

arts, are kittle cattle. But at least it is difficult to keep them to a rigid orthodoxy of any kind, or to prevent them from asking themselves, or one another, the questions, perhaps insoluble, which have haunted the human race wherever their standard of living has risen above the level of poverty. A scientific friend of mine was being shown round a scientific institute library by his Soviet host, when they passed the political section filled with the orthodox literature of Marxism-Leninism. "This is our theological section," said the Russian to my friend, and while the remark undoubtedly illustrates the absence in both of orthodox religious belief it is a scarcely less-convincing argument for the lack of any real conviction about the official political theory. A Soviet scientist visiting Britain was asked in a university common room what changes he had seen in Britain since he was last in this country more than thirty years ago. His astonishing reply was that Britain had travelled further on the road to Socialism than the Soviet Union. I do not profess to understand, far less agree, with this judgment; but at least it goes to show that the preconceived categories of opinion among the Soviet intelligentsia are less rigid than might be supposed.

With the capitalist and the socialist worlds converging towards each other from opposite directions and each competing for the favours of the politically developing but economically undeveloped nations, what in the end can we foresee as the impact of the scientific revolution for mankind?

Need for a Common Culture

We see, I believe, the urgent need for a common culture, a generally accepted standard of social and political values, a commonly enforced and recognized ethical and political code between men, between nations, between races, between classes. We see also the necessity for an international mechanism more effective than that provided simply by diplomatic contacts, functional organizations, military alliances, or even the United Nations.

I am well aware of the dangers of advocating, in any era of ideological struggle, anything which even savours of the co-existence of ideas as distinct from the co-existence of people. But if we are to co-exist as people, and if our mutually incompatible ideas are to lock in the dialectic of history, it is above all things necessary that races, classes and states—yes, and individuals—should work out, under-

stand, and observe some objective rules of behaviour mutually acceptable and universally understood if only for the conduct of the struggle. For this purpose there must be communication, there must be established dialogue, and those who seek to explore, each with loyalty to his own people, the minds of the other side must not be condemned as revisionists or fellow travellers. The logic of history demands that human beings, as well as being the masters of their environment, should also learn to control and mitigate the violence of the very forces which make for conflict. I myself was proud last summer to play, with others, a part in the negotiation of the limited test ban agreement later signed in Moscow. It caused me real pain to see some of those who had taken part with me in the negotiation, which seemed to me a logical political corollary of the scientific revolution, condemned by doctrinaire and sectarian extremists of their own camp as traitors to their own side.

To my mind, the necessary corollary of the scientific revolution, the urgent necessity of our time, is to break down cultural, political and racial barriers and especially to break down the barriers between East and West, between the developed and the developing, and all the other remaining psychological barriers which, after all, are the relics of an age when we could afford to ignore races and nations who were not our immediate neighbours, and could afford without ultimate disaster to go to war with those who were. These days the scientific revolution has brought to an end. I do not mean that, in the world of the future, differences of language, culture, personality, colour should cease to exist. Freedom under the law does not extinguish—perhaps it even enhances—a variety of individual and national expressions. That at least has been our experience of it in Europe, where we have been, for upwards of four thousand years, at once the guardians and the heirs of the slowly evolving and dynamic tradition of freedom under the law, self-disciplined freedom under a law carrying moral as well as positive authority. But the need for such a system of law and morality acceptable to the different races and creeds of the re-united human family is perhaps the most specific question which the scientific revolution compels us to face. Unless we face it, not all the increased control of our physical environment will save us from disaster. If we do, there is, perhaps, ahead of us an age of magnificence and splendour equalling the rosiest dream of poets, prophets and philosophers.

OBITUARIES

Prof. Ø. Winge, For.Mem.R.S.

PROF. ØJVIND WINGE, director of the Physiological Department of the Carlsberg Laboratory, Copenhagen, died on April 5, after a long illness at the age of seventy-seven.

Some years ago, at a ceremony in memory of the founder of the Carlsberg Laboratory, the brewer J. C. Jacobsen, Prof. Aksel Tovborg Jensen expressed that he felt he had a right to say that the men of the Carlsberg Laboratory have always administered the founder's rich endowments well; and he continued: "Emil Chr. Hansen's and Joh. Kjeldahl's successors—Johs. Schmidt, S. P. L. Sørensen, Kaj Linderstrøm-Lang and Øjvind Winge—stand as leading lights of their sciences in Denmark and in the wide world as the equals of the greatest. They have done credit to their country and to J. C. Jacobsen, Denmark's great son."

A finer monument can scarcely be imagined, and with this as a background we shall remember Prof. Winge's achievements in genetics and brewing science.

Øjvind Winge was born in Århus in 1886; he started his career as an assistant to Prof. Johs. Schmidt at the Carlsberg Laboratory, and in 1921 he was appointed professor in genetics in the Royal Veterinary and Agri-

cultural High School in Copenhagen. During this period he wrote a most outstanding text-book on genetics.

After the death of Johs. Schmidt in 1933, Øjvind Winge succeeded him as director of the Physiological Department of the Carlsberg Laboratory. He immediately took up research on yeast and here introduced the breeding of new hybrids by crossing and by the combination method, and contributed largely to our knowledge of the sex-life of yeast, its meiosis and its fertilization mechanism. The micromanipulation technique, elaborated by Winge and Laustsen as a necessary new microscope technique, is now commonly used in heredity investigations and yeast breeding.

Theoretical investigations of yeast first of all comprise the heredity conditions of the fermentation enzymes, and they have contributed to a knowledge of the nature of the gene and its mode of operation. Inheritance of the morphological properties has also been thoroughly investigated, and of heterosis, even to a pronounced degree, in certain crossing combinations of yeast, has been demonstrated.

Degeneration phenomena of normal brewer's bottom yeast, poor formation of spores, and low fertility in the spores have resulted in the fact that the combination

breeding could not be utilized in the brewing industry. With the production of baker's yeast, on the other hand, both breeding and heterosis effect have been utilized.

In the science of brewing, Prof. Winge will be specially remembered from his breeding work with barley and hops. The plant-growing part of the work was carried out at 'Nordgården', the experimental farm belonging to the Carlsberg Breweries, where Prof. Winge was the scientific leader during 1938-62. With regard to barley, the variety Carlsberg II, on the market in 1953, attained a wide distribution as a high-yielding and acknowledged malting barley. Its outstanding qualities have left their marks on the European barley-breeding, often being used as crossing material in many European countries.

Winge's work on breeding of hops is especially familiar to specialists, but here it is highly esteemed. We are grateful to Prof. Winge for his review last year in *Comptes Rendus des travaux du Laboratoire Carlsberg* of his experiences: "Fifty Years of Hop Breeding at the Carlsberg Laboratory and Nordgården".

Prof. Winge received many scientific honours, among those many honorary doctorates, and he was elected a member of numerous scientific academies all over the world. For several years he was chairman of the group of natural scientists in the Royal Danish Academy of Science and Letters. He was an inspiring teacher, and his researches have been in front ranks both in connexion with yeast and with barley and hop breeding.

BIRGER TROLLE

Prof. R. McKay

ROBERT MCKAY, who died on May 4 at the age of seventy-five, was emeritus professor of plant pathology in University College, Dublin. Born in County Antrim, he received his early education there. He entered the Royal College of Science for Ireland in 1912, but his studies were interrupted from 1915 until 1919, during which time he served with the Royal Army Medical Corps in France. In 1920 he became an Associate of the Royal College of Science, and after a short period of service with the Seed Propagation Division of the Department of Agriculture, he joined the Plant Disease Division as Assistant to the late Prof. Paul A. Murphy. Following the death of Prof. Murphy in 1938, McKay became head of the Plant Pathology Department, which had been transferred to University College, Dublin, in 1926. In 1940 he was appointed to the post of lecturer and in the same year was awarded a D.Sc. degree of the National University of Ireland. He was appointed professor of plant pathology in 1945.

Prof. McKay's earliest work, in collaboration with Prof. Murphy, was concerned mainly with investigations on potato virus diseases. The technique worked out by these investigators of testing nucleus stocks of potatoes in the glasshouse and propagating such stocks under conditions of good isolation and rigid inspection has been largely responsible for the high repute in which Irish seed potatoes are held.

Onion mildew was probably the first of the fungal diseases worked on by Prof. McKay. With Prof. Murphy, he demonstrated the presence of hibernating mycelium in bulbs from diseased plants and that such mycelium could be killed by heat treatment. This is one of the first references to control of a fungus disease by heat treatment. Prof. McKay was the first to observe the germination of the oospores of the onion mildew fungus, and he showed that such spores could remain viable in the soil for up to twenty years. His work on diseases of cereals, particularly on *Septoria* leaf spot of barley, *Helminthosporium* leaf spot of oats and diseases of wheat caused by *Gibberella* has added much to our knowledge concerning these maladies. During the Second World War, flax growing was an important industry in Ireland, and Prof. McKay made a study of the diseases occurring on that crop. With his co-workers, he was the first to demonstrate clearly

that the fungus causing the pasmo disease of flax was seed-borne. He carried out spraying trials on the control of apple scab over many years and he pointed out the importance of bud scale infection as a source of the apple scab fungus under Irish conditions. He studied beet diseases, and it was mainly due to his advice to the Irish Sugar Company that the practice of growing stecklings and sugar-beet crops in isolation was adopted many years ago. This practice has resulted in considerable reduction in such diseases as virus yellows and downy mildew in these crops. Among other diseases which he investigated were blight and scab of potatoes.

As adviser in plant pathology to the Department of Agriculture, he came in contact with most of the diseases occurring on commercial crops in Ireland. The knowledge thus gained he committed to writing in a series of monographs on diseases of individual crops. These monographs, so well and so profusely illustrated, are of immense value to growers, advisers and students of plant pathology.

His monographs on diseases were subsidized by the Irish Sugar Co. (sugar beet diseases), the Irish Potato Marketing Co. (potato diseases), Messrs. Guinness (cereal diseases), and the Flax Development Board (flax diseases). He was honoured by the Royal Horticultural Society of Ireland by the award of the Medal of Honour in 1948 and by the Royal Dublin Society by the award of the Boyle Medal in 1957.

Prof. McKay's work covered a wide field of research, but it was always carried out with thoroughness and perseverance. Whether fundamental or applied, all of it is sound and reliable.

As a teacher, Prof. McKay is remembered with affection and respect by hundreds of graduates in agriculture. As a lecturer he was painstaking in keeping up to date with his subject and in delivery he was clear and lucid. His lectures were often interspersed with witticisms, for he had a lively sense of humour. Under the auspices of the Royal Dublin Society he lectured on plant diseases to growers in almost every county in Ireland. His practical approach to the subject, and his awareness of their needs, earned him the appreciation of growers throughout the country.

J. B. LOUGHNANE

Miss E. H. Ekins, O.B.E.

MISS E. H. EKINS died at Hitchin, Hertfordshire, on June 4. She was eighty-four.

Emily Helen Ekins, daughter of A. E. Ekins, public health analyst for Hertfordshire, was educated at St. Albans High School, the University of Birmingham and Studley College, Warwickshire. She joined the staff of Studley College as a lecturer in horticulture in 1911, became acting warden in 1922 and principal in 1924, which position she held until August 1946. She was awarded the O.B.E. in recognition of her services to agricultural education in 1934.

Miss Ekins will long be remembered as one of the pioneers of agricultural and horticultural education for women. During the twenty-two years she held office as principal of Studley College she put her whole-hearted energy into consolidation of the administrative and educational sides. Building developments began in 1925; two appeals were launched, one to purchase the freehold of the property from the Warwick Estate and the second for the building of science laboratories and study bedrooms, and despite difficulties and frustrations, all-round progress in the history of the College was evident, brought about by her integrity and single-mindedness. She will also be remembered by hundreds of students who recognize and appreciate the vast amount of service which she so generously gave; she was the chief link in binding together each generation of students throughout her long association with the College, and many of them will remember with gratitude the help and encouragement she gave during their training and early days of their career.