

The Editorial Board would like to encourage the submission to the *Advances* of Review Papers summarising and coordinating recent results in any of the fields of Applied Probability. The papers should be approximately 40–50 printed pages in length. On acceptance of a Review Paper for publication in the *Advances*, the author will receive £stg. 100 (\$240).

In addition to these Review Papers, *Advances* is also designed to be a medium of publication for (1) long research papers in Applied Probability, which may include expository material, (2) expository papers on branches of mathematics of interest to probabilists, (3) papers outlining areas in the biological, physical, social and technological sciences in which probability models can be usefully developed, and finally, (4) papers in Applied Probability presented at conferences which do not publish their proceedings.

In short, the main function of *Advances* will be to define areas of recent progress and potential development in Applied Probability. As with the *Journal of Applied Probability*, *Advances* undertakes to publish papers accepted by the Editors within 15 months of their submission.

The Editorial Board will include E. Sparre Andersen, D. Blackwell, B. Gnedenko, J. Hájek, E. J. Hannan, D. G. Kendall, J. F. C. Kingman, K. Krickeberg, P. A. P. Moran, J. Neveu, K. R. Parthasarathy, R. Pyke, C. A. B. Smith and L. Takács. The Editor-in-Chief is J. Gani, and the Editorial Office of the *Advances* is in the Department of Probability and Statistics, The University, Sheffield, S3 7RH, England.

The first number of *Advances* contains the following papers:

- | | |
|------------------|--|
| E. Seneta | Functional equations and the Galton-Watson process |
| J. E. Littlewood | On the probability in the tail of a binomial distribution |
| P. A. P. Moran | A second note on recent research in geometrical probability |
| J. Gani | Recent advances in storage and flooding theory |
| P. D. Finch | Linear least squares prediction in non-stochastic time series. |

Subscription rates (post free) per volume are:

For libraries and institutions: U.S.\$13.00 £stg.5.5.0. \$A.11.00

For individuals belonging to a recognised scientific society: U.S.\$8.00 £stg.3.6.0. \$A.7.20

Cheques made out on U.S., U.K. and Australian banks will be acceptable; they should be made payable to *Applied Probability*, and sent to:

Editorial Assistant, *Advances in Applied Probability*,
Department of Probability and Statistics,
The University, Sheffield, S3 7RH, England.

Methuen's Supplementary Review Series in Applied Probability

General Editor: M. S. BARTLETT, M.A., D.SC., F.R.S.

Editor: J. GANI, D.I.C., PH.D.

This supplementary series consists of the Review Papers from the first four volumes of the *Journal of Applied Probability* in book form. The volumes are written in a simple expository style, and provide research workers and students of Applied Probability with concise accounts of work done in their fields. The eight volumes deal with the applications of Probability Theory to the biological, chemical and technological sciences.

- Volume 1. TIME-DEPENDENT RESULTS IN STORAGE THEORY
by N. U. Prabhu
- Volume 2. DIFFUSION MODELS IN POPULATION GENETICS
by M. Kimura
- Volume 3. GROUP REPRESENTATIONS AND APPLIED PROBABILITY
by E. J. Hannan
- Volume 4. STOCHASTIC MODELS FOR BACTERIOPHAGE by J. Gani
- Volume 5. RECENT RESULTS IN INFORMATION THEORY by S. Kotz
- Volume 6. ON THE ALGEBRA OF QUEUES by J. F. C. Kingman
- Volume 7. COMPLETE EXPONENTIAL CONVERGENCE AND SOME
RELATED TOPICS by C. R. Heathcote
- Volume 8. STOCHASTIC APPROACH TO CHEMICAL KINETICS by D. A.
McQuarrie

Orders for these should be made through your bookseller or direct from:
Methuen & Co. Ltd.

11 NEW FETTER LANE, LONDON EC4

Mathematical Spectrum

A Magazine of Contemporary Mathematics

This magazine addresses itself primarily to young mathematicians in schools, colleges of education, and universities. Its object is to discuss the entire range of modern mathematical disciplines (pure mathematics, applied mathematics, statistics, operational research, computing science, biomathematics) in an informative but informal manner and to relate discoveries in mathematics to progress in the natural sciences, technology, social studies, and business management.

The Editors believe that the process of learning is a dialogue, and consequently they wish to promote active participation by readers. Correspondence on any subject relating to mathematics and mathematical education is welcomed. There is also a problem section, and readers are encouraged to submit their solutions, the best of which are published.

For a descriptive leaflet, rates of subscription, and order form, application should be made to

The Oxford University Press, Walton Street, Oxford.

Mathematical Spectrum is published by Oxford University Press on behalf of the Applied Probability Trust.

Subscription rates

Subscriptions (post free) for the 1969 volume of the *Journal* are:

U.S. \$17, £stg. 7.0.0. \$A. 15.00, for libraries and institutions;

U.S.\$8, £stg. 3.6.0, \$A. 7.20, for individuals belonging to a recognised scientific society.

Members of the London Mathematical Society should apply direct to the Secretary of the Society for copies of the *Journal*.

All enquiries about the *Journal*, as well as other subscriptions and orders for back numbers should be sent to the Editorial Assistant, Miss M. Hitchcock, Department of Probability and Statistics, The University, Sheffield, S3 7RH, England. The price of back numbers is \$19.50, £stg. 8.0.0. \$A. 17.00 per volume. Cheques, money orders, etc. should be made out to *Applied Probability*; cheques on U.S., U.K. and Australian banks will be acceptable.

Notes for Contributors

It is a condition of publication in the *Journal of Applied Probability* that papers shall not previously have appeared elsewhere, and will not be reprinted without the written permission of the Trust. The copyright of all published papers shall be vested in the Trust. It is the general policy of the *Journal* not to accept for publication papers which cannot appear in print within 15 months of their date of submission. Authors will receive 100 reprints of their papers free, and joint authors 50 each. Additional reprints will be provided at cost.

Manuscripts should be written in English or French; manuscripts in other languages may be accepted by the Editors, but will appear (subject to the author's agreement) in English or French translation in the *Journal*.

It will be of help to the Editors if the following conventions are adopted:

a) The manuscript should be typewritten, using double spacing, on one side of the paper only. The original and a copy, may be submitted to any Editor; a duplicate of the covering letter should, however, be sent to the Editor-in-Chief.

b) References should be indicated in the text by the name of the author(s) and the date, thus: Feller (1961), and the full references listed at the end of the article in alphabetical order. Journal references should include the title of the article cited, the title of the journal (abbreviated in the style of the *International Journal of Abstracts: Statistical Theory and Method*) the volume, and inclusive page numbers. Book references should give the full title, the publisher, and the place of publication. For example:

Feller, W. (1961) A simple proof of renewal theorems. *Comm. Pure Appl. Math.* **14**, 285–293.

Robinson, E. A. (1959) *An Introduction to Infinitely Many Variates*. Griffin, London.

c) Type faces should be carefully distinguished on the manuscript using the following standard methods of marking:

Italic capitals (*T*, *I*, *R*) and lower case letters (*t*, *i*, *r*) should be underlined once, e.g., T, I, R, t, i, r.

Bold-face capitals (**T**, **I**, **R**) and lower case letters (**t**, **i**, **r**) should have a curly underline, e.g., T, I, R, t, i, r.

Greek characters (α , β , θ) and script letters (\mathcal{J} , \mathcal{I} , \mathcal{R}) should be carefully drawn and identified when first used by a marginal note of the form ' α —lower case Greek alpha' or ' \mathcal{R} —script R'.

d) Indices and subscripts should be clearly distinguished, using the marking $\overset{4}{\underset{4}{\wedge}}$ where necessary.

Authors will receive only first proofs for correction; charges will be made for excessive alteration to these.

CONTENTS

Volume 6

Number 2

August 1969

Research Papers

- A. B. CHIA AND 231 Demographic effects on the rate of genetic
G. A. WATTERSON evolution. I. Constant size populations with
two genotypes
- P. JAGERS 249 The proportions of individuals of different
kinds in two-type populations. A branching
process problem arising in biology
- NORMAN BRESLOW 261 On large sample sequential analysis with ap-
plications to survivorship data
- SAMUEL LITWIN 275 The distribution of radioactive recovery in
randomly cut and sedimented DNA
- DONALD L. IGLEHART 285 Diffusion approximations in collective risk
theory
- MARK BROWN 293 Some results on a traffic model of Rényi
- A. M. W. VERHAGEN 301 Random size trees on the one and two dimen-
sional lattice
- B. R. BHAT 309 Used item replacement policy
- Z. W. BIRNBAUM AND 319 A new family of life distributions
S. C. SAUNDERS
- S. C. SAUNDERS AND 328 Estimation for a family of life distributions
with applications to fatigue
Z. W. BIRNBAUM
- PETR MANDL 348 An identity for Markovian replacement pro-
cesses
- P. A. W. LEWIS 355 Asymptotic properties and equilibrium condi-
tions for branching Poisson processes
- R. T. LESLIE 372 Recurrence times of clusters of Poisson points
- G. M. TALLIS 389 The identifiability of mixtures of distributions
- H. F. DANIELS 399 The minimum of a stationary Markov process
superimposed on a U-shaped trend
- EUGENE LUKACS 409 A characterization of stable processes
- C. C. HEYDE 419 On the maximum of sums of random variables
and the supremum functional for stable processes
- RODNEY COLEMAN 430 Random paths through convex bodies

Short Communications

- LIONEL WEISS 442 The joint asymptotic distribution of the k
smallest sample spacings
- M. S. BINGHAM 449 A note on stochastic processes with independent
increments taking values in an abelian group
- MARK BROWN 453 An invariance property of Poisson processes
- DUANE C. BOES 459 Note on the output of a queueing system