

Men and Mathematicians

Men of Mathematics

By Prof. E. T. Bell. Pp. 653. (London: Victor Gollancz, Ltd., 1937.) 12s. 6d. net.

PROF. E. T. BELL has written a fascinating book. The amount of biographical details and of mathematics that he has compressed into a volume of 650 pages is extraordinary; but he is never dull; his style is lively, at times even 'snappy'; he carries the reader along; he whets the appetite. No doubt the mathematician of a certain age who remembers little more mathematics than what he learnt at school and at the university will wish that the modern theories and developments could be more fully described so that he could get a better general idea of them; and the reader who is mainly interested in the personal and human side, while reading with enjoyment the biographical details, which are not easily accessible elsewhere, will wish for more. This is as it should be; but, if the writer has set himself what is (in such a compass) a wellnigh impossible task, we are not the less grateful to him.

Prof. Bell explains that he has applied two criteria in selecting names for inclusion: first, the importance for modern mathematics of a man's work, and, secondly, the human appeal of the man's life and character. Some, as he says, qualify under both heads, for example, Pascal, Abel and Galois; others, like Gauss and Cayley, chiefly under the first, though both had interesting lives. When the two criteria clash or overlap as between several claimants for inclusion on account of a particular advance, he has given the second the precedence, as his primary interest is here in mathematicians as human beings.

In his first chapter Prof. Bell deals with the Greeks—Zeno, Eudoxus and Archimedes; then, with a bound over eighteen centuries, he passes to Descartes and Fermat, the founders of analytical geometry. This is because, throughout the book, "the emphasis is wholly on modern mathematics, that is to say, those great and simple guiding ideas of mathematical thought that are still of vital importance in living creative science and mathematics". The particular Greeks dealt with are those whose work makes, as it were, a continuous story with that of the moderns. The story properly begins with Zeno of Elea. Zeno did not indeed claim to be a mathematician, and next to nothing is known of his life; but he put forward the four famous paradoxes which have exercised the acutest minds ever since, and even now, notwithstanding the labours of Weierstrass, Dedekind and Georg Cantor, cannot be said to be disposed of finally.

Though some of the great mathematicians were born in the humbler walks of life, they are not in a majority. Monge was the son of a pedlar and knife-grinder, Fourier of a tailor, Fermat of a leather-seller; Gauss's father worked as a gardener, canal-tender and bricklayer. Laplace was the son of a peasant and became a complete snob; he examined Napoleon as a candidate for the Military School, and afterwards, in recognition, Napoleon 'pushed' him in every possible way; he was Minister of the Interior for six weeks; under Louis XVIII he sat as Marquis de Laplace in the chamber of peers. Most of the others were sons of professional men, chiefly in the law, officials, pastors, and so on. Some were miserably poor or became so; Kummer tramping back and forth every day between Sorau and Halle with his food and books in a knapsack on his back reminds us of Eudoxus trudging from the Piræus to Athens and back to hear the lectures of Plato.

Only a few of the subjects of the book seem to have been exceptionally precocious. Though the legends of Pascal's precocity are no doubt overdrawn, he discovered his famous theorem before reaching the age of sixteen years. Lagrange is said to have become professor of mathematics at the Royal Artillery School in Turin at sixteen years of age. Gauss, before he was three years old, spoke up and corrected an error which his father had made in calculating the weekly wages of some labourers; in his tenth year he produced in a few seconds the answer to an addition sum set to his class, in which a hundred numbers beginning with 81,297 and ending with 100,899 were to be added, because he instantly saw that the numbers formed an arithmetical progression with 198 as common difference. Sir William Rowan Hamilton must almost have rivalled John Stuart Mill: he was a good reader and advanced in arithmetic at three years of age; at five he read and translated Latin, Greek and Hebrew; at eight he added Italian and French and wrote an original poem in Latin hexameters. Euler ("analysis incarnate") was, like Gauss, a marvellous calculator. Two of his students summed a complicated convergent series in specific numbers and disagreed only by a unit in the fiftieth place of the result. To decide between them Euler did the whole calculation in his head; his answer was found to be correct.

Prof. Bell has strong likes and dislikes. He cannot forgive Newton for accepting, at the age of fifty-four years, the post of Warden of the Mint, nor Leibniz for spending so much of his life in the trivial service of the Brunswick family.