

he seldom failed to find some new angle leading to clearer vision. Being shy and reserved, he made comparatively few friends; but those whom he had, found him a most entertaining companion. They appreciated also his extreme conscientiousness and sense of duty. He was a man of strong convictions, which he urged with pugnacity tempered by a delightful sense of humour.

No account of Robb would be complete without reference to his gift for writing topical verse and parody. He wrote many of the songs sung at the annual dinners of the Cavendish Society. His feat of adapting Maxwell's equations as the chorus of a song must have earned the gratitude of many who, like the present writer, could never remember them otherwise.

Robb was a thorough Irishman, in voice, appearance and sentiment. Though his home and family connexions were in Belfast, his sympathies were generally with the South. After passing through Queen's College, Belfast, he became a research student at St. John's College, Cambridge; he afterwards studied at Göttingen, where he took a Ph.D. degree. Being possessed of independent means, he never sought a post; but his habit was to spend most of term-time in Cambridge, living very quietly in lodgings, seeing a few old friends, and mainly occupied with mathematical research.

When the Great War came, Robb voluntarily undertook chemical work in connexion with the supply of medical drugs. But after some time his suspicions were aroused, and being unable to obtain an assurance that his products were not intended for the production of poison gas, he resigned. Not to be deterred from medical service, he learned to drive a motor-car and served as an ambulance-driver in France. In later years he joined Emmanuel College and was made a member of the High Table. Sometimes by invitation of the Faculty Board of Mathematics he gave a course of lectures on his theory. He was elected to the Royal Society in 1921.

This quiet academic life was rudely broken about five years ago, when Robb was called by circumstances to assume the management of his family business—an important firm in Belfast. Through a series of deaths of near relations, he was left almost the sole adult representative of his family, and it depended on him to keep things going in the interests of the next generation. For him it was a most uncongenial change; but he appears to have adapted himself to it successfully. He retained his rooms in Cambridge, hoping to find opportunity to return; but his visits have been rare. The new edition of his book, which contains considerable changes, is evidence that he remained active in mathematical research up to his death.

A. S. E.

Sir Henry Hall, I.S.O.

It is with great regret that we have to record the death of Sir Henry Hall, who died at Brookside, Chester, on December 8, at the ripe age of ninety years; he was born, therefore, in 1846, and was the

youngest son of Mr. John Hall, of Sedgefield, Co. Durham. He served his time at the old Haswell Colliery Co., Durham, and got an appointment in the Swansea district in 1873. About 1875 he was appointed inspector of mines in that district, and was afterwards transferred to Lancashire, and was in addition given the care of North Wales when districts were reorganized a few years later (about 1910).

According to his own account, an accident at Wynnstay Colliery, North Wales, about the year 1874, first directed Sir Henry's attention to the danger of coal dust, and in 1890 he was appointed to experiment on the subject by the Royal Commission, which sat under the Right Hon. Joseph Chamberlain, M.P., as chairman, and consisted of a number of men well versed in explosions and mining, who altogether examined thirty-nine witnesses. According to his own statement, three different collieries were experimented on, in shafts ranging from 50 yd. to 200 yd. deep, and in a gallery some 45 yd. deep, using dust from the various districts of the country and no firedamp. It was not a new idea of Mr. (as he then was) Henry Hall's, the original idea being due to Faraday and Mr. Lyell, according to Mr. Godfrey Lushington (in Answer 66) in 1844. It was then revived by Mr. William Galloway and Messrs. W. N. and J. B. Atkinson, in which an explosion in a hopper, where no firedamp was present, was cited.

Mr. Henry Hall's results were accepted by the industry, but his remedies for this state of affairs, namely, watering and the use of high explosives (not gunpowder), were not followed up, because watering was not a complete remedy and often produced 'creep', and Sir William Edward Garforth's further experiment on the use of stone dust, finely divided, has been accepted by the industry in general and is now confirmed by legislation. The remedial suggestion decidedly advocated by Mr. Henry Hall was the use of the safety lamp, according to Mr. J. B. Atkinson, which has since been made compulsory by legislation.

For this service and his numerous papers read before the North of England Institute of Mining and Mechanical Engineers, and before the Institution of Mining Engineers—these among other services to the mining industry—Hall was given the medal of the Institution of Mining Engineers in 1928, whilst he was awarded the Imperial Service Order, and afterwards received the honour of knighthood. His death removes a man whose name is a household word in the mining industry, and who has ever, even after his retirement from the inspectorship, taken the keenest possible interest in the industry.

Dr. E. S. Cobbold

THE ranks of the amateur geologists have been seriously thinned by the death of Edgar Sterling Cobbold on November 20, in his eighty-sixth year. The son of a surgeon who was greatly interested in natural history, he studied engineering at the Owens College and, after some fifteen years' practice, retired to Church Stretton in 1886. Here he at once threw