

A mathematician's Miscellany. By J. E. Littlewood. London, Methuen, 1953. 8+136 pp. 15s.

From the introduction: "A Miscellany is a collection without a natural ordering relation; I shall not attempt a spurious unity by imposing artificial ones. . . . The other quality is lightness, notwithstanding the highbrow pieces; my aim is entertainment and there will be no uplift. I must leave this to the judgment of my readers, but I shall have failed where they find anything cheap or trivial." There is nothing cheap or trivial in the book, because there is so much of Littlewood's mathematical personality in it. For the same reason, and despite the author's disclaimer, there *is* uplift in the book. It is indeed more than entertainment to learn Littlewood's views, to see his tastes, to feel "what makes him click." Even his entertaining game of debunking ("every mathematical proof is a debunking of some sort") becomes an experience when Littlewood discusses the discovery of Neptune.

The book is intended for the mathematical amateur. But the amateur whom the author envisages is of the rare type who frowns on a repetition of what can be found in Courant-Robbins. Littlewood's masterful style and lack of ostentation should have a wide appeal, but presumably the book will be enjoyed mostly by professional mathematicians who are used to concentration and who have the basic experience of mathematics as art.

The opening chapter is entitled "Mathematics with minimum 'raw material'." In rapid succession (sometimes in telegram style) the author reviews a series of puzzles, paradoxes, unexpected arguments, and proofs. They all illustrate the nature of mathematical reasoning, its power, or its appeal. "Official" mathematics is represented by a few items ranging from an isoperimetric inequality (whose claim to interest lies in the simplicity of the proof) to the highbrow convexity theorem of M. Riesz. Thorin's proof is given, and the reader is led to share Littlewood's excitement when an upper bound is taken "with respect to a variable that is not there!"

Next we come to a short digression on the Tripos, and then to "Cross-purposes, unconscious assumptions, howlers, etc." This chapter is, in part, hilarious, although it contains serious and noteworthy views on style and rigor. A satirical gem is a proof of Weierstrass' approximation theorem presented with all the horrors of bad mathematical manners.

There follow "The Zoo" (conformal mapping), "Ballistics," and "The Dilemma of Probability Theory." This theory, it is said, is genuine mathematics, but when the student of probability interprets