and interesting than it would otherwise have been. He re-visited India and Burma in connexion with this work and was engaged on the preparation of a further volume to bring the history up to 1940 at the time of his death—I recently took over from him the task of completing and publishing it (extending it to the end of the British regime in 1947).

As a teacher, Stebbing had very definite ideas of what was best for his students, and kept as firm a rein on the curriculum as he did on his horse. He always rejected any suggestion of loading up his undergraduate course with more basic science, considering that practical forestry had not yet advanced enough for it to be of any value: his course was accordingly more weighted on the technological side than elsewhere—which might not have been expected in view of his own early specialization. Possibly he was inclined to overstress the model of advanced European practice, rather curiously adding an overdose of engineering and surveying appropriate to India and Burma in the old days.

No account of Stebbing's life would be complete without reference to his personality. Small and spare, he was exceptionally 'tough' both on foot and as a horseman, and remained so until an unusually advanced age. Stories of his walking performances still persist in India, while his equestrian ride from his home in Kent (Romden Castle) to London in 1935 when he was sixty-five was no isolated feat.

During much of his time at Edinburgh, Stebbing had the largest number of students among the four university schools of forestry in the United Kingdom. Many of them had been sent from overseas, and these and many others are serving or have served in the forest services of Britain and all countries of the Commonwealth; in fact, cases could be quoted where the large majority of the officers of the Forest Department were his men. One can safely prophesy that his record will never be repeated, and he will long be remembered in all forestry circles.

H. G. Champion

Prof. E. J. Kraus

Dr. Ezra Jacob Kraus died at Corvallis, Oregon, on February 28 at the age of seventy-four. He was distinguished throughout the United States both for his massive contribution to scientific horticulture and for his flair for friendship with young botanists. He graduated from Michigan State University in 1907 and spent the first eleven years of his academic career in Oregon State College. In 1919 he went from Oregon to the University of Wisconsin; after a few years there he accepted an invitation to a chair in the botany department in the University of Chicago, where he stayed until his retirement in 1949.

The scientific work for which Kraus is remembered is his analysis of the balance of carbohydrate and nitrogen in plants in relation to fruiting. He demonstrated that many crop plants did not bear fruit unless a balance was maintained between these two classes of compounds. Some of his disciples greatly over-simplified his ideas by talking loosely about a carbohydrate–nitrogen ratio (or even a C/N ratio); but Kraus himself always realized that the relation between chemical composition and fruiting was a subtle and complex one, and he was impatient of these facile simplifications. Kraus's ability to diagnose why crops failed to bear fruit was quite astonishing. He showed (for example) how low yields in the apple orchards in the Hood River valley were due to over-manuring coupled with early pruning. A score of other examples could be cited, where fruit growers were able to improve their yields by controlling the balance of carbohydrate and nitrogen by means of simple horticultural practices: manuring, pruning, ringing and the like.

In Chicago he turned his attention to the anatomical effects of plant growth hormones, and (during the War, when he was attached to the U.S. Department of Agriculture) to the use of hormone-like chemicals for weed control; in both these fields he did important work.

But in the memories of hundreds of students Kraus will survive as a man rather than as a research worker. His influence on the graduate students who passed through his hands was enormous. It was conveyed through a quiet approach, a slightly cynical modesty, a bubbling sense of humour, and above all an impression that the priority which Kraus put first in his life was to spend time with young men, to talk to them, to travel with them, to pass on to them his enthusiasm for scientific horticulture. He was a capital 'debunker': indeed his interest in applied science and his suspicion of pure science sometimes led him to distrust research which seemed too sophisticated, and the succession of young men who had the privilege of his friendship remember with zest his mocking pragmatism.

Kraus disliked administration and committees, and he retired early (partly on account of illness) to spend the rest of his life doing the work he loved in the place he loved. From 1949 until his death, as a visiting professor of horticulture at Oregon State College, he devoted his time to horticulture, especially to the production of new varieties of chrysanthemums, and to cultivating his friends. He died after a long and painful succession of illnesses.

Kraus received wide recognition for his distinction in American botany. He was president of the Botanical Society of America in 1933 and of the American Society of Plant Physiologists in 1928, and he won many medals and prizes for his horticultural work. Much of his work is inevitably out of date: but his influence on a generation of botanists will endure.

E. Ashby

Sir Leonard Woolley

Charles Leonard Woolley, who died on February 20, nearly eighty years old, was perhaps the most internationally famous archæologist of his generation. This reputation was built upon far more than the fact that he best represented the ordinary man's notion of an archæologist, namely, a digger-up of the lore, but especially the treasures, of antiquity. Certainly this was his life's work, and certainly his successes in it were outstanding. He was constantly in the field (in Egypt, Syria, above all in Iraq), he never belonged to any institution, he never undertook to teach students (except by practical example to his assistants), and he scarcely attempted academic literature in his subject.

Yet even among those few who could have worked so widely and so hard as he, many would have fallen short for want of certain talents which Woolley possessed. First, by some scarcely explicable gift, he could find the most rewarding spot to work, whether it was the choice of Atshanah (the ancient

Alalakh) in 1937 among the multitude of settlement-mounds in its area, or the divining, season after season, at Ur of the most significant quarter to unearth in the great city. There he conducted, beginning from 1926, his most famous operation, revealing the royal tombs of Sumerian rulers who had held sway over the city in a period of unequalled splendour, about 2,500 B.C. as now believed, unhappily just before writing, already in use, had learned to record history.

In this great discovery also was best exercised the next in order of Woolley's talents, namely, a fine appreciation of materials in the ground, how they should each be reached, traced, or penetrated, how objects sighted should be protected from impacts of tools or of the atmosphere, how they should be lifted, and how first-aid should be given for their protection, transport, and even their ultimate reconditioning. Many almost deceptively 'well-preserved' exhibits in museums are now substantially as they left Woolley's hands, not restored or falsified, but skilfully extricated by him and remoulded to the shapes which they had lost by decay and pressure of earth. Much of his work of this kind was brilliantly improvised in days which, although not long past, were before the very recent development of preservation laboratories and techniques in museums.

Woolley had, moreover, a notable facility of exposition, which worked in two ways: an attractive lecturer and writer for general audiences, he was also —more important for one whose discoveries could well speak for themselves—a judicious author of excavation reports, that difficult marginal literature which, always bulky, is worthless if it strives for effect, repulsive and unreadable if too painfully 'scientific'. Woolley's many publications were highly successful in these two kinds; his popular works are both interesting and well founded upon his discoveries (whereas his few attempts at more general themes are not very valuable), and his large volumes of excavation reports have the virtues of well-arranged matter, ample pictures and plans, and careful description based upon his industrious recording in the field. Such descriptive parts can nearly always be read with interest and ready understanding. Some have, indeed, criticized his observation as not being of the exactitude demanded by the most recent methods, and it is true that Woolley could be intuitive in his perception of archæological levels and his mental reconstructions of buildings and fragments. But such criticisms seem not to make enough allowance for the character of most Near Eastern sites, and the pell-mell of dwellings and artefacts of different ages, often jumbled together, which they usually exhibit.

Woolley's lively mind and exploring intelligence, if they sometimes led him beyond his evidence, were of more service in suggesting many true and fruitful consequences of his discoveries. These, as great and varied as have fallen to any modern digger, are his principal bequest and his enduring memorial.

C. J. GADD

Dr. Eric Boehm

DR. ERIC BOEHM, who died suddenly at Cardiff on December 28, was a well-known and respected figure in industrial chemical and pharmaceutical circles. Born in Breslau, Silesia, sixty-one years ago, he served a pharmaceutical apprenticeship in the town of Schreiberhau and later studied at the University of Berlin, graduating in 1922. He followed this with postgraduate training which, in 1925, resulted in the award of a Ph.D. He later studied bacteriology at the Robert Koch Institute in Berlin. The pre-war political situation in Berlin forced him and his family to leave Germany for Great Britain.

As a research worker he had become associated with Prof. Sabaletschka after the latter had introduced the now well-known esters of *p*-hydroxy-benzoic acid. Their association resulted in establishing these compounds under the trade names of 'Nipa Esters' as extremely useful, reliable and non-toxic preservatives for pharmaceutical and medicinal products and for foodstuffs. In 1938 these two workers showed that esters of gallic acid showed very promising anti-oxidant activities; this led to the widespread use of propyl gallate as an anti-oxidant for animal fats to prevent or retard rancidity. Its proved non-toxicity was recognized in 1948 when the United States officially approved its incorporation in fats for human consumption, to be followed by similar recognition in Britain and elsewhere.

In 1942, Boehm showed that certain mono-aryl and mono-alkyl ethers of ethylene glycol possess bactericidal activity. Interest centred chiefly around the phenyl ether of ethylene glycol ('Phenoxetol'), which was investigated bacteriologically and clinically by Berry, Gough *et al.* It showed unusual activity against *Ps. pyocyanea* and during the War, in the early days of penicillin, when topical application to wounds was, of necessity, used, a combination of 'Phenoxetol' with penicillin widened the antibacterial spectrum of the latter and also prevented its decomposition in the wound.

Dr. Boehm was that rare combination of an able scientist and capable business administrator. He also combined rare intellectual qualities with integrity, charm and kindness, as those who had the privilege of knowing him can testify.

H. BERRY

Prof. H. Stansfield

PROF. HERBERT STANSFIELD, whose death occurred on March 14, was appointed to the chair of physics and electrical engineering at University College, Southampton, in 1912. Previously he was a lecturer in physics in the Victoria University, Manchester. In 1919 he was transferred, with other Departments of the College, from the old Hartley Building to the new site at Highfield.

Research undertaken at Southampton by various members of his staff, under his direction, was started in the late 'twenties. His main interest was in optics, particularly with modifications to the Michelson interferometer experiments on the velocity of light. One summer he co-operated with the Royal Navy on sound recordings of gunfire. Setting up his apparatus in an area where no reports were expected, many yards of photographic paper recordings from an Eindhoven string galvanometer were processed and examined, and the nil report confirmed.

Past students will remember Prof. Stansfield's very characteristic action in stroking his fountain pen on his beard in order to charge some piece of electrostatic equipment in lecture demonstrations. Another characteristic was his exceptionally dry skin. He would touch 200-V. terminals with his fingers and then to be quite sure he would moisten them and repeat the action and remark, "Yes, I am sure they are alive"!