his directorship, has performed major computational work in many fields—for industry, for government departments and for universities. Emphasis was on accuracy, and on the lack both of dislike and of fear of computation—no job was ever turned down as being too large. When the Second World War broke out, one of Comrie's most valuable contributions consisted of two volumes of 200 pages of double-entry ballistic tables for the War Office, which were designed, computed, proof-read, printed and bound under his direction within the first twelve days of the War.

Comrie's main work was in the application of commercial machines to computational problems and in the construction of mathematical tables. He was opposed to the building of special calculating machines, but advocated always an examination of existing machines, available in considerable numbers, to see which was best adapted to the problem in hand. He was adept in devising special methods by which such machines could best be used, and in modifying the computational formulæ to fit the machines. He was never reluctant to tell a client that he was asking for unnecessary accuracy or results, or to point out that proposed methods were wrong or unduly lengthy.

One of his most constant objectives was the complete replacement of logarithmic computation by machine computation; he was always advocating the widespread adoption of calculating machines in all business and research establishments, and was always ready to advise on the choice of machine for each job to be tackled. It was his belief that, eventually, everyone who had need to compute should and would have a calculating machine. His experiences and judgment in this respect were acknowledged by the leading manufacturers and distributors of calculating machines, who could always be sure of advice based strictly on the merits of the machine and problem under discussion.

Comrie's work in preparing mathematical tables will probably form his most lasting memorial. At the Nautical Almanac Office and in collaboration with Prof. J. Peters of Berlin, he was interested in preparing tables of trigonometrical functions in exactly the form needed to help the computer most, and prepared several tables giving natural values to meet the needs of mechanical computation, for which logarithmic values are useless.

As secretary of the British Association Mathematical Tables Committee, he played a leading part in the preparation of most of the B.A. Mathematical Tables—achieving standards of typography and accuracy not previously considered attainable.

The "Standard Four-figure Mathematical Tables", prepared with Prof. L. M. Milne-Thomson, and his two revisions of Barlow's Tables are well known. So also are his last works to appear during his life-time, namely, his revision of "Chambers's Mathematical Tables"; the four-figure tables contain more useful tables, formulæ and ideas about tables and computing than have ever before been collected into 64 pages, while in the two volumes of "Chambers's Six-figure Mathematical Tables" he has prepared a set of tables replacing the old seven-figure tables, which should meet nearly all needs in the elementary field for many decades to come. In the introductions to these two volumes he has compressed an account of a very large proportion of his computational experience—they may almost be used as a text-book on general computational techniques. He was the first to believe that the maker of tables not only should, but also could, provide tables that were free from error. He

believed, too, that it was his duty to give the user every possible aid and convenience. Comrie had an almost professional knowledge of typography, and the careful and expert attention which he always paid to this art, as well as to the logical austerities of the English language, set its mark on all his work.

Besides a great interest in the preparation of mathematical tables, Comrie had an equally powerful interest in other tables, and he conducted systematic and thorough searches for errors over very many years. His experience in these matters was very great, and it is fortunate that he had almost completed a record of this experience. This is to appear as part of a new edition of "An Index of Mathematical Tables", prepared by Fletcher, Miller and Rosenhead. The first edition of this "Index" was actively sponsored by Comrie, who financed publication through the Scientific Computing Service.

Comrie's outstanding contributions to the field he had done so much to extend and transform were acknowledged by election to the fellowship of the Royal Society last March. He was the first in this field to receive such recognition.

His experience and enthusiasm in computation and table-making will be very greatly missed. He will also be missed by his many astronomical and New Zealand friends, who could always be sure of interest, encouragement and help.

J. C. P. MILLER

Prof. J. W. Cobb, C.B.E.

ON Saturday, November 25, John William Cobb died in Leeds at the age of seventy-seven. Educated at the Leeds Modern School, he entered the Yorkshire College (now the University of Leeds) in 1889. After graduating in the University of London at the age of nineteen, he went straight into industry with the Farnley Iron Co., Ltd., of Leeds. This firm manufactured certain high-grade local products—wrought iron and clay ware. John Cobb found himself in a works peopled with skilled craftsmen but without a scientific atmosphere. He was commissioned to learn by his own observation and experiment, but without a laboratory. His employers were in advance of the times and not lacking in encouragement. Thus he was able to advance the technique of the works, especially in the efficient use of fuel. In this way he acquired a reputation for knowledge of industrial gas heating. Endowed with curiosity and initiative, and thanks to the support of his employers, Cobb was able to carry out a considerable amount of investigation of works processes, notably on the solid reactions of silicates. In this, he showed himself ahead of his contemporaries.

In 1904 the Yorkshire College attained university rank and one of its first acts was to embark on the study of, and research on, fuels. This enterprise was the first of its kind in a British university. In 1906, a Department of Fuel and Metallurgy was established under the responsibility of Prof. W. A. Bone. He retained this position until 1912, when he took office in the new Department of Fuel at the Imperial College of Science and Technology.

In the meantime, the Fuel Department at Leeds had become associated with the science and technology of towns' gas. In 1910, when, by death, the British gas industry had lost one of its leading members, Sir George Livesey, it chose to use its resources to endow the chair of the new Department in Leeds. The departure of Prof. Bone to London

called for the appointment of a successor. Actually, no better choice could have been found than John W. Cobb. Appointed thus in 1912, he continued in office until 1938. In two years, however, the First World War broke out, followed by unforeseen problems. The Fuel Department at Leeds, the only one of its kind, had associations with the British gas industry, and the industry was faced with urgent technical problems arising from the War. To meet these needs, it was found necessary to establish a joint research organization between the University and the gas industry. This organization proved successful and led to extension and imitation. There is no doubt that the early success of these efforts owed much to Prof. Cobb's capacity and judgment.

H. J. HODSMAN

Mr. C. E. C. Fischer

THE death occurred on October 19, at the age of seventy-six, of Cecil Ernest Claude Fischer, formerly of the Indian Forest Service.

Born in Bombay on July 9, 1874, Fischer first went to school in Neuchâtel, Switzerland, and later to private schools in Brighton and Stratford-on-Avon. In 1892 he entered Coopers Hill College, Englefield Green, where he received his forestry training. He passed out of the College in September 1895 to join the Indian Forest Service in the Madras Presidency. From 1907 he acted as forest entomologist at the Forest Research Institute, Dehra Dun. During 1908-9 he was on furlough, taking special leave to study plant pathology in Munich and London. During the years 1915-17 he was principal of the Madras Forest College. He assisted the professor of forestry for four university terms at the School of Forestry, Oxford, during 1919-20. After his return to India in 1920, he became a conservator of forests, Madras, which post he held until he left at the end of 1923, finally retiring from the Indian Forest Service in 1926.

Retirement did not mean, however, a life of leisure for Fischer, but merely the dropping of his

official duties in the Indian Forest Service and the commencement of a period of very useful work at Kew. In 1925 he was appointed assistant for India in the Herbarium of the Royal Botanic Gardens, where he remained until he reached the age limit in 1940. While at Kew he brought to a conclusion the late J. S. Gamble's "Flora of the Presidency of Madras", being responsible for the third volume of this work, from *Ulmaceæ* to the *Gramineæ*. Following Gamble's practice, he published explanatory notes during the progress of the "Flora" in the *Kew Bulletin*. He also published a number of other papers in the *Kew Bulletin*, including his important "Contributions to the Flora of Burma" (1926-40), "Plants New to Assam" (1929-40), "New or Little Known Plants from South India" (1932-39), and his determinations of "The Koenig Collection in the Lund Herbarium" (1932). His valuable "Survey of the Flora of the Animalai Hills" (1921) and "Flora of the Lushai Hills" (1938) appeared in the *Records of the Botanical Survey of India*. He described many new species, and in naming one of these he commemorated the Indian Forest Service.

Fischer had a strong sense of civic duty and served on many committees. During the War he was an air-raid warden, and while on duty in an air raid was injured and left permanently slightly lame. After the War he taught himself to make Braille books for the blind and became very proficient at this self-imposed task.

No one who knew Fischer could fail to appreciate his sterling integrity of character and the pleasant manner in which he discharged his manifold duties.

H. S. MARSHALL

WE regret to announce the following deaths:

Prof. E. Abderhalden, editor of the well-known "Handbuch der biologischen Arbeitsmethoden", on August 5, aged seventy-four.

Sir Leonard Parsons, F.R.S., emeritus professor of pædiatrics and child health in the University of Birmingham, on December 17, aged seventy-one.

NEWS and VIEWS

New Year Honours

THE following names of scientific men and others associated with scientific work appear in the New Year Honours list:

K.B.E.: Mr. Harry Mason Garner, chief scientist, Ministry of Supply; Dr. Arthur Elijah Trueman, chairman, University Grants Committee.

Knights: Dr. Frank Macfarlane Burnet, director of the Walter and Eliza Hall Institute for Medical Research, Melbourne, for services to biological research; Mr. Thomas Dalling, chief veterinary officer, Ministry of Agriculture and Fisheries; Prof. Thomas Henry Havelock, emeritus professor of mathematics, King's College, Newcastle upon Tyne; Mr. Christopher Hinton, deputy controller of Atomic Energy (Production), Ministry of Supply; Dr. Gordon Morgan Holmes, consulting physician, Charing Cross Hospital and National Hospital for Nervous Diseases; Mr. Henry Thirkill, master of Clare College, Cambridge, and chairman of the Cambridge University Joint Recruiting Board.

C.B.: Mr. E. Barnard, deputy secretary, Department of Scientific and Industrial Research; Mr. W. R. J. Cook, chief of the Royal Naval Scientific Service, Admiralty; Dr. W. F. P. McLintock, lately director of the Geological Survey and Museum.

C.M.G.: Mr. W. Abbott, H.M. inspector of schools, Ministry of Education; Dr. W. J. Hall, director of the Commonwealth Institute of Entomology; Dr. C. F. Hickling, fisheries adviser to the Secretary of State for the Colonies; Mr. J. C. Muir, Colonial Agricultural Service, member for agriculture and natural resources, Tanganyika; Mr. H. J. Page, principal of the Imperial College of Tropical Agriculture, Trinidad; Dr. G. L. Sutton, for services to agriculture in Western Australia.

C.B.E.: Mr. K. Baumann, for services to turbine development; Mr. H. J. Braunholtz, keeper of the Department of Ethnography, British Museum; Mr. S. E. Chisholm, assistant controller, Patent Office; Mr. Hayne Constant, director of the National Gas Turbine Establishment, Ministry of Supply; Dr. Oscar Faber, for services in the rebuilding of the