

Pickering, however, as a younger man had, in order to regain his health, put himself to work as a labourer on the Experimental Farm at Rothamsted, and thus acquired an interest in the application of science to the problems of the cultivator. He had as early as 1894 designed a series of experiments upon the growth of fruit, and had persuaded the Duke of Bedford to set up a trial garden at Ridgemount in Bedfordshire. Results soon began to appear and to arouse dissent; not easily did the practical fruit grower, accustomed to old grass orchards, accept the doctrine of the injurious effect of grass upon tree growth. This subject occupied Pickering to the end of his days; the complexity of the problem grew with extended knowledge; but Pickering maintained his first explanation that the grass roots excrete something specifically poisonous to fruit trees. Much other ground was broken—the effects of pruning, methods of planting and preparing the soil for planting, manuring, insecticides—there is no part of the fruit grower's routine on which Pickering did not inaugurate investigation.

The conclusions published from year to year and gathered together into a final volume, "Science and Fruit Growing," in 1919, have been the occasion of much controversy. The unsuitability of soil and situation, and some defects in management in the early years, hindered their acceptance, but the Woburn trials will remain as the most substantial contribution of the last hundred years to the study of fruit-tree development, one full of stimulus to new workers. His work on spray fluids led Pickering back to chemistry and his earliest interests—basic salts; after a ten years' silence papers began to reappear on such questions as the basic copper salts of Bordeaux mixture, on emulsions (with his strange discovery of a method of solidifying paraffin), and on quadrivalent copper salts.

In his horticulture, as in his chemistry, Pickering was essentially the amateur of genius; he often seemed to be careless of, and even but moderately equipped with, the knowledge that was common form, academic or practical. But he had a disconcerting habit of making discoveries which contradicted that common form. Either from policy or from temperament, he never disguised these antagonisms; where another man might have looked round to find hints and anticipations in previous experience, Pickering would say roundly, "All men who have hitherto expressed opinions on this point have been entirely wrong," even in such a matter as the way to plant a fruit tree. He loved truth, and he pursued it all his life like an artist, for the interest it had to himself; there was also something of the artist's disdain in the way he presented it to the world.

Never in robust health, an accident that deprived him of the sight of an eye probably helped to keep him out of general society, nor had he any of the ordinary man's amusements. At one time he used to walk a great deal with his inseparable companion, his wife, but he seemed to get most

pleasure out of the company of a few friends in his Harpenden garden, and it is there, among his fruit trees, or indoors at his piano, that one will remember Spencer Pickering, handsome, imperturbable, a fine and rare presence among men.

A. D. H.

WILLIAM ARTHUR HAWARD.

WILLIAM ARTHUR HAWARD, who accidentally met his death on Monday, December 6, whilst making some final experiments in an important investigation upon gaseous combustion under high initial pressures, upon which he had been engaged during the past two years as a Salters' research fellow in the Imperial College of Science and Technology, was passionately devoted to the cause of scientific research. There is every reason to believe that, had his career not been thus so tragically cut short, he would at no distant date have achieved great distinction as a scientific discoverer. Even during the research which he was completing at the time of his death he had, by most skilful experimental work, discovered a series of facts which pointed to an important new fundamental development in the science of combustion. Indeed, the actual experiment upon which he was engaged when the accident occurred was intended to test a new theory which had been suggested to account for some of his remarkable experimental results. In due course, when the results of his research are published, the importance of them to science will at once be apparent. He undoubtedly laid down his life in the cause of science.

The various stages in Haward's all too brief, but very distinguished, career were as follows: Entering the Royal College of Science in October, 1912, he took the associateship two years later, and also his London B.Sc. degree with first-class honours in chemistry. He thereupon commenced a course of post-graduate study and research in the department of chemical technology, under the direction of Prof. W. A. Bone. It was soon apparent that he was unusually gifted as an experimentalist, for he made some remarkable experiments upon certain aspects of surface combustion, which have yet to be published. During two of his summer vacations, in the years 1915 and 1916, he made investigations under the direction of Dr. R. V. Wheeler at the Eskmeals Home Office Experimental Station upon (1) the propagation of flame in mixtures of hydrogen and air, and (2) the uniform movement of flame in mixtures of acetylene and air, the results of which were embodied in two papers that were published in the joint names of himself and two others (who had assisted him) in the *Trans. Chem. Soc.* for 1916 and 1917.

In June, 1916, Haward was elected to a Beit research fellowship tenable at the Imperial College, but this was relinquished some six months later in order to join the chemical staff of H.M. Explosives Factory, Gretna, where he remained until shortly after the armistice. He then obtained a Salters' research fellowship, with which, at his

own desire, he undertook the particular investigation which he was completing at the time of his death. Though a man of gentle disposition, and very modest in his demeanour, Haward undoubtedly was conscious in the right way of his experimental powers, which excited the daily admiration of those whose privilege it was to watch their rapid development. He had in a marked degree the instinct of the true artist, which was never satisfied with anything less than the best. He was twenty-six years of age, and was married only fifteen months ago.

ANOTHER Kew veteran has passed away in the person of JOHN READER JACKSON, who died on October 28 at his house at Lymptstone, near Exmouth, Devon, aged eighty-three. Mr. Jackson was born in 1837 at Knightsbridge, but his family removed about 1843 to Canterbury, where he received his early education, returning in 1851 to school in London. Through the influence of Prof. Thomas Bell, then president of the Linnean Society of London, he was given charge of the museums at Kew, then in process of development under Sir William Hooker, and for nearly twenty years he discharged his duties single-handed, until in 1879 he received the help of an assistant. His work left him but little time for literary diversion, but we owe to him not a few contributions in applied botany in various journals, as in those of the Linnean and Pharmaceutical Societies, the *Technologist*, *Gardeners' Chronicle*, and the like. Mr. Jackson brought out a new edition of Barton and Castle's "British Flora Medica" in 1877, and in 1890 appeared his excellent "Commercial Botany of the Nineteenth Century." He was elected an associate of the Linnean Society in 1868, and was the senior on the list at the time of his death.

WE regret to record the death of DR. CHARLES INFROIT, late head of the radiological service at the Salpêtrière Hospital, Paris. The death of Dr. Infroit adds one more to the list of victims to X-ray dermatitis. A pioneer in the subject of X-rays in medicine, he was injured through over-exposure to the rays at a time when these dangers were not fully appreciated. Despite the disabilities by which he was handicapped, he made numerous contributions to the literature of the subject of radiology, especially from the diagnostic side. So recently as last year a paper appeared by him on the subject of concretions in the lung simulating the presence of a foreign body. A joint communication with Pascalis upon the surgery of the bones of the head appeared in the *Journal de Chirurgie*, 1912. Dr. Infroit designed and put into use a localiser of foreign bodies, which was used very considerably during the war; details of this instrument and the results obtained by its use may be found in the *Bulletin de l'Académie de Médecine*, 1915.

NEWS has just been received of the death of HOFRAT ALEXIUS MEINONG, on November 27, after a short illness, at the age of sixty-seven. Professor of philosophy at the University of Graz, to which he was appointed in 1889, Meinong was well known to philosophical students throughout the world by his important contributions to a special branch of study which he named "Gegenstandstheorie." His earliest published work was "Hume Studien," 2 vols., 1877. His principal work, and that by which he is best known, is entitled "Ueber Abnahmen," published in 1902, and a second edition of which appeared in 1910.

WE regret to announce the death, on December 13, at seventy-two years of age, of DR. ALEXANDER MUIRHEAD, F.R.S.

Notes.

THE position of scientific men employed in the Government service has long exercised the minds of scientific workers. The responsibility for the National Physical Laboratory and for the Geological Survey has been handed over to the Department of Scientific and Industrial Research. Kew is still under the Ministry of Agriculture and Fisheries. The Government Chemical Laboratory and the British Museum, with its Natural History Branch at South Kensington, remain distinct institutions for which the Treasury is responsible. All these institutions are largely concerned with the preservation and routine examination of specimens, testing, and the standardisation of methods, and do not serve solely for research. The Ministry of Agriculture has farmed out its research work to institutions such as Rothamsted, the Imperial College of Science and Technology, Cambridge and Oxford, etc.; it still retains, however, on its fisheries side a Research Division. Dissatisfaction has long been felt at the positions, rates of pay, and

prospects of promotion in all these offices. Scientific men claim that the positions offered to them should be at least equal in rank, in prospects, and in pay to those offered in the regular Civil Service. The matter came up for discussion at the meetings of several Sections of the British Association at Cardiff. It was referred to the council of the Association, which has now unanimously passed the following resolution and forwarded it to the First Lord of the Treasury:—"That the council considers that no scheme of payment of professional scientific men in the service of the State is satisfactory which places them on a lower level than that of the higher grade of the Civil Service." It is clear that the Treasury must agree with this resolution if the services of scientific men of the first grade are to be obtained for research purposes.

IN addition to revolutionising the methods of wireless telegraphy and rendering possible the practical development of wireless telephony, the thermionic