Obituary.

DR. FINN MALMGREN.

DR. FINN MALMGREN, who, after the wreck of the airship *Italia* in the Polar regions in May, lost his life in a brave effort to cross the ice on foot with two companions to North-East Land, Spitsbergen, was a Swedish meteorologist of considerable achievement and great promise. Educated at Upsala University, he became assistant to Prof. Hamberg at the high altitude observatory at Portetjäkko, whence he returned to Upsala to work at the meteorological observatory. Later he served at Pettersson's Hydrographic Institute at Bornö.

Dr. Malmgren's first polar experience commenced in 1922, when he became assistant scientist under Dr. Sverdrup in Amundsen's expedition in the *Maud* during the two years' drift in the polar ice. Returning to civilisation in 1925, Dr. Malmgren was soon engaged again in polar work, for he was one of the small body of men which crossed the north pole in the airship *Norge* during the Amundsen-Ellsworth expedition from Rome to Alaska in 1926. This year he responded yet again to the call of the polar regions, when, on the invitation of General Nobile, he became meteorologist on board the airship *Italia*, in which Nobile intended to carry out flights over the polar basin for scientific purposes from a base at King's Bay, Spitsbergen. After flying from Milan to Spitsbergen, two flights were carried out in the direction of Nicholas II. Land, and it was during the return from the north pole on the third flight that the accident happened to the airship which led to Dr. Malmgren's tragic end, at the early age of 32 years. The airship had, however, reached the pole, and Dr. Malmgren was therefore one of the few men who have been there twice.

Of Dr. Malmgren's contributions to scientific literature, perhaps that best known is the work summarising his observations of humidity and hoar frost in the *Maud*, for which special instruments were devised in view of the small water content of the air at the low temperatures experienced.

Dr. Malmgren was not unknown personally in England, for during the call of the *Norge* at Pulham on her way to the north pole an opportunity was afforded of appreciating his vivid personality. In the meteorological office at Pulham many interesting discussions took place, especially those relating to the weather conditions for the next stage of the flight.

Dr. Malmgren's death is to be deplored, not solely on account of his promise of brilliant scientific work in the future, but because much of his extensive scientific experience of the polar regions must now go unrecorded. M. A. G.

MR. FRANK CASTLE.

THE death of Mr. Frank Castle on Aug. 4, at seventy-one years of age, will be regretted by a wide circle of friends and by thousands of artisan students who have profited by the courses of instruction in his text-books of practical mathematics and related subjects. Mr. Castle was born at Dewsbury, Yorkshire, and served his apprenticeship with a firm of engineers and tool-makers there. After working at his trade and introducing several improvements in grinding machinery, he became in 1883 an assistant in the mechanics and mathematics division of what is now the Royal College of Science, South Kensington, and he occupied that position for twenty-six years. Hundreds of students who passed through the College during that period will remember his retiring nature and are grateful for the assistance he was ever ready to afford them on either the mechanical or the mathematical side of their work. When Prof. John Perry, who was appointed professor of mathematics and mechanics at the College in 1896, was carrying on there his campaign for the teaching of everyday or practical mathematics, Mr. Castle became an enthusiastic exponent of the reform, and in quick succession produced his "Practical Mathematics for Technical Students" (1899), "Practical Mathematics for Beginners" (1901), and "A Manual of Practical Mathematics" (1903), all of which became standard text-books and remain so even now. He was the author also of "Machine Construction and Drawing," "A Manual of Machine Design," and several useful books of mathematical tables. His success as an author and a teacher was due to his early workshop training and an instinctive appreciation of the difficulties of elementary students. He was for many years lecturer in mathematics at the Morley College, London, and at the time of his death was lecturer in practical mathematics, machine construction and drawing, building construction and applied mechanics at the Municipal Technical Institute, Eastbourne.

WE much regret to announce the death on Aug. 12, at sixty-eight years of age, of Dr. Charles Chree, F.R.S., superintendent of the Kew Observatory from 1893 to 1925 and a leading authority upon terrestrial magnetism, atmospheric electricity, and related subjects.

News and Views.

THE bicentenary of the birth of the great navigator Captain James Cook is to be celebrated in the Cleveland district of Yorkshire on Sept. 8 and 9. Cook was born in the village of Marton, Yorkshire, on Oct. 27, 1728, and though as a boy he was apprenticed to a haberdasher near Whitby, he gained his first experience at sea in a Whitby collier. At the age of 27 he joined the Navy as a volunteer, and as such soon attracted attention. He was present at the capture of Quebec, surveyed the St. Lawrence from Quebec to the sea, and was made marine surveyor of Newfoundland and Labrador. His three great voyages of exploration occupied the years 1768–1771, 1772–75, and 1776–79. The primary object

of the first was to observe the transit of Venus of 1769 at Tahiti; that of the second to discover the boundaries of the lands of the Antarctic; that of the third to discover a passage from the North Pacific to the North Atlantic. His work not only added immensely to geographical knowledge, but it whetted the public appetite for further discoveries. He did more than any other explorer to extend our knowledge of the Pacific and the Southern Ocean, and an interesting feature of the forthcoming celebrations will be the presence of the High Commissioners of New Zealand and Australia.

ON July 29, M. Herriot, Minister of Education, unveiled at Lyons a monument to Chardonnet, the inventor of artificial silk, who, he said, was worthy to rank between Pasteur and Berthelot, and had deserved well as a savant and a philanthropist. Chardonnet's invention was the result of a long and laborious research carried out at his laboratory at Besançon. Born on May 1, 1839, Comte Hilaire de Chardonnet received his scientific training in the École Polytechnique. He then travelled abroad, and after settling down strove for many years to realise Réaumur's suggestion that silk might be made artificially. It was on May 12, 1884, he took out his first patent "Sur une matière textile artificielle ressemblant à la soie," and by so doing took the decisive step towards the creation of an entirely new textile industry. The result of his work was made known in 1889; in the Paris Exhibition of that year he exhibited specimens of his material, with the result that money was found for erecting a 'Chardonnet Silk' factory at Besançon. Chardonnet died at Rome in 1924.

VARIOUS references have been made in the technical press to the fact that it is just fifty years since Sidney Gilchrist Thomas and his cousin Percy Gilchrist brought to a successful issue their experiments on the elimination of phosphorus from mild steel, and thus laid the foundation of the basic steel industry. In 1878 all steel, whether produced in the Bessemer converter or the open hearth furnace, was acid steel, the world's output being about $2\frac{3}{4}$ million tons. During 1927 the world's production of steel ingots and castings was about 99 million tons, and this enormous increase is largely due to the basic steel manufacture, more than 84 per cent of the total being basic steel. Thomas was led to his researches by a remark of a lecturer at Birkbeck College, and his experiments were made while he was still a clerk in a Stepney Police Court. He began studying the problem of the dephosphorisation of pig-iron in 1870 at the age of 20. Eight years later he announced his success at the Iron and Steel Institute. Seven years afterwards, while still under 35 years of age, but regarded as "the most promising light of the steel world," he died in Paris and was buried in Passy Cemetery.

IN recent years all the world has become interested in tales which illustrate certain mental traits of the Aberdonian; many of these stories, it is alleged, emanate from the city of Aberdeen itself. However this may be, it is quite clear from a paper which Dr. James Ritchie, of the Royal Scottish Museum, himself a distinguished native of Aberdeenshire, contributes to the *Aberdeen University Review* of July, on "The Genius of the Aberdonian," that the native of the North-East of Scotland has other gifts than those of parsimony. Havelock Ellis, in his "Study of British Genius," found that Scotland produced an unfair share, and that among Scottish counties, Aberdeenshire came out almost at the top of his list. Dr. Ritchie cools this compliment by pointing out that if its former population is taken into account, Aberdeenshire sinks to the tenth position, but "still stands far above the average of Scotland's production of genius." What is the characteristic mentality associated with the genius of the North-East? Dr. Ritchie asks. His answer is: "It is a bent for minute, detailed work; for accuracy in small things. And having laid this sound foundation, it exhibits itself in the logical piling up of premises and the deduction of laboriously won conclusions. Lofty imagination is foreign to the nature of the North-East."

THERE are traits which have been traditionally ascribed to the German men of science. It is a remarkable fact that in the second millennium before Christ, a 'beaker' people, a peculiar breed of round-headed folk, of short stature, began to settle in the north-east corner of Scotland. All the evidence at present at our disposal leads us to trace these people to a home in a part of Europe which is now held by a German-speaking population. There is much to be said for the thesis maintained by Dr. Ritchie that the modern Aberdonian owes much of his mental outfit to these 'beaker' ancestors. Whether Dr. Ritchie owes his lucidity of statement and charm of style to his beaker ancestry or to his University, is a moot point; they are certainly not Germanic.

THE reports of the council and of the director (Mr. J. F. Marshall) of the British Mosquito Control Institute, Hayling Island, Hampshire, record the continued development of the work. Advice has been sought at the Institute by correspondents from more than five hundred localities in Great Britain, and at the request of local health authorities or of private individuals a number of localities have been visited by the director or by his assistant and appropriate control measures suggested, which in every case have been followed by satisfactory results. Reference may be made to the following educational work—instructional courses for two or three days in laboratory and field work have been arranged to begin on the first Tuesday of each month; a handbook on "The Principles and Practice of Mosquito Control" was issued in June 1927; a series of fifty-three lantern slides (obtainable from Messrs. Newton, Museum Street, W.C.1) has been prepared to illustrate the various species of British mosquitoes and the methods employed in their control; and sets of microscopic slides (about 1*s.* 6*d.* each at the Institute) made to show the life-history of the different species of mosquitoes. In September 1927

the staff investigated a serious mosquito annoyance in a North London suburb and found it to be due to *Ædes vexans*, a species which, though common in many parts of the world, is very rare in Britain, for only about a dozen specimens had previously been found. The council points out that the Institute is the only existing institution entirely devoted to mosquito control research and that it affords the only opportunity available in Great Britain for the practical study of a mosquito control scheme in actual and continuous operation. The council records its high appreciation of the devoted services rendered by the director and adds that he continues to bear the chief cost of the Institute. It is to be hoped that subscriptions from those interested, and grants from scientific or other public bodies, will be forthcoming so that the Institute may approach a more satisfactory, self-supporting position.

IT is announced that the exhibition of last season's finds at Ur at the British Museum is to remain open until a late date in the autumn. This is a welcome addition to the facilities which have been afforded the public to view one of the most remarkable collections of objects which have yet been brought from Mesopotamia or perhaps from any area of archæological exploration at one time. It places beyond question the artistic and technical pre-eminence of Mesopotamia at as early a date as 3000 B.C. In this connexion it may be noted that although Dr. Hall's lecture on Ur before the Royal Society of Arts, which is printed in the issue of the Society's *Journal* for July 27, was a survey of past work which did not attempt to throw fresh light on the results, one or two interesting points emerged both in the lecture itself and in the discussion which followed and is reported with the lecture. Mr. J. W. Wilson, formerly Director of Public Works and Antiquities in Iraq, pointed out the value of the explorations for the history of architecture: Babylonia shows evidence of early town planning; while the history of the brick can be followed from its earliest beginning as an unbaked lump of natural clay. He himself as officer in charge of public works had been responsible for the making of bricks, but for some reason he had not been able to ascertain, whether owing to some change in the nature of the soil, or the loss of some secret process which the ancient brickmakers possessed, he had been unable, even with the assistance of modern machinery, to manufacture a brick which equalled that of Hammurabi or Nebuchadnezzar.

DR. HALL gives some interesting figures relating to the cost of the work in Mesopotamia. His own work of excavation in 1919, which turned out to be more than a preliminary recognizance, cost £600. The expenses of a good season's work to-day are not less than £4000. The charges for the work being carried on at present are borne equally by the British Museum and the University Museum of Philadelphia. The British Museum, which has other calls upon it, is strictly limited in the amount which it can place at the disposal of the Ur expedition without assistance from the public. It will be remembered that last year Mr. Woolley had to close down for lack of funds when he had barely touched one of the most interesting and important finds of the whole of the work yet carried out. Material of priceless value, as was shown by the first turn of the spade in the next season, was exposed to the risk of plunder for months. This in itself should be enough to convince the public of the desirability of supplementing the Museum's funds in carrying on what Dr. Hall characterises as "the most important archæological investigation in the world at the moment."

An exhibition case to illustrate the fluorescence of minerals (and some other substances) in ultra-violet rays has been fitted up near the entrance to the Mineral Gallery in the Natural History Museum at South Kensington. This is probably the first public exhibit of the kind, and during the August Bank Holiday week it attracted thousands of visitors. Marvellous changes in colour effects are produced by simply pressing a button outside the case. The specimens are first seen in ordinary light with inside electric lighting ('linolight'). When the button of the two-way switch is pressed, this changes over to ultra-violet rays, which are produced by a Hanovia 'artificial sunlight' mercury-vapour lamp fitted with a dark screen to cut out all the visible light rays, allowing only the dark ultra-violet to fall on the specimens. Large groups of fluorspar crystals shine up with a wonderful bluish-violet glow, willemite and autunite with a brilliant green, black zinc-blende with a golden yellow, and white calcite with a rose-red. When the spring-switch is released this fairyland of glowing colours suddenly vanishes. In the adjoining wall-cases a display has been made with a series of large specimens of well-crystallised spar, from the Snailbeach mine in Shropshire, recently bequeathed to the Museum by the late manager of the mine. The largest slab measures $5\frac{1}{2} \times 3\frac{1}{2}$ feet, and weighs over $8\frac{1}{2}$ cwt. With inside electric lighting ('linolight') and a dark grey background a striking effect has been obtained. A description of this new exhibit appears in the *Natural History Magazine* for July.

IN the *Times* of Aug. 7 is an account of the nomadic companies of market gardeners of Bulgaria which is of considerable interest to geographers and economists. These gardeners live in Tirnovo and the adjacent areas in the rolling country lying between the Balkan Hills and the Danube, where there is a long tradition of efficient practice in market gardening. As, however, the district is too thickly populated for the volume of local agriculture, it is the custom for small bands of twelve to fifteen to migrate for the season to less densely occupied land in Rumania, Russia, Turkey, Serbia, and elsewhere. Hiring land, they prepare the ground and raise a crop, of which they dispose in the market which they had in view in choosing their land, at a considerable profit to themselves. Even among the more primitive peoples, agriculture is normally a sedentary occupation, unless it is combined with the pastoral life and a seasonal migration as among some of the peoples of the mountainous areas of

Asia Minor. Something analogous to the Bulgarian practice occurs among peasant populations, for instance, Ireland and Brittany, who leave their own country to seek employment in the harvest elsewhere. This, however, is merely a special, if not too common, instance of the mobility of labour, whereas the extension of the principle of mobility in agriculture in search of suitable ground to such a degree as to justify the term 'migratory' in the Bulgarian instance is probably unique.

IN an article entitled "Chaucer's Physician and his Forbears" in the current number of the *Nineteenth Century*, Dr. H. H. Bashford deals with the physician who figures in the prologue to the "Canterbury Tales" and his predecessors, particularly Gilbert the Englishman and John of Gaddesden. Chaucer's physician, though apparently of an avaricious disposition, is described as 'a verrey parfit practisour' and well versed in old medical lore. Although Bald's Anglo-Saxon "Leech Book," the earliest medical treatise composed in Great Britain, was written soon after the death of Alfred the Great, no great figure emerged from Anglo-Saxon medicine, and Gilbert, who was born about a hundred years after the battle of Hastings, was the first Englishman to acquire a European reputation as a physician. After study at Salerno, Montpellier, where he is said to have been chancellor, and Paris, he returned to England, where he acquired fame by his "Compendium" or "Laurea Medicinæ," which covered the whole field of medicine and contained a certain amount of original observation and research. He was the first, for example, to recognise the contagious nature of small-pox, and also emphasised the importance of surgical treatment for cancer and of a fruit diet for sea travellers. John of Gaddesden, who was born in 1280, fifty years after Gilbert's death, studied at Oxford, which since the time of Gilbert had possessed a medical school, and settled in London, where he composed his treatise entitled "Rosa Medicinæ," which rapidly obtained a great success. He became court physician, in which capacity he cured one of the royal family of small-pox by the first application of red light treatment, resuscitated centuries later. It is noteworthy that both these physicians had a belief in magic. Gilbert, for example, included in his treatise an impressive list of legendary antidotes, while John of Gaddesden, like his successors for many subsequent centuries, had a firm belief in the efficacy of the royal touch.

A BEET-SUGAR factory has recently been found polluting the River Barrow at Carlow and fouling the machinery of a local miller, who is entitled under his lease to a supply of uncontaminated river water. The case is of interest to readers of NATURE, as it is the first time, in Ireland at any rate, that a *biological*, as distinct from a chemical, analysis has been accepted in a court of law as evidence of pollution. Dr. T. Johnson, of Dublin, found the two *indicator* organisms—*Sphærotilus natans* and *Leptomitus lacteus* in the filter bed, the effluent, and the mill premises. They are microscopic fungi living on nitrogenous matter. 'Lambs' tails' may be used as a common name for them, as in mass they look alike.

MR. H. KEIJSER, of the Koninklijk Nederlandsch Meteorologisch Instituut, has forwarded a barogram obtained on board the Dutch steamer *Sapœræa* when passing through a typhoon about 400 nautical miles east of Luzon. The barogram was of the extremely sharp 'V' type usually obtained on such occasions, and pressure fell so much that the pen quickly passed off the chart. Readings of a mercurial barometer were accordingly made, and the lowest pressure was observed to be 665·1 mm. (886·8 millibars) after correction for temperature, gravity, and height above sea-level. This reading was checked by several persons, and there seems to be no reason for not accepting it as correct, in which case the previous lowest reading of 918·9 m.b. obtained on Sept. 22, 1885, at False Point, Orissa, India (NATURE, vol. 35, p. 344), no longer constitutes a 'record' for tropical cyclones. It should, however, be pointed out, that in tornadoes much lower pressures occur, but since a severe tornado usually destroys all buildings that lie directly in its path, we have no exact knowledge as to how low pressure may fall.

IN a letter entitled "Pleochroic Haloes and the Age of the Earth," Dr. Franz Lotze (Göttingen) expresses the view that, even when we use the determinations of the range of the α-particles from uranium I and uranium II recently carried out by G. C. Laurence, there still exists a slight discrepancy between the theoretical and observed ranges in biotite. He interprets this as indicating a change in the medium produced by the radiation, rather than an alteration in the radioactivity of the contained uranium during geological time. The second possibility cannot be accepted in the absence of unequivocal evidence in its favour, and Dr. Lotze feels that his suggestion of an alteration in the cohesion properties of the mica (NATURE, Jan. 21, 1928, p. 90) is ample to meet the case. He considers that Prof. Joly's criticism (NATURE, Feb. 11, 1928, p. 207) of the letter cited is scarcely justifiable in view of the uncertainty of the relevant experimental evidence, and explains the fact that such anomalies are not observed with thorium and emanation haloes as being due to the smallness of the effects to be expected, as pointed out in his previous letter. Dr. Lotze sees confirmation of his own views in the recent work of Dr. J. H. J. Poole and of Dr. K. C. Bailey. Chemical and physical changes undoubtedly occur in the region of the inner haloes, and further work on this subject is much to be desired, so that quantitative effects can be predicted, and compared with observational data on the haloes. Such altered minerals may be attacked more readily by rock moisture and suffer a partial loss of their mineral constituents. Finally, Dr. Lotze advocates a thorough investigation of the medium in which thorium as well as uranium haloes occur, with the object of determining whether similar anomalies are to be found in minerals other than in biotite.

DR. L. DE BROGLIE has accepted the invitation of the British Association to attend the Glasgow meeting as a foreign guest and to take part in the discussion in Section A on the scattering of electrons from crystals.

THE Secretary of the Department of Scientific and Industrial Research informs us that he understands from the Spanish Ambassador in London, that the National Association of Olive Growers of Spain have extended until Oct. 31, 1928, the period for acceptance of entries for the international competition for oil analysis organised by that Association. Particulars of the competition will be found in NATURE of June 2, p. 880.

THE appointments to scientific and technical departments made by the Secretary of State for the Colonies during the month of July include two agricultural officers, Mr. A. H. Savile, and Mr. N. V. Rounce, to Tanganyika Territory; one government veterinary surgeon, Mr. J. F. Timoney, to the Straits Settlements, and one veterinary officer, Mr. H. A. Hay-Barclay, to the Agricultural Department of Kenya; an assistant cotton botanist, Mr. H. R. Hosking, to Uganda; a plant breeder, Mr. E. R. Guest, to Iraq; an entomologist, Mr. R. W. E. Tucker, to Barbados; and a produce inspector, Mr. H. G. Pudney, to the Agricultural Department of Nigeria.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A full-time assistant for the engineering department of the West Hartlepool Technical College—The Secretary, Education Offices, West Hartlepool (Aug. 20). An assistant lecturer in the department of zoology of the University of Leeds—The Registrar, The University, Leeds (Aug. 27). A woman demonstrator and assistant lecturer in the department of chemistry of the Royal Holloway College—The Principal, Royal Holloway College, Englefield Green, Surrey (Aug. 30). An aircraft and engine inspector under the Government of India—The Secretary to the High Commissioner for India, General Department, 42 Grosvenor-gardens, S.W.1 (Sept. 1). The Maybury (part-time) professorship of highway engineering at the City and Guilds College—The Academic Registrar, University of London, S.W.7 (Sept. 11). A general secretary of the Society of Chemical Industry who shall also have the position of general manager of the society's affairs—The President, Society of Chemical Industry, Central House, Finsbury Square, E.C.2 (Oct. 11). A Macleay bacteriologist of the Linnean Society of New South Wales—The Secretary, Linnean Society of New South Wales, 16 College Street, Sydney, N.S.W. (Nov. 30). A science master, with special qualifications in chemistry and qualifications in metallurgy desirable, at the Scunthorpe Modern School and Technical School—H. S. McIntosh, 14 Wells-street, Scunthorpe, Lincs. A petroleum chemist for Silvertown Lubricants, Ltd.—The Chief Chemist, Silvertown Lubricants Limited, Silvertown, E.16. A lecturer to deal with farm engineering and estate management subjects at the Harper Adams Agricultural College—The Principal, Harper Adams Agricultural College, Newport, Shropshire. A junior assistant for a Government establishment—The Commandant, Experimental Station, Porton, Wilts. A junior chemical assistant in the Laboratories of the Research Association of British Flour-Millers—The Director of Research, Research Association of British Flour-Millers, St. Albans. Two junior assistants under the directorate of Ballistics Research of the Research Department, Woolwich—The Chief Superintendent, Research Department, Woolwich, S.E.18.

Our Astronomical Column.

THE SPECTRUM OF MIRA CETI.—In 1924 the maximum magnitude reached by Mira was exceptionally low, and on that occasion some new bands hitherto unknown in stellar spectra were noticed in its spectrum by Dr. A. H. Joy. The origin of these bands is discussed in the *Monthly Notices of the Royal Astronomical Society* for June by Mr. F. E. Baxandall, who attributes them to aluminium oxide. They were treated by Dr. Joy as wide, bright lines, and he gave the wave-length measurements of their centres. By correcting these wave-lengths to the junction of the bright and dark regions, Baxandall has produced evidence which appears to be conclusive that the origin is to be found in aluminium oxide. Some enlarged spectra of Mira, accompanied by laboratory spectra of aluminium oxide as comparisons, show striking agreements of stellar bands with those of aluminium. A further examination of other spectra of Mira shows that aluminium oxide bands are probably normally present, and that all recorded bands other than those of titanium oxide may be attributed to this source.

INTERSTELLAR CALCIUM.—The problem of 'stationary' calcium lines in stellar spectra still presents difficulties in the way of an adequate explanation; but the recent work of Dr. Otto Struve has helped considerably to reduce these difficulties. In a paper in the *Astrophysical Journal*, vol. 67, p. 353, Dr. Struve gives the results of intensity measures of non-stellar Ca lines in 2056 stars (mostly of early spectral type). He finds that there is a marked increase in the intensity of the detached [K] line for fainter stars and for earlier spectral types, though there is no evidence of any such relation with luminosity. After a thorough examination of the data for possible sources of error, he shows that the intensity of the detached Ca lines is a function of the distance. This is in accordance with Prof. Eddington's theory of a large calcium cloud diffused throughout space (as opposed to localised clouds)—a theory which is becoming increasingly favoured. In explanation of the objection that detached Ca lines have not been found in stars of type later than B3, Dr. Struve suggests the comparative nearness of most of the late-type stars examined and the difficulty of distinguishing a blend of the true stellar line with the detached line. In the case of Novæ, which are usually admitted to be of very small parallax and in which the radial velocities are so great as to separate these two components with ease, the detached Ca has been found to be of great strength.