the real meaning of a formula difficult to grasp. It was natural enough that Ramanujan should feel a little hesitation in giving away his secrets to a mathematician of an alien race. Whatever reservations had to be made, one thing was obvious, that the writer was a mathematician of the highest quality, a man of altogether exceptional originality and power.

It seemed plain, too, that Ramanujan ought to come to England. There was no difficulty in securing the necessary funds, his own University and Trinity College, Cambridge, meeting an unusual situation with admirable generosity and imagination. The difficulties of caste and religion were more serious; but, owing to the enterprise of Prof. E. H. Neville, who happened fortunately to be lecturing in Madras in the winter of 1913–14, these difficulties were ultimately overcome, and Ramanujan arrived in England in April, 1914.

The experiment has ended in disaster, for after three years in England Ramanujan contracted the illness from which he never recovered. But for these three years it was a triumphant success. In a really comfortable position for the first time in his life, with complete leisure assured to him, and in contact with mathematicians of the modern school, Ramanujan developed rapidly. He published some twenty papers, which, even in wartime, attracted wide attention. In the spring of 1918 he became the first Indian fellow of the Royal Society, and in the autumn the first Indian fellow of Trinity. Madras University endowed him with a research studentship in addition, and early in 1919, still unwell, but apparently considerably better, he returned to India. It was difficult to get news from him, but I heard at intervals. He appeared to be working actively again, and I was quite unprepared for the news of his death.

Ramanujan's activities lay primarily in fields known only to a small minority even among pure mathematicians—the applications of elliptic functions to the theory of numbers, the theory of continued fractions, and perhaps above all the theory of partitions. His insight into formulæ was quite amazing, and altogether beyond anything I have met with in any European mathematician. It is perhaps useless to speculate as to his history had he been introduced to modern ideas and methods at sixteen instead of at twenty-six. It is not extravagant to suppose that he might have become the greatest mathematician of his time. What he did actually is wonderful enough. Twenty years hence, when the researches which his work has suggested have been completed, it will probably seem a good deal more wonderful than it does to-day.   G. H. HARDY.

PRINCIPAL SIR JOHN HERKLESS, D.D., LL.D.

SIR JOHN HERKLESS, whose death we regret to announce, was the son of an engineer in Glasgow; he was born on August 9, 1855, and educated in the High School before entering the University of his native city. His career as a student was varied, and his fellow-students did not think it outstanding. He not only studied arts, but also attended medical classes. Like some men who have

afterwards made their mark in life, he disliked mathematics, but was fond of philosophy, and finally he decided to study for the Ministry, and was duly licensed, though he obtained no degree from his *Alma Mater.* For a short time he lectured on English literature at Queen Margaret College, then became an assistant-minister until 1883, when he was appointed to the parish of Tannadice in Forfarshire.

The death of the eloquent Principal Cunningham made a vacancy in St. Mary's College, St. Andrews, and it was rumoured that Dr. Herkless would be appointed to the post (divinity). Prof. Mitchell, however, resigned his chair of Church history, and he was appointed, whilst Prof. Stewart, of Aberdeen, was made principal. About this time the strained relations with Dundee in regard to the medical school, and the claims of St. Leonard's Parish in connection with the College Chapel, gave the forceful new professor of Church history an ample field for polemics. He took the side of Dundee, and opposed the parish. Besides stray papers, he afterwards published two books, viz. "Francis and Dominic" and "Richard Cameron," whilst, along with Mr. (now Prof.) R. K. Hannay, he edited a volume of documents pertaining to St. Leonard's College, and four volumes on the archbishops of St. Andrews. He was chairman of the St. Andrews School for Girls Company. He was appointed principal of the University by Mr. Asquith on the death of the distinguished educationist, Sir James Donaldson.

Though not a man of original cast of intellect, Sir John Herkless had great versatility and shrewdness, and was not devoid of ambition (as he himself stated), his main field for advancement being politics. He was diligent in his duties as principal, but he had little time to make noteworthy advances. His lamented death on June 11 occurred after an operation, and whilst he was in the midst of plans for the improvement of the University.

THE death of MR. CHARLES E. RHODES is announced in *Engineering* for June 11, and will be regretted by a large circle who knew him through his activity in colliery developments. Mr. Rhodes was born in 1849, and died on June 7 last. Since December, 1873, he held the position of engineering manager for Messrs. John Brown and Co., Ltd., for whom he sank several shafts and developed a number of pits. He became a member of the Institution of Civil Engineers in 1890, and at various times was president of different institutions connected with mining. He was appointed a member of the Standing Committee on Mining in 1916, and joined the Coal Conservation Committee in the same year.

WE regret to note that the death of MR. WILLIAM SHELDON is recorded in *Engineering* for June 11 as having occurred on May 20. Mr. Sheldon was in his sixty-ninth year, and had been connected with the steam plough works belonging to Messrs. Fowler since 1879. He was president of the Leeds Association of Engineers in 1898–99