

Dixon has driven water back along the vascular tracts in the leaf by placing the blade under an external gas-pressure higher than the osmotic pressure in the leaf-cells. Here again, however, without further evidence of the distribution of the pressure gradient, it would seem natural to assume that the water was driven merely out of the living cells, which surround the vascular cylinder in an airtight sheath, not from the cells of the leaf, external to this layer. Dixon also directs attention to the evidence for the movement of hormones in the xylem as witness that organic substances are distributed by their tissue (see NATURE, Dec. 1, 1923, p. 799, "The Nerves of Plants").

On the other hand, quite independently, in America, Mr. Otis F. Curtis, in two papers printed in the *American Journal of Botany* (vol. 7, 1920, and vol. 10, 1923), has been describing experiments which have convinced him that, although carbohydrates may be present in the xylem sap, the xylem is not responsible for their transport. Thus if a healthy shoot is ringed through the phloem, so long as there are leaves above the ring a fair amount of growth is made; but if the leaves above the ring are removed, practically no growth follows, unless even a narrow strip of phloem be left, when growth is very considerable. These experiments seem to prove too much. They were performed with the sugar maple amongst other plants, and in the bleeding season. The conclusion here would seem to be that with plenty of sugar in the sap of the xylem vessels, the sugar must certainly pass above the ring if the young

xylem is undamaged, but that sugar alone is not sufficient for growth, and something else is either required to be received (or removed) in small quantity, so that a small strip of phloem suffices for the purpose. Curtis's experiments on the failure of starch to disappear from a region of the stem isolated between two rings through the phloem are, however, very striking, and seem to provide very strong evidence that such carbohydrates are transported by the phloem. In his later paper, by analysis of the shoots above a ring and by observations of symptoms of nitrogen starvation even when the roots are fully supplied with nitrate, he shows that there is considerable evidence that nitrogen and the inorganic constituents found in the ash of plants pass such a ring with difficulty.

The phenomenon of leaf-roll in the potato may ultimately throw light upon this problem. Murphy has shown clearly (Proc. of the Royal Dublin Soc., vol. 17, No. 20, 1923) that the rolling of the leaves is a direct consequence of the excess accumulation of assimilates within them, and it would certainly seem significant that this symptom of the "virus" disease known as leaf-roll is constantly associated with a disorganisation of the phloem. The causal connexion of the two phenomena is, however, still in doubt, Quanjér arguing that the assimilates accumulate on account of the disorganisation of the phloem, Murphy that the phloem disorganises for lack of its proper work, the removal of the assimilates which fail to reach it from the leaf-blade.

### Obituary.

MR. W. M. PYBUS.

MR. WILLIAM MARK PYBUS, who died on January 4, was born on April 10, 1851. He was an eminent lawyer in Newcastle-on-Tyne, and he devoted his spare time to natural history, mainly to ornithology. His collection of eggs is well known to ornithologists and is in many respects unique. It numbers about 40,000, and is perhaps the most complete in existence. The many duplicate specimens of the same species were selected with great care to illustrate variation with especial reference to the eggs of the guillemot and the razor bill, and variations also with regard to locality. In all cases a complete record is given of the time and the place of collection, and the specimens are in a perfect state of preservation. In one case, at least, the collection includes an interesting clutch resulting from a cross between the black cock and the common fowl, and it illustrates the effects grouped under the term "hybrid oology."

Mr. Pybus made many journeys in the nesting season to different places in the northern counties, and later to St. Kilda, the Scilly Isles, the Orkneys and Shetland, and the journeys were usually followed by chatty ornithological papers from his pen. In 1901 he was elected president of the Tyneside Naturalists' Field Club, and his presidential address printed in the Transactions of the Club contained many important ornithological observations. He contributed also an interesting and suggestive paper on the destruction of sand eels by their many enemies, and especially by the heat of the sand between tide marks in summer, from observations made on the Northumberland coast. An account of this work will be found in the Report of the Dove Marine Laboratory for 1912. A. M.

WE regret to announce the death, on January 17, of Mr. Philip Buckle, lecturer in agricultural zoology in the University of Durham. Mr. Buckle was only twenty-seven years of age, and had already published several papers of interest and importance. He was joint author with Mr. Wardle of the recently published work, "The Principles of Insect Control."

WE regret to announce the following deaths:

Prof. E. Emrys-Roberts, professor of pathology and bacteriology in the Welsh National School of Medicine (University of Wales), Cardiff, also known for his antiquarian interests, on January 15, aged forty-five.

Gustaf Eneström, of Stockholm, founder and for eighteen years editor of *Bibliotheca Mathematica* and well known for his work on the history of mathematics, aged seventy-one.

Prof. Marcus Hartog, emeritus professor of zoology at University College, Cork, on January 21.

Sir Archibald Reid, president of the War Office X-Ray Committee, 1914-19, and joint secretary of the Radiology Section of the International Congress of Medicine, on January 15, aged fifty-two.

Prof. S. P. Sadler, formerly professor of organic and industrial chemistry in the University of Pennsylvania and a past-president of the American Institute of Chemical Engineers, on December 14, aged seventy-six.

Prof. J. M. Stillman, emeritus professor of chemistry at Stanford University, to which institution he was appointed in 1891, on December 13, aged seventy-one.

Prof. R. R. Thompson, professor of oil mining in the University of Birmingham, on January 24, aged thirty-nine.