

treated chromosomes themselves, but in their descendants.

Chemically, mustard gas belongs to the group of the so-called mustards, several of which were found to be mutagens of great power. The inhibition of mitosis by the mustards is used in the treatment of certain types of malignant disease. The same is true for urethane, which likewise was found to be a mutagen. Phenol, or perhaps a contaminant of phenol, has given high frequencies of mutations in experiments by Hadorn and his collaborators. Formalin, mixed with the food of *Drosophila*, is a highly effective mutagen. The fact that one weak, but decidedly positive mutagen, mustard oil, occurs naturally in *Brassica* plants raises the question whether naturally occurring mutagens have played a part in evolution.

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THE CENTENARY OF FINLAND'S INSTITUTE OF TECHNOLOGY

By SIR ALFRED EGERTON, F.R.S.

A STATUTE issued in 1817 prescribed the foundation of such schools in Finland as would provide "youths who wish to have a career in Industry with an opportunity for all the necessary training". The Technical School founded in Helsinki was opened on January 15, 1827. So was born the present Finland's Institute of Technology, which has just celebrated its centenary.

The Institute has experienced several phases of development. In 1872 the Technical School became a Polytechnic School with five departments, architecture, civil engineering, mechanical engineering, chemical technology and surveying. In 1879 the School became a Polytechnic Institute admitting only matriculated students, and in 1908 its name was changed to "Finland's Institute of Technology" and it was placed under the control of the Ministry of Trade and Industry. Administration is in the hands of the Rector, who is chairman of an Administrative Council. There is also an advisory body appointed by the Government. Diplomas are given in architecture and in engineering (civil, mechanical, electrical, chemical; wood technology, mining and metallurgy, and technical physics). The syllabus is drawn up on the basis of a course of four and a half years. The examination is in two parts, a preliminary or intermediate examination in the basic sciences, followed in the second period by specialized training and a diploma thesis. Practical training in industries with which the Institute is related is included in the course. Opportunity for postgraduate studies are provided and lead after a considerable period of study to the degree of doctor of technology. The diploma courses are designed on the principle that in a country like Finland with a comparatively small population (3.8 millions) the need for technical experts is limited compared with the larger countries, and so the aim is to give students a good general theoretical basis in engineering or architecture, with opportunity for advanced specialized training in a wide choice of subjects.

The Mechanical Engineering Department of the Institute is the largest, with about 580 students. The Department has four separate sections: mechanical engineering, ship-building, aeroplane construction

and textile engineering. In chemical engineering, the stress is laid on the basic training in chemistry and in engineering; practical experience is gained in works rather than attempting to operate chemical plant in the Institute, which seems a wise procedure. There is a separate and very active Department of Wood Technology relating to Finland's major industry, divided into the sections, chemical, mechanical and paper, and well equipped with appliances for testing and treatment of wood. The Chemistry Department is well known for researches (of Prof. G. Komppa and others) on the chemistry of terpenes. The Department of Architecture has also a great reputation; Prof. J. S. Sirén is the present head.

Teaching is provided in Finnish and in Swedish. There are fifty-two professors on the staff of the Institute and 2,200 students (of whom nearly 200 are women). All students enrolled belong to the Students' Corporation, which promotes the intellectual efforts of its members and assists their finances. Within this Corporation, each Department of the Institute has its own students' guilds based on the subjects studied and their special interests, such as the choir, the orchestra, the athletic society and the girl student club. These free activities of the students have been helpful in preparing them for public life; there is much innate talent in the Finnish students, and the standard of achievement in their many activities is remarkably high.

The main building of the Institute dates from about 1875; but it has been largely rebuilt and greatly extended by the addition of new buildings (for example, the Mechanical Engineering Laboratory). The principal building, with its fine hall and council room, was considerably damaged during the Second World War, but has now been repaired; the new chemical laboratories were on view on the occasion of the centenary. The present site is pleasant; it opens on to a wide space leading to one of Helsinki's many quays. Looking to the future, however, plans are afoot for buildings on an altogether new site.

The Institute has trained many of Finland's leading men—industrialists, architects, engineers and men of science—and it was no wonder that the celebration of the centenary was a momentous occasion in Helsinki. The main festival was held on September 13 in the hall of the University and was attended by President Paasikivi. General Mannerheim was present also. Addresses were handed to the Rector by representatives of many institutes of technology in foreign countries, including the Imperial College, London, and the Victoria University, Manchester; Prof. Wright Baker represented the Victoria University. It would not have been consistent with Finland's contribution to the arts if this gathering in honour of its great centre of science and technology had taken place unaccompanied by music; not only were those who attended delighted by the music of Sibelius, but there was also the magnificently trained students' choir.

On the next day, a ceremony was held in the hall of the Institute for the conferment of degrees: Dr. K. T. Compton (U.S.A.), Prof. A. Engelund (Denmark), M. A. Perret (France), Sir Alfred Egerton (England), Prof. F. Vogt (Norway), Prof. H. Kreüger and Prof. R. Woxén (Sweden), and Prof. M. Roš (Switzerland) received the degree of doctor of technology *honoris causa*, along with Prof. A. I. Virtanen and other distinguished men of Finland.

Finnish affairs are largely in the hands of those who have been distinguished in technology or the academic field, and the conspicuous virility and efficiency in the industry and the culture of Finland may arise partly from this circumstance. They also owe much to the courage and energy of the Finnish people. The open-hearted hospitality towards the many guests on the occasion of this festival was also characteristic.

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OBITUARIES

Prof. C. L. Fortescue, O.B.E.

PROF. C. L. FORTESCUE'S death on September 22, only three years after his retirement from the chair of electrical engineering at the Imperial College of Science and Technology, London, came as a shock to his many friends and former colleagues and staff. He was born in 1881 and educated at Oundle School and Christ's College, Cambridge, where he obtained a first class in the Mechanical Sciences Tripos. He played an active part in school and College life, was a keen oarsman and reached the 'trial eights' while at Cambridge. This keen interest in student activities and particularly rowing never diminished, but probably increased during his later years, and he was rarely away from the river when Imperial College crews were racing.

On leaving Cambridge he spent some years at Messrs. Siemens dynamo works and as instructor in electrotechnics and applied mechanics at H.M. Torpedo and Gunnery Schools, Portsmouth. During 1911-22 he was professor of electrical engineering at the Royal Naval College, Greenwich, and during this period, in addition to his academic and administrative duties, he carried out experimental work connected with wireless telegraphy during the First World War.

In 1922 he was appointed professor of electrical engineering at the Imperial College of Science and Technology, London. He was the third to occupy this position since 1885, the two previous occupants being Profs. W. E. Ayrton and T. Mather. During the whole of the twenty-four years that he was professor and head of the Electrical Engineering Department he was indefatigable in his work for the College and never seemed to begrudge the long hours he spent in the Department. He was always accessible to the

students and ready to help them in any way that was possible. As a lecturer and teacher he was probably more successful with the advanced and postgraduate students than with those in the earlier years, who, in many cases, found his methods of dealing with electrical engineering somewhat difficult to appreciate. He will, generally speaking, be remembered at the Imperial College for his very strenuous work in connexion with the teaching of the subject of telecommunications at the undergraduate stage and the development of facilities for study and research in this subject for postgraduate students.

This development was so successful that it can be stated that the Electrical Engineering Department of the Imperial College provided a more thorough course of education in the subject of telecommunications than any other college or university in Great Britain, and students from all over the world were attracted both to the undergraduate and postgraduate courses.

As a professor of the University of London, he took very seriously the many duties which fell to his lot, and devoted a great deal of care and attention to the work of the many committees and boards of which he was a member. He served on the Senate of the University, was dean of the Faculty of Engineering and chairman of the Board of Studies in Electrical Engineering.

In 1942 Prof. Fortescue was elected president of the Institution of Electrical Engineers, which was a fitting recognition not only of his professional standing and academic qualifications but also of the devoted work he had done for the Institution for very many years.

Prof. Fortescue very rarely took any rest from his work, and since his retirement in 1946 he had been active in the service of the University and also at Southampton Technical College in connexion with the development of courses in telecommunications, electronics and electrical measurements. He is survived by his wife, son and daughter.

A. RUSHTON

WE regret to announce the following deaths:

Sir Robert Pickard, F.R.S., formerly director of research, British Cotton Industry Research Association, on October 18, aged seventy-six.

Prof. Ida Ward, C.B.E., emeritus professor of West African languages in the University of London, on October 10, aged sixty-nine.

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NEWS and VIEWS

The Nobel-Prize for Peace (1949):

Lord Boyd-Orr, F.R.S.

THE Nobel Prize for Peace (1949) has been awarded to the Right Hon. Lord Boyd-Orr. Lord Boyd-Orr's scientific life can be divided into certain fairly well-defined phases. There is first the period of finishing off the work which he began in the Institute of Physiology of the University of Glasgow. His most important contribution at that time was made in collaboration with Prof. E. P. Cathcart and was concerned with the "Energy Expenditure of the Infantry Recruit in Training"; then he commenced the study of the mineral requirements of farm animals along with Walter Elliot, Arthur Crichton and others. This culminated in the production of a

stimulating book entitled "Minerals in Pastures and their Relation to Animal Nutrition"—a book which set the Empire thinking and working on its pasture problems. About 1924 Boyd-Orr began to apply his knowledge of mineral nutrition in farm animals to allied problems in children and native populations, and in 1930 along with Miss Clark he published a dietary survey of 607 families in seven cities and towns in Scotland. A little later the problem of nutrition in relation to susceptibility to disease exercised his mind, and his work in this and other spheres was recognized by his admission to the fellowship of the Royal Society in 1932. Three years later he was created a Knight Bachelor.

In 1936 Boyd-Orr published his epoch-making survey of adequacy of diet in relation to income