

work, but each attempt resulted in a relapse, and at the close of the academic session, towards the end of October, it was thought best for him to try the effects of a complete change. Accompanied by his sister, who had joined him and his three boys in Dunedin shortly after the death of his wife, he started on a visit to his friend, Mr. Bell, of Shag Valley, about forty miles from Dunedin. But halfway there he was so prostrated that the continuation of the journey had to be postponed, and a week later it was decided to return to Dunedin by easy stages. After a night's rest at Warrington, he seemed to be better, but the same night he began gradually to sink, and died a few days later—on November 7, 1897. He was buried at Warrington, and a number of his Dunedin friends accompanied him to the grave. His unexpected death, at the age of 47, is a severe loss to biological science in the Antipodes, where he was one of its foremost pioneers.

G. B. H.

PERCIVAL FROST was born at Kingston-upon-Hull on September 1, 1817. He was the second son of Mr. Charles Frost, F.S.A., who practised as a solicitor in that town. Percival Frost's earlier school-life was spent at Beverley. From Beverley he was removed in the year 1833 to Oakham School, which was then presided over by Dr. Doncaster, and here he remained until October, 1835, when he proceeded to St. John's College, Cambridge.

As an undergraduate, Frost devoted most of his energies to the study of mathematics. The competition which Frost met with at St. John's College is sufficiently apparent from the fact that in his year, 1839, the first four places in the Mathematical Tripos were won by men of his own college; a unique example of one college obtaining the first four places in that Tripos. Frost's chief rival was B. M. Cowie, the present Dean of Exeter. In the Mathematical Tripos, in January, 1839, Cowie was Senior Wrangler, and Frost was Second Wrangler; but immediately afterwards this order was reversed by the examiners for the Smith's Prizes. Both were elected to fellowships in their College on the same day, 18th March, 1839.

After his degree, Frost was urged by friends, and especially by Dr. Hymers, his college tutor, to read for the Bar, and he commenced to do so; but his great success in obtaining private pupils when he returned to Cambridge for the Long Vacation, induced him to abandon all idea of the legal profession. In 1841 Frost was ordained by the Bishop of Ely, and in the same year vacated his fellowship on his marriage with Jennett Louise, daughter of Mr. Dixon, of Oak Lodge, Finchley, the commencement of a happy union which lasted 57 years. Frost held a mathematical lectureship in Jesus College from 1847 to 1859, and one in King's College from 1859 to 1889; but his chief work consisted in the tuition of private pupils.

In this work he was eminently successful; many of his pupils took high degrees. As examples of those who rose to distinction at the Bar and in Science, may be mentioned the names of Lord Justice Rigby and the late W. K. Clifford.

The first book which Frost wrote was an edition of Newton's 'Principia,' Book I, sections 1—3 (with notes and illustrations, and a collection of Problems); it was published in 1854. Subsequent editions appeared in 1863, 1878, and 1883. His next work he published in 1863, in conjunction with the late Joseph Wolstenholme. It was entitled 'A Treatise on Solid Geometry.' Second and third editions of this work were published by Frost alone in 1875 and 1886, and 'Hints for Solution of Problems in the Third Edition of Solid Geometry,' in 1887. In 1872 he published his third work, 'A Treatise on Curve-tracing.' In addition to these books, he wrote a considerable number of minor papers relating to Algebra, Analytical Geometry, the Lunar and Planetary Theories, and Electricity and Magnetism, more than twenty of which appear in this Society's 'Catalogue of Scientific Papers.'

In 1882 Frost was elected a Fellow of the Royal Society, and in the same year he was elected by King's College, Cambridge, to a terminable Fellowship, to which he was re-elected three times, and which he held at the time of his death. By new University Statutes, which came into force in 1882, two new degrees were established at Cambridge, those of Doctor of Science and Doctor of Letters. Shortly afterwards, Frost proceeded to the degree of Sc.D.

Frost was no mere mathematician; he was a man of wide interests and varied attainments. He had an extensive acquaintance with the works of musical composers, and his execution on the pianoforte was of a high order. His drawings in water colours were very successful. Moreover, he had a Yorkshireman's instinctive love for games and sports.

Frost possessed a strong constitution, and enjoyed excellent health. If we make an exception of the lameness of his later years, against which he courageously fought, he scarcely knew, until he had passed his 80th birthday, what a day's illness was. Towards the end of last April, he was attacked by a painful disorder, which in six weeks' time proved fatal to a frame exhausted by prolonged suffering. Frost died on Trinity Sunday, June 5, 1898, and his remains were laid to rest on the following Friday in the Mill Road Cemetery, Cambridge.

Frost's character endeared him to all who knew him. He was admired and esteemed by his pupils; and between him and them many a life-long friendship was established. His kindness of heart and consideration for others could not be exceeded. If there was anything that he abhorred, it was what seemed to be self-conceit and pretentiousness. He was always bright and cheerful, and ready to see fun in any situation which might occur.

The writer of these lines takes this opportunity of recording his own deep debt of gratitude to Dr. Frost. Some four years ago, when the writer ceased to be able to read, Dr. Frost with characteristic kindness and generosity volunteered to act as reader. His readings, which took place three or four times a week, and lasted about an hour and a half each, were continued until Dr. Frost was attacked by his fatal illness. In that period something like thirty octavo volumes, on subjects of diverse interest, were read, as well as a sprinkling of special articles from the 'Times,' or papers in 'Nature' and other scientific periodicals.

The memory of such a friend cannot easily fade.

H. M. T.

LYON PLAYFAIR, son of Dr. George Playfair, Chief Inspector General of Hospitals, Bengal, was born at Meerut, May 21, 1819. He came home for his education to St. Andrews, where his grandfather had been Principal of the United College of St. Salvator and St. Leonard, and where his uncle, Sir Hugh Lyon Playfair, after a distinguished career in the Indian army, retired in 1834, not to repose but to new battles against dirt, disorder, and ruin, battles the result of which we see in the clean, prosperous, and healthy city of St. Andrews. We may well believe that Lord Playfair derived some of his enthusiasm for sanitation and order from this uncle, "the eccentric and energetic soldier who begged and bullied and wheedled away the filth and ruinous neglect which bade fair to entomb the ancient city." After some years in St. Andrews, he went to Glasgow to study medicine, but was attracted to chemistry by the teaching of Thomas Graham, then Professor of Chemistry in the Andersonian. After a short visit to India he resumed his chemical studies, under Graham, in the University College, London. In 1838 he went to Liebig's laboratory at Giessen, where he worked at organic chemistry and produced his first scientific paper "On a new Fat Acid in the Butter of Nutmegs." Liebig was not only his teacher but his friend, and when Liebig, on the invitation of Prince Albert, came to this country to lecture on agricultural chemistry, Playfair acted as his assistant and interpreter, and was thus introduced to the Prince, an introduction which had an important effect on his subsequent life.

For two years he managed the chemical department of Messrs. Thomson's print-works, at Clitheroe. In 1843 he was appointed Professor of Chemistry in the Royal Institution, Manchester. In 1844, on the recommendation of Sir Robert Peel, he was appointed a member of a Royal Commission for the examination of the sanitary condition of large towns and populous districts. This was the beginning of what was to be a large part of the work of his life. In 1845 he was one of the commissioners on the Irish famine, and from that time till his death