

sideration. I have pictured him writing my obituary notice; I never thought the natural order would be reversed.

HUGH ROBERT MILL.

PROF. E. HAGEN.

THE issue of the *Physikalische Zeitschrift* for April 1 contains the account of the life and work of the late Prof. E. Hagen given by Prof. E. Gümlich at the meeting of the German Physical Society on March 9. Prof. Hagen was born at Königsberg on January 31, 1851, and losing his mother, who was the youngest daughter of Bessel the astronomer, in 1856, was brought up by a stepmother for whom he had a lifelong affection. On the removal of his father to Berlin he became a pupil at the local Gymnasium and in 1871 entered the University. After two years there he went to Heidelberg, where he graduated in 1875, having in the meantime acted as assistant to Bunsen. The next two years he spent at Dresden as assistant to Toepler and a further six as assistant to Helmholtz at Berlin.

In 1883 Hagen became a lecturer in the University of Berlin, and next year extra professor of applied physics at the Dresden Polytechnic. In 1887 he became physicist to the Navy and, removing to Kiel, acted also as extra professor at the University. In 1893 he became director of the technical section of the Reichsanstalt at Charlottenburg. He married in 1896 the daughter of Von Bezold the meteorologist, and in 1904 joined the staff of the German Museum at Munich. He died of inflammation of the knee on January 15. He was best known in this country for his work in conjunction with Rubens on the connexion between the electrical conductivity and the radiating and reflecting powers of metals.

It is with much regret that we record the death of Dr. Elizabeth Acton, on Sunday, May 13, after a prolonged illness. Dr. Acton was a distinguished student of the late Prof. G. S. West in the botanical department of the University of Birmingham. In 1908 she took her Bachelor of Science degree with honours, and in the following year received the M.Sc. for research work in botany. After that time she was almost continuously engaged in botanical research, and in 1916 was awarded the degree of D.Sc. (Birmingham). Her contributions to the study of fresh-water algæ are of outstanding value, and her work throughout was marked by great thoroughness and painstaking accuracy. Her early death has removed a devoted worker from the sphere of botanical research. Dr. Acton's activities outside her scientific work were necessarily limited, owing partly to her continuous ill-health and partly to her retiring disposition. She was a loyal friend, and her uncompromising honesty was one of her chief characteristics.

J. S. B. E.
E. M. P.

WE regret to announce the following deaths:

Prof. J. Chiene, emeritus professor of surgery in the University of Edinburgh and a friend and disciple of Lord Lister, on May 29, aged eighty.

Canon W. W. Fowler, president in 1901-2 of the Entomological Society, and author of "The Coleoptera of the British Islands," on June 3, aged seventy-four.

Prof. Franz Neger, professor of botany in the Dresden Technical College and director of the Botanical Gardens there, who worked with Baeyer for several years and published a thesis on dehydracetic acid, aged fifty-four.

Current Topics and Events.

THE immense progress which has been made in the elucidation of crystal structure by means of X-rays, since the first discovery of von Laue at Munich in 1912, and especially the quantitative development which has afforded the absolute distances separating the atoms, their actual sizes, and the dimensions of the space-lattice cells, is largely due to the invention of the ionising X-ray spectrometer by Sir William Bragg. The brilliant use made of that instrument at University College, London, and latterly also by an increasing number of other workers in various parts of the world, has been the means of accumulating a surprising amount of knowledge of the structure and structural dimensions of a large number of substances, many of the more recently studied of which are no longer of the simplicity of those first submitted to investigation. It must prove of interest, therefore, to our readers that we are able to present, as a supplement to the present issue, a revised form of an admirable lecture which was recently delivered by Sir William Bragg to the Royal Society of Arts. The most noteworthy fact which emerges from the accumulated results, including those derived from the photographic method of Laue and the powder methods of Debye, Scherrer, and Hull, is that the conclusions of crystallographers, based on the most accurate crystal measurement and on the perfected

geometrical theory of crystal structure, are proved to be correct, both as regards the nature of that structure, and its relative unit-cell dimensions in those few cases in which it had been possible to determine them. These relative dimensions are now converted into absolute values by the X-ray spectrometric measurements. The recent venture into the more difficult field of organic substances is adding a further chapter of exceptional interest, and is of immense importance both to chemistry and to optics. The results have already had the happy effect of restoring the molecule to its proper place in the solid state, from which only a misreading of the first few results with the simplest inorganic compounds had temporarily displaced it. Moreover, they have rendered it clear that the number, nature, and arrangement of the external electrons of the atom itself are involved in cementing together the parts of the crystal structure, so that further work is bound to throw light on atomic structure, and possibly to decide between, or combine the correct portions of, the rival theories concerning it.

CIRCULAR No. 137, issued by the Bureau of Standards, U.S.A., is the fourth of a series of circulars describing very simple radio receiving sets which were originally prepared for use by the Boys' and