

BOOK REVIEWS

The first four books I review would be an asset to any School library but might be too expensive for you to buy for yourself; the last one, however, comes within our usual price range. Of course, we would like to see most of the books we review put into School libraries!

From my own experience as a school teacher I knew that libraries often lack good, readable books on mathematics because, understandably, librarians do not know (or do not get suggestions about) what titles to buy; I hope I can help them.

"Number, the language of science" by T. Dantzig

Published by Collier-Macmillan, \$7.50

This is an old favourite of mine which I am glad to say I usually managed to get into libraries of schools where I taught. Although it was written 40 years ago, it is still one of the most intriguing and readable accounts of our number systems, their working and their history. The author shows that their development was by no means as smooth as many textbooks imagine; there were many false starts made and wrong directions taken. He points out that many different civilisations contributed to this development; for instance, our way of writing numbers in units, tens and hundreds came from India via the Arabs. Think how difficult it would be to do multiplication or division in Roman numerals!

Elsewhere the book demonstrates and explains some fascinating facts about integers which are the basis of elementary number theory, it deals with more unusual topics like continued fractions; it explains how the rational numbers, the real numbers and the complex numbers are related to each other and among many other things has a fascinating chapter on "the anatomy of the infinite."

Finally, for every question it answers, it raises another in your mind — and that's the mark of a good mathematics book to me.

"Mathematics for the Million" by L. Hogben

Published by Allen and Unwin, \$9.80

This too is a book written in the 1930's which still holds its own with other popular accounts of mathematics. Many of the topics covered are in secondary school mathematics courses today, so it may help you to a better understanding of ideas you have already met through its clear and interesting explanations. But that's not my reason for recommending it; I like it because it shows how closely the development of civilisation from the earlier days has been interwoven with, and often dependent on, the development of science and mathematics. This book is for the many Parabola readers who want to know more about Mathematics in the everyday world — although it naturally does not include the tremendous

developments of the last 35 years. There's still plenty to read, however, as the following selection of chapter headings will show:—

From Crisis to Crossword Puzzles or The Beginnings of Arithmetic; The Size of the World or What we can do with Trigonometry; The Dawn of Nothing or How Algebra began; The Arithmetic of Growth and Shape or What the Calculus is About; Statistics or the Arithmetic of Populations.

"Mathematics — the man-made universe" by S.K. Stein

Published by W.H. Freeman, \$9.95

This is a book I have only just discovered. Professor Stein says he wants to give his readers an appreciation of the beauty, extent and vitality of mathematics and I think he does this well. He also advises us to take nothing on trust but to check everything he writes for ourselves. He provides plenty of examples for this purpose.

The topics covered range from prime numbers to floor tiling (a very mathematical subject I assure you) and from magic squares to memory wheels (now they're intriguing). He deals with graph theory and topology particularly well. Many of the examples he uses are similar to problems set in Parabola and the School Mathematics Competition. An exciting book — and you don't need a special mathematical background to work through it.

"Recreations in the Theory of Numbers" by A.H. Beiler

Published by Dover Books, \$3.25

What is the least positive integer with exactly 100 divisors? What is the smallest number whose digits are 3's and 7's such that both the number itself and the sum of its digits is divisible by both 3 and 7? What whole number is exactly $\frac{1}{3}$ of the sum of all its divisors? What's the reason that $n \times 9 \times 12,345,679 = nnn,nnn,nnn$ where n is any number from 1 to 9? Which numbers are simultaneously square and triangular? What whole numbers x have the property that both $x + 1$ and $\frac{1}{2}x + 1$ are squares of integers?

You'll find the answers in this book — but I've only scratched the surface of its contents. A delightful book if you enjoy playing around with numbers; I do!

"An Introduction to Matrices" by A.E. Coulson

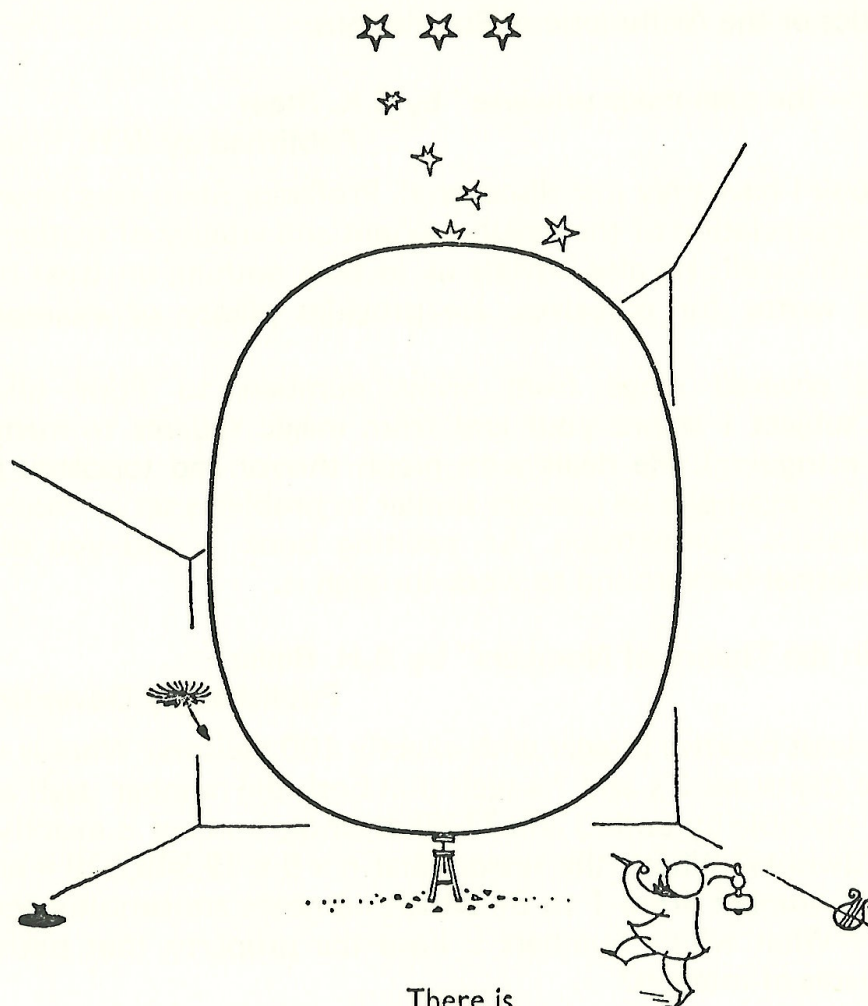
Published by Longman's, \$2.65

This is one of the best introductions to matrices that I know. It was written by the subject master in mathematics at a British grammar school. It is in the form of a textbook insofar as it contains exercises and answers, but if all textbooks were as interesting as this one there would be little need to persuade students to pore over them; they would be only too anxious to read "the next enthralling instalment." I particularly like the way the author uses examples from code making and simple electrical networks to illustrate his explanations.

Highly recommended to those wanting to learn about matrices before they

meet them in Level I Mathematics or University — although it would be useful there, too. But I leave you with a practical arithmetical thought: The UK price quoted to me from a catalogue is £0.70 and £1.00 buys only \$1.84 Australian!

M.G. Greening



There is
one art,
no more,
no less:
to do
all things
with art-
lessness.

Piet Hein

The Super-Egg World Center, Skjern, Denmark