QUARTERLY REVIEWS OF BIOPHYSICS

VOLUME 7 1974

Editors: A. Engström [Sweden], A. Ehrenberg [Sweden],

R. D. Keynes [United Kingdom],

G. Felsenfeld [U.S.A.]

Council of IUPAB

F. Lynen [Fed. Rep. Germany], President

B. Chance [U.S.A.], Vice-President

J. C. Kendrew [United Kingdom], Hon. Vice-President

R. D. Keynes [United Kingdom], Secretary-General

A. Ehrenberg [Sweden]

A. R. Gopal-Ayengar [India]

F. Hutchinson [U.S.A.]

L. Kayushin [U.S.S.R.]

E. Kellenberger [Switzerland]

O. Maaløe [Denmark]

F. Oosawa [Japan]
B. Pullman [France]

W. Reichardt [Fed. Rep. Germany]

M. Sela [Israel]

J. Tigyi [Hungary]

C. A. Tobias [U.S.A.]

Published for the International Union for Pure and Applied Biophysics

Cambridge University Press, 1975

PUBLISHED BY THE SYNDICS OF THE CAMBRIDGE UNIVERSITY PRESS

Bentley House, 200 Euston Road, London NWI 2DB American Branch: 32 East 57th Street, New York, N.Y.10022

© Cambridge University Press, 1975

Printed in Great Britain at the University Printing House, Cambridge

Contents

No. 1. FEBRUARY 1974	
FELIX FRIEDBERG. Effects of metal binding on protein structure	page 1
ROBBERT A. SCHILPEROORT. Prospects in genetic	
engineering of plants	35
IAN BREMNER. Heavy metal toxicities	75
News from IUPAB	125
No. 2. MAY 1974	
ALAN J. BEARDEN and RICHARD MALKIN. Primary	
photochemical reactions in chloroplast photosynthesis	131
CLAY M. ARMSTRONG. Ionic pores, gates and gating	
currents	179
M. Beer, J. Frank, K-J. Hanszen, E. Kellenberger	
and R. C. WILLIAMS. The possibilities and prospects	
of obtaining high-resolution information (below 30 A)	
on biological material using the electron microscope	211
PETER LETH JØRGENSEN. Isolation and characterization	
of the components of the sodium pump	239
News from IUPAB	275

CONTENTS

No. 3. JULY 1974	
H. P. RANG. Acetylcholine receptors	page 283
JENS CHR SKOU. The (Na++K+) activated enzyme and its	
relationship to transport of sodium and potassium	401
News from IUPAB	435
No. 4. NOVEMBER 1974	
R. H. SANDS and W. R. DUNHAM. Spectroscopic studies	
on two-iron ferredoxins	443
Alberto Pullman and Bernard Pullman. New	
paths in the molecular orbital approach to solvation	
of biological molecules	505
News from IUPAB	567

INFORMATION FOR CONTRIBUTORS TO QUARTERLY REVIEWS OF BIOPHYSICS

- 1. Quarterly Reviews of Biophysics is the official journal of the International Union for Pure and Applied Biophysics. As such, its primary aim is to provide a forum for general and specialized communication between biophysicists working in different areas. This will normally be achieved by inviting authors who have made significant contributions to give a critical and readable account of recent progress in their special fields. Shorter and even controversial articles discussing topics of particular current interest will also be published.
- 2. Reviews should preferably be written in English. The style of presentation must be concise, with only key references.
- 3. Three copies of manuscripts are required. They should be typed in double spacing with a margin of 4 cm all round. The position of tables and illustrations should be indicated in the text. Tables and legends for illustrations should be typed on separate pages. A table of contents should be provided for printing at the head of the article.
- 4. In the text, the references should be to authors and year. When a paper cited has three or more authors the style Smith et al. (1973) should be used on all occasions. At the end of the paper, references should be listed alphabetically, with the full title of each paper, and the first and last pages. Abbreviations of journal titles should follow the latest edition of the World List of Scientific Periodicals. For example

Bernal, J. D. (1967). Origin of Life. London: Weidenfeld and Nicolson. Eigen, M. (1968). New looks and outlooks on physical enzymology. Q. Rev. Biophys. 1, 3-33.

- 5. Drawings should be in Indian ink on tracing paper. They should be drawn roughly twice the size of the finished block. Explanations should as far as possible be placed in the legends. Lettering for photographs should either be on a duplicate print or on an accurately registered overlay.
- 6. The author will receive only one set of page proofs for correction. Fifty reprints of each review will be provided free of charge. Additional copies may be purchased.

QUARTERLY REVIEWS OF BIOPHYSICS

Reviews on the following topics will appear in forthcoming issues:

Differential gene activity and segregation of cell lines: an attempt at a molecular interpretation of the primary events of embryonic development.

MOSE ROSSI, GABRIELLA AUGUSTI-TOCCO and ALBERTO MONROY

Insulin secretion: Mechanism of the stimulation by glucose

EROL CERASI

© Cambridge University Press 1975

CAMBRIDGE UNIVERSITY PRESS

Bentley House, 200 Euston Road, London NWI 2DB American Branch: 32 East 57th Street, New York, N.Y. 10022

Single parts £4.00 net (US \$12.50 in U.S.A. and Canada) 1974 Subscription price £14.00 net (US \$42.50 in U.S.A. and Canada)

Printed in Great Britain at the University Printing House, Cambridge