

full swing and help was coming in from every quarter; following it closely, happily aided by the inspired action of men like Tiemann and Baeyer, who every now and then gave to it a guiding kick, he was able to carry it forward with ever-growing advantage, the score of papers to his record being ultimately 179.

The first foundations of terpene chemistry were laid in France, especially by Berthelot. Gladstone and Wright were early in the field here but did not get very far. In the early 'seventies, Tilden and I began to revise and extend the French work but the real cause of advance was Tilden's brilliant discovery of the beautifully crystalline nitroso-chlorides and nitroso-derivatives of turpentine (pinene) and citrene. We were early convinced that the number of isomeric hydrocarbons had been greatly exaggerated. Wallach began by studying wormseed oil but soon passed into our field—without ever asking our permission, although those were days when not all were pirates as now. He scored his first real success in working with Tilden's compounds. It was therefore amusing when, in 1890, in a paper in the *Annalen* he practically accused me of having picked his brains when I had visited his laboratory shortly before. This was in connexion with *sobrerol*. As a matter of fact, I had been collecting the material a dozen years previously: it was in this work that Sir William Pope's crystallographic genius first became apparent.

If we ask why Tilden, who made so brilliant a beginning, did so little afterwards, whilst Wallach who had trod in his footsteps did so much, the answer is that in 1880 Tilden became the head of a new school (Mason College) and had 'fish to fry' more important than essential oils. Wallach had

not a few helpers, under the German university system. The last thing Birmingham cared for then was research. Tilden had scarce a student to work with him: his men were under no Ph.D. compulsion to attempt original work. I was in a like position and, at about the time Wallach began, had three new laboratories on my hands in rapid succession. Still we kept the camphor pot boiling usefully, so that an English camphor school gradually arose; this began by doubting Kekulé. Perkin junior's synthetic terpene work stands unrivalled. Later English workers in the field have given proof that there are still craftsmen among us. Maybe, ere long we shall have to show that not a few of the conclusions of the Wallach school are unsound.

Wallach was able to accomplish his work because he was under conditions which were the outcome of centuries of loving care for the universities and a public belief in the value of education. Here, fifty to sixty years ago, even Oxford and Cambridge were scarce known to natural science. Cambridge came fairly rapidly to the fore but Oxford was slower. Meanwhile schools of university rank have been established in every considerable town in the country; perhaps some of us who have contributed to this end may prove to have done work of far more value than that on essential oils.

HENRY E. ARMSTRONG.

WE regret to announce the following deaths:

Mr. T. C. Cantrill, formerly of the Geological Survey of Great Britain, on April 3, aged sixty-three years.

Sir John de Villiers, noted especially for his work while in charge of the map room at the British Museum and his contributions to geographical and historical literature, on April 2, aged sixty-seven years.

News and Views.

THE Society for the Preservation of the Fauna of the Empire performed a great service when it persuaded the Secretary of State for the Colonies to approve of and support a general survey of the East African group of Colonies and Dependencies from the point of view of the preservation of wild life. A fortunate choice selected as observer Major R. W. G. Hingston, already well known for his natural history observations; and after a rapid survey of the land, the results and conclusions of his tour were presented on Mar. 9, in the form of a lecture to the Royal Geographical Society. Major Hingston had the advantage of discussing with Government officials and representatives of public opinion the problems which face the fauna of Africa, and on the basis of these discussions and his own observations he has submitted for the consideration of H.M. Government a scheme of nine national parks, which, if brought into being and effectively conducted, would ensure the perpetual preservation of the fauna of these territories, without undue interference with native rights or economic development. To anyone familiar with the history of wild life in Africa, the gradual but constant retreat

and often final extermination of the large animals is a commonplace, but surely Major Hingston exaggerates when he states that "great and small, everything is retreating". The general experience is that cultivation of the soil *increases* the amount of wild life; only, the great animals go, and the small things that take their place, even if they do not become pests, far from compensate for the picturesqueness of the departed.

THE large animals are at the mercy of several disruptive forces. Of these, man has brought into play cultivation of the soil, the demands of special trades, and the activities of sportsmen; while Nature threatens with epidemic diseases. Not only has African wild life suffered directly from such diseases, but the suspicion that it may harbour or encourage diseases to which man is subject has concentrated a new warfare against it, so that last year 20,000 head of game, including 9000 zebra and 2500 wildebeest, were slaughtered in Zululand because it was feared that they kept alive the tsetse fly with its burden of sleeping-sickness. National parks and game reserves at present help to preserve the wild life of Africa, but the perma-

nence of the latter is uncertain, since their establishment or dissolution depends simply upon a proclamation in the local Government *Gazette*, agreed to by the Secretary of State. National parks, on the other hand, are more stable, made by Act of Parliament the property of the public for ever, to be utilised for the sole purpose of preserving the natural objects within them. "It is the belief", declared Major Hingston, "of all who desire the perpetuation of the fauna, that national parks on this rigid basis should replace the fluid reserves." Accordingly, he describes a series of nine national parks ranging from South-Central Africa to the gorilla territory of Uganda. It is important that these parks should be created before wild life approaches the stage of disappearance. Not only will delay make them less effective for their prime purpose, but also it will add to the difficulties and cost of establishing them.

OF the many inventors from whose work has gradually been evolved the modern safety bicycle, James Starley, the centenary of whose birth occurs on April 21, was one of the most successful. By his improvements, it has been said, he rendered bicycles and tricycles machines capable of general use, while to his perseverance and energy Coventry owes its position as the centre of the cycle industry. The son of a Sussex farmer and born at Albourne, he began work on the land at the age of nine and at fifteen was a gardener in the employ of the famous marine engineer, John Penn, at Lewisham. A born inventor, he abandoned gardening for mechanics, and first in High Holborn and then in Coventry was employed on the manufacture of sewing machines. On the introduction of the French 'boneshaker' bicycles into Great Britain in 1868, their manufacture was taken up by the Coventry Machinists' Company, in which Starley was a foreman, and by him quickly improved. Patenting a method of tightening the wire spokes of tension wheels, in 1870 he brought out the "Ariel" bicycle, the first attempt to produce a light all-metal machine, and from this sprang the well-known 'ordinary' or 'penny-farthing' bicycle. Starting in business for himself in 1872, he quickly gained a reputation for his machines and became known as the 'Father of the Bicycle'. He died on June 17, 1881, at the early age of fifty years, and was buried in the Cemetery, Coventry. Three years later, a monument was erected in Queen's Road bearing his portrait and representations of some of his machines. His nephew, J. K. Starley, also made notable improvements on bicycles, and in 1885, with Sutton, brought out the "Rover" bicycle, which embodied most of the features of the present safety machine.

AN exhibition of British glass and glassware was held in the exhibition hall of Messrs. Selfridge and Co., Ltd., Oxford Street, London, April 13-18. The exhibition was organised by the Glass Manufacturers' Federation in order to indicate to the general public the variety and quality of the products of the glass industry. The exhibits included artistic glassware and fine crystal tableware; glass bottles and jars of various shapes and sizes; sheet-glass in different

forms and plate-glass from $\frac{1}{8}$ -inch in thickness to $1\frac{1}{2}$ -inch; glass transparent to ultra-violet light, and glass which excludes about 80 per cent of the heat rays. The varied range of exhibits of chemical, scientific, laboratory, and medical glassware, and of fused silica glassware, gave evidence of the remarkable progress that has been made in these branches of the industry. The application of glass in the electrical industry was illustrated by wireless valve bulbs; electric lamp bulbs, which are produced by automatic machinery; a 10 kw. electric lamp, such as is used in lighthouses and in aerodrome pilot lights; photocells; and neon lights for decorative and publicity purposes. Two large blocks of fine optical glass were shown, and also a polished telescope disc of 24 inches diameter. Amongst the spectacle lenses exhibited were samples of specially computed cataract lenses of light weight, and trifocal lenses made by fusing as many as six pieces of glass to form the complete lens. Spun glass, known as glass silk or glass wool, was shown in skeins, and also woven into cloth and mats. This is now being largely manufactured and used for heat insulation purposes on boilers and steam-pipes. It is more efficient than many other substances used for this purpose, and, in the form of mattresses or strips, can be easily and quickly applied or removed.

At the quarterly meeting of the Grand Council of the British Empire Cancer Campaign held on April 13, the finance report showed that, including the grants approved at the meeting, the Campaign had now subsidised research centres and independent research workers, since its inception, to the extent of £157,000. Apart from this, a sum of more than £500,000 had been subscribed and is being administered by the branches and affiliated organisations of the Campaign throughout the British Empire. On the recommendations of the Executive Committee, the Grand Council approved the following grants: £2500 to the Cancer Hospital (Free) for its general research work, together with an additional sum of £500 to meet the expense incurred by the Research Institute by the appointment of its bio-chemist, Dr. J. W. Cook; £650 for one year to St. Mark's Hospital, City Road, and £2500 to St. Bartholomew's Hospital. For the sixth year in succession, the Grand Council renewed the grant of £680 to the Medical Research Council towards the upkeep of the Radon Centre at the Middlesex Hospital, which supplies a number of organisations with radon for scientific experimental investigations. Prof. W. S. Lazarus-Barlow was elected to fill the vacancy in the five nominees of the Campaign on the Scientific Advisory Committee, the other five members of which are nominated jointly by the Royal Society and the Medical Research Council. The Grand Council acceded to the request that the Glasgow Royal Cancer Hospital should be affiliated officially to the British Empire Cancer Campaign.

THE "Unusual Ice Formation" described by Prof. A. Morley Davies in *NATURE* for Mar. 7, p. 340, has also been recorded by Mr. W. B. Alexander at Reigate on the morning of Jan. 2, 1931. The latter formation consisted of a pencil-shaped column of ice $3\frac{3}{8}$ in. high

and $\frac{3}{8}$ in. in diameter, rising vertically from a glass bowl about 4 in. in diameter and containing nearly 2 in. of water. A similar phenomenon, illustrated by a very fine photograph, was described by Mr. Basil Longley, of Crawley, Sussex, in the *Meteorological Magazine* for March 1929, and there are probably other descriptions extant. In all these cases the method of formation was probably along the lines described by Prof. Davies. Mr. Longley explains it as follows: "the water froze rapidly on top, and when the expansion took place underneath, the surface ice broke (this can be seen) and owing to the continuing pressure of the water expanding, it gradually oozed out, freezing as it came. There was a tiny hole up the centre of the column which justifies this theory." The volume of Mr. Longley's column was, roughly, one-hundredth of the ice in the bowl, of Mr. Alexander's about one-sixtieth, and of Prof. Davies' (if it was solid) about one-fifteenth; the expansion of water in freezing is about one-tenth, but the formation of the columns could not begin until a fair thickness of ice existed on the surface. The order of magnitude is approximately correct, but the formation evidently requires a high degree of cohesion between the ice and the sides of the bowl, as well as certain definite conditions of temperature, thus accounting for its rarity.

A NEW record for a long distance flight in a light aeroplane has been set up by Mr. C. W. A. Scott, who left Lympne aerodrome on April 1 and arrived at Darwin, in the Northern Territory, Australia, on April 10. His time for the journey was 9 days 3 hours 40 minutes, thus beating Air Commodore Kingsford Smith's time for the same flight last autumn by about nineteen hours. Mr. Scott's machine is a Gipsy Moth light aeroplane, specially fitted with fuel tanks carrying about a third of a ton of petrol, and the engine is a de Havilland 120 h.p. Gipsy II., the same pattern as that used by Kingsford Smith. Its cruising speed is about ninety miles an hour. According to a long communication from Mr. Scott in the *Times* of April 11, his course was from Lympne across Europe to Belgrade, on to Aleppo, then to Baghdad, Gwadar in Baluchistan, Karachi, Calcutta, Rangoon, Singapore, Bima, and then across the Timor Sea to Bathurst Island and Darwin. His longest day was 15 hours 45 minutes, covering 1450 miles, and total flying time and distance, 109 hours 50 minutes and 10,450 miles. That the aeroplane successfully withstood the strain of this flight must be very gratifying to the designers and makers of both engine and machine, while the flight itself is a noteworthy feat of personal endurance and skill.

In a paper read before the New York Electrical Society on Mar. 19, Dr. Goldsmith discussed what he calls the "new music of electric vibrations". He illustrated it by a novel device called the electric carillon, which can send out bell tones louder than any bell in the world. A series of small steel chimes not unlike those of a household clock are struck by little electric hammers actuated by a keyboard similar to that of a piano. The sounds thus produced are only audible a few inches away but the vibrations of

the steel chimes create small electric currents in devices like the 'pick-up' used in electric gramophones. These feeble currents are amplified millions of times by vacuum tube amplifiers and can be clearly heard in the largest concert hall or for miles round a church tower by means of giant amplifiers. The operator of the electric carillon not only controls the notes to be played but also can vary the volume of the tone to any desired extent. Dr. Goldsmith believes strongly in the future of electric music. In his opinion, the musical artist of the future will become more and more indispensable. The physical limitations which now weigh heavily on great artists will be largely reduced. The number of notes which the musician can play per second will not be limited by the speed of his fingers. Tones of any origin can be made to resemble those of any desired instrument by electrical methods. Each musician will be able to play not only the melody but also will be able to make it sound as if produced by any type of instrument. The new electric music will gradually evolve a new type of composer capable of utilising to the full the capabilities of emotional expression contained in electric music. Dr. Goldsmith also demonstrated the 'theremin', an electric musical instrument which is operated by moving the hands backwards and forwards in front of it. It is called the theremin, after its inventor, a Russian physicist.

In the *Engineer* of Mar. 27, Mr. H. J. Shepstone gives an account of the progress made with the scheme for supplying Palestine with electricity, generated in the valley of the River Jordan. In its passage from its source in Mount Hermon to the Dead Sea, the river has a fall of no less than 3000 ft., and it discharges more than 5,000,000 tons of fresh water into the Dead Sea daily. The entire scheme includes the provision of three hydro-electric plants, the first of which has just been completed. This station is situated at Jisr-el-Mujameh, some seven miles south of the Sea of Galilee. For the storage and control of the water two dams and two concrete-lined canals have been constructed and the first two units of 8000 h.p. each have been installed in the power-house. When the demand warrants it, two other units will be installed, while later on a second power-house will be built at Abadieh and a third at Jisir Banah Yakoub, which lie respectively south and north of the Sea of Galilee. Transmission lines will connect the hydro-electric plants with three fuel power-stations at Jaffa, Haifa, and Tiberias, and in the near future, it is hoped, every city, town, and agricultural settlement will be able to obtain electrical energy.

SMUT diseases, bunt of wheat in particular, are responsible for considerable loss of grain in England, and the illustrated bulletin (No. 24) recently issued by the Ministry of Agriculture entitled "Cereal Smuts and their Control" should prove of great benefit to the farmer. The symptoms and mode of infection of these diseases in wheat, barley, and oats are described, and methods of control, fairly simple to carry out and of moderate cost, are given in detail.

Attention is directed to the necessity for distinguishing between 'covered' and 'loose' smuts: for whereas in the former, contamination with the fungus is on the outside of the grain only, in the latter the infection is internal, and the appropriate methods of control are accordingly different in the two cases. For prevention of 'covered' smuts, of which bunt in wheat is an example, treatment or 'pickling' with formalin (1 pint of 40 per cent formaldehyde to 40 gallons of water) is recommended as preferable to the older method of steeping or spraying with copper sulphate. The advantages afforded by a dry type of treatment are obvious, and mention is made of recent successful trials of powder-pickling with copper carbonate. The control of 'loose' smuts offers a much more difficult problem, as external application of a fungicide is useless. Steeping the grain in hot water appears to be the only known remedy, but the temperature necessary to kill fungus is very close to that fatal to the grain, so that the method is attended with considerable difficulty. Copies of the bulletin may be obtained from the Ministry of Agriculture, 10 Whitehall Place, London, S.W.1. Price 5*d.* post free.

PRELIMINARY reports on the work of the expedition of the Royal Anthropological Institute to Kharga Oasis, organised and led by Miss Caton-Thompson with Miss E. Gardiner as geologist, justify the choice of this little-explored area as the scene of the past season's work, and hold out strong hopes for the future. Thanks to the co-operation of Lady Bailey, and with the permission of the Egyptian and British Governments, an aeroplane and air-photography were at the disposal of the expedition for a period of two weeks. By this means, and with the additional assistance of camel transport, it was possible to examine the area thoroughly, and points of archaeological importance were marked down for future seasons' investigations. In addition to the work of reconnaissance, the history of the springs of the floor of the oasis was investigated. This brought to light a deeply buried Mousterian culture of specialised type, showing affinities with cultures in Algeria and Tunisia. Another notable find was extensive flint workings, extending for some miles along the edge of the Kharga Scarp, the second only of its kind to be found in Egypt. A short account, with illustrations, of the results appeared in the *Times* of April 13.

THE *Polar Record*, of which the first number has just appeared, is a modest journal which it is proposed to publish twice a year from the Scott Polar Research Institute at Cambridge (price 1*s.*). It is to be the official organ of that institute, and though at present merely a record of news of exploration in polar regions, it is hoped gradually to extend its scope. The first number starts well and should be full of interest to that small but growing group of explorers and students of polar regions. News is given of Norwegian work in Svalbard, Russian in Franz Josef Land and Northern Land, and German, British, American, and Danish in Greenland. There are also some details of American, Norwegian, and British work in the Antarctic, where important discoveries have been

made during the last few months. The number concludes with a short bibliography of recent polar books.

THE issue of the two index numbers of *Science Abstracts* completes the physics and the electrical engineering sections of volume 33 (1930). More than 200 periodicals are abstracted by 76 abstractors, most of whom are specialists in the particular branch of the subject with which they deal. The physics volume has 4165 abstracts of average length 0.267 page, and 230 pages of index; the electrical engineering volume, 2537 abstracts of average length 0.282 page, and 134 pages of index. The volumes are essential in every library consulted by physicists or electrical engineers who desire to keep themselves up-to-date.

AT the annual meeting of the Gilbert White Fellowship held on April 11, Sir John Russell was elected president and Prof. E. J. Salisbury and Prof. W. H. Wagstaff were elected vice-presidents.

A MEMORIAL to Admiral of the Fleet Sir Henry Jackson, which has been placed in the crypt of St. Paul's Cathedral, was unveiled and dedicated on April 13. It is in the form of a tablet, recording the principal posts he held and referring to the services he rendered to the Navy. Sir Henry's scientific work was described in an article in *NATURE* of Jan. 11, 1930. His chief work was a pioneer investigation into problems connected with the transmission of signals by wireless telegraphy, a piece of research inspired by some experiments by Sir Jagadis Chunder Bose on coherers. Under Sir Henry's personal supervision, this type of communication was installed throughout the Navy.

AT the annual election of office-bearers of the Royal Philosophical Society of Glasgow, on Mar. 25, the following officers were elected: *President*: Prof. W. R. Scott; *Vice-President*: Dr. J. W. French; *Hon. Treasurer*: Sir John Mann; *Hon. Librarian*: Dr. J. Knight; *Hon. Auditors*: Mr. John J. D. Hourston and Mr. James A. French; *Acting Secretary*: Dr. James M. Macaulay. During the session, Sir Donald MacAlister, chancellor of the University of Glasgow; Sir C. V. Raman, professor of physics in the University of Calcutta, and Prof. F. O. Bower, emeritus professor of botany in the University of Glasgow, were elected honorary members of the Society.

ACCORDING to a notice issued (in Latin) from the Vatican City on Mar. 15, the Pontifical Academy of Sciences (Nuovi Lincei) is inaugurating the broadcasting of notes and information on mathematics and the experimental sciences and their applications. In general, the language used will be Latin, but for notes referring to investigations or discoveries the author's own language may be employed, and for matters of great importance other languages may be utilised. A general invitation to supply material for this purpose is expressed, and all communications submitted will be considered by a committee of the Academy. Notes giving the results of scientific work should consist of about 300 words, and items of

information of about 100 words. Communications should be addressed "Pontificia Academia Scientiarum Comitatu pro Nuncio Radiophonico, Città del Vaticano".

At a meeting of the Council of the Royal College of Surgeons on April 10, the Jacksonian Prize for 1930 was awarded to Mr. Edgar S. J. King, of the University of Melbourne, for his essay on "The Pathology of Ovarian Cysts and its Bearing on their Treatment". A certificate of honourable mention for an essay on the same subject was granted to Wilfred Shaw, of St. Bartholomew's Hospital. The John Hunter Medal and Triennial Prize for 1928-30 was awarded to Mr. Layton, of Guy's Hospital, for his contributions to otology and for his valuable services to the museum, particularly in connexion with the Onodi Collection. The Walker Prize for work on the pathology and therapeutics of cancer for 1926-30 was awarded to Sir G. Lenthal Cheatle. The Cartwright Prize for 1926-30 was awarded to Mr. F. W. Broderick for his essay on "The Etiology, Pathology, and Treatment of Chronic General Periodontitis (*Pyorrhea alveolaris*)".

THE twenty-first annual May Lecture of the Institute of Metals will be given on Wednesday, May 6, by Mr. William B. Woodhouse, engineer and manager of the Yorkshire Electric Power Company, on "The Progress of Power Production". Tickets for the lecture may be obtained from the Secretary of the Institute of Metals, Members' Mansions, Victoria Street, London, S.W.1. The autumn meeting of the Institute of Metals is to be held in Zurich on Sept. 13-18 by kind invitation of the Schweizerische Verband für Materialprüfung. The evening of Sept. 13 will be devoted to the formal opening of the meeting, addresses of welcome by the inviting body, and the Autumn Lecture, to be given by Mr. U. R. Evans, on "Thin Films on Metals in Relation to Corrosion Problems". The mornings of Sept. 14 and 15 will be devoted to the reading and discussion of papers, whilst for the afternoons visits have been provisionally arranged to works in Zurich and its neighbourhood. On Sept. 18 the main party will divide, one part going to Biel to visit a watch factory and leaving for England in the evening, whilst the other will go via Lötschberg to visit the new aluminium alloys rolling mills at Chippis-Siders, in the Rhône Valley. From Chippis the party will either return to London via Lausanne or Geneva, or proceed via the Simplon to Milan to take part in the International Foundry Exhibition and Congress, which continues at Milan until Sept. 27. The first congress of the New International Association for Testing Materials is being held at Zurich during the week preceding the Institute of Metals meeting.

We have received from Messrs. A. Gallenkamp and Co., Ltd., Sun Street, London, E.C.2, their catalogues of electrochemical apparatus and colorimeters (Lists No. 80c and No. 92). In the former will be found listed apparatus for electro-analysis, the electrometric determination of hydrogen ion concentrations, and the measurement of conductivity of electrolytes. Ammeters, voltmeters, galvanometers, and thermostats

are included. In the section on hydrogen ion concentration, a useful summary is provided of the use of the hydrogen electrode, with descriptions of other types, including the quinhydrone and glass electrode. In the second list, numerous types of both simple and more complicated colorimeters are detailed, including two modern patterns of the Lovibond tintometer. The catalogue gives a good idea of the range of instruments of this type which are at present on the market, and should be of use to biochemists and physiologists.

A SHORT but useful list of scientific journals and transactions of learned societies has just been issued by Messrs. Oppenheim and Co. (Rare Books), Ltd., 317A Fulham Road, S.W.10. In several cases complete sets are offered for sale.

LIBRARIANS and others interested in the Far East should obtain a copy of Catalogue No. 534, "Orientalia", just issued by Francis Edwards, Ltd., 83 High Street, Marylebone, W.1. Particulars of upwards of 1000 works are given in it relating to Burma, Ceylon, China, the East Indian Archipelago, Formosa, India, Japan, Korea, Persia, Siam, Tibet, and general works.

A GOOD catalogue (No. 364) of second-hand books, upwards of 2000 in number, has just been published by Messrs. W. Heffer and Sons, Ltd., Petty Cury, Cambridge. It ranges over the subjects of agriculture, botany, anthropology and ethnology, chemistry and chemical technology, mathematics, physics and engineering, physiology, anatomy and medicine, zoology and biology, and is strong in journals and other publications of learned societies.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A senior secretary in the Matriculation and School Examinations Department of the University of London—The Principal ("M.S.E."), University of London, South Kensington, S.W.7 (April 25). A master under the Education Department of Southern Rhodesia to teach physics and chemistry at the Boys' High School, Umtali—The High Commissioner for Southern Rhodesia, Crown House, Aldwych, W.C.2 (April 30). A chief inspector of smoke nuisances under the Government of Bengal—The High Commissioner for India, General Department, India House, Aldwych, W.C.2 (April 30). Two fellows in psychiatry at the London Child Guidance Clinic, 1 Canonbury Place, N.1—The Secretary, Child Guidance Council, 7 Buckingham Palace Gardens, S.W.1 (May 2). An assistant lecturer in chemistry at the Liverpool Central Municipal Technical School—The Director of Education, 14 Sir Thomas Street, Liverpool (May 2). An assistant lecturer in physics at the University College of North Wales, Bangor—The Registrar, University College of North Wales, Bangor (May 16). A director of the Rubber Research Institute of Ceylon—The Chairman of the Board of Management, Rubber Research Scheme, Peradeniya, Ceylon (May 30). A lecturer in tinctorial chemistry and dyestuffs at the Manchester Municipal College of Technology—The Registrar, College of Technology, Manchester (June 5).