

THE QUARTERLY JOURNAL OF MATHEMATICS

OXFORD SECOND SERIES

Edited by T. W. CHAUNDY, J. T. LEWIS, E. C. THOMPSON
with the advice of M. F. ATIYAH, D. A. EDWARDS, G. HIGMAN,
I. M. JAMES, G. TEMPLE, C. T. C. WALL

VOLUME 15

No. 60

December 1964

CONTENTS

- Amnon Jakimovski: Analytic continuation and summability of series of legendre polynomials
Soraya Sherif: Tauberian classes and tauberian theorems
Kathleen M. Urwin: Integral equations for paraboloidal wave functions (I)
M. Arkowitz and C. R. Curjel: Homotopy commutators of finite order (II)
Anne C. Baker: Systems of linear equations over a topological module
P. B. Kennedy: On the derivative of a function of bounded characteristic
A. J. Ellis: Extreme positive operators
Isidore Fleischer: Completeness in valued spaces and algebras
D. E. Daykin: Generalized möbius inversion formulae
A. McD. Mercer: An integrability theorem for power series
G. S. McCarty, Jr.: Products between homotopy groups and the \mathcal{Y} -morphism
Wu-Chung Hsiang and Wu-Yi Hsiang: Some free differentiable actions of S^1 and S^3 on 11-spheres
A. Baker: Rational approximations to $3/2$ and other algebraic numbers

Quarterly Journal of Mathematics (Oxford Second Series) is published in March, June, September and December at 18s. 6d. net for a single number with an annual subscription (for four numbers) of 65s. post free. Orders may be placed with any bookseller or sent direct to the Publisher.

OXFORD UNIVERSITY PRESS
AMEN HOUSE, WARWICK SQUARE, LONDON, E. C. 4.

PROCEEDINGS

OF THE

EDINBURGH MATHEMATICAL SOCIETY

VOLUME 14 (Series 2)

June 1964

PART I

- PETER YFF: On k -Conjugacy in a Group.
V. HUTSON: Asymptotic Solutions of Integral Equations with Convolution Kernels.
N. A. BOWEN: On the Limit of the Modulus of a Bounded Regular Function.
LL. G. CHAMBERS: Long Waves on a Rotating Earth in the Presence of a Semi-Infinite Barrier.
JET WIMP: A Class of Integral Transforms.
HENRYK MINC AND LEROY SATHRE: Some Inequalities involving $(r!)^{1/r}$.
A. D. SANDS: Primitive Rings of Infinite Matrices.
E. M. PATTERSON: Commutation Problems Involving Rings of Infinite Matrices.
R. J. KNOPS: Further Considerations of the Elastic Inclusion Problem.
J. M. HOWIE: The Maximum Idempotent-Separating Congruence on an Inverse Semigroup.

BOOK REVIEWS

MATHEMATICAL NOTE

R. P. AGARWAL: A Note on Evaluation of the Integral $\int_0^{\infty} e^{-kt} I_0^n(t) dt$.

OBITUARY NOTICE: J. H. SMITH

Series I of the PROCEEDINGS consists of forty-four volumes published from 1886 to 1926.
Series II consists of thirteen complete volumes to date.

The PROCEEDINGS are published in parts and issued twice yearly. Four parts complete a volume of approximately 200 pages and the Title Pages and Index are published in Part 4 of each volume.

The prepaid subscription per volume is 60s. (U.S.A. \$10.00) post free. Single parts 15s. (U.S.A. \$2.50) net.
Orders should be addressed to Oliver and Boyd Ltd., Tweeddale Court, 14, High Street, Edinburgh, 1.



CAMBRIDGE

Topological Vector Spaces

A. P. ROBERTSON & W. ROBERTSON

This Tract gives an elementary and readable introduction to the modern theory of topological vector spaces. It is, in fact, the first elementary and easily accessible account of the subject.

The authors concentrate their attention on the important class of locally convex spaces; they give a clear picture of the principal ideas and results concerning them, and lay sound foundations for their numerous applications in the theory of distributions, differential equations, and other fields. The requisite concepts of general topology are introduced and explained as they are needed. Each chapter has a supplementary section outlining particular cases, applications and further development of the topics discussed in it. *Cambridge Tracts in Mathematics, No. 53.* 30s. net

Packing and Covering

C. A. ROGERS

Professor Rogers has written this economical and logical exposition of the theory of packing and covering at a time when the simplest general results are known and future progress seems likely to depend on detailed and complicated technical developments. The book treats mainly problems in n -dimensional space, where n is larger than 3. The approach is quantitative and many estimates for packing and covering densities are obtained.

The introduction gives an historical outline of the subject, stating results without proof, and the succeeding chapters contain a systematic account of the general results and their derivation. Some of the results have immediate applications in the theory of numbers, in analysis and in other branches of mathematics, while the quantitative approach may well prove to be of increasing importance for further developments. *Cambridge Tracts in Mathematics, No. 54.* 30s. net

Some Lessons in Mathematics

EDITOR: T. J. FLETCHER

A handbook on the teaching of "modern" mathematics which is the result of a "writing week" attended by members of the Association of Teachers of Mathematics. The book is concerned with new mathematics, new ways with old mathematics, contemporary applications of the subject and the psychology of teaching it. "Compulsory reading for everyone concerned in mathematical education". Bryan Thwaites in the *Foreword.* Clothbound, 35s. net

Paperback, 17s. 6d. net

from all booksellers

CAMBRIDGE UNIVERSITY PRESS