

OXFORD BOOKS FOR STUDENTS

The Theory of Groups IAN D. MACDONALD

This book provides a substantial first course in the theory of groups that is suitable for undergraduate courses in universities and will be of interest to those teaching modern mathematics in schools. It is self-contained and can be used as an introduction to modern algebra, since no knowledge of other branches of modern algebra is assumed. Finite and infinite groups are given equal emphasis, and the topics covered extend as far as nilpotent and soluble groups. The book thus provides the groundwork for the study of the more specialized topics that are treated in monographs. Numerous specially written exercises are an important feature. Ian D. Macdonald is Reader in Mathematics in the University of Queensland, Australia. 256 pp 2 text figures 45/- net paper covers 22/6 net

Calculus for Beginners W. L. FERRAR

Intended primarily for economists, biologists, chemists and others who find they need more mathematics than their earlier training provided, this book deals with elementary differential and integral calculus and includes short accounts of such topics as the binomial theorem, trigonometric functions, and the exponential function. It can be used by anyone who has reached an O-level standard. 202 pp 47 text figures 48/- net paper covers 21/- net

Differential Calculus W. L. FERRAR

Written specifically for students, this book is divided into three sections: (i) the foundations of the differential calculus, (ii) functions of one variable, (iii) functions of two or more variables, together with a concluding note on singular points and envelopes. The reading lists drawn up by the author indicate what parts of the book are suitable to a course for honours in science, what parts are suitable to a first year course in mathematics, and what parts are best deferred to a second year. 296 pp 21 text figures paper covers 20/- net

Integral Calculus W. L. FERRAR

This book is a companion volume to the author's *Differential Calculus* and aims at providing a course suitable for mathematicians and scientists during their first year or so at a university. Part I is concerned with the indefinite integral; Part II is concerned with the definite integral and includes a concise chapter on the Riemann-Stieljes integral; Part III covers double and triple integrals, line and surface integrals. In both the latter parts each new topic is presented in a form that meets the needs of the applied mathematician and is then developed in the analytical form needed by the pure mathematician. Separate reading lists are given for scientists and for mathematicians. 276 pp - 40 text figures paper covers 20/-net

OXFORD UNIVERSITY PRESS

Meschkowski

Introduction to Modern Mathematics (27s. 6d.)

Naimark

Linear Differential Operators Part 1: Elementary Theory of Linear Differential Operators (40s.) Part 2: Linear Differential Operators in Hilbert Space (72s.)

Franz

General Topology (25s.) Algebraic Topology (60s.)

Gericke

Lattice Theory (30s.)

Pettofrezzo

Introductory Numerical Analysis (60s.)



HARRAP

182 High Holborn, London W.C.1

JUST PUBLISHED

NEW MATHEMATICS BOOK 4

R. D. KNIGHT M.A.

The fourth book in this very popular series of modern mathematics texts, of which an outstanding feature is the successful way in which modern and traditional material are integrated into a composite whole.

"The bookwork is sound and follows the modern trend of learning by experiment, discovery and discussion. The clear illustrations and well planned exercises all help to make this book another link in the chain of a very good series of mathematical books up to and including O level." Technical Journal of Book 2.

Book I: Teachers' edition 12s 6dStudents' edition 10s 6dBook 2: Teachers' edition 14s 0dStudents' edition 12s 6dBook 3: Teachers' edition 16s 6dStudents' edition 13s 6dBook 4: Teachers' edition 18s 6dStudents' edition 15s 0d

Book 5 is to be published in 1969

Please write for inspection copies to: Educational Department (Desk H3)

JOHN MURRAY

50 Albemarle Street London WI



Dear Member,

A FURTHER INVITATION

The value of calculating machines as a teaching aid at all levels, is now widely accepted by mathematics teachers. It may not be so widely known however, that, owing to pioneering work over the last ten years, Britain leads the world today in the use of this method of teaching.

The Brunsviga 13RM at £39.10.0. educational price (or less for bulk purchase) with $10 \times 8 \times 13$ capacity, full tens transmission, one-handed operation and back transfer, is the latest of the family of Brunsvigas well known for 75 years.

The large number of Brunsvigas already in use in schools all over the country, is a testimonial to the excellent value which this robust, low-cost, machine represents.

There are still, however, many schools with very few calculating machines and even entirely without. This is why we have pleasure in once again inviting members to try without obligation, a Brunsviga 13RM for a fortnight, on receiving a request on school letter-heading.

Yours very truly,

EDUCATIONAL ADVISER.

Brunsviga Calculator Division, Olympia Business Machines Co. Ltd., 203/205 Old Marylebone Road, London, N.W.1. (*Phone*: 01-262 6788.)

School Mathematics Project Director: BRYAN THWAITES

25.
6 s.
öd.
öd.
5s.
5s.
s.

Practical Programming

P. N. CORLETT and J. D. TINSLEY

An S.M.P. handbook providing an introduction to computer programming for schools and all other beginners. Throughout the text, program writing is based on flow diagrams so that although ALGOL is used for examples the text can be adapted to teach any computer language.

Cloth 521 07261 1 Paperback 521 09542 5 455. net 195. net

Royal Society Mathematical Tables 9 Indices and Primitive Roots Edited by A. E. WESTERN and J. C. P. MILLER

A table of indices of small primes p up to 37 or 47 with respect to each prime P as modulus, for P < 50,000 and for many P beyond up to 1,000,000. 521 07201 8 £6 net

Inspection copies available from the publisher :

CAMBRIDGE UNIVERSITY PRESS BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W.1



Oxford University Press

Education Department, Oxford

Technical drawing today

Book One A. R. Price

Contents: Introduction; Angle; Parallel Lines; Circle; Polygons; Perspective; Free hand Sketching; Plain Scales; Orthographic Projection (1st angle); Different Types of Line used; Using the Basic Information Learned; Orthographic Projection using Shape; Sections; Woodwork and Metalwork Section; Engineering Section; Design Section; Isometric Projection; Experimental Section; Isometric Circles; The Ellipse. 96 pages, with numerous line drawings 7/6

A second book is in preparation, and Books 1 and 2 together will cover the complete CSE syllabus.

Geometrical Drawing Second Edition

George Pearson

In this revised edition the first object has been to make necessary corrections. Some changes in construction have been made, and the book will continue to be suitable for GCE O Level courses. 148 pages, with text figures Boards covers, 15/-

Making Mathematics

For pupils in the lower streams of secondary schools D. Paling, C. S. Banwell, K. D. Saunders Book 1 96 pages 7/6 Book 3 112 pages 8/6

Book 196 pages7/6Book 3112 pages8/6Book 2112 pages8/6Workbooks 1–3each 1/6In preparation: Book 4 and Topic Books for the fourth and fifth years.

'A mere recital of the contents would not do full justice to this new series ... there are plenty of good practicable ideas—maps, clocks, gardening, the post office, home-decorating, simple games, puzzles and activities ... what better recommendation could any authors want than the remark overhead in a girls' secondary school which has used the material: "Do you have to do ordinary maths? How terrible!" ' The Times Educational Supplement

NEW from Pergamon

INTRODUCTION TO CALCULUS S. W. Hockey 300 pages 35s

A SURVEY OF DIGITAL COMPUTING F. H. George 132 pages *21s/30s

ELEMENTS OF ELASTICITY D. S. Dugdale 160 pages *15s/25s

EXPLORING UNIVERSITY MATHEMATICS—3 N. J. Hardiman 134 pages *20s/30s

OUTLINE COURSE OF PURE MATHEMATICS A. F. Horadam 592 pages 70s

STATISTICS FOR EXPERIMENTALISTS B. E. Cooper 350 pages 70s

*First price: flexi-cover student edition Second price: hard cover library edition



Provides an introduction to calculus for students who have achieved a satisfactory standard in school mathematics. The scope of the book is planned to enable most students to assimilate the contents within a year.

A general description of digital computers and computing procedures for non-specialist readers is given and the text has been arranged as a branching programme which has been thoroughly checked and validated.

Physical properties of stress and strain are examined and applied to an elastic body. The mathematical treatment is kept to a moderate level.

The articles in this book — the third in a successful series — are based on lectures given by professional mathematicians to an audience of mathematics teachers and senior school children at Bedford College, London. The purpose of the course of lectures is to introduce prospective students of mathematics to the kind of work they will encounter in their university courses.

This textbook covers in one volume the basic Pure Mathematics needed by the first year undergraduate. There are over 150 worked examples and 1100 exercises with full solutions.

Experimental scientists in many fields need a working knowledge of statistical methods to assess the results of their work and this book has been produced to meet this need. The author's treatment of the subject will be readily comprehended by those who are working for their first or second degree and by those who are currently engaged in the scientific field.

For further details of the above, and a complete list of titles in your field, please write to:

The Manager

College Sales and Promotion PERGAMON PRESS LTD Headington Hill Hall, Oxford

Bessel Functions

With Some Physical Applications

C. J. Tranter, C.B.E., M.A., D.Sc., F.I.M.A.

This book provides an up-to-date account of Bessel Functions which will be useful to the increasing number of scientists and engineers who encounter these functions in their work. A special feature of the book is the treatment of dual integral and dual series equations. Typical problems of mathematical physics involving Bessel Functions are solved by using the classical method of separating the variables in the appropriate partial differential equations and, in a separate chapter, by the method of integral transforms.

50/- net



St. Paul's House, Warwick Lane, London, E.C.4.

Inner London Education Authority

Avery Hill College of Education, Bexley Road, Eltham, S.E.9. Principal—Mrs K. E. Jones, M.A., B.Litt.

> A one-term course dealing with Modern Mathematics in the Secondary School will be held during the Summer Term 1969.

> Applications are invited from qualified teachers serving in Secondary Schools. The course is recognised by the Department of Education and Science and successful applicants may apply to their Local Education Authorities for secondment on full salary.

Further particulars and application forms may be obtained from the Principal.



CONVERGENCE OF PROBABILITY MEASURES

By Patrick Billingsley, The University of Chicago

A treatment of the theory of weak convergence of probability measures in metric spaces, with applications to limit theorems in probability and statistics.

approx. 253 pages approx. 117s. due November 1968

SELECTED APPLICATIONS OF NONLINEAR PROGRAMMING

By Jerome Bracken, Institute for Defense Analyses (Former member of the Technical Staff, Research Analysis Corporation) and Garth P. McCormick, Member of the Technical Staff, Research Analysis Corporation.

This book presents selected applications for nonlinear programming in some detail. The first chapter is a general introduction to nonlinear programming including definitions, classification of problems, mathematica characteristics and solution procedures. The remaining chapters deal with various problems and their nonlinear programming models.

approx. 110 pages approx, 84s. due November 1968

AN INTRODUCTION TO HARMONIC ANALYSIS

By Yitzhak Katznelson. The Hebrew University of Jerusalem

The first five chapters deal with classical Fourier series, followed by a chapter on the real line and a brief treat-ment of locally compact abelian groups. The final chapter offers an introduction to the theory of commutative Banach algebras, studied mainly as a tool in harmonic analysis.

approx. 264 pages approx. 115s. due October 1968

EVOLUTION OF MATHEMATICS CONCEPTS

By Raymond L. Wilder, Professor Emeritus, University of Michigan

An analysis of the causes for the inception and growth of mathematics as a fundamental factor in meeting the needs of evolving civilizations. By limiting the technicalities to simple arithmetic, number and the elements of geometry, a treatment is achieved within the range of the average educated layman. approx. 224 pages approx. 75s. due November 1968

SOLUTIONS OF ORDINARY LINEAR DIFFERENTIAL EQUATIONS WITH CONSTANT COEFFICIENTS

By Evarard M. Williams, Professor of Electrical Engineering, Carnegie-Mellon University and Asok Mukhopadhyay, Jet Propulsion Laboratory, Pasadena

A programmed self-teaching work designed to enable students to acquire solid competence in solving ordinary linear differential equation with constant coefficients, for use in basic science and engineering courses. The book is not a substitute for mathematics courses but a supplement to the typical courses taken by engineering and basic science students.

approx. 134 pages approx. 27s. due³November 1968





This is the first in a series of advertisements that will keep you, the teacher, in touch with Longmans' plans for Decimalisation. Wherever you see the above symbol it is a sign that we will be announcing the latest step forward in our fully comprehensive plan to decimalise all our secondary mathematics courses before D-day (February 15th, 1971).

We have done a lot of work on Decimalisation, and have already produced Decimal Supplements to two of our secondary mathematics courses:

- 1. Examples in Decimal Currency, an 80-page supplement to General Mathematics and A School Arithmetic (J. B. Channon and A. McLeish Smith), price approximately 8 for 30s.
- 2. A 48-page supplement to Longmans' Mathematics (A. E. Howard, W. Farmer and R. A. Blackman), price 8 for 20s. Now available.

These supplements are designed to accompany the books in the series so that they can be used to teach Decimalisation until decimalised editions are available; they are of the same approach and layout as the courses they accompany.

Longmans are selling the supplements on a non-profit making basis in order to make the imposed textbook change as inexpensive as possible. They can be ordered through your usual supplier.

The next step in our Decimalisation plan will be the publication of Peter Kaner's *Modern World Mathematics*, a fully decimal O level course. Full details of this course will be announced in January, but you can write now for inspection copies to Longmans, Pinnacles, Harlow, Essex.



Longmans



ADDISON-WESLEY

Foxley and Neave—A First Course in ALGOL 60

Eric Foxley, Director, Computing Centre, Notingham University, and H. R. Neave, Nottingham University 248 pp, 1968 paperbound 30. This short self-instructional text is intended for anyone who needs to use a computer or who wishes to learn how to program a computer. Neither mathematical nor programming prerequisites are assumed on the part of the reader, and the book is carefully structured with abundant exercises to help the reader master the material and gain confidence in himself as a programmer.

Capildeo-Vector Algebra and Mechanics: Theory, Problems and Solutions

Rudranath Capildeo, University College, London

280 pp, 108 illus, 1968 paperbound 36s.

This book is intended to be used in conjunction with a course on vector algebra and mechanics taken by mathematics, science and engineering students. Each of the book's twelve chapters begins with a statement of the relevant theory which leads into a selection of problems. The first part of the book presents the theory and problems; the second part contains very carefully worked solutions, so that the book will be of particular value for private study. A familiarity with elementary algebra, geometry and calculus is assumed on the part of the student.

Nevanlinna-Space, Time and Relativity

Rolf Nevanlinna, Academy of Finland. Translated from the German by Gordon Reece

192 pp, 52 illus, 1968 paperbound 28s. clothbound 40s. "There have been many books on special relativity for a popular readership, but this one will certainly be selling whem most of the rest are forgotten. Nevanlinna starts from fundamentals and takes little for granted. Although this is a popular presentation of relativity, it differs both in the exactness of its thought and in the clarity of its argument from nearly all other popular presentations. Indeed, it can compare with a first-class textbook on the subject better than some of the textbooks which have appeared in recent years. The book is to be widely recommended." (Mathematics Teaching.)

White-Real Analysis: An Introduction

A. J. White, University of Aberdeen, Scotland This text for a first course in real analysis sets out to introduce students as soon as possible to the ideas, attitudes, and methods of modern analysis. Axiomatic discussion and topological ideas are therefore introduced from the outset. The author's experience in teaching this course has convinced him that a modern introduction, one founded on metric space theory, increases the student's understanding and ability to absorb the related abstract ideas. The material is thoroughly accessible to students whose preparation has been a course in calculus and analytic geometry of the fairly conventional sort. Exercises to provide practice in the manipulation of definitions and the use of theorems are an integral part of the text. Problems are included as well, at the end of each chapter. These are of the "project type" and stimulate the student to develop further the ideas in the text.

244 pp, 13 illus, 1968 paperbound 38s. clothbound 55s.

For inspection copies or further information, please write to this address

ADDISON-WESLEY PUBLISHING COMPANY, INC. West End House, 11 Hills Place, London W.1

Pitman Books

Variational Principles in Dynamics and Quantum Theory

W. Yourgrau and S. Mandelstam Third Edition 40s net This celebrated monograph receives a new chapter on variational principles in hydrodynamics, which is, substantially, original work by the authors, and of great current interest in this field. Otherwise the book is unaltered and remains the best general account of variational principles in physics.

Vector Analysis

R. Braae Illustrated 50s net

In this undergraduate treatment for students on courses for mathematics and physics and also for the more mathematical engineering courses, the basic theory has been introduced where appropriate but the emphasis is on application. The modern approach and provision of plentiful but carefully chosen examples should recommend the book as an outstanding one for student use.

Pitman, 39 Parker Street, London W.C.2.



Enthusiastically welcomed

VECTORS AND THEIR APPLICATION TO GEOMETRY & MECHANICS

by A. J. FRANCIS, B.Sc., Head of Mathematics, Parmiter's School, London. 12s. 6d.

Many teachers have welcomed the publication of this book the main purpose of which is to cover those changes in London 'A' level examinations in Pure, Applied and Further Mathematics best dealt with by vector methods. Additional topics are included, however, so that the book will prove a good introduction to vector methods at sixth form level for general purposes. At each stage in the development of the vector algebra examples of as many applications as possible are given. Numerous exercises are provided.

Outstanding Books ELEMENTARY MECHANICS

by D. A. QUADLING, M.A. and A. R. D. RAMSAY, M.A. Volume I. 15s. Volume II. 17s. 6d.

"A well written book \ldots a book which challenges attention. It will be welcomed for its combination of the sound with the practicable and for its excellent sets of examples."

Times Educational Supplement

INTRODUCTION TO ADVANCED MECHANICS

by D. A. QUADLING, M.A. and A. R. D. RAMSAY, M.A. 21s.

"An altogether exceptional book ... Some of the questions on space travel are splendid." *Times Educational Supplement*

MODERN MATHEMATICS

by H. E. PARR, M.A. and J. R. SHELLEY, B.Sc., Part I. 10s. 6d.; with answers, 11s. 6d. Part II. 15s. 6d.; with answers, 16s. 6d.

"The approach is sensible and very thorough, and many teachers will find the large number of carefully chosen worked examples and exercises a most useful feature of the book... one of the best of the supplementary books on modern mathematics." *Mathematics Teaching*

THE MATHEMATICAL ASSOCIATION

The fundamental aim of the Mathematical Association is to promote good methods of Mathematical teaching. Intending members of the Association are requested to communicate with one of the Secretaries. The subscription to the Association is 42s. per annum and is due on January 1st. Each member receives a copy of *The Mathematical Gazette* and a copy of each new Report as it is issued.

Change of address should be notified to the Membership Secretary at 22 Bloomsbury Square. If copies of *The Gazette* fail to reach a member for lack of such notification, duplicate copies can be supplied only at the published price. If change of address is the result of a change of appointment, the Membership Secretary will be glad to be informed.

Subscriptions should be paid to the Hon. Treasurer of the Mathematical Association.

The Library of the Mathematical Association is housed in the University Library, Leicester.

Correspondence for the **Problem Bureau** should be addressed to Mr. G. A. Garreau, 90 Wyatt Park Rd., London, S.W.2.

The address of the Association and of the Hon. Treasurer and Secretaries is 22 Bloomsbury Square, London, W.C.1. Telephone MUSeum 4340.

The arrangements for The Mathematical Gazette are as follows:

Business matters should be addressed to: The Mathematical Association, 22 Bloomsbury Square, London, W.C.1.

Dr. H. M. Cundy, Marlborough College, Wilts., is the Assistant Editor responsible for classroom notes, correspondence, gleanings, notices and articles on the teaching of mathematics, and such material should be sent direct to him. Articles, mathematical notes, reviews and all other matter for publication should (subject to the next paragraph) be sent to Dr. Maxwell at Queens' College, Cambridge.

Two Assistant Editors, Dr. J. Howlett, National Institute for Research in Nuclear Science, Atlas Computer Laboratory, Chilton, Berks. and Dr. E. T. Goodwin, Superintendent, Mathematics Division, National Physical Laboratory, Teddington, Middlesex are particularly concerned with all aspects of applied mathematics, and material for publication should be sent to Dr. Howlett at Chilton.

Advertisements. Will advertisers please write to the Advertisement Editor, Mrs. O. Farquharson, 'Tofts', Farnham, Bishop's Stortford, Herts.

NOTES FOR CONTRIBUTORS

Printing costs form a substantial element in the budget of the Association. They may be considerably increased if MSS are not in a form immediately intelligible and ready for printing: corrections at proof stage are very expensive. Contributors are therefore asked to submit their MSS in a tidy form and ready for printing. Care should be taken about arrangement, display of formulae, paragraphing and such matters. Diagrams should be drawn accurately and as the author wishes them to look when printed.

Articles may be at any level, with a preference for those that will help the teacher in the class-room. The work need not be new, though freshness of approach is desirable. There is no lower limit at the "elementary" end, but articles will not normally be accepted at the "advanced" end if the subject-matter goes beyond what a recent honours graduate may be expected to have met or if the language is not such as may be expected to be within the experience of readers most of whom are teachers in the schools. Clear expositions of what is being done in contemporary mathematics are, of course, welcome provided that the level of knowledge assumed is kept reasonable.