

Forrestall in "The Shamrock Tradition" (*Irish Ecclesiastical Record*, 36, 63, 1930, Dublin).

As to which species of clover is the shamrock, the overwhelming majority of the Irish consider the small yellow-flowering trefoil as the shamrock. This usage of the people of Ireland has the force of a living tradition and outweighs the evidence of some of the dictionaries and lexicons which refer the shamrock to *Trifolium repens*, the white or Dutch clover. Botanical names, unless used by systematic botanists, are often misapplied. The plant meant by the people of Ireland has much greater claim to accuracy than a botanical name in a dictionary. Mgr. Patrick Nolan, Lakeland, Florida, recalls that as a boy in Belfast he learned to distinguish the shamrock from the clover (*T. repens*) by the white spots commonly shown on the leaves of the latter. *T. dubium* does not have white-spotted leaves.

To sum up: the shamrock of Irish and Scotch Gaelic language and literature and tradition is a clover, in the living tradition of the Irish, *Trifolium dubium* Sibth. The shamrock of English writers is the wood-sorrel.

NEW CROP VARIETIES

NEW introductions from Sweden, Denmark, Holland, France, Canada and the United States are included among the 163 distinct varieties and strains of crop plants now being tested by the National Institute of Agricultural Botany, Cambridge. Many very promising varieties have been submitted by private and 'official' plant breeders working in England, Wales, Scotland and Northern Ireland. In order to give the varieties every opportunity of demonstrating their merits, the fifteen principal yield trials are repeated at centres as far apart as Newcastle-on-Tyne, Bridgwater, and Wye (Kent).

To secure accurate yield results the Institute normally includes each variety in eight different plots, while seasonal effects are overcome by continuing the trials for three seasons in succession. Among the 98 varieties included in special observation plots are fourteen French varieties of wheat submitted by the Syndicat des Producteurs de Semences Selectionnées which are growing alongside the well-known variety Bersee.

Resistance to attacks of such diseases as yellow rust and loose smut, as well as 'lodging' of the straw in cereals, are carefully watched, and the most successful varieties will be promoted from observation plots to yield trials in 1947.

The quality of the resulting crop is carefully studied in co-operation with interested authorities such as the Cereals Research Station at St. Albans, and the Institute of Brewing. The progress made in the breeding of higher quality varieties of oats, wheat, barley, potatoes and sugar beet, etc., is largely the result of careful testing of older varieties in past years.

Apart from the headquarters trial ground at Cambridge, three of the pre-war testing stations are now in full progress at the Harper Adams College (Shropshire), Cannington Farm Institute (Somerset), and the Norfolk Agricultural Station at Sprowston. New regional stations have been established with the approval of the Ministry of Agriculture at the following centres: King's College Farm, Nafferton, Newcastle-on-Tyne; Midland Agricultural College

Farm, Loughborough; Hampshire Farm Institute at Sparsholt; and the South-Eastern Agricultural College at Wye. In Yorkshire, trials have been distributed between the Askham Bryan Farm Institute and selected farms in the Wolds and Holderness districts of East Riding.

Combine harvesters will be used to harvest many of the trials in Cambridge, Norfolk and Yorkshire. The 'Combine' enables additional trials to be conducted on farms possessing soil or climatic conditions which are of special interest but which are situated at some distance from a testing station.

The following members of staff have recently been appointed to the National Institute of Agricultural Botany: Mr. J. C. Cullen, senior scientific officer in charge of potato trials and propagations; Dr. F. Earnshaw, economic botanist; and Messrs. P. J. Jones, A. F. Kelly, G. W. Mann, L. A. Willey, A. Main, G. G. Graham, J. D. Ivins and J. Munro, crop recorders at the trial centres.

EXPLORING MAGNETIC FIELDS

AN article by Lillian Shapiro (*Bell Lab. Rec.*, 23, No. 8; August 1945) describes means and methods devised for exploring the magnetic fields employed for guiding the electron stream in a cathode ray tube. Search coils are used in the method and a special winding machine and technique were developed to produce them.

Two coils with the axis of one at right angles to that of the other are wound on a common mandrel, and this assembly, with an outside diameter of about 0.2 in., is slipped into the end of a very thin-walled plastic search tube in such a way that one of the coils is concentric with the tube. As this search tube is moved along the axis of the tube, this latter coil will always be in a position to measure the component of the flux along the z -axis, while the other coil may be used to measure the components along the other two axes, turning the tube first so that the coil is perpendicular to the x -axis and then turning it 90° to bring it perpendicular to the y -axis.

Since such a search tube cannot actually be inserted in a cathode ray tube, exactly equivalent conditions are simulated by using a solid plastic cylinder with an outside diameter the same as the cylindrical section of the cathode ray tube. This plastic cylinder is accurately drilled longitudinally with twenty-one holes. It is then slipped inside the deflexion assembly of the cathode ray tube just as the tube itself would be. The magnetic fields set up in the plastic cylinder are thus exactly the same as those in a cathode ray tube when the same deflexion assembly is used.

The search tube carrying the exploring coils is inserted successively in the twenty-one holes of the cylinder, and a number of readings is taken in each so as to record the field at successive positions along the length of the tube. At each position, a reading on the coil that is concentric with the tube gives the z component of the field. Readings of the x - and y -components are made with the transverse coil, which may be rotated to any desired position merely by turning the tube. On the end of the tube remote from the exploring coils, there is a protractor from which the x - and y -axes may be determined.

One of the holes in the plastic block is exactly down the centre. The maximum field in this hole is usually rectilinear, with a component along one axis

only, and is generally opposite the centre of the windings inducing the field under measurement. The ordinary procedure is to take the first reading at this point. The direction of this field, which may be considered as along the x -axis, is determined by turning the transverse exploring coil until a null reading is obtained, and the angular position of this null reading is determined from the dial. This represents the y -axis, and 90° from this position is the x -axis. This determines the angular positions on the dial for the x - and y -axis, which will be used for all subsequent readings. The transverse exploring coil is then turned to be at right angles to the x -axis so as to obtain a reading of the maximum field. All other readings can then be given as a percentage of this maximum, which may ultimately be calibrated for actual field strength.

After the maximum field at the centre has been determined, the coil is moved along the z -axis in the same hole, and readings taken of all three components at short intervals. Where the field strength is changing rapidly, readings may be made at intervals as small as 0.05 in., distance being read on the graduated brass rod that carries the search tube. Farther out from the centre, where the field is weaker and is changing less rapidly, the distance between readings may be increased. Similar sets of readings can then be taken throughout the length of the remaining twenty holes.

NEPHRIDIA AND GENITAL DUCTS

THE last two issues of the *Quarterly Journal of Microscopical Science* (86, Pts. II, III and IV) contain one memoir, and they will be received with mixed feelings of gratitude and sadness by zoologists throughout the world. Gratitude because they contain such an admirable review of the subject of nephridia and genital ducts, and sadness because the second part contains a notice of the death of their distinguished author, Prof. E. S. Goodrich. The reviewer suggests that, if the type is still available, the publishers of the journal consider the possibility of adding some personal notes and issuing the two parts together as a memorial volume. The publication of the second number almost coincides with Prof. Goodrich's twenty-five years as editor of this famous journal; while his numerous publications in this field, in which he was an acknowledged master, extend over more than fifty years and, with one exception, have appeared in it—surely an exceptional record.

Accounts of the excretory organs and the genital ducts in a wide range of animals occurred frequently in previous literature, but they were difficult to correlate because of the lack of a generally accepted nomenclature, in part due to the fact that their true nature and origin were not properly understood. After original investigations of his own, Prof. Goodrich published in 1895 a memoir "On the Coelom, Genital Ducts and Nephridia". In this for the first time the relationships of these structures were clarified, a much more satisfactory terminology was proposed and a series of important homologies pointed out. This work became a classic and formed a secure foundation for all future investigations on these topics.

In the fifty years that have passed since its appearance, a large volume of work along the same lines has been published, including noteworthy contribu-

tions by Prof. Goodrich himself and others directly inspired by him. Naturally much has been added to our knowledge and new types of these structures discovered, and these are all referred to in their appropriate places in the present memoir. In spite of the elaboration of certain details, almost no modification of the fundamental ideas originally put forward has been found necessary. The present memoir bears the title "The Study of Nephridia and Genital Ducts since 1895" and is self-explanatory. It covers the whole range of triploblastic animals from the Platyhelminths up to and including the Vertebrata. It is illustrated by 100 text-figures and is furnished with a full bibliography. There is no doubt that, like its predecessor, it will furnish the standard work of reference for many years to come.

FORTHCOMING EVENTS

(Meetings marked with an asterisk * are open to the public)

Tuesday, May 28

EUGENICS SOCIETY (at the Royal Society, Burlington House, Piccadilly, London, W.1), at 4.45 p.m.—Discussion on "Eugenically Desirable Types" (to be opened by Mr. Geoffrey Eley, followed by Mrs. C. Bosanquet and Dr. Maurice Newfield).*

LONDON ASSOCIATION OF UNIVERSITY WOMEN (at the Royal Institution, Albemarle Street, London, W.1), at 5.30 p.m.—Dr. Kathleen Lonsdale, F.R.S.: "The History of the Royal Institution".

SOCIETY OF INSTRUMENT TECHNOLOGY (at the London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1), at 6 p.m.—Dr. A. Porter: "The Design of Automatic and Manually Operated Control Systems".

Wednesday, May 29

ROYAL SOCIETY OF ARTS (at John Adam Street, Adelphi, London, W.C.2), at 1.45 p.m.—Major W. H. Cadman: "Colloidal Carbon".

ROYAL STATISTICAL SOCIETY (at the London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1), at 5.15 p.m.—Prof. R. G. D. Allen: "Mutual Aid between the United States and the British Empire, 1941-45".

Thursday, May 30

LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE (at Houghton Street, Aldwych, London, W.C.2), at 4.45 p.m.—Prof. E. R. Hondelink: "The Organisation and Control of European Inland Transport".*

Friday, May 31

ROYAL ASTRONOMICAL SOCIETY (at Burlington House, Piccadilly, London, W.1), at 4.30 p.m.—Geophysical Discussion on "The Ionosphere" (to be opened by Sir Edward Appleton, G.B.E., F.R.S.).

APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

LECTURER IN MATHEMATICS—The Clerk to the Governors, Middlesex Technical College, Market Road, Chelmsford (June 1).

ENTOMOLOGIST for Colorado beetle, potato root eel-worm and general advisory work—The Secretary, States' Committee of Agriculture, 6 Bond Street, St. Helier, Jersey (June 1).

LECTURER IN CHEMISTRY up to B.Sc. standard—The Principal, Chelsea Polytechnic, Manresa Road, London, S.W.3 (June 6).

LECTURER IN PHYSICS AND MATHEMATICS—The Registrar, Merchant Venturers' Technical College, Bristol 1 (June 6).

LECTURER (ungraded), an ASSISTANT LECTURER (ungraded), and DEMONSTRATORS (3), IN THE DEPARTMENT OF PHYSIOLOGY—The Registrar, The University, Liverpool (June 7).

ASSISTANT LECTURER IN GEOGRAPHY—The Registrar, The University, Manchester 13 (June 15).

TECHNICAL DEVELOPMENT SUPERVISOR for the organisation and supervision of a Technical Development Section—The Secretary, Turf Development Board, 21 Fitzwilliam Square, Dublin (June 15).

PROFESSOR AND HEAD OF THE DEPARTMENT OF ENGINEERING—The Secretary, The University, St. Andrews (June 29).

MYCOLOGIST at the Tea Research Institute of Ceylon, Talawakelle, Ceylon—The Secretary, Ceylon Association in London, King William Street House, Arthur Street, London, E.C.4 (June 30).

RESEARCH WORKERS to take part in an investigation of the distribution of drugs in cells using radioactive elements—Prof. Gaddum, Pharmacological Department, The University, Edinburgh (June 30).

LECTURER IN MATHEMATICS AND SCIENCE at the British Institute, Cairo—The Director of Education, British Council, 3 Hanover Street, London, W.1.

LECTURER IN MATHEMATICS, qualified to teach to the standard of the Special Degree of London University—The Registrar, Municipal College, Portsmouth.