

# BRITISH JOURNAL OF PHARMACOLOGY AND CHEMOTHERAPY

EDITED FOR  
THE BRITISH PHARMACOLOGICAL SOCIETY  
BY

G. S. DAWES (Chairman)   R. S. STACEY (Secretary)   N. AMBACHE  
W. A. BAIN   R. B. BARLOW   J. W. BLACK   W. C. BOWMAN  
A. S. V. BURGEN   A. W. CUTHBERT   L. G. GOODWIN   P. HEY  
F. HOBBERGER   H. W. KOSTERLITZ   J. L. MONGAR   D. F. SHARMAN  
HANNAH STEINBERG   J. R. VANE   MARTHE VOGT  
J. R. HODGES (Press Editor)

In co-operation with the EDITOR of the British Medical Journal

VOLUME 30, 1967

LONDON  
BRITISH MEDICAL ASSOCIATION  
TAVISTOCK SQUARE, W.C.1

**NOTICE TO CONTRIBUTORS.** The journal is published in volumes of three numbers each, and publishes original work in pharmacology and experimental chemotherapy, including the biochemical and pathological aspects of the subject. MSS. submitted for publication should be addressed to the Secretary to the Editorial Board, Prof. R. S. Stacey, Department of Pharmacology and Therapeutics, St. Thomas's Hospital Medical School, London S.E.1. Papers submitted to the journal are only accepted on the understanding that they are subject to editorial revision and that they have not been and will not be published in whole or in part in any other journal. When submitting a paper for publication, author(s) should include a statement to this effect.

¶ **PREPARATION OF MSS. AND ILLUSTRATIONS.** Authors are recommended to consult the current number of the journal before preparing a MS. so that the presentation of their paper follows current practice of the journal. Foreign-speaking contributors are advised, where possible, to seek the help of some British pharmacologist, known to them, in revising manuscripts before submission. Text and Tables should be in double-spaced typing on one side only of quarto or foolscap sheets with a margin of not less than 1½ in. on the left. The title, the name(s) and address(es) of the author(s) and a suggested short title should be typed on the first sheet. Where there is more than one author their names shall be printed in alphabetical order. The text should then start on a separate sheet. In stating the object, reference should only be made to previous work if it has a direct bearing on the subject. The paper should end with a summary of the author's results and conclusions, presented in numbered paragraphs, and not more than one-twentieth of the total length of the paper. Authors should also send an abstract of about 100 words suitable for inclusion in *International Abstracts of Biological Sciences*. Papers must be as concise as possible, but only recognized physical and chemical abbreviations may be used. All other names must be given in full. Abbreviations consisting of initial letters of words, etc., should not be used. Official or approved names should always be used, but, when these are not available, chemical or trade-names may be employed. On first mention, trade-names, serial numbers, etc., must be defined in terms of chemical names. The contributor should consider whether concentrations of solutions might be best stated in terms of weight per volume or molarity. Where comparisons are made it is often advisable to use molarities. Reference to other work should always give the author's name followed by the year of publication; more than one paper in one year being indicated by a small letter (a, b, c) after the date. On first reference to work by three or more authors, all the surnames should be given in full, but subsequently only the surname of the first author followed by *et al.* and the date is necessary. Footnotes and notes added in proof should be avoided.

¶ **TABLES.** Tables are referred to in the text by Arabic numerals and each must be typed on a separate sheet. Tables should be comprehensible without reference to the text. Explanations should follow the heading of the Table. Footnotes are not used.

¶ **ILLUSTRATIONS.** Illustrations are referred to in the text by Arabic numerals. The legend for each is to be typed on a separate sheet, numbered correspondingly, and should make the illustration understandable independently of the text. Line drawings and graphs are to be carefully and boldly drawn in Indian ink, on tracing linen, or Bristol board, or stout smooth white paper; blue-lined graph paper of good quality may be used for graphs. All lettering and numerals must be written lightly but legibly in pencil. Where desirable, kymograph tracings should be calibrated in both dimensions. Symbols which are to appear in the legend should be chosen from the following:

× + ● ■ ○ □ ▲ ▼ ▽ ◆ ◇

The original drawing, or a full size high quality photograph of it, should always be sent. Small photographic copies are useful to the editors, but are insufficient by themselves. Originals should be about two to three times the suggested final size, and in no case larger than foolscap for ease in sending through the post. Mounted originals of kymograph tracings, rather than copies, should be sent, as should those of x-ray or other illustrations for half-tone reproduction. Photographs and photomicrographs should be printed on glossy paper and should be larger than the size desired for reproduction; particular care must be taken to ensure adequate definition, contrast, etc., in the prints submitted.

¶ **REFERENCES.** References should be arranged according to the Harvard system at the end of the paper in the alphabetical order of the names of the first author of each paper, and should include: author's name, followed by initials; year of publication in parentheses; title of article; title of publication, underlined, and abbreviated in accordance with the *World List of Scientific Periodicals* (4th ed.); volume number in Arabic numerals, underlined with a wavy line to indicate bold type; the number of the first and last page in Arabic numerals. The reference will then appear in type thus:

BURN, J. H. & RAND, M. J. (1958). The depressor action of dopamine and adrenaline. *Br. J. Pharmacol. Chemother.*, 13, 471-479.

When reference is made to a book, the author's name and the year should be followed by: title (underlined); editor's name and volume number or edition (if appropriate); page (p. or pp.); town of origin; publisher. The reference will appear in type thus:

CLARK, A. J. (1940). *Applied Pharmacology*, 7th ed., p. 378. London: Churchill.

¶ **PROOFS.** Two page proofs will be supplied, one of which may be retained by the author. Authors are requested to read their proofs immediately on receipt, correct in pencil, and return them at once to the Press Editor. It is assumed that all but verbal corrections have been made in the original MS.: an allowance of eightpence/page is made for alterations in the proof (printer's errors excepted) and contributors will be charged for any excess.

¶ **REPRINTS.** Fifty reprints of an article will, if desired, be given to an author or divided among the authors. Additional reprints at cost price can be supplied if application is made on the postcard sent out with the proofs or to the publishers.

**NOTICE TO ADVERTISERS.** Applications for advertisement space and for rates should be addressed to the Advertisement Manager, *British Journal of Pharmacology and Chemotherapy*.

**NOTICE TO SUBSCRIBERS.** The Editorial Board have decided that, due to the increased number of acceptable papers, it will be necessary to publish an additional volume in 1966. Each volume will contain three numbers (as at present) and the charge per volume will remain unchanged. The annual subscription rate in 1967 is therefore £15 15s. in the United Kingdom and Republic of Ireland, and £16 10s. (U.S.A. \$48.00) in all countries overseas.

Payment for overseas subscriptions should be made in sterling, i.e., £16 10s., and sent by Mail Transfer—*Charges Remitter*—through a Bank, payable to the British Medical Association. Orders can also be placed locally through any leading subscription agent or bookseller. (For the convenience of readers in the U.S.A. subscription orders, with or without payment, can be sent to: BRITISH MEDICAL JOURNAL, 80 Brighton Avenue, Boston, Mass. 02134. All enquiries, however, must be addressed to the Publisher in London.)

**COPYRIGHT © 1967** by the *British Journal of Pharmacology and Chemotherapy*. All rights of reproduction are reserved in respect of all papers, articles, illustrations, etc., published in this journal in all countries of the world.

# CONTENTS

	PAGE
BRITISH PHARMACOLOGICAL SOCIETY . . . . .	1
GUTMAN, Y. AND WEIL-MALHERBE, H. SUBCELLULAR DISTRIBUTION OF NORADRENALINE AFTER COLD EXPOSURE . . . . .	4
BLANE, G. F., BOURA, A. L. A., FITZGERALD, A. E. AND LISTER, R. E. ACTIONS OF ETORPHINE HYDROCHLORIDE (M99). A POTENT MORPHINE-LIKE AGENT . . . . .	11
BENFEY, B. G., GREEFF, K. AND HEEG, E. EVALUATION OF SYMPATHETIC BETA-RECEPTOR BLOCKADE BY RECORDING THE RATE OF VENTRICULAR PRESSURE RISE IN CATS . . . . .	23
MARTIN, B. K. THEORETICAL CONSIDERATIONS RELATING TO THE AMOUNT OF DRUG REABSORBED BY THE RENAL TUBULES . . . . .	30
GOKHALE, S. D., GULATI, O. D. AND PANCHAL, D. I. AN ANALYSIS OF THE SYMPATHOMIMETIC EFFECTS OF ACETYLCHOLINE ON THE RAT ILEUM . . . . .	35
HUGHES, J. AND VANE, J. R. AN ANALYSIS OF THE RESPONSES OF THE ISOLATED PORTAL VEIN OF THE RABBIT TO ELECTRICAL STIMULATION AND TO DRUGS . . . . .	46
CLINESchmidt, V. AND HORITA, A. AUTO-POTENTIATION AND POTENTIATION BY INHIBITION OF MONO-AMINE OXIDASE OF THE SYMPATHOMIMETIC ACTION OF PHENELZINE AND PHENIPRAZINE . . . . .	67
GILLESPIE, J. S. AND MUIR, T. C. A METHOD OF STIMULATING THE COMPLETE SYMPATHETIC OUTFLOW FROM THE SPINAL CORD TO BLOOD VESSELS IN THE PITHEd RAT . . . . .	78
GILLESPIE, J. S. AND MUIR, T. C. THE ORIGIN OF THE DECLINE IN THE VASOPRESSOR RESPONSE TO INFUSED NORADRENALINE IN THE PITHEd RAT . . . . .	88
GILLESPIE, J. S. AND MUIR, T. C. THE EFFECT OF INFUSING NORADRENALINE OR OF STIMULATING THE SYMPATHETIC NERVES ON THE BLOOD PRESSURE RESPONSE TO INDIRECT SYMPATHOMIMETICS . . . . .	99
BRUNNER, H., HEDWALL, P. R., MAITRE, L. AND MEIER, M. ANTI-HYPERTENSIVE EFFECTS OF ALPHA-METHYLATED CATECHOLAMINE ANALOGUES IN THE RAT . . . . .	108
BRUNNER, H., HEDWALL, P. R. AND MEIER, M. INFLUENCE OF ADRENERGIC BETA-RECEPTOR BLOCKADE ON THE ACUTE CARDIOVASCULAR EFFECTS OF HYDRALAZINE . . . . .	123
RUGSTAD, H. E. PURIFICATION OF A KININ-INACTIVATING ENZYME FROM CULTURES OF PSEUDOMONAS AERUGINOSA . . . . .	134
CIOFALO, F., LEVITT, B. AND ROBERTS, J. SOME FACTORS AFFECTING OUABAIN-INDUCED VENTRICULAR ARRHYTHMIA IN THE RESERPINE-TREATED CAT . . . . .	143
FIELDEN, R. AND GREEN, A. L. A COMPARATIVE STUDY OF THE NORADRENALINE-DEPLETING AND SYMPATHETIC-BLOCKING ACTIONS OF GUANETHIDINE AND (-)- $\beta$ -HYDROXYPHENETHYLGUANIDINE . . . . .	155
BLANE, G. R. AND DOBBS, H. E. DISTRIBUTION OF TRITIUM-LABELLED ETORPHINE (M99) AND DIHYDRO-MORPHINE IN PREGNANT RATS AT TERM . . . . .	166
CARROLL, P. R. AND STARMER, G. A. STUDIES ON THE PHARMACOLOGY OF CONOPHARYNGINE, AN INDOLE ALKALOID OF THE VOACANGA SERIES . . . . .	173
INOUE, F. AND FRANK, G. B. EFFECTS OF ETHYL ALCOHOL ON EXCITABILITY AND ON NEUROMUSCULAR TRANSMISSION IN FROG SKELETAL MUSCLE . . . . .	186
BAMFORD, D. G., BIGGS, D. F., DAVIS, M. AND PARNELL, E. W. NEUROMUSCULAR BLOCKING PROPERTIES OF STEREOISOMERIC ANDROSTANE-3,17-BISQUATERNARY AMMONIUM SALTS . . . . .	194