

may be sterile when pollinated with its own pollen, it yields an abundant crop if pollinated with the pollen of certain other varieties. Hence it is of considerable economic importance to discover which varieties serve best for mutual cross-pollination.

Mr. Cecil H. Hooper has been engaged in the study of this subject for some years, and he published a short time ago a summary of the results of observations made by others and himself on the pollination of apples, pears, plums, and cherries.

The list of self-sterile apples is surprisingly large. It includes Lane's Prince Albert, Bismarck, Annie Elizabeth, Warner's King, Gladstone, Lady Sudeley, James Grieve, and Cox's Orange Pippin (rarely self-fertile).

It is to be observed, however, that, as indicated in the case of Cox's Orange Pippin, self-sterility is by no means absolute in all these varieties. This, although of no particular importance practically—for a poor setter no less than a completely self-sterile variety requires to be planted with a variety the pollen of which causes it to set fruit freely—is nevertheless significant from a scientific point of view. It means probably that some link in the chain of chemical changes pre-requisite for the germination of the pollen tube on the stigma and its growth in the style is missing, rather than an inability of the sexual nuclei to unite with one another. Thus it is known that the absence of a particular kind of sugar on the stigmatic surface may suffice for the suppression of the germination of a pollen tube. Hence it is most desirable that this problem of sterility of fruit trees should be studied more minutely than has been the case up to the present. The pioneer field work has been done fairly thoroughly; it is now time for the physiological botanist to intervene. He, unfortunately, is so sequestered in his laboratory that he rarely discovers even the existence of the stimulating problems which modern horticulture offers for elucidation.

The establishment of horticultural research stations at Merton, Wisby, and Long Ashton gives ground, however, for the hope that this attitude of aloofness is a thing of the past, and indeed it is these stations that are contributing most to our knowledge of the phenomena of self-sterility of fruit trees.

That the reproductive organs of fruit trees, like those of many other cultivated plants, are subject to grave disturbances is indicated by the fact that not a few apples are very shy of pollen bearing. Among varieties which exhibit this habit, Mr. Hooper mentions Newtown Wonder, King of the Pippins, Irish Peach, Baumann's Red Winter Reinette, Cox's Pomona and Broad-eyed Pippin.

Pears are apt even more than apples to be self-sterile, and such varieties as William's Bon Chrétien, Pitmaston Duchess, Doyenné du Comice, and others require to be planted in proximity with good "pollenisers." Progressive

fruit-growers are, of course, well aware of the stubborn fact of partial or complete self-sterility, and see to it that their orchards contain varieties which supplement each other's pollen requirements; but it is to be feared that many small growers are not so alive to these facts as they should be. However, so long as many of the small orchards of this country are so ill-cultivated as they are at present, self-sterility of varieties is of no great moment to the trees or owners, for the crops would inevitably be poor, in spite of the introduction of good pollenisers.

Of the insects visiting fruit trees and presumably engaged in transferring pollen to the stigmas of the flowers, Mr. Hooper gives an interesting list. In the case of apples observed during 1912 and 1913, the record was:—Hive bees, 72; bumble bees, 26; other wild bees, 2; other insects, 20. The insect visitors to the cherry were in somewhat similar proportions, but in the case of the plum the visits of bumble bees were to those of hive bees as 41 is to 29. How far the reduction in numbers of hive bees due to recent epidemics is likely to have an effect on the yield of apples is an open question.

FREDERICK KEEBLE.

PROF OCTAVE LIGNIER.

PALÆOBOTANY recently suffered a serious loss in the death of Graf zu Solms-Laubach and Prof. Zeiller. Another gap has been made in the ranks of the small body of botanists whose work is mainly concerned with extinct plants by the death, on March 19, of Prof. Octave Lignier, who occupied the chair of botany at Caen since its foundation in 1889. Prof. Lignier was born on February 25, 1855, at Pougy (Aube, Champagne). His earlier botanical studies were chiefly concerned with investigations undertaken to test the value of anatomical characters as a guide to the affinities of the Calycanthaceæ and other Dicotyledons. These researches led him to adopt certain views with regard to the important part played by the foliar vascular system (the "meriphyte") in the evolution of the conducting system of the stem. For his original ideas on this subject Lignier did not always receive his full share of credit. He also wrote on the anatomy and floral morphology of many other recent genera; but it is for his numerous additions to our knowledge of Mesozoic and Palæozoic plants that he is best known.¹ One of his most important contributions is the masterly account of *Bennettites Morièrei*, a Cycadean "flower," probably from the Gault.

Among other important contributions by Lignier reference may be made to his detailed description of several species of Jurassic and Cretaceous Coniferous and Cycadean stems and some Upper Cretaceous Angiospermous wood referred to the Hamamelidaceæ; his ingenious suggestions with regard to the relationships of

¹ "Notes on the Pollination of Orchards." By Cecil H. Hooper. *The Fruit, Flower and Vegetable Trades' Journal*, September, 1915.

¹ For a list of Lignier's papers, see "Titres et Travaux scientifiques de M. Octave Lignier." Laval, 1914.

the Equisetales and Sphenophyllales; papers on Jurassic floras of France; and especially his recent work, in part in collaboration with M. Tison, on the flowers of the Gnetales and the systematic position of the group. Lignier's activities ranged over a wide field; he was a botanist of marked originality, a generous friend, and a man imbued with the true scientific spirit. It was through his persistence that a botanical laboratory was built at Caen, and under his able direction the University became an important centre of botanical research.

A. C. S.

NOTES.

At the ordinary scientific meeting of the Chemical Society, held at Burlington House on Thursday, April 6, Dr. Alexander Scott, president, announced that the council had decided that an extraordinary general meeting of the society should be summoned for Thursday, May 11, to consider the question of the removal of the names of the nine alien enemies from the list of honorary and foreign members of the society.

REPLYING to a question relating to the inventions branch of the Ministry of Munitions, Dr. Addison said, in the House of Commons on April 10:—The Director-General of Munitions Design is General Du Cane. His salary is 2000*l.* per annum. The Superintendent of Research is Colonel R. A. Craig. His salary is 850*l.* per annum. The present salaries of his staff range from 750*l.* per annum to 240*l.* per annum. It is not desirable to give their names. In addition to the staff of the Superintendent of Research, a number of most eminent chemists and other men of science in the country have for many months given their services to the Ministry of Munitions without payment, and have rendered invaluable assistance to the country.

SIR COLIN CAMPBELL SCOTT-MONCRIEFF, whose death occurred on April 6, in his eightieth year, was a man of distinguished parts, who achieved reputation in three several directions, as a soldier, as an engineer, and as an administrator. Born in 1836, his military career commenced at the age of twenty, when he entered the Bengal Engineers as a second lieutenant. He was engaged in the suppression of the Indian Mutiny, for which he received the medal. In 1883 he retired with the rank of Colonel. From that date he devoted himself to the inauguration and execution of engineering projects of a utilitarian character, connected in the first instance with the agricultural development of the North-West Provinces, by artificial irrigation. He also held office as chief engineer for Burma. In 1883 his services were transferred to Egypt, where he acted as Under-Secretary of State Public Works at Cairo. There, where perhaps his best and most notable work was performed, his efforts were concentrated upon the more effective regulation of the existing water supply for purposes of irrigation, and during his tenure of office he carried out the restoration of the Great Nile Barrage—a difficult and tedious operation, which extended over a period of six years. A comprehensive review of his labours and of the difficulties which he encountered and overcame is to be found in a paper entitled "Irrigation in Egypt," which was published in the Professional Papers of the Corps of Royal Engineers in 1893. This paper is the substance of three lectures delivered by Col. Scott-Moncrieff before the Royal Engineers' Institute, and it contains much interesting information on

the Nile and its treatment, particularly as regards the restoration and adaptation of the barrage, which was effected in circumstances of great discouragement and no little opposition. In 1892 he left Egypt for home, and for the next decade he was in office as Under-Secretary for Scotland. Then, at the beginning of the century, he returned to India to take up duty as president of the Indian Irrigation Commission, for which service he was rewarded, in 1903, with the K.C.S.I. He had previously, in 1887, been made K.C.M.G.

WE regret to record the death of Sir Alexander R. Simpson, emeritus professor of midwifery in the University of Edinburgh. Although above eighty years of age, he was active both in mind and body, and it was on his way home from a meeting through the darkened streets that he was knocked down by a motor-car and received injuries from which he died shortly afterwards—on the night of Thursday, April 6. Born at Batnagate, West Lothian, in 1835, and receiving his early education at the local academy, Simpson went to the University of Edinburgh, and began the study of medicine in the apprenticeship days. He was apprenticed to John Goodsir, the anatomist, and amongst his other teachers was Syme. After his graduation he studied abroad at Montpellier and Berlin, acquiring, in addition to a widened knowledge of his profession, that facility in speaking French and German which made him such an admirable and acceptable representative of his University at many foreign congresses. On his return he for some years assisted his uncle, Sir J. Y. Simpson, then at the zenith of his fame, and after an interval of five years spent in practice in Glasgow, succeeded him in the chair of midwifery and the diseases of women and children in the University of Edinburgh. This chair he held for thirty-five years, 1870–1905. In 1906 he received the honour of knighthood. Simpson had a wide knowledge alike of the history, theory, and practice of his profession. He practically grew up with the modern science of gynaecology, and he was always awake to every new development of it, and familiar with everything of importance written upon it in all languages. His contributions to the literature of his department were numerous and valuable: many of them are collected in his "Contributions to Obstetrics and Gynecology." Sir Alex. Simpson took a wide and responsible view of his professorial functions, and interested himself in all that concerned the welfare of his students and the University. Lady Simpson predeceased him several years ago, and he is survived by four sons and a daughter.

THE death is announced, at sixty-five years of age, of Sir Stafford Howard, K.C.B., formerly Commissioner of Woods and Forests, a post to which he was appointed in 1893, and retained until 1912. He was also an active member of the Afforestation Committee.

THE *Nieuwe Courant* announces the death at the age of fifty-four, of Dr. H. P. Wijsman, formerly professor of pharmacy in the University of Leyden, and since 1908 extraordinary professor of the chemistry of foods and drugs at Utrecht. He was also secretary of the Colonial Institute of Amsterdam.

Science announces that the Avogadro medal has been awarded to Prof. H. N. Morse, of the Johns Hopkins University, for the most important contribution to molecular physics made since the meeting held in Turin in 1911, to celebrate the centennial of the announcement of the hypothesis of Avogadro.

DR. DAVID HOOPER, formerly curator of the Economic and Art Sections of the Indian Museum at Calcutta, has been elected president of the British