

Engineering, but he had only held this for a year when he was transferred to the Topographical Section of the General Staff at the War Office. Here his scientific inclinations found full scope in the organisation of survey work in all parts of the world. During his tenure of the post he raised the standard of this work in a very notable degree, which was recognised by the C.M.G. being conferred on him in 1902. His work here brought him into contact with many problems in geodesy, in which he took a keen and lasting interest. At this time Sir David Gill was actively promoting the geodetic triangulation in South Africa, and to this Grove-Hills gave his whole-hearted support.

In 1905 he completed his period of service as head of the topographical department of the War Office, and then retired from the army. In the following year he contested Portsmouth in the Conservative interest unsuccessfully, and afterwards occupied himself mainly with scientific investigations. At the British Association in 1906 he raised the question whether the triangulation of this country was of the accuracy required by modern geodesy, and a few years later the Ordnance Survey undertook the re-observation of certain triangles in Scotland to determine this point. In the same year he and Sir Joseph Larmor discussed the movement of the pole in an important communication to the Royal Astronomical Society.

Col. Grove-Hills was president of Section E at the British Association meeting in 1908, where he discussed the surveys of the British Empire in an important address. He had before this been invited to report on the Canadian surveys and wrote a valuable and instructive report on them. In 1911 he was elected a Fellow of the Royal Society, and from 1913 to 1915 he was president of the Royal Astronomical Society. He was also latterly Secretary of the Royal Institution. Keenly interested in astronomy, he designed the suspended zenith instrument at Durham Observatory, of which institution he was Honorary Director up to the time of his death. While on his way to Kieff with the eclipse expedition of 1914 he was recalled to take his part in the Great War, and was appointed Assistant Chief Engineer of the Eastern Command, being gazetted Brigadier-General in 1918. His services in this responsible post were recognised by the award of the C.B.E. in 1919.

Endowed with very great natural ability, and a keen interest in all scientific questions, Grove-Hills combined with these great administrative ability and sound common sense. He was always ready to assist by his advice and active co-operation in any well-planned scheme of scientific work, and in his death astronomy and geodesy have suffered a severe loss.

H. G. L.

MAJOR-GENERAL J. WATERHOUSE.

MAJOR-GENERAL JAMES WATERHOUSE, who was eighty years of age, died on September 28. As a youth he joined the Royal Bengal Artillery, and after seven years was made Assistant Surveyor-General in charge of the photography section in the Surveyor-General's Office in Calcutta. He retired in 1897. His official duties necessitated the study of photography and

photo-mechanical methods of reproduction, and this he did with a keen eye for any possible improvement, and a skilful hand which enabled him to test the practical value of any new introduction. He made an extended continental tour during his term of office that he might become acquainted with the methods employed in foreign photographic laboratories. A considerable number of improvements were introduced by Waterhouse in photolithography and allied processes, as well as in collotype, sometimes varying methods in use elsewhere to render them suitable for a tropical climate. His knowledge of these methods in all their minutiae was very extensive, and in 1882-1885 he contributed to the *Photographic News* a series of fifty chapters on photolithography.

In 1873, when Vogel published his discovery that the sensitiveness of plates to green and red could be enhanced from a negligible to a practically useful amount by the use of certain dyes, Waterhouse was one of the very first to confirm the observation and to find other effective dyes. In 1890 he found that by the addition of thiourea to the developer the reversal of the image was so much facilitated that a very little, if any, increase of exposure was necessary. He took part in the observation of the total eclipses of 1871 and 1875, and in the transit of Venus in 1874.

On his retirement, Waterhouse studied the early history of the camera obscura, and of the action of light on silver salts, correcting some false and incomplete ideas that were current. He was president of the Royal Photographic Society from 1905 to 1907, honorary secretary of the Calcutta Zoological Gardens from 1894 to 1897, president of the Asiatic Society of Bengal from 1888 to 1890, and trustee and twice chairman of the Indian Museum at Calcutta. The value of his scientific work in connexion with photography was acknowledged by the award to him of the Progress Medal of the Royal Photographic Society, and the Voigtländer Medal of the Vienna Photographic Society.

WE regret to record the death of Prof. J. K. A. Wertheim Salomonson. He was born in 1864, passed his medical studies at the University of Leyden, and in 1899 became professor in neurology and radiology in the University of Amsterdam. His contributions to these two subjects were of considerable importance, for his range of knowledge of medicine and physics was supplemented by a perfection of skill in instrumental design. He was a frequent visitor to this country and only last year he demonstrated to the Ophthalmological Section of the Royal Society of Medicine a method for the photography of the structure of the eye. He was responsible for improvements in the electro-cardiograph and in many instruments designed for radiological purposes. A man of engaging personality, his loss will be felt over the wide circle which his scientific interests served. He was a Knight of the Order of the Lion of the Netherlands and an honorary member of the Röntgen Society. At the time of his death he held the office of rector magnificus at the University of Amsterdam.