The American Journal of Physiology: Gastrointestinal and Liver Physiology

Editor: L. R. JOHNSON

Associate Editors:
E. L. FORKER
M. J. JACKSON
G. SACHS
J. H. SZURSZEWSKI

Editorial Board:
S. A. ADIBI
P. BASS
T. BERGLINDII
H. J. Binder
H. G. BOHLEN
C.-C. CHOU
H. J. COOKE
W. C. DE GROAT
M. DONOWITZ
M. J. EVANS
M. J. FAVUS
J. G. FORTE
J. D. GARDNER
M. C. GEOKAS
D. N. GRANGER
R. J. GROSZMANN
S. J. HENNING
S. J. IERSEY
U. HOFPER
K. A. HUBEL
N. KAPLOWITZ
O. KOLDOVSKY
R. LEATER
L. M. LICHTENBERGER
T. E. MACHEN
G. M. MAIHILOUF
H. MURER
J. D. OSTROW
D. W. POWELL
R. C. ROSE
S. M. SABESIN
D. SCHACHTER
H. P. SCHELD
G. A. SCHEELE
I. SCHUZ
A. P. SHEPHERD, JR.
Y. F. SHIAU
A. H. SOLL
T. E. SOLOMON
J. G. SPENNEY
J. WATKINS
W. A. WEEMBS
N. W. WEISBRODT
J. A. WILLIAMS
D. L. WINGATE
E. M. WRIGHT

Publications Committee of the American Physiological Society

S. R. GEIGER
W. A. SONNENBERG
Publications Manager and
Executive Editor
Business Manager

Address all editorial and business correspondence to:
AMERICAN JOURNAL OF PHYSIOLOGY
9650 Rockville Pike,
Bethesda, MD 20814

Copyright © 1984 by the American Physiological Society. Printed in the United States of America. The code at the bottom of the first page of an article indicates the copyright owner's consent that copies of that article may be made beyond that permitted by sections 107 and 108 of the U.S. Copyright Law—unless the copies are for general distribution, for advertising, for creating new works, or for resale—provided the per-copy fee is paid through the Copyright Clearance Center, Inc., 21 Congress St., Salem, MA 01970. 0193-1857/84 $1.50.

Change of Address: The Journal must be advised of a change of address at least 6 weeks prior to date of issue, with both the subscriber's old and new address given. Undelivered copies resulting from address change will not be replaced.