Group	Typical Alloy
(1) Chromium - nickel - iron + small additions of molybdenum, tungsten, columbium and titanium.	Firth-Vickers *F.C.B.* (*T*). C, 0·12; Si, 0·6; Mn, 1·6; Ni, 12·5; Cr, 18·0; Cb, 1·45. Firth Vickers H.R. Crown Max. C, 0·25; Si, 1·5; Ni, 12·0; Cr, 24·0; W, 3·0.
(2) Similar to (1) but with nickel exceeding chromium.	S. Fox and Company. Red Fox 33. C, 0·1; Si, 0·8; Ni, 31·0; Cr, 20·0; Ti, 1·0.
(3) Nickel-chromium + small additions of aluminium and titanium.	Mond Nickel Company's Nimonic 80. C, 0·05; Si, 0·70; Mn, 0·4; Fe, 3·0; Ti, 2·4; Al, 0·5; Cr, 21·0; balance, Ni.
(4) Nickel - chromium - cobalt-iron + small additions of molybdenum, tungsten, columbium and titanium.	Jessop and Company's G18*b*. C, 0·4; Si, 1·0; Ni, 13·0; Cr, 13·0; Co, 10·0; W, 2·5; Mo, 2·0; Nb, 3·0. Allegheny Ludlum Steel Corp., U.S.A. *S*816. C, 0·4; Ni, 20·0; Cr, 18·0; Mo, 4·0; W, 4·0; Cb, 3·0; Fe, 3·5; Co (balance), 45·0 approx.
(5) Cobalt - chromium with additions of molybdenum and tungsten.	Vitallium (U.S.A.). C, 0·2; Cr, 28·0; Mo, 6·0; Co (balance), 65·0 approx.

stages of the expansion; but experience with complex alloys has shown that an increase in size may multiply manufacturing difficulties unexpectedly, and therefore in the development of new alloys an early exploration of the influence of size should be made. It must be remembered also that, in all high-duty alloys for elevated temperatures, heat treatment plays an important part in creating the maximum endurance, and experiment is usually needed to determine the treatment appropriate in a particular case. In designs in which high-duty alloys are to be used, account must be taken of the modes of failure of these materials. The more resistant materials which usually have good ductility at atmospheric temperatures frequently show poor ductility under conditions of sustained stress and high temperature. This is because the mode of failure under these conditions is by intergranular fracture, and for this reason permissible deformations may appear to be unnecessarily small and the working stresses correspondingly low. Intergranular cracking may be caused by steep fluctuating temperature gradients, and tests show that different materials vary widely in their ability to withstand repetition of thermal shock.

The discussion was opened by Dr. W. G. Radley, who directed attention to the extensive use to which new materials have been put in tele-communications work, instancing the application of "Permalloy" alloys for the loading of submarine cables, of polythene for the insulation of high-frequency cables, and the ferrites for small transformer cores. Dr. A. T. Bowden, discussing Dr. Bailey's paper, said that austenitic steels must be used in gas turbines, and that these steels can be worked, up to their temperature of oxidation.

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OBITUARIES

Prof. P. E. Newberry, O.B.E.

Percy Edward Newberry, who died at his home at Hascombe, near Godalming, on August 7, was the *doyen* of British Egyptologists. The youngest son of H. J. Newberry of Ealing, he was born on April 23, 1869, and educated at King's College School and King's College, London. While still at school, at the age of fifteen, he came under the spell of Ancient Egypt, which was to dominate all the rest of his long life.

When only twenty-one, in 1890 (having already reprinted, in two volumes, essays by Carlyle), he became officer-in-charge of the newly founded Archæological Survey of the Egypt Exploration Fund (as it then was), a branch of the Fund's activities which was to prove highly fruitful in publishing accurate records of the already known rock-tombs of Egypt. His first work for the Survey was two volumes (1892–93) on the very important group of tombs at Beni Hasan; these were followed by two more (1893–94) on those of El-Bersheh; all the scenes and inscriptions were copied by him single-handed.

In 1895–1901 he was engaged on a survey of the Theban Necropolis, during which he cleared a number of tombs, and with R. de P. Tytus he excavated the Palace of Amenophis III there until 1902; in that year he joined the staff of the great "Catalogue Général of the Cairo Museum", contributing, as time went on, volumes on the contents of the tomb of Tuthmosis IV, on scarabs and scarab-shaped seals, and on funerary statuettes.

In 1900 he edited the papyri in the collection of Lord Amherst of Hackney and also much of the famous tomb of the Vezier Rekhmirê. His book on scarabs, which appeared in 1905, was for long the leading authority on the subject. He was the first holder of the Brunner chair of Egyptology in the University of Liverpool, to which he was elected in 1906, resigning in 1919 to make way for a younger man, T. Eric Peet. In 1908 he published a volume on the Timins Collection.

Much of Newberry's literary output was in the form of collaboration: together with, or in works by, Petrie, Garstang, Maspero, T. M. Davis, Lord Northampton, Lord Carnarvon, Howard Carter, Hall, Peet and others, he published much valuable work, especially on excavation and antiquities, history, ancient botany and art; and his contributions to various British and Continental journals embrace almost every branch of Egyptology.

During the First World War he took part in the national effort by undertaking the highly skilled work of gauge-making, somewhat to the detriment of his eyesight; later he became assistant secretary of the London and South-Eastern Region of the Ministry of National Service. In 1923 he was elected president of the Anthropological Section of the British Association; his address in that capacity, "Egypt as a Field of Anthropological Research", opened up new perspectives of investigation. During 1926–27 he was vice-president of the Royal Anthropological Institute. The winter of 1927–28 was devoted to an exploration of the Gebel Elba region of the Red Sea Province of the Sudan, from which he brought back a harvest of botanical and other specimens. Thereafter for four years (1929–33) he was professor of Ancient Egyptian history and archæology in the Fouad I University, Cairo. In 1933 the Saxon Academy of Sciences made him a corresponding member. Other distinctions were the O.B.E., in recognition of his war services, an honorary readership in Egyptian art in the University of Liverpool, and a vice-presidentship of the Egypt Exploration Society.

Throughout his career Newberry was an ardent researcher, and collected immense stores of notes on many aspects of ancient Egypt, bearing especially on history, early religion, botany and zoology. His zeal for amassing information (which led him to visit many out-of-the-way sites rarely visited by Egyptologists) outran his urge to publish the results; it is greatly to be hoped that other scholars will be able to make use of his rich material, which he was always

ready to put at the disposal of his colleagues. As a teacher he was admirable, and while professor at Cairo did a great deal in many ways for his Egyptian pupils, who regarded him with real affection. His industry was incessant, but did not interfere with his unusual degree of generosity and hospitality.

In 1907 he married Essie Winifred (who survives him), a daughter of William Johnston, of Bromborough, Cheshire. She assisted in the preservation of the necklaces and other pieces of jewellery found in the tomb of Tutankhamûn.

BATTISCOMBE GUNN

Dr. James Colvin

DR. J. COLVIN, senior lecturer in the Department of Inorganic and Physical Chemistry, University of Leeds, who died suddenly on September 5, at the age of forty-seven, had been a member of the staff of the Department since 1927. He was a graduate of the University of Liverpool and went to Leeds in 1925 to do research work under Prof. R. Whytlaw-Gray; he joined the academic staff at Leeds two years later.

Before 1939 Dr. Colvin worked on the kinetics of reactions in the solid state, particularly the dissociation of salt hydrates; during the War he was occupied with research for the Government, and more recently he returned to the study of salt hydrate decompositions. He was a brilliant teacher, and will be remembered with affection by generations of former students for his sympathetic understanding of their difficulties, academic and otherwise.

WE regret to announce the following deaths:

Mr. A. H. Hall, C.B., C.B.E., formerly chief superintendent of the Royal Aircraft Establishment, Farnborough, on September 11, aged seventy-three.

Prof. August Krogh, For.Mem.R.S., emeritus professor of zoophysiology in the University of Copenhagen, aged seventy-four.

NEWS and VIEWS

Frederick Ives Medal of the Optical Society of America: Dr. G. R. Harrison

THE Frederick Ives Medal for distinguished work in optics has been awarded by the Optical Society of America to Dr. George R. Harrison, dean of science in the Massachusetts Institute of Technology. Dr. Harrison, who is fifty-one, was born in San Diego, California, and graduated from Stanford University. After rising to become associate professor of physics at Stanford, he joined the Massachusetts Institute of Technology as professor of physics in 1930 and was appointed dean of the School of Science in 1942. As professor of physics, and during 1930–42 as director of the Research Laboratory of Physics at the Institute, Dr. Harrison has won wide recognition for his achievements in spectroscopy and studies of atomic structure, much of which was valuable in developments associated with the Second World War. He has made especially notable contributions in the fields of spectral line intensities, photometry and vacuum spectroscopy, and with his wide background of scientific research he is known as a leader in applying advances in modern physics to industrial development. Under his guidance the spectroscopy laboratory of the Institute has become an important centre of technological research and has produced tools of great value for investigations in modern physics. For his achievements in this field Dr. Harrison was in 1939 awarded the Rumford Medal of the American Academy of Arts and Sciences. During the War he was chief of the Optics Division of the Office of Scientific Research and Development, and later he became chief of the research section at General MacArthur's headquarters. In recognition of his services he was awarded the Medal of Freedom and the Presidential Medal for Merit.

A. J. Corda (1809–49)

BORN at Libereo in north-east Bohemia, August Josef Corda began a remarkable scientific career as a pharmacist's assistant. He attracted the attention of Prof. Kombholz, who gave him a microscope and arranged for his further education. As early as 1826 Corda succeeded in germinating certain moss and fungal spores and made elaborate drawings of these cultivated cryptogams. He came into prominence for his medical work during the 1832 cholera epidemic, and this brought him to the notice of some German naturalists who gave him an opportunity to study cycads at Berlin. At the Breslau congress of doctors and naturalists in 1833, he gave an account of his work on *Cycas*, pointing to its links with higher cryptogams. Back in Bohemia, he was engaged to study the specialized algal and other flora of Karlsbad hot springs. Always fighting poverty, Corda's work was handicapped by his indifferent health; his main income was the stipend as curator of the Bohemian National Museum and the money he received from Count Kaspar Sternberg (president of the Museum Society) for his share in such tasks as examining fossils from the West Bohemian coal measures, described in Sternberg's "Flora der Vorwelt" (1837). Corda's most important work was "Icones Fungorum", printed in parts between 1837 and 1854, and thus completed by other botanists. Here, too, the most valuable feature was Corda's splendid illustrations. His ability to draw rapidly and accurately led to his being sent by some Bohemian patrons of science to Texas and elsewhere to collect specimens for the Museum. His ship, the *Victoria*, sank on the return voyage during a storm in the West Indies in September 1849, and Corda perished at the early age of forty.

Orientation of Lund Cathedral

A LECTURE on "The Orientation of the Cathedral of Lund", which was delivered by Hans Erlandsson at the Observatory of Lund on May 23, 1946, has been published by the Observatory in "Historical Notes and Papers", No. 21. In the donation letter of Canute, May 21, 1085, St. Lawrence was chosen as the patron saint of the cathedral at Lund, and the document of the consecration festival, September 1, 1145, says that the cathedral was built in honour of the Blessed Virgin Mary and Saint Lawrence, so that the name of St. Mary must be considered in dealing with the question of the orientation of the building. The late C. V. L. Charlier's investigations in 1900 suggested that the axis of the cathedral was