to maintain order on a large scale, to impose silence upon his heart and to listen only to his intelligence ; to be neither suspicious nor confident, neither doubting nor credulous, neither grateful nor ungrateful, neither unprepared for an event nor surprised by an idea ; to live, in short, through the sentiment of the masses, and to dominate them always by extending the wings of his intelligence, the volume of his voice, and the penetration of his eye ; in seeing, not the details, but the consequences of everything—is not this to be a little greater than a man ? "

Does Hitler come up to this standard ? Does Mussolini ? Does Stalin ? Did Lenin ? I think Benassis comes nearer to it than any of them. Why, then, did he not employ his talents where they would have had more scope ? Perhaps because he remained too human and too imaginative and too modest. In fact one is left wondering whether perhaps he is not a little too good to be true. Balzac seems to have had the idea of creating a minor Napoleon—but he has made him virtuous. At least Benassis knew something which the revolutionary autocrats of our time do not seem able to get into their heads, that " ideas which suit one country are fatal in another."

MATHEMATICS MAKES NEWS

Men of Mathematics. By E. T. Bell. (Gollancz. 12s. 6d.)

THIS is a book without a theme. It has the specious unity of one of those novels which relate the life-stories of a number of people who happen to be staying at the same expensive hotel or travelling by the same train. The stories which are told in it are those of some thirty mathematicians, who are considered to have been the greatest in the history of the western world. They are taken roughly in chronological order. After disposing of the Greeks, who are represented by Zeno, Eudoxus and Archimedes, in a single brief chapter, the author goes on at once to Descartes and ends eventually with Cantor. The account which he gives of Gauss, " the prince of mathematicians," is fairly detailed. The others are allotted on the average about twenty pages each, which deal to an equal extent with their lives and their works. We are given occasional indications of the way in which one mathematician influenced another, but no very clear view of the general course of development of mathematical ideas. Nor are we presented with any fruitful or suggestive theories about the psychology of mathematicians. Professor Bell is not interested in seeing whether his subjects have anything besides their mathematical achievements in common. He sets forth a number of particular facts and anecdotes ; and the reader is left to draw what conclusions he may.

One conclusion which we may safely draw is that success in mathematics is not, as is sometimes thought, reserved for a special type of intelligence which cannot bear fruit in any other field. Their mathematical genius did not prevent Descartes from earning fame as a philosopher, or Pascal as a theologian. For Fermat, King's Councillor in the Parlement of Toulouse, mathematics was only one of many intellectual recreations. Gauss, of whom Professor Bell remarks that " in all the history of mathematics there is nothing approaching his precocity," showed almost equal promise as a classical scholar. Monge and Fourier served Napoleon well as administrators and engineers. And as for Leibnitz, he is surely without a rival in the scope of his genius. He disputes with Newton the honour of being the inventor of the calculus ; modern symbolic logicians regard him as their ancestor ; with equal ardour he devoted himself to law, metaphysics, theology, history, politics, diplomacy ; and in whatever he attempted he excelled. Among the nineteenth-century mathematicians we do indeed find a stricter limitation of interests if not of ability ; but even then there were notable exceptions. There was, for instance, Kronecker who made a fortune in business ; and Poincaré, who excelled in physics as well as every branch of mathematics and wrote semi-popular books about science which are the soundest and most brilliant of their kind ; and the fascinating Sonja Kowalewski, the only woman to win a place in this book, who, having established herself as a mathematician with a prize-winning memoir on the rotation of a solid body about a fixed point, went on to achieve even greater fame as a novelist ; and, most remarkable of all, Sir William Hamilton, the inventor of quaternions, who in his youth showed even more brilliance as a classical scholar than as a mathematician, and having acquired Greek, Latin and Hebrew at the age of five, and French and Italian at the age of eight, was master of half a dozen oriental languages by the time

that he was thirteen. And when at the age of twenty-three he published the first part of his great treatise on optics he was already being spoken of as " the first mathematician of the age."

Precocity indeed is the one distinctive characteristic that all these mathematicians clearly have in common. In other respects it is remarkable how faithfully they conform to the diverse spiritual fashions of their times. It was the seventeenth century that made a soldier of Descartes and a tormented mystic of Pascal. Such men as Euler and Lagrange reflect, in the eighteenth century, the tolerant catholicity of the Age of Enlightenment. " The dangerous *républicain*, Evariste Galois," who was killed in a duel before he was twenty-one, is a figure of the Romantic movement. After him, as one would expect in the nineteenth century, the mathematicians' ideas grow more adventurous and fruitful, their lives and characters more humdrum. The university professor comes into his own.

In writing his short biographies, Professor Bell employs a colloquial style which at times becomes excessively breezy and facetious. His canons of judgement are those of *l'homme moyen sensuel*. In dealing with mathematics, as opposed to the mathematicians, he is obliged to compress so much and take so much for granted that I doubt if much of what he has to say will be intelligible to those who are not familiar with it already. I see that his book is being advertised as a successor to Hogben's *Mathematics for the Million* ; but as a mathematical text-book it is not comparable with it. What it rather resembles is Mr. Will Durant's book about the philosophers, which had such an astonishing sale in America. Of these two works of journalism I prefer Professor Bell's. But if he wished to capture Durant's market he ought, I think, to have included photographs.

A. J. AYER.

A REVOLUTIONARY IN THE GARDEN

A Gardener's Testament. By Gertrude Jekyll. (Country Life. 10s. 6d.)

GERTRUDE JEKYLL died in 1932, her place among what might be called the revolutionists of gardening already secure. A dozen books, many articles, a practical association with Sir Edwin Lutyens as a garden designer, had helped in the establishment of a reputation which, to my mind, stands more than a good chance at the hands of posterity. She wrote well, and gardened better. In both she exhibited less volatility but better taste than Farrer, less cantankerousness and more tolerance than Robinson, her contemporaries in the fight against bad taste. She was an autocrat, but she never, as Robinson did, thumped the table, and was never guilty of his violent Philistine absurdities (" Maupassant, the dirtiest writer who ever soiled the literature of France. . . ." " In Hyde Park an outrage in the name of sculpture is perpetrated by Mr. Epstein)". She had a wonderful, almost uncanny feeling for colour, not surprising when we hear that her first ambition was to become an artist, but very surprising when we hear, in her own words, that she suffered from an " extreme and always progressive myopia."

She expressed her opinions with conviction and restraint, in a style of which almost the only oddity was the crowning of all flower-names with capitals. Out of an immense knowledge of plants she must have evolved thousands of schemes, charming for their quietness or magnificence or tropical splendour or whatever it was she wanted to convey, but she worked always for naturalness of effect, to rigid and well-tried rules. If she sometimes gave the show away, as in that classic passage where, with autocratic finger, she ordered the sinking of carefully groomed pots of hydrangea into the blank spaces of the summer border, she did many things of classic loveliness : her famous grey border, her many arrangements of foliage plants and her many schemes of contrasting form and texture, of which the grouping of hydrangea, lilium speciosum and funkia, illustrated in this volume, is a superb example. You rarely hear her, like Robinson, despising plants, but only man's misuse of them, and whereas Robinson's huge and crusty volume grows yearly more out of date, her own work, it seems to me, is still slightly ahead of not only her time but of ours too.

A Gardener's Testament has been compiled by Mr. Francis Jekyll and Mr. G. C. Taylor, from her papers. It is a truly Jekyllian book, charming, in the best taste, instructive, informative, amply supplied with plans and illustrations

from her own garden. It covers almost all her favourite subjects : the wild garden, the water garden, the mixed border, colour effects, the winter garden, the fern garden, gardens of the past, the grey garden. There are some excellent notes on annuals, on borders of special colour, and on the newly fashionable old garden-roses. A book, in fact, for all gardeners of intelligence, taste, imagination and ambition.

H. E. BATES.

"H. P. B."

Personal Memoirs of H. P. Blavatsky. Compiled by Mary K. Neff. (Rider. 18s.)

minutely accurate—a dictum on which it would be interesting to hear the judgement of competent students.

At the same time no religion which has guided the lives of sincere persons is a proper subject of ridicule : and Theosophy has unquestionably been found satisfying by thousands of men and women who deserve respect. It may be a matter of doubt how and whence Madame Blavatsky obtained her doctrines : there can be no doubt that many of them are lofty, noble, and powerful in influencing for good those who accept them.

The value of the book is enhanced by a good index, some appendices, and half a dozen excellent illustrations.

E. E. KELLETT.