

# The Journal of Experimental Biology

EDITED BY

V. B. WIGGLESWORTH and J. A. RAMSAY

## Contents

	PAGE
HARMSSEN, R. The excretory role of pteridines in insects . . . . .	1
JONES, M. D. R. The acoustic behaviour of the bush cricket <i>Pholidoptera griseoaptera</i> . 1. Alter- nation, synchronism and rivalry between males . . . . .	15
JONES, M. D. R. The acoustic behaviour of the bush cricket <i>Pholidoptera griseoaptera</i> . 2. Interaction with artificial sound signals . . . . .	31
ODHIAMBO, THOMAS R. The metabolic effects of the corpus allatum hormone in the male desert locust. I. Lipid metabolism . . . . .	45
ODHIAMBO, THOMAS R. The metabolic effects of the corpus allatum hormone in the male desert locust. II. Spontaneous locomotor activity . . . . .	51
CHAPPLE, WILLIAM D. Asymmetry of the motor system in the hermit crab <i>Pagurus granosi- manus</i> Stimpson . . . . .	65
LAND, M. F. Activity in the optic nerve of <i>Pecten maximus</i> in response to changes in light intensity, and to pattern and movement in the optical environment . . . . .	83
MUNTZ, W. R. A. The photopositive response of the frog ( <i>Rana pipiens</i> ) under photopic and scotopic conditions. (With Plates 1-2) . . . . .	101
BROKAW, C. J. Effects of increased viscosity on the movements of some invertebrate sperma- tozoa. (With Plates 1-2) . . . . .	113
ROBERTS, M. B. V. Facilitation in the rapid response of the earthworm, <i>Lumbricus ter- restris</i> L. . . . .	141
BENTLEY, DAVID R. and KUTSCH, WOLFRAM. The neuromuscular mechanism of stridulation in crickets (Orthoptera: Gryllidae) . . . . .	151
JOHANSEN, KJELL and MARTIN, A. W. Circulation in a giant earthworm, <i>Glossoscolex gigan- teus</i> . II. Respiratory properties of the blood and some patterns of gas exchange . . . . .	165
SKAER, R. J. and PICKEN, L. E. R. The pleated surface of the undischarged thread of a nematocyst and its simulation by models. (With Plate 1) . . . . .	173
HUGHES, G. M. The dimensions of fish gills in relation to their function. (With Plates 1-2) . . . . .	177

---

*Published for The Company of Biologists Limited*

CAMBRIDGE UNIVERSITY PRESS

BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W.1

AMERICAN BRANCH: 32 EAST 57TH STREET, NEW YORK, N.Y. 10022

---

Price 30s. net (U.S.A. \$5.00). Subscription per volume 80s. (U.S.A. \$14.00)





# Journal of CELL SCIENCE

Formerly The Quarterly Journal of Microscopical Science

The *Journal of Cell Science* is devoted to all aspects of the study of cells. The scope of the journal is wide, and papers dealing with the entire range of investigations of cell organization, including accounts of advances in the relevant techniques, will be acceptable. Thus, in addition to studies of the structure and functions of plant and animal cells and their extracellular products (for example, cell walls, cuticles), papers will be published on such topics as cell growth and division, cell movements and interactions, and cell genetics. Contributions concerned with aspects of morphogenesis at the cellular and subcellular levels will also be acceptable. Studies of the organization of micro-organisms will be welcomed, as will papers dealing with study of viruses, in so far as they are relevant to an understanding of cell organization (for example, those dealing with cell virus interactions). Cytochemical papers will be acceptable, but histochemical work, in which the emphasis is on the localization of substances at the tissue level, will not ordinarily be included. Occasional review articles will be published.

*Subscriptions*: £8 per vol. of 4 parts, post free; single parts 50s., postage extra. Copies may be ordered from your bookseller, or direct from the publishers:

CAMBRIDGE UNIVERSITY PRESS  
Bentley House, 200 Euston Road, London, N.W. 1

FULL PARTICULARS OF THE

## JOURNALS

PUBLISHED BY THE

CAMBRIDGE  
UNIVERSITY PRESS

MAY BE HAD FROM

THE MANAGER  
CAMBRIDGE UNIVERSITY PRESS  
BENTLEY HOUSE  
200 EUSTON ROAD  
LONDON, N.W. 1



## CAMBRIDGE

*Cambridge Monographs in  
Experimental Biology*

### **14. The Neurochemistry of Arthropods**

J. E. TREHERNE

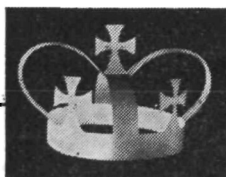
This book, the first detailed account of the chemistry of the nervous system of an invertebrate animal group, will be of interest to a wide variety of biologists.

Dr Treherne considers the chemical and physiological processes in relation to the specialized structure of the various arthropod nervous tissues.

30s. net

CAMBRIDGE UNIVERSITY PRESS

---

**COLUMBIA****COLUMBIA**

---

## **The Hepaticae and Anthocerotae of North America**

**East of the Hundredth Meridian, Volume I**

By RUDOLF M. SCHUSTER

This book, the result of several decades of research by a noted botanist, is the first classification of these groups of plants. The author deals with 450 species of the Hepaticae and Anthocerotae families which may be found east of the Rocky Mountains, discussing their form and structure, their distribution, and their relationship to the environment. 1344 *pages*. 750 *original drawings*. Coming September

\$20.00

## **Flower Pollination in the Phlox Family**

By VERNE GRANT and KAREN A. GRANT

The product of over five years of extensive field work in western North America and of considerable experimental work, this book deals with the relationships between flowers and animals in terms of the single representative Phlox plant family—and with some consequences of these relationships for flower evolution. 3 *color plates*. 46 *line drawings*. 200 *pages*.

\$5.75

## **The Natural Geography of Plants**

By HENRY A. GLEASON and ARTHUR CRONQUIST

"Gleason and Cronquist have supplied the best possible introduction to the world of plants."—*Forest History*.

"It is a credit to their joint efforts that a simple, comprehensive presentation was maintained, almost without technical language and yet effective and meaningful throughout."—*The Bryologist*.

250 *illustrations*. 420 *pages*.

\$10.00

**COLUMBIA UNIVERSITY PRESS**

2960 Broadway  
New York, N. Y. 10027

