

are due to the action of late magmatic residues in which water is always the predominating constituent. These deposits have been termed 'hydrothermal' by Niggli, but this usage does not distinguish between deposits of truly magmatic origin and those due to heated waters of non-magmatic derivation. There seems to be need for a term to cover the latter, although admittedly there is often difficulty in distinguishing between the two types. Perhaps the best solution would be to use the term hydrothermal for all cases of ore deposition by heated waters, and to prefix the term 'magmatic' for those in which the magmatic origin of most or all of the water is demonstrable.

Dr. Tyrrell also dealt with ore deposition and the distribution of igneous rocks, and contended that ore provinces follow the distribution of igneous provinces as between the kratogenic and orogenic regions of the crust in any given period of tectonic and igneous activity.

The complexity of origin of ores was emphasised by Prof. R. W. Brock, of Vancouver, and he welcomed Prof. Niggli's sharp distinction between ores due to the solidification of the main mass of a magma, the products of the semi-liquid extract, and the products of the fluid extract that remain in solution through a long range of temperatures. The diversity of opinions upon particular ore

deposits, remarked by Prof. Cullis, he considered satisfactory, as it shows that each deposit is being treated individually, as is necessary since more than one process is involved in most cases. Thus the Kiruna iron ores he regards as due in part to ortho-magmatic differentiation from the local syenite-porphry, in part to later pegmatitic injection, and in part also to vein formation. He was glad that the Kiruna ore may still be considered as in part orthomagmatic, as unquestionable examples of this mode of formation are now difficult to locate. As Prof. Cullis mentioned, the nickel-ores of Sudbury are not altogether safe examples, for Dr. Cyril Knight has assembled a large number of observations that cast great doubt on their orthomagmatic origin, and Dr. T. C. Phemister has brought to light a disquieting amount of evidence that the Sudbury sill consists not of one rock showing pronounced gravity differentiation, but of two distinct rocks. Prof. Brock remarked that we can ill afford to lose this classical illustration of this possible type of ore formation, but it may be wise to prepare ourselves for such a calamity. He considers that small ore deposits are often the more instructive as to processes of formation, and that the problems of economic geology must be solved by patient and informed study in the field, laboratory work being accessory and supplementary.

Obituary.

DR. S. E. LANE-POOLE.

WE regret to record the death of Dr. Stanley Lane-Poole, the distinguished orientalist, which took place at his residence in Brompton Square, London, on Dec. 29, at the age of seventy-seven years. Dr. Lane-Poole, who was born in London on Dec. 18, 1854, was the son of Edward Stanley Poole, of the Science and Art Department, and a great-nephew of E. W. Lane, the translator of the "Arabian Nights", the author of "The Modern Egyptians", and the compiler of an Arabic lexicon—a connexion in which he took considerable pride and emphasised by incorporating "Lane" by a hyphen in his surname.

After being educated privately, Lane-Poole entered Corpus Christi College, Oxford, in 1874, with the declared intention of devoting himself to Oriental studies. Before he took his degree in 1877, when he obtained a third class in the honours school of modern history, he was already at work in the Coin Department of the British Museum, and in 1875 had begun the publication of the Museum catalogue of Oriental and Indian coins, which was completed in fourteen volumes in 1892. He was sent by the Government on archaeological missions to Egypt in 1883 and to Russia in 1886, and from 1895 until 1897 was employed in archaeological research in Cairo. From 1898 until 1904 he was professor of Arabic at Trinity College, Dublin, acting for part of that period as secretary to the Council of the Royal Irish Academy.

The remainder of Lane-Poole's life was devoted to literary work and research. He was the author

of a number of works, some of a highly specialised character, some of a wider appeal, and of several biographies of notabilities, such as Lord Stratford de Redcliffe, Ambassador to Constantinople; Sir Harry Parkes, Minister to China and Japan; and others whose activities had been in fields in which he was interested. Two of his works of outstanding importance in Oriental studies were "Muhammedan Dynasties" (1893), a standard work of chronological reference for scholars, and the Arabic lexicon which he edited from the material amassed by Lane and published in 1893 after a labour of sixteen years. Of a large number of scholarly works dealing with the culture, art, and history of the Moslem world, the best known are "The Art of the Saracens in Egypt" (1886) and the volume on medieval India in the "Story of the Nations" series, which reached its ninth edition.

PROF. A. W. KIRKALDY.

PROF. A. W. KIRKALDY, until recently professor of economics and commerce at University College, Nottingham, and, prior to 1919, professor of finance in the University of Birmingham, who died on Dec. 29, 1931, aged sixty-four years, was one of the few British economists of the generation of teachers, now passing away, who had actual experience of routine business management for he did not enter Wadham College, Oxford, to take up academic studies until he had served in a family business in Sunderland, in many capacities, for several years. It was only natural, therefore, that

his work as teacher and as writer should be characterised by a certain impatience with the more abstract school, and by a desire to lay the foundations of economic science more securely on a basis of real fact than on speculation concerning the actions of imaginary business men and on abandoned psychological generalisations.

Prof. Kirkaldy's publications include descriptive works on the British shipping industry and on the economics of transport, in addition to certain useful elementary textbooks. He was president of Section F of the British Association at the Newcastle-on-Tyne meeting in 1926, and was editor of two important reports ("British Labour", 1914-21, and "British Finance", 1914-21) of committees of inquiry set up on that occasion. These have since been published in book form, and they constitute an authoritative and a permanent record of economic movements at a most important epoch. His knowledge of business and of business men made him exceptionally welcome on councils of merchants and industrialists.

In addition to being an appointed member of several Trade Boards, Prof. Kirkaldy served on the Nottingham Chamber of Commerce, taking his turn as president of that body and acting as its delegate and as economic adviser at important meetings of the Associated Chambers of Commerce. He also acted for many years as one of the honorary auditors of the accounts of the British Association. He was a valued member of the college staff at Nottingham, and he played a prominent part in the efforts there to raise the prestige of that institution and to secure a charter conferring full

university powers. His loss is one which will be seriously felt in many varied spheres.

WE regret to announce the death of Mr. Francis A. Towle on Jan. 10, at the age of fifty-seven years. He will be remembered by a large number of scientific workers and others through his official connexion with the Royal Society, of which he had been assistant secretary since 1921, while for the preceding twenty years he had been clerk to the Government Grant Committee. Mr. Towle's earlier life was spent in Birmingham. His keen, incisive manner will be missed by many fellows of the Society that he served so zealously during a period of active expansion in many directions. Outside his work, he showed great interest and skill in all kinds of mechanism, and sometimes regretted he had not devoted himself to engineering. For example, he built model locomotives that ran on miniature railway systems of his own construction, and installed electric light plant in at least one country-house. Mr. Towle was also an enthusiastic photographer, and will certainly be missed in the Camera Club.

WE regret to record the death, at the early age of forty-eight years, of Marc Bridel, of the Muséum national d'Histoire naturelle and chief pharmacist to the Hôpital Lariboisière, Paris. M. Bridel, a pupil of the late Prof. Bourquelot, published numerous papers on vegetable glucosides and their hydrolyses by enzymes, and was a well-known figure in French chemical and biochemical circles.

News and Views.

Prof. J. C. McLennan, F.R.S.

THE announcement that Prof. J. C. McLennan, dean of the School of Graduate Studies, professor of physics, and director of the Physical Laboratory at the University of Toronto, has decided to retire and make his home in England, is a matter of international concern. His resignation means the departure from Canada of one of her most distinguished men of science. Someone has said that an institution is an elongated shadow of a man. Never was this more true than in the case of the Physical Laboratory of the University of Toronto. Its achievements are the work of many men, to whom they have brought deserved recognition. None the less, the laboratory as the entity and organisation which has made it possible is a projection of the personality of Prof. McLennan, and in this sense its achievements are his achievements. He became director of the laboratory under President Loudon in 1904, and professor of physics as successor to President Loudon in 1907. At that time he was the leading spirit of the Alumni Association of the University in a movement which resulted in the obtaining of permanent support for the University from the Government of the Province of Ontario. This led to the establishment of such organisations as the Faculty Union, the Students' Union, the University Press, and the erection of

Convocation Hall and the Physical Laboratory. The interest then aroused has proved to be permanent, as shown by the generous support accorded by the Government of the Province in all plans of development and expansion in the University of recent years.

UNDER Prof. McLennan's guidance, the Physical Laboratory at Toronto has contributed numerous publications that have attracted wide attention in the scientific world. At the beginning of the present century there was Prof. McLennan's work in collaboration with Prof. E. F. Burton on penetrating radiation, better known now under the name of cosmic rays. His work with Carr on spark potentials is a classic in this field. About 1910 his attention was directed to the field of spectroscopy. This resulted in a flow of papers unravelling the mysteries of the structure of spectra of many elements and the laws connected therewith. This work was temporarily interrupted by the War, when Prof. McLennan was scientific adviser to the British Admiralty. On his return, new fields of research were opened up by the liquefaction of helium at Toronto. Utilising these low-temperature facilities, researches in spectroscopy were undertaken, in which it was proved that the excitation of atomic oxygen was responsible for the radiation of the well-known green line in the spectrum of auroral displays. This has stimulated further research