

work in the U.S.S.R., as in the United States and Great Britain, has shown that the old agricultural prejudice against this form is ill-founded. Indeed, it has been shown that some sensitive crops, such as serradella, lupins and potatoes, may safely receive full dressings of magnesian, though not of high-calcium, limestones.

Great importance is attached by the Mechanization Institute to a double plough in which a half-size plough precedes the usual digger plough. It is claimed that this buries turf and weeds more completely and avoids dead air spaces, and it was stated that no other type of plough is to be made.

Much work is being done on the difficult problem of analysing the production of tilth and the stability of soil aggregates. It will come as a shock to exponents of ley-farming in Britain to hear that several Russian workers hold that leys should not be grazed, at least for three years, lest trampling by stock should annul the granulating action of the grass roots.

(To be continued)

OBITUARIES

Major C. E. S. Phillips, O.B.E.

By the death of Charles Edmund Stanley Phillips on June 17, many will mourn the death of a very interesting personality.

Phillips was born on February 18, 1871, his father being Samuel E. Phillips, one of the founders of Johnson and Phillips, the firm which made some of the earliest electric marine cables. He was educated privately and studied, for a short time only, at the Central Technical College, South Kensington. It may be that it was owing to his rather unorthodox education that he was so versatile.

After the discovery of X-rays in 1895, Phillips devoted much time to the making of vacuum tubes and in studying their performance in his own laboratory at Shooters Hill. His friend, H. O. Mance (now Brigadier-General Sir Osborne Mance), who was working with him, has preserved some of Phillips's letters written to him early in 1896 describing his difficulties. In a letter dated May 4, 1896, Phillips says, "this afternoon I made a Röntgen tube myself but afterwards found the glass used was lead glass so gave it up as useless". In July of the same year he writes: "I've got an experimental vacuum tube nearly finished which takes to pieces and can be cleaned and exhausted. . . . There seems no doubt that the X-rays consist of rays having various different properties and are by no means homogeneous".

Phillips continued to experiment with vacuum tubes and published in 1901 a paper, which created a good deal of interest at the time, on the effects produced by a magnetic field upon the distribution of ions within a highly evacuated space (*Phil. Trans.*, A, 197, 135; 1901). In 1908 he produced an electrical conducting glass (*Proc. Roy. Soc. Edin.*, 28, 627; 1908) from which the windows of electroscopes could be made. Unfortunately, the glass was never made commercially. In 1910 he delivered a discourse at the Royal Institution on the electrical and other properties of sand. In this he showed some striking and original experiments which might well be repeated.

Phillips was one of the founders of the Röntgen Society and read several papers before it. He served

as its president in 1909. During 1914-17 he was in charge of the X-ray Department of the Royal Herbert Hospital, Woolwich, and during 1915-18 was physicist to the X-ray Committee of the War Office. Towards the end of 1915 he gave, at the 2nd London General Hospital, a course of lectures to the orderlies of X-ray departments on the physics of X-rays, Dr. Russell Reynolds dealing with the medical side of the subject. These courses of lectures may well be regarded as the initiation of the movement for training radiographers. Phillips was much concerned at the need of protection for those working with X-rays, and served as a member of the Inter-Services X-ray Advisory Committee from its inception until its dissolution in 1939. He was appointed brevet major (on reserve to the 5th Battalion Royal West Kent Regiment) in 1918 and received the O.B.E. for his services.

Phillips was one of the founders of the British Institute of Radiology and was its president during 1930-31. He was for some time lecturer on radiology at University College, London, and was also physicist to the Royal Cancer Hospital.

In 1909 Phillips suggested the use of a trace of radium with zinc sulphide for luminizing the dials of night-marching compasses, and the first model made by him is preserved in the Science Museum at South Kensington. It is unnecessary to stress the importance of this invention.

Phillips was one of the founder fellows of the Institute of Physics, and, if he was not the first to suggest the formation of the Institute, played the leading part in its formation in 1918. He was a member of the first Board and, except for one brief interval, served on it until his death; he had been treasurer since 1925. From 1929 until a few weeks before his death he was also honorary secretary of the Royal Institution.

Phillips was an excellent violinist and enjoyed playing on his Stradivari violin. In a discourse given before the Royal Institution in May 1935, he showed how he had tried to elucidate the secrets of the tone of the violins made by the old masters. He was also a good amateur artist; his portrait of Sir William Bragg now hangs on the walls of the Royal Institution. He gave great pleasure to many friends by his facility in depicting them in caricature. He was a delightful companion with a keen appreciation of a practical joke, especially if it had a scientific background. He was at his best at the dinners of the Physical Society Club, of which he was one of the founders.

In 1903 he married Winifred, the elder daughter of the late Mr. John Baines. R. S. WHIPPLE.

Mr. R. W. F. Harrison and Mr. A. G. Hastings White, C.B.E.

THE association of the main work of a lifetime with the affairs and traditions of an old foundation is, happily, not yet rare. With the recent deaths of Mr. Robert William Frederick Harrison (July 15) and Mr. Alfred George Hastings White (July 8), at the ripe ages of eighty-seven and eighty-six years, the Royal Society has lost links with a bygone generation. Both had made its interests the centre of their own and had become steeped in its traditions, though the manners of their service and the periods over which it was rendered differed widely.

Mr. Harrison was already a man of thirty-eight,