be slip lines, because the establishment of thermally etched striations takes considerably longer than six seconds.

Preliminary quantitative observations on the plastic properties of solid argon have included measurements of the ultimate stress as a function of temperature. The programme of future research includes a further study of the slip process, efforts to obtain single crystals, measurements of the creep-rate at liquid oxygen temperatures and below, a quantitative study of grain-boundary movements during grain growth and measurements of the elastic constants of solid argon.

C. DOMB

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OBITUARIES

Sir Alexander Fleming, F.R.S.

SIR ALEXANDER FLEMING, the discoverer of penicillin, died suddenly on March 11 at his home in London with a heart attack at the age of seventy-three.

Alexander Fleming, the son of a farmer, was born near Darvel in Ayrshire, Scotland, on August 6, 1881. He received his early education at the village school and at Kilmarnock Academy. His father died when he was seven years old, and at thirteen years of age Alexander and his brother Robert were sent to live in London with a doctor brother who practised as an oculist in Marylebone Road. He continued his education for two or three years by attending the Polytechnic Institute in Regent Street, and then for four years worked in a shipping office. However, his doctor brother encouraged him to take up medicine, and with the help of a small legacy he became a student at St. Mary's Hospital Medical School, where he won the senior entrance scholarship in natural science. He showed that he had found his true bent by winning practically every class prize and scholarship during his student career. He qualified in 1906 and took his M.B., B.S. of the University of London in 1908 with honours and the gold medal.

In 1906 Fleming had begun to assist Almroth Wright in the Inoculation Department at St. Mary's Hospital, and he continued to work in the same Department for the rest of his life with the exception of an interlude during the First World War.

In 1928 he was appointed professor of bacteriology in the University of London, and he retired with the title of emeritus in 1948, but continued as the principal of the Wright-Fleming Institute of Microbiology until the end of last year. He was busily occupied with lecture tours and laboratory work to the end.

Fleming never ceased to pay tribute to the inspiring leadership of that great bacteriologist, Sir Almroth Wright, with whom he worked for nearly forty years. There is little doubt that in the early years he, like other assistants—and they were a distinguished team—was to a considerable extent the apprentice of Almroth Wright, whose dominant personality and fertile brain directed the general research programme of the Inoculation Department for many years. But even in the early days, Fleming showed

his ingenuity and originality in devising simple apparatus and techniques for tackling laboratory problems. The First World War directed his attention to wound infection and its control; he was one of the first to show that most wounds become infected after admission to hospital. As Wright's disciple, he took an active part in the controversy on the physiological versus chemical treatment of wounds, and again his inventiveness in devising apparatus and experiments to test the validity of a hypothesis or statement was very well demonstrated. This work led on to one of his classical experiments, in which he showed that carbolic acid when added to blood in certain concentrations killed the leucocytes but not the pathogenic germs, so that the antiseptic actually helped rather than hindered bacterial multiplication.

In 1922 came the discovery of lysozyme. Following an observation that his own nasal secretion after a common cold had an inhibitory action on some of the bacteria present in the nose, he showed that this lytic substance was present in many tissues and secretions of the body and was also widely distributed in Nature. But, because it was not particularly active against pathogenic organisms *in vitro*, the medical world did not give it the attention it deserved. His work with lysozyme prepared the way for the epoch-making discovery of penicillin.

Fleming had been studying variation in the staphylococcus, which meant that he was frequently examining colonies of that organism as they appeared on ordinary nutrient agar. As a result of this exposure, a mould appeared on the culture medium some days later and Fleming noticed the unusual phenomenon of the disappearance of staphylococcal colonies around the mould. His first paper describing his work with the active principle of this mould, which he named penicillin, shows that he appreciated the great potentialities of this substance as a new kind of antiseptic.

Fleming was a reticent and rather taciturn man, with great independence of mind and strength of character. He was a born naturalist, keenly observant of everything around him, and always ready to devise and test new methods for studying germs in the laboratory or seeds and plants in the garden. He accepted the many honours that were showered upon him with slightly amused modesty. The simple kind of tribute touched him most, such as a collection of signatures or a letter from a child or from some poor person who had benefited from penicillin. Freed from administrative duties, he had been looking forward to working again with his beloved phagocytes and lysozyme, for the natural defences of the body were his abiding interest; now, instead, we mourn the loss of a great scientist.

ROBERT CRUICKSHANK

Prof. A. L. Dixon, F.R.S.

ARTHUR LEE DIXON died at Folkestone on February 20 at the age of eighty-seven. He was the son of the Rev. G. T. Dixon, Wesleyan minister of Northallerton, and was educated at Kingswood School, Bath. He was a scholar of Worcester College, Oxford, and his long and distinguished career is summarized in the appointments he held: in 1891 prize Fellow of Merton, in 1898 tutorial Fellow of that college, in 1922 Waynflete professor of pure mathematics and professorial Fellow of Magdalen