunition with headquarters at Woolwich Arsenal and later director of dilution of labour at the Ministry of Munitions. In 1920 he was appointed to the chair of engineering at University College, Cardiff, and in 1922 he succeeded the late Prof. John Goodman in the chair of engineering at Leeds.

David was no narrow scholar, and was a strong advocate of education in the true university sense. He was a man of high integrity and sound judgment, and his brilliance, kindness and wisdom endeared him both to colleagues and students. He freely gave to all students and encouraged them to high endeavour by his inspiring teaching and the impact of his personality. In his lectures he would stress the importance of grasping the fundamental principles of engineering science, revealing the basic concepts in brilliant flashes, and would carefully lead the student in some branch of the subject on to the very frontiers of knowledge. David frequently likened this method of lecturing to students to taking them to the top of Mount Pisgah to view 'the promised land', so that with few words he would excite and fire the imagination of the students and make a lasting impression upon their minds.

In the field of research David directed his efforts mainly towards the problems of combustion phenomena and the related problems of internal combustion engines. At Cambridge he took special interest in heat loss from gaseous explosions, and he became intrigued with the problem of 'missing-pressure' in internal-combustion engines. This resulted in a comprehensive study of explosions of inflammable gaseous mixtures at a time when the lack of reliable thermal data handicapped his investigations. His intuition, however, led him to believe that flame gases were not really normal hot gases but possessed energy in excess of that of normal gases. The development of quantum mechanics and afterwards the provision of thermal data have made it possible to confirm his early ideas concerning flame gases. No one was more devoted to his subject or to his students.

Outside the University of Leeds, David was known in engineering circles in Yorkshire and elsewhere; was a member of the Institutions of Civil and of Mechanical Engineers, and was chairman of the Yorkshire Association of the Institution of Civil Engineers for the session 1928–29.

David was a man whose views were highly valued in any assembly and his contributions to discussion, often brief and pungent, were commonly wise. He possessed an independent mind and a forceful character, "it's dogged that does it" being his motto. He will be sorely missed for his clear judgment, store of good humour and warm sympathy, especially at a time like the present, when the transition to peace and the expansion of the University of Leeds are raising so many problems. R. H. EVANS

Dr. A. E. Jones

DR. ARTHUR EMRYS JONES, lecturer in mathematics at the Imperial College of Science and Technology, London, was killed in a lift accident on May 7 at the age of twenty-seven. A scholar of St. John's College, Cambridge, he secured a first class in Part II of the Mathematical Tripos in 1939, and honours in Part III in the following year. During the War he worked in the Ballistics Section of the Armaments Research Department, and was associated with J. R. Womersley in his pioneer work on the application of statistical methods to the control of variability in gun-cordite. In 1945–46 he worked at Rothamsted Experimental Station on the design of grazing experiments, and thereafter entered the Statistics Section of the Mathematical Department at Imperial College.

A thesis on continuous stochastic processes and autocorrelation theory brought him his doctorate in 1946. He had also published, in *Biometrika*, vol. 33, Part IV, a paper on the routine estimation of dispersion from large samples. At the time of his death