

ILLUSTRATIONS should be assigned figure numbers. Photographs should only be used where essential, for example for electron micrographs. Wherever possible, oscillographs should be made suitable for reproduction as line drawings. The cost of colour plates must be defrayed by the author.

Line drawings must be no more than twice final size. Maximum final size is 200×130 mm. Pen drawings should be in black Indian ink on unfolded heavy white paper or good quality tracing paper. Oscillographs should have a white background. *Lettering* will be inserted by the printers and should be indicated on the duplicate copies.

Photographs should be at final size. Maximum final size is 200×130 mm for a single plate, and 200×290 mm for a double plate. Photographs should be glossy bromide prints with good definition. They should be gummed on to white card and grouped as they are to appear. *Numbering* and *lettering* will be inserted by the printers and should be indicated on a tracing paper overlay. Magnification should be indicated, when relevant, by a scale line drawn on the overlay or beside the illustration.

SHORT COMMUNICATIONS must be original contributions to the literature and not preliminary reports. Methodological papers will only be accepted as *Short Communications*. All above instructions apply except that the communications must not exceed four published pages in length (including illustrations), no *Summary* is required, and line drawings must be at final size.

WORD-PROCESSOR DISKS. JEB can now use author's *word-processor disks* for setting accepted articles. If available, please send a copy of the disk plus details of the word processor and program used with your manuscript after final revision. Disks will be returned after use.

PROOFSHEETS AND OFFPRINTS. Authors will receive one set of slip proofs for correction and return to the Editor. A page proof will also be sent if the slip proof is marked by the author 'Revise'. An allowance of 50p per sheet of sixteen pages will be made for alteration errors not made by the printers: any excess may be charged to the author. Authors will receive 200 complimentary copies of their papers: additional copies may be purchased at modest cost, and should be ordered when the proofs are returned to the Editor.

The Company of Biologists Limited is a non-profit-making organization whose directors are active professional biologists. The Company, which was founded in 1925, is the owner of this journal and the Journal of Cell Science and Journal of Embryology and Experimental Morphology.

Copyright and Reproduction. Authors may make copies of their own papers in this journal without seeking permission from The Company of Biologists Limited, *provided that such copies are for free distribution only: they must not be sold.*

Authors may re-use their own illustrations in other publications appearing under their own name, without seeking permission.

Specific permission will *not* be required for photocopying copyright material in the following circumstances:

1. For private study, provided the copying is done by the person requiring its use, or by an employee of the institution to which he/she belongs, without charge beyond the actual cost of copying.
2. For the production of multiple copies of such material, to be used for *bona fide* educational purposes, provided this is done by a member of the staff of the university, school or other comparable institution, for distribution without profit to student members of that institution provided the copy is made from the original journal.

For all other matters relating to the reproduction of copyright material written application must be made to Dr R. J. Skaer, Company Secretary, The Company of Biologists Limited, Department of Zoology, Downing Street, Cambridge CB2 3EJ, UK.

ISI Tear Service, 3501 Market Street, Philadelphia, Pennsylvania 19104, USA is authorized to supply single copies of separate articles for private use only.

Subscriptions. *The Journal of Experimental Biology* (ISSN 0022-0949) is published as seven volumes a year in January, March, May, July, September, October and November. The subscription price of volumes 120–126 (1986) is £140.00 UK (USA and Canada US \$370.00, Japan £158.00) per annum, payable in advance; postage is included. Individual volumes may be purchased at £25.00 (USA and Canada US \$62.00) each, plus postage. Orders for 1986, which must be accompanied by payment, may be sent to any bookseller or subscription agent or direct to The Biochemical Society Book Depot, P.O. Box 32, Commerce Way, Colchester CO2 8HP, UK. Copies of the journal for subscribers in the USA and Canada are sent by air to New York to arrive with minimum delay. Second class postage paid at New York, NY and at additional mailing offices.

POSTMASTER, send address corrections to: The Journal of Experimental Biology, c/o Mercury Airfreight International Inc., 10B Englehard Avenue, Avenel, New Jersey 07001, USA (US Mailing Agent).

Claims for missing parts can only be considered if made immediately upon receipt of the subsequent issue.

Back Volumes. Please contact The Biochemical Society Book Depot (see above) for prices.

Index. An annual index will appear in the last volume each year.

**This Publication
is available in Microform**

University Microfilms International

300 North Zeeb Road, Dept. P.R., Ann Arbor, Mi. 48106

The Journal of Experimental Biology

EDITED BY
J. E. TREHERNE
WITH W. A. FOSTER & P. K. SCHOFIELD

VOLUME 126
1986

THE COMPANY OF BIOLOGISTS LIMITED
CAMBRIDGE

Published and Printed by The Company of Biologists Limited,
Department of Zoology, University of Cambridge,
Downing Street, Cambridge CB2 3EJ

© The Company of Biologists Limited 1986

CONTENTS

PAGE

CARROLL, LESLIE S., CARROW, GRANT M. AND CALABRESE, RONALD L. Localization and release of FMRFamide-like immunoreactivity in the cerebral neuroendocrine system of <i>Manduca sexta</i>	1
ARECHIGA, H., CHIQUET, M., KUFFLER, D. P. AND NICHOLLS, J. G. Formation of specific connections in culture by identified leech neurones containing serotonin, acetylcholine and peptide transmitters	15
BOUTILIER, R. G., GLASS, M. L. AND HEISLER, N. The relative distribution of pulmonary blood flow in <i>Rana catesbeiana</i> : effects of pulmonary or cutaneous hypoxia.	33
CLAIBORNE, J. B. AND HEISLER, N. Acid-base regulation and ion transfers in the carp (<i>Cyprinus carpio</i>): pH compensation during graded long- and short-term environmental hypercapnia, and the effect of bicarbonate infusion	41
MARSH, RICHARD L. AND BENNETT, ALBERT F. Thermal dependence of contractile properties of skeletal muscle from the lizard <i>Sceloporus occidentalis</i> with comments on methods for fitting and comparing force-velocity curves	63
MARSH, RICHARD L. AND BENNETT, ALBERT F. Thermal dependence of sprint performance of the lizard <i>Sceloporus occidentalis</i>	79
MORISAWA, SACHIKO AND MORISAWA, MASAOKI. Acquisition of potential for sperm motility in rainbow trout and chum salmon	89
HELLER, KLAUS-GERHARD. Warm-up and stridulation in the bushcricket, <i>Hexacentrus unicolor</i> Serville (Orthoptera, Conocephalidae, Listroscelidinae)	97
OKA, TAKASHI, NAKOAKA, YASUO AND OOSAWA, FUMIO. Changes in membrane potential during adaptation to external potassium ions in <i>Paramecium caudatum</i>	111
O'DONNELL, M. J. Action potentials in <i>Rhodnius</i> oocytes: repolarization is sensitive to potassium channel blockers.	119
BOUTILIER, R. G. AND SHELTON, G. Gas exchange, storage and transport in voluntarily diving <i>Xenopus laevis</i>	133
NEIL, DOUGLAS M. AND MIYAN, JALEEL A. Phase-dependent modulation of auxiliary swimmeret muscle activity in the equilibrium reactions of the Norway lobster, <i>Nephrops norvegicus</i> L.	157
MIYAN, JALEEL A. AND NEIL, DOUGLAS M. Swimmeret proprioceptors in the lobsters <i>Nephrops norvegicus</i> L. and <i>Homarus gammarus</i> L.	181
WEBBER, D. M. AND O'DOR, R. K. Monitoring the metabolic rate and activity of free-swimming squid with telemetered jet pressure.	205
AXELSSON, MICHAEL AND NILSSON, STEFAN. Blood pressure control during exercise in the Atlantic cod, <i>Gadus morhua</i>	225
WAINWRIGHT, PETER C. Motor correlates of learning behaviour: feeding on novel prey by pumpkinseed sunfish (<i>Lepomis gibbosus</i>)	237
CONLEY, KEVIN E. AND PORTER, WARREN P. Heat loss from deer mice (<i>Peromyscus</i>): evaluation of seasonal limits to thermoregulation	249
WOOD, CHRIS M., BOUTILIER, R. G. AND RANDALL, D. J. The physiology of dehydration stress in the land crab, <i>Cardisoma carnifex</i> : respiration, ionoregulation, acid-base balance and nitrogenous waste excretion	271
YAMANA, KENJIRO, TOH, YOSHIHIRO AND TATEDA, HIDEKI. Electrophysiological studies on the temporal organ of the Japanese house centipede, <i>Thereuonema hilgendorfi</i> . . .	297
BEAL, A. M. Effects of flow rate, duration of stimulation and mineralocorticoids on the electrolyte concentrations of mandibular saliva from the red kangaroo (<i>Macropus rufus</i>)	315

Contents

	PAGE
STEPHENSON, R., BUTLER, P. J. AND WOAKES, A. J. Diving behaviour and heart rate in tufted ducks (<i>Aythya fuligula</i>)	341
RIEGEL, J. A. The absence of an arterial pressure effect on filtration by perfused glomeruli of the hagfish, <i>Eptatretus stouti</i> (Lockington)	361
KUTERBACH, DEBORAH A. AND WALCOTT, BENJAMIN. Iron-containing cells in the honey-bee (<i>Apis mellifera</i>). I. Adult morphology and physiology	375
KUTERBACH, DEBORAH A. AND WALCOTT, BENJAMIN. Iron-containing cells in the honey-bee (<i>Apis mellifera</i>). II. Accumulation during development	389
EVANS, PETER D. AND MYERS, CAMILLA M. The modulatory actions of FMRFamide and related peptides on locust skeletal muscle	403
BRACKENBURY, J. H. Blood gases and respiratory pattern in exercising fowl: comparison in normoxic and hypoxic conditions	423
HIGUCHI, TAKASHIRO, NAKAMURA, HIROYUKI, SAWAUCHI, KATSUHIKO AND OKUMURA, HIROSHI. Withdrawal reflex and conduction block in the giant axons of a sabellid worm (<i>Pseudopotamilla ocellata</i>).	433
SILLAR, KEITH T. AND ELSON, ROBERT C. Slow active potentials in walking-leg motor neurones triggered by non-spiking proprioceptive afferents in the crayfish	445
PINDER, ALAN W. AND BURGGREN, WARREN W. Ventilation and partitioning of oxygen uptake in the frog <i>Rana pipiens</i> : effects of hypoxia and activity	453
MALLEFET, J. AND BAGUET, F. Oxygen consumption and luminescence of <i>Maurolicus</i> photophores stimulated by potassium cyanide	469
ALDRIDGE, H. D. J. N. Kinematics and aerodynamics of the greater horseshoe bat, <i>Rhinolophus ferrumequinum</i> , in horizontal flight at various flight speeds.	479
WRIGHT, PATRICIA, HEMING, TOM AND RANDALL, DAVID. Downstream pH changes in water flowing over the gills of rainbow trout	499
SHORT COMMUNICATIONS	
MUNTZ, W. R. A. The spectral sensitivity of <i>Nautilus pompilius</i>	513
FUNK, G. D., WEBB, C. L. AND MILSOM, W. K. Non-invasive measurement of respiratory tidal volume in aquatic, air-breathing animals	519
TAUTZ, JÜRGEN AND HAMM, IRIS. Interneurones sensitive to water vibrations in the second abdominal ganglion of the crayfish	525
EUSEBIO, EMMANUEL J. AND MOODY, WILLIAM J. Calcium-dependent action potentials in the prothoracic gland of <i>Manduca sexta</i>	531
INDEX TO VOLUMES 120 to 126.	i