

The Journal of PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

*A Publication of The American Society
for Pharmacology and Experimental Therapeutics*

Founded by John J. Abel 1909

Editor	Eva King Killam		
Assistant Editor	Mannfred A. Hollinger		
Editors for Specific Fields	<i>Analgesia and Drug Abuse</i> Joseph Cochin <i>Autonomic Pharmacology</i> Robert E. Stitzel <i>Behavioral Pharmacology</i> John A. Harvey <i>Cardiovascular Pharmacology</i> Henry R. Besch, Jr. Theodore M. Brody Donald V. Priola <i>Cell Pharmacology</i> Toshio Narahashi George B. Weiss	<i>Chemotherapy</i> H. George Mandel <i>Developmental Pharmacology</i> Bernard L. Mirkin <i>Drug Metabolism and Disposition</i> Edward Bresnick Vincent G. Zannoni <i>Endocrine Pharmacology</i> Paula H. Stern <i>Gastrointestinal Pharmacology</i> Thomas F. Burks	<i>Immunopharmacology</i> Sydney Spector <i>Neuropharmacology</i> S. J. Enna A. James Hance Charles O. Rutledge <i>Pulmonary Pharmacology</i> Mannfred A. Hollinger <i>Renal Pharmacology</i> William O. Berndt <i>Toxicology</i> Curtis D. Klaassen
Editorial Advisory Board	Martin W. Adler Edson X. Albuquerque Edmund G. Anderson Lewis Aronow Leslie E. Bailey Paul Bass John A. Bevan C. Paul Bianchi Leslie C. Blaber David A. Blake Floyd E. Bloom Carl K. Buckner Theodore J. Cicero E. E. Daniel William C. de Groat J. W. Downie Linda Dykstra Hugh L. Evans James A. Ferrendelli Lawrence J. Fischer William W. Fleming Ray W. Fuller Gerard L. Gebber James W. Gibb Shri N. Giri Dora B. Goldstein Frank R. Goodman	Charles W. Gorodetzky Garrett J. Gross T. Kendall Harden Harold F. Hardman Louis S. Harris Philip C. Hoffmann Jordan L. Holtzman Stephen G. Holtzman Jerry B. Hook David M. Jacobowitz Donald R. Jasinski Alain F. Junod Conan Kornetsky Edwin A. Kroeger Wayne Levin Louis Levy Benedict R. Lucchesi John C. McGiff Donald E. McMillan Jerry Mitchell Perry B. Molinoff W. H. Morse Mary J. Mycek Robert A. Neal Achilles J. Pappano William A. Pettinger Larissa A. Pohorecky	James W. Putney, Jr. Arthur Raines G. Alan Robison C. R. Ross Ronald P. Rubin Robert R. Ruffolo, Jr. Betty I. Sasyniuk Arnold Schwartz Lewis S. Seiden Eric J. Simon Roger P. Smith John L. Sutko Robert I. Taber A. E. Takemori Robert E. Ten Eick Thomas R. Tephly Richard E. Tessel C. D. Thron U. Trendelenburg Betty M. Twarog Norman J. Uretsky Martin A. Wasserman Richard M. Welch David P. Westfall Martin M. Winbury Ben G. Zimmerman
Board of Publications Trustees	Normal Weiner, <i>Chairman</i> George I. Drummond Leon I. Goldberg	Eva King Killam Norman Kirschner Kenneth C. Leibman	Allan H. Conney Walter Modell Paul L. Munson
Executive Officer	Houston Baker		

THE JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS (ISSN 0022-3565) is published monthly by The American Society for Pharmacology and Experimental Therapeutics, 428 E. Preston Street, Baltimore, MD 21202. Annual dues includes \$60.00 for journal subscription. Second class postage paid at Baltimore, MD and at additional mailing offices. Postmaster send address changes (Form 3579) to Williams & Wilkins, 428 E. Preston St., Baltimore, MD 21202. Subscription rates \$120.00 (\$140.00 foreign); institutions \$165.00 (\$185.00 foreign) single copy \$14.00 (\$16.00 foreign). Copyright © 1981 by The American Society for Pharmacology and Experimental Therapeutics.

Noteworthy volumes from Grune & Stratton— **THE ROYAL SOCIETY OF MEDICINE INTERNATIONAL CONGRESS AND SYMPOSIUM SERIES**

This well established series provides a means of rapid publication of the proceedings of meetings on the use of new pharmaceutical products or new treatments in clinical practice using established products.

Number 27

PNEUMONIA AND PNEUMOCOCCAL INFECTIONS

EDITED BY A. D. S. CALDWELL AND
H. P. LAMBERT

Proceedings of a symposium sponsored by Merck, Sharp and Dohme, held at The Royal College of Physicians, London, December 10, 1979.

1980, 128 pp. (paperback), \$16.00
ISBN: 0-8089-1287-9
Order Code: 790756

Number 28

FENCLOFENAC in Arthritis

EDITED BY M. C. SWAIN AND
A. A. J. GOLDBERG
CHAIRMAN: DR. B. M. ANSELL

A symposium sponsored by Reckitt & Colman Pharmaceutical Division at The IXth European Congress of Rheumatology, Weisbaden, on September 7, 1979.

1980, 128 pp. (paperback), \$16.00
ISBN: 0-8089-1288-7
Order Code: 794460

Number 29

MYOCARDIAL PROTECTION AND EXERCISE TOLERANCE

The Role of Lidoflazine,
a New Anti-Anginal Agent

EDITED BY G. TOWSE

Proceedings of an International Symposium sponsored by Janssen Research Foundation at the Royal College of Physicians, London, January 10, 1980.

1980, 112 pp. (paperback), \$19.50
ISBN: 0-8089-1290-9
Order Code: 794644

Number 30

THE PLACE OF SODIUM VALPROATE IN THE TREATMENT OF EPILEPSY

EDITED BY M. J. PARSONAGE AND
A. D. S. CALDWELL

Proceedings of an International Symposium sponsored by Reckitt-Labaz, held at the Metropole Hotel, Birmingham, November 8-9, 1979.

1980, 224 pp. (paperback), \$29.00
ISBN: 0-8089-1293-3
Order Code: 793248

Number 31

WORKSHOP ON FERTILITY CONTROL

EDITED BY J. R. NEWTON,
H. S. JACOBS, AND A. D. S. CALDWELL

Proceedings of an International Symposium held in the Auditorium of the Sponsors, Schering AG Berlin and Bergkamen, West Germany, November 15, 1979.

1980, 88 pp. (paperback), \$17.00
ISBN: 0-8089-1297-6
Order Code: 793109

Number 32

PRACTICAL PROBLEMS IN RHEUMATOLOGY

EDITED BY ROBERT G. RICHARDSON

Proceedings of a Multicentre Symposium on Piroxicam held on January 16, 1980. Sponsored by Pfizer.

1980, 37 pp. (paperback) \$10.50
ISBN: 0-8089-1309-3
Order Code: 793532

Number 33

CINNARIZINE AND THE VERTIGINOUS SYNDROME

EDITED BY G. TOWSE

Collected papers compiled by Janssen Pharmaceuticals Limited.

1981, 64 pp. (paperback), \$12.00
ISBN: 0-8089-1307-7
Order Code: 794645

Number 34

TOPICS IN CARDIOVASCULAR MEDICINE

EDITED BY R. W. ELSDON-DEW,
G. F. B. BIRDWOOD, AND
C. A. S. WINK

Condensed Proceedings of a Symposium organized by CIBA and held on September 14, 1979, at the Hopital Necker, Paris.

1981, 56 pp. (paperback), \$12.00
ISBN: 0-8089-1318-2
Order Code: 791156

Number 35

SISOMICIN

An International Round-Table Discussion
EDITED BY P. NOONE

Proceedings of an International Round-table discussion held on March 14 in Lucerne, Switzerland, sponsored by Schering Corporation and its affiliates, the Essex Group of Companies

1981, 72 pp. (paperback), \$10.50
ISBN: 0-8089-1349-2
Order Code: 793125

Number 36

PROGRESS WITH DOMPERIDONE

A Gastrokinetic and Anti-Emetic Agent

EDITED BY G. TOWSE

Proceedings of an International Symposium sponsored by the Janssen Research Foundation at the XI International Congress of Gastroenterology, Hamburg, June 10, 1980.

1981, 110 pp. (paperback), \$19.00
ISBN: 0-8089-1350-6
Order Code: 794643

Number 37

INTERNATIONAL EXPERIENCE WITH NADOLOL

A Long-Acting β -Blocking Agent

EDITED BY F. GROSS

Proceedings of a symposium held by Squibb Europe Limited at the Grand Hotel, Paris, on December 5-7, 1980.

1981, 248 pp. (paperback), \$38.50
ISBN: 0-8089-1368-9
Order Code: 791743

This series of volumes is published by The Royal Society of Medicine, Academic Press London, and Grune & Stratton.

Volumes in THE ROYAL SOCIETY OF MEDICINE INTERNATIONAL CONGRESS AND SYMPOSIUM SERIES are available on a Continuation Order basis. Your Continuation Order authorizes us to ship and bill each volume automatically, immediately upon publication. This order will remain in effect until cancelled. Please specify the volume number with which your order will begin.

*Send payment with order and save postage and handling.
Prices are in U.S. dollars and are subject to change without notice.*

Grune & Stratton

A Subsidiary of Harcourt Brace Jovanovich, Publishers
New York • London • Toronto • Sydney • San Francisco
111 FIFTH AVENUE, NEW YORK, N.Y. 10003

AUTHOR INDEX

- Abuchowski, A., 352
Aiken, J. W., 299
Alkadhi, K. A., 338
Angus, J. A., 474
Barker, L. A., 453
Benos, D. J., 481
Besseghir, K., 435
Brady, L. S., 344
Brunello, N., 489
Cavero, I., 510
Chang, J.-K., 296
Cheney, D. L., 489
Chu, B. C. F., 389
Colsanti, B. K., 580
Czervionke, R. L., 415
Dafniet, M. L., 558
Danis, M., 383
Davis, B. B., 442
Davis, F. F., 352
de Miranda, P., 309
Drack, E., 534
Dubois, A., 287
Duval, N., 540
Elion, G. B., 309
Erlinger, S., 558
Evans, R. K., 383
Fischer, L. J., 281
Gerber, J. G., 321
Goblet, C., 526
Goldman, S., 394
Gomeni, R., 510
Gorman, R. R., 299
Graham, R. M., 400
Green, M. D., 281
Greenberg, S., 326
Haigler, H. J., 496
Halter, F., 534
Harman, A. W., 281
Hartmann, A., 505
Henderson, E. G., 338
Henry S., 459
Herz, A., 551
Hoak, J. C., 415
Hoffman, B. B., 290
Holtzman, S. G., 344
Hosford, D. A., 496
Hough, L. B., 453
Howell, S. B., 389
Ito, K., 520
Jen, M.-F., 296
Johanson, C. E., 355
Johnson, M. R., 363
Jones, D. J., 370
Karp, D., 352
Kauffman, F. C., 383
Kenakin, T. P., 464
Kiil, F., 505
Kishimoto, T., 520
Knight, R. G., 573
Koike, H., 520
Kong, S.-K., 551
Koup, J. R., 316
Krasny, H. C., 309
Langer, S. Z., 540
Lau, S. S., 563
Lavin, T. N., 290
Lee, N. M., 296
Lefevre-Borg, F., 510
Lefkowitz, R. J., 290
Lindamood C. III, 580
Loh, H. H., 296
Lund, A. E., 464
Malik, K. U., 377
Massingham, R., 540
Mast, R. W., 363
Mattammal, T. V., 442
Mayersohn, M., 394
Miller, D. S., 428
Miller, O. V., 299
Milne, G. M., 363
Miyamoto, M., 520
Morkin, E., 394
Mounier, Y., 526
Murphy, P. J., 447
McIlhenny, H. M., 363
Narahashi, T., 464
Nies, A. S., 321
Nompleggi, D., 287
Nosek, T. M., 573
Olajos, M., 394
Olson, R. D., 321
Ozaki, H., 520
Page, D. A., 309
Parks, W. M., 415
Patterson, B. A., 338
Perrier, D., 394
Pessayre, D., 558
Pettinger, W. A., 400
Pieniaszek, H., 394
Pollack, G. D., 447
Quenzer, L. F., 326
Quernec, L. L., 558
Rapp, N. S., 442
Rennick, B., 435
Rubini, P., 547
Ruffolo, R. R., Jr., 290, 447
Sagalowsky, A., 400
Scheurer, U., 534
Schmidt, R., 407
Schmitt, S. L., 407
Schmitz, J. M., 400
Schulz, R., 547
Schuster, C. R., 355
Shea-Donahue, P. T., 287
Shebuski, R. J., 299
Shepperson, N. B., 540
Sinclair, R., 459
Smith, A. L., 316
Spradlin, T. A., 447
Steen, P. A., 505
Stephens, N. L., 551
Susic, H., 377
Takimoto, G. S., 420
Taylor, K., 407
Thurman, R. G., 383
Tulany, F. C., 296
Urakawa, N., 520
Van Orden, D., 407
Varga, L., 534
Volle, R. L., 326
Waddell, J. E., 447
Watthey, J. W. H., 481
Weber, A., 316
Weiner, N., 420
Williamson, H. E., 407
Wuster, M., 547
Yorio, T., 459
Zannoni, V. G., 563
Zenser, T. V., 442

Textbook of Adverse Drug Reactions Second Edition

Edited by D.M. DAVIES, Newcastle University Hospital. The new edition of this text has been thoroughly updated — with about 200 pages added — and a new chapter on drug-induced disorders of temperature regulation included.

From reviews of the first edition: "An exceptionally well-written and edited volume . . . a concise, lucid, and well-documented analysis." — *American Journal of Pharmaceutical Education*

"This comprehensive book fills the need for an authoritative reference on all major and minor adverse drug reactions." — *Journal of Pharmaceutical Sciences*
1981 720 pp.; 30 illus. \$67.50

Iatrogenic Diseases Second Edition

Edited by P.F. D'ARCY, The Queen's University of Belfast, and J.P. GRIFFIN, Department of Health and Social Security, United Kingdom. "All physicians ought to be familiar with this book. Thoughtful physicians will find themselves referring to it frequently." — *Journal of the American Medical Association*. "Its unique approach and crisp style make it an invaluable addition to the bookshelf of the practitioner. It fills a void not covered by any other reference book of current vintage." — *Journal of Pharmaceutical Sciences*

1980 564 pp.; 40 illus. \$67.50

Iatrogenic Diseases Second Edition: Annual Update 1981

P.F. D'ARCY and J.P. GRIFFIN. Part of a new series which summarizes the most recent information on drug induced states, this text reviews what has appeared in the literature since the writing of the second edition of *Iatrogenic Diseases*. Designed for use in conjunction with the previous volume, the *Annual Update* contains the same chapter divisions to simplify usage, and adds two new chapters on drug-induced sexual dysfunction and adverse reactions to herbal preparations.

November 1981 200 pp. \$46.50

The Anticancer Drugs

WILLIAM B. PRATT, University of Michigan Medical School, and RAYMOND W. RUDDON, National Cancer Institute-Frederick Cancer Research Center. "The strength of this book lies primarily in its superb organization and in its accurate, up-to-date review of the information on each agent." — *The New England Journal of Medicine*. "Excellent integration of the proposed mechanism of action of the agent, its uses against specific tumor types, and toxicity of the agent in humans." — *Journal of Pharmaceutical Sciences*

1979 340 pp.; 57 illus. cloth \$20.00 paper \$13.95

Chemotherapy of Infection

WILLIAM B. PRATT
1977 484 pp.; 65 illus. cloth \$21.95 paper \$14.95

New, from Oxford Journals . . .

Adverse Drug Reactions and Acute Poisoning Reviews

Edited by D.M. DAVIES and H. DE GLANVILLE
Quarterly, \$65.00 Single Issues, \$20.00
First issue, Spring 1982

Prices are subject to change.

Pharmacology and Pharmacologists An International Directory

Containing up-to-date biographical and professional information on some 3,200 pharmacologists working around the world, this comprehensive directory provides an alphabetical index of research activities, allowing pharmacologists to learn at a glance what other work is taking place in the fields that interest them, who the researchers are, and, by reference to the separate alphabetical listing of biographical entries, where they may be contacted.

1981 412 pp. \$110.00

Behavioral Pharmacology Second Edition

SUSAN D. IVERSEN and LESLIE L. IVERSEN, both of the University of Cambridge. "An excellent second edition of a first-rate book. Incorporates superb discussions of the possible neurotransmitter or modulator functions of neuropeptides and recent advances in our understanding of transmitter receptor mechanisms. A more clearly structured treatment of the effects of various drugs on specific classes of behavior (including clinical disorders in man) makes this revision of the original, very fine book, a joy to read and use as a text." — Sebastian P. Grossman, University of Chicago

1981 320 pp.; 74 illus. cloth \$17.95 paper \$10.95

Drug Delivery Systems Characteristics and Biomedical Applications

Edited by R.L. JULIANO, University of Texas Medical School. Providing a comprehensive examination of current and prospective technologies in the rapidly evolving field of controlled drug delivery, this volume describes the physical, chemical, and biological bases of delivery systems and their applications in both human and veterinary medicine. "An informative perspective to some modern approaches in drug delivery." — *British Journal of Pharmaceutical Practice*

1980 336 pp.; 50 illus. \$27.50

Psychopharmacology of Affective Disorders

Edited by E.S. PAYKEL, St. George's Hospital Medical School, London, and A. COPPEN, MRC Neuropsychiatry Laboratory, Epsom. "Quite simply the best text of psychopharmacology, and perhaps the best on clinical pharmacology, written to this date." — *Journal of Clinical Psychiatry*. "An excellent summary of current thinking in a rapidly changing field. It should prove very useful to a wide variety of readers." — *Lancet*

1979 (paper, 1981) 272 pp.; 31 illus. cloth \$27.50
paper \$17.95

Psychopharmacology From Theory to Practice

Edited by JACK D. BARCHAS, PHILIP A. BERGER, ROLAND D. CIARANELLO, and GLEN R. FLLIOTT, all of Stanford University School of Medicine
1977 592 pp.; 40 illus. cloth \$21.95 paper \$13.95

Endorphins in Mental Health Research

Edited by EARL USDIN and WILLIAM E. BUNNEY, JR., both of the National Institute of Mental Health, and NATHAN S. KLINE, Rockland Research Institute
1979 640 pp.; 15 illus. \$49.50

Drug Disposition in Humans The Basis of Clinical Pharmacology

WILLIAM A. CREASEY, University of Pennsylvania School of Medicine
1979 256 pp.; 41 illus. cloth \$19.95 paper \$10.95