The Elements of Integration, by Robert G. Bartle. John Wiley and Sons, New York, 1966. vii + 129 pages. $6.95.

Many good text-books on measure and integration have been written, some excellent of their kind. With so much competition, a further book on the subject has to be indeed outstanding to be worth while; yet I have no hesitation in welcoming Dr. Bartle's book as an addition to the literature. The style is lucid and compact and the choice of material is excellent. The book is suitable for beginners in the subject, being frankly an introduction, though a surprising amount of ground is covered in the limited space.

The first five chapters give an account of abstract integration theory according to the lines of the excellent account in the beginning of Saks' book. Terminology and notation, of course, are brought up to date and do not follow Saks. The arguments are less condensed and there are numerous illustrative examples to aid the understanding of the basic ideas. In chapter 5, in addition to the usual results such as Lebesgue's dominated convergence theorem, there is a rather useful section about integrals which depend on a parameter, including questions of continuity and of differentiation under the sign of integration.

The material in the remaining chapters is well chosen. Chapter 6 deals with the Lebesgue spaces L_p and includes a brief introduction to the ideas of Banach space. Chapter 7 deals with the different modes of convergence of sequences of functions, giving such relations between them as Egoroff's theorem. Chapter 8 includes the Hahn and Jordan decompositions of a measure and the Radon-Nikodym theorem. Chapter 9, headed "Generation of Measures", establishes, among other things, the existence of Lebesgue measure on the real line. It is now a standard, as well as logical, procedure to prove this only late in a course. However, as the author points out in the course of the text, this chapter can, in fact, be read much sooner. Chapter 10 on product measures is rather brief, but Fubini's and Tonelli's theorems are proved.

I have one slight criticism of the choice of illustrations in the introductory chapter. To illustrate the superiority of the Lebesgue over the Riemann integral, the author takes two examples. The first is the sequence

$$I_n = \int_0^\infty \frac{e^{-nx}}{\sqrt{x}}\, dx$$

which can be proved to tend to zero by Lebesgue's dominated convergence theorem. Since a substitution $y = nx$ shows that $I_n = \frac{1}{\sqrt{n}} I_1$, this conclusion can hardly be termed outrageously difficult in the Riemann theory. The second example is the differentiation of the function

$$F(t) = \int_0^\infty x^2 e^{-tx} dx$$

which can be shown to be a constant multiple of t^{-3} by essentially the same substitution! Reviewer and advanced readers do not need to be convinced of the value of Lebesgue's theory, but a college junior does. The by-passing of the above difficulties does not justify the very real effort he will have to make to master it.

However, this minor criticism must not carry much weight in evaluating an otherwise truly admirable book.

A.M. Macbeath, Birmingham

Ordinary Differential and Difference Equations: Theory and Applications, by F. Chorlton. Van Nostrand, Toronto, Princeton, 1965. xii + 284 pages.

This book covers the basic material in a first course in Ordinary Differential Equations, including first-order equations, special second-order equations, linear constant coefficient with emphasis on the D-operator, non-homogeneous linear equations, solution in series, and the equations of Bessel and Legendre. Because of the numerous worked examples from a variety of areas in the Physical Sciences and the large number of excellent problems it makes a fine text for Engineering and Science undergraduates.

In addition to this standard material, there are three chapters on Finite Difference equations, with the applications, and a final chapter on the Laplace transform. Unfortunately, there is no existence theorem in the book.

P.J. Ponzo, Waterloo

Introduction to Ordinary Differential Equations, by Shepley L. Ross. Blaisdell Publishing Co., 1966. viii + 337 pages. $7.50.

Designed for a one-semester introductory course in differential equations, this book covers the traditional elementary material. The nine chapters cover first-order equations, linear equations with constant and variable coefficients, series solutions, and linear systems. There are numerous worked examples and applications to problems in electricity and mechanics. In addition, the basic theorems are given. The last chapter is on the Laplace transform.

An interesting and worthwhile addition is the chapter on approximate methods of solution, including the method of isodines, Taylor series expansions and numerical integration. Unfortunately, the introduction of