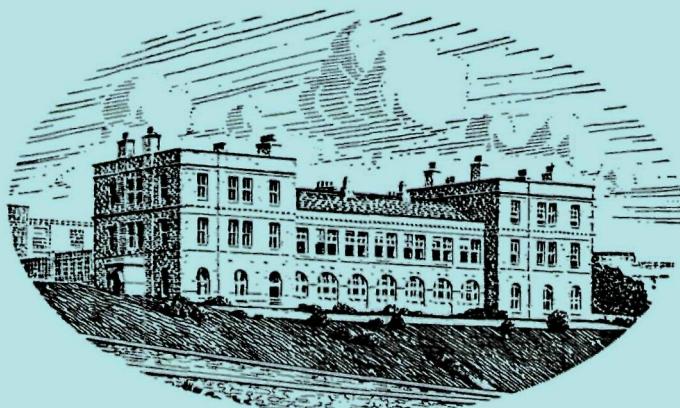


JOURNAL OF THE
MARINE BIOLOGICAL ASSOCIATION
OF THE UNITED KINGDOM



THE PLYMOUTH LABORATORY

VOLUME 37, No. 3
(issued October 1958, and completing Volume 37)

CAMBRIDGE
AT THE UNIVERSITY PRESS
1958

Price Fifty-six shillings net

(U.S.A. \$9.50)

MARINE BIOLOGICAL ASSOCIATION
OF THE UNITED KINGDOM
PATRON

H.R.H. THE PRINCE PHILIP, DUKE OF EDINBURGH, F.R.S.

OFFICERS AND COUNCIL

President: Prof. A. V. HILL, C.H., O.B.E., Sc.D., LL.D., F.R.S.

Vice-Presidents

The Earl of IVEAGH, K.G., C.B., C.M.G.	A. T. A. DOBSON, C.B., C.V.O., C.B.E.
Sir NICHOLAS E. WATERHOUSE, K.B.E.	Major E. G. CHRISTIE-MILLER
Col. Sir EDWARD T. PEEL, K.B.E., D.S.O., M.C.	MORLEY H. NEALE, C.B.E.
Vice-Admiral Sir JOHN A. EDGEWELL, K.B.E., C.B., F.R.S.	The Earl of VERULAM
Sir EDWARD J. SALISBURY, Kt., C.B.E., D.Sc., LL.D., F.R.S.	Prof. Sir JAMES GRAY, Kt., C.B.E., M.C., Sc.D., LL.D., F.R.S.
	G. M. GRAHAM, C.M.G., O.B.E.

Honorary Members

Dr H. B. BIGELOW	Dr A. G. HUNTSMAN
Dr R. DOHRN	Prof. HANS PETTERSSON, For. Mem. R.S.
Prof. LOUIS FAGE	Dr A. C. REDFIELD
E. H. E. HAVELOCK, C.B., C.B.E.	Dr Å. VEDEL TÅNING

COUNCIL

Elected Members

Prof. E. BALDWIN, Ph.D.	C. H. MORTIMER, Dr.phil., D.Sc., F.R.S.
H. A. COLE, D.Sc.	C. F. A. PANTIN, Sc.D., F.R.S.
G. E. R. DEACON, C.B.E., D.Sc., F.R.S.	Prof. R. J. PUMPHREY, Sc.D., F.R.S.
G. E. FOGG, Ph.D.	Prof. J. E. SMITH, Sc.D., F.R.S.
Prof. J. E. HARRIS, Ph.D., F.R.S.	Prof. G. P. WELLS, Sc.D., F.R.S.
M. N. HILL, Ph.D.	H. G. VEVERS, M.B.E., D.Phil.
O. D. HUNT	Prof. C. M. YONGE, C.B.E., D.Sc., F.R.S.
C. E. LUCAS, C.M.G., D.Sc.	

Governors

R. G. R. WALL (Ministry of Agriculture, Fisheries and Food)	Prof. Sir ALISTER C. HARDY, Kt., D.Sc., F.R.S. (Oxford University)
The Worshipful Company of Fishmongers:	S. SMITH, Ph.D. (Cambridge University)
The Prime Warden	EDWARD HINDLE, Sc.D., F.R.S. (British Association)
Major E. G. CHRISTIE-MILLER	N. B. MARSHALL (Zoological Society)
HARRISON S. EDWARDS	Prof. Sir JAMES GRAY, Kt., C.B.E., M.C., Sc.D., LL.D., F.R.S. (Royal Society)

Hon. Treasurer: HARRISON S. EDWARDS, Westhumble Lacey, Nr. Dorking, Surrey

Secretary: F. S. RUSSELL, C.B.E., D.S.C., D.F.C., LL.D., F.R.S., The Laboratory, Citadel Hill, Plymouth, Devon

SCIENTIFIC STAFF

Director: F. S. RUSSELL, C.B.E., D.S.C., D.F.C., LL.D., F.R.S.

D. P. WILSON, D.Sc., F.R.P.S. (<i>Zoologist</i>)	D. B. CARLISLE, M.A., D.Phil. (<i>Bursar and Endocrinologist</i>)
L. H. N. COOPER, D.Sc., F.R.I.C. (<i>Chemist</i>)	G. R. FORSTER, B.Sc. (<i>Zoologist</i>)
G. M. SPOONER, M.B.E., M.A. (<i>Zoologist</i>)	F. A. J. ARMSTRONG, A.R.I.C. (<i>Chemist</i>)
MARY W. PARKE, D.Sc., Ph.D. (<i>Botanist</i>)	E. D. S. CORNER, M.Sc., Ph.D. (<i>Biochemist</i>)
P. G. CORBIN, B.A. (<i>Zoologist</i>)	A. J. SOUTHWARD, B.Sc., Ph.D. (<i>Zoologist</i>)
J. A. C. NICOL, B.Sc., M.A., D.Phil. (<i>Experimental Zoologist</i>)	T. I. SHAW, M.A., Ph.D. (<i>Physiologist</i>)
E. J. DENTON, B.A., B.Sc., Ph.D. (<i>Physiologist</i>)	Q. BONE, M.A. (<i>Zoologist</i>)
N. A. HOLME, M.A. (<i>Zoologist</i>)	G. W. BRYAN, B.Sc. (<i>Special Appointment: Zoologist</i>)