

PROCEEDINGS
OF THE
EDINBURGH MATHEMATICAL SOCIETY

EDITED BY

I. N. SNEDDON D. MONK
J. HUNTER W. D. COLLINS

VOLUME 15 (SERIES II)
1966-1967

OLIVER AND BOYD
EDINBURGH: TWEEDDALE COURT
LONDON: 39A WELBECK STREET, W.1

COPYRIGHT © 1967 THE EDINBURGH MATHEMATICAL SOCIETY

PRINTED AND PUBLISHED IN GREAT BRITAIN BY
OLIVER AND BOYD LTD., EDINBURGH

CONTENTS

	PAGE
AL-SALAM, W. A. Some fractional q -integrals and q -derivatives	135
ANDERSON, J. A. On a theorem of Korous	103
BEHZAD, M. AND CHARTRAND, G. Total graphs and traversability	117
BERNDT, C. Generalised Dirichlet series and Hecke's functional equation	309
BOOK REVIEWS	75, 155, 245, 321
BREARLEY, M. N. The simple pendulum with uniformly changing string length	61
CHADWICK, P. AND TUPHOLME, G. E. Generation of an acoustic pulse by a baffled circular piston	263
CHAMBERS, LL. G. Derivation of solutions of the Klein-Gordon equation from solutions of the wave equation	125
CROZIER, R. J. M. AND HUNTER, S. C. The normal vibrations of a rigid spherical punch on the surface of an elastic half-space	297
DUNCAN, J. $B^\#$ modular annihilator algebras	89
FIELDS, JERRY L. A note on the asymptotic expansion of a ratio of gamma functions	43
FULP, R. On extending semigroup characters	199
HARDING, E. F. The number of partitions of a set of N points in k dimensions induced by hyperplanes	285
HOLGATE, P. Genetic algebras associated with polyploidy	1
HOLGATE, P. Jordan algebras arising in population genetics	291
HUNTER, D. B. On a result in Young's quantitative substitutional analysis	257
IYAHEN, S. O. Some remarks on countably barrelled and countably quasibarrelled spaces	295
JACK, H. The asymptotic value of the volume of a certain set of matrices	209
KNOWLES, J. K. The Dirichlet problem for a thin rectangle	315
LEVINSON, N. On the elementary proof of the prime number theorem	141
LOSEY, N. Useful theorems on commutative non-associative algebras	203
LOVE, E. R. Some integral equations involving hypergeometric functions	169
LOWENGRUB, M. A note on Griffith cracks	131

	PAGE
LOWNDES, J. S. Dual integral equations with trigonometric kernels	73
MCDONAGH, S. An estimate for trigonometrical sums over square-free integers with a constant number of prime factors	249
MCDONAGH, S. On the sum $\sum_{t < N^{1/k}} d(N-t^k)$	215
MUNN, W. D. The idempotent-separating congruences on a regular 0-bisimple semigroup	233
OBITUARY NOTICE. D. E. RUTHERFORD	241
PEINADO, R. E. Ancestral rings	107
RANKIN, R. A. Common transversals	147
ROSE, JOHN S. On a splitting theorem of Gaschütz	57
SEGAL, S. L. A remark on small values of entire functions	121
SHARMA, R. M. On the absolute summability by Borel's integral method of the derived Fourier series and its conjugate series	279
SHAWYER, B. L. R. Theorems on strong Riesz summability factors	19
SITARAMAN, Y. A note on logarithmic summability (L)	47
SRIVASTAV, R. P. On certain integral equations of convolution type with Bessel-function kernels	111
SRIVASTAVA, K. N. A class of integral equations involving Laguerre polynomials as kernel	33
SRIVASTAVA, K. N. On triple series equations involving series of Jacobi polynomials	221
SUDLER, JR., C. Two enumerative proofs of an identity of Jacobi	67
WALL, DRURY, W. Characterisations of generalised uniserial algebras. III	37
WEST, T. T. Operators with a single spectrum	11
YOUNG, R. M. On the Cauchy problem for the n -dimensional wave equation	29

The *Edinburgh Mathematical Notes* appear at the end of Parts 1 and 2

GLASGOW MATHEMATICAL JOURNAL

Edited by

R. A. RANKIN, R. P. GILLESPIE,
T. S. GRAHAM, A. GEDDES

This is a continuation of the *Proceedings of the Glasgow Mathematical Association*, which was founded in 1952,

Although the Journal is intended primarily for the publication of original work in Pure Mathematics, papers on Applied Mathematics are also included.

Published twice yearly in JANUARY and JULY

The 1968 volume is number 9

Annual subscription 40s. U.S.A. \$6.50

Single part 20s. U.S.A. \$3.25 plus postage 1s.

Seven volumes of the *Proceedings* were issued between 1952 and 1966. Complete sets of back volumes are still available.

Inquiries and subscription orders should be sent to the publishers
OLIVER and BOYD LTD., Tweeddale Court, 14 High Street, Edinburgh, 1

STATISTICAL THEORY AND METHOD ABSTRACTS

A Journal of the International Statistical Institute

The object of this abstracting service is to cover published papers concerned with statistical theory, including relevant aspects of probability and mathematical methods, and new contributions to statistical method. These abstracts provide valuable information on new developments for studying problems in many fields: such as frequency distributions, estimation and testing problems, sampling and experimental designs, variance analysis, spectral theory and other methods in time-series analysis, queueing theory, reliability and acceptance inspection. Journals appearing in all parts of the world, on mathematics and statistics, or on other fields and possibly containing contributions of interest are regularly scanned for suitable papers. Abstracts are also prepared from collections of papers such as reports of conferences, symposia and seminars: technical reports of experiment and research stations are covered.

The abstracts do not exceed 400 words, with occasional "double abstracts" for papers where this size is not sufficient to represent the paper. The language is English; the language of the original paper is indicated. The headings give the name and address of the author together with the Journal in which the paper is published, moreover a note is added on the number of references, tables and figures.

The classification scheme which is used in this Journal supplies a division of all abstracts in twelve main sections. The pages of the Journal are colour-tinted in accordance with these main sections. Each section is further sub-divided to indicate the main topic of the paper; a secondary number denotes the most important additional topic referred to by the author. A special index in each part links together these two classifications. This scheme is arranged to facilitate transfer to punch cards. Papers containing new statistical tables are listed in a separate index.

The abstracts are numbered serially, the volume number being inserted as a prefix. The Journal is published four times a year and contains approximately 1,000 abstracts. An author index, the secondary classification index and the new statistical tables index are published in each issue and combined in a yearly supplement which also contains a list of all Journals represented in the volume by one or more abstracts.

Annual Subscription

Single Number

Loose Leaf Binders for Single

Abstract Sheets

£7, 10s. (U.S.A. \$24.00)

£2, 5s. (U.S.A. \$7.00)

16s. 3d. including postage
and packing.

OLIVER AND BOYD LTD.

Tweeddale Court, 14 High Street, Edinburgh, 1

Calculus for Beginners

W. L. FERRAR

This book is intended primarily for biologists, chemists, economists and others who find they need more mathematics than their earlier training provided. It is suitable for all students who have reached an O-level standard in mathematics and will also provide a secure basis on which the future mathematician can build. 47 text figures 48s net (paper covers 21s net)

Sequences

VOLUME ONE

H. HALBERSTAM and K. F. ROTH

'... the many excellent descriptive paragraphs giving the history of results and the relations between results provide ... a good picture of the present position in the subject. ... The book is delightfully printed.' *Nature* 63s net

Elementary Logic

BENSON MATES

This is an introduction to elementary mathematical logic for students. The author defines each of the principal concepts involved before describing the grammar and semantics of a fairly simple artificial language. 42s net

Collected Papers of G. H. Hardy

Including Joint Papers with J. E. Littlewood and others

VOLUME I

Edited by a Committee Appointed by The London Mathematical Society

'The papers themselves make absorbing reading ... and reflect the extremes of creativity and technical facility which were characteristic of the authors.' *J. V. Armitage in Nature Frontispiece and numerous text figures* £5 5s net

The Algebraic Eigenvalue Problem

J. H. WILKINSON

The author discusses the algorithms developed for solving this problem together with the solution of linear equations and the calculation of zeros of polynomials. The book also covers the techniques of error analysis. £5 10s net
Monographs on Numerical Analysis

Elements of Mathematical Statistics

J. F. RACTLIFF

In the second edition of this university and technical college textbook the treatment of regression and curve-fitting has been extended, and a new chapter introduces density and moment-generating functions. *Second edition, numerous text figures, paper covers* 18s net
Oxford Mathematical Handbooks

OXFORD UNIVERSITY PRESS