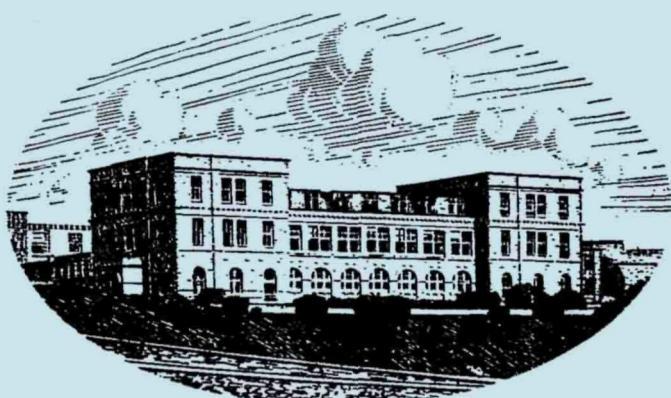


JOURNAL OF THE
MARINE BIOLOGICAL ASSOCIATION
OF THE UNITED KINGDOM



THE PLYMOUTH LABORATORY

VOLUME 47, No. 3
(issued October 1967, and completing Volume 47)

CAMBRIDGE
AT THE UNIVERSITY PRESS
1967

Price £5 net

(U.S.A. \$16.75)

Annual Subscription for Volume (of three parts); £14 (U.S.A. \$47.00)

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. L. HODGKIN, Sc.D., F.R.S.

Vice-Presidents

Prof. A. V. HILL, C.H., O.B.E., Sc.D., LL.D.,
F.R.S.
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.
Prof. Sir ALISTER C. HARDY, Kt., D.Sc., F.R.S.
Sir C. MAURICE YONGE, Kt., C.B.E., D.Sc., F.R.S.
Rear Admiral Sir EDMUND G. IRVING, K.B.E., C.B.
Sir FREDERICK S. RUSSELL, Kt., C.B.E., D.Sc.,
D.F.C., D.Sc., L.L.D., F.R.S.

Honorary Members

Dr H. B. BIGELOW
Prof. Sir JAMES GRAY, Kt., C.B.E., M.C., Sc.D.,
LL.D., F.R.S.
Prof. Sir ALISTER C. HARDY, Kt., D.Sc., F.R.S.
E. H. E. HAVELOCK, C.B., C.B.E.
Dr A. G. HUNTSMAN

Miss MARIE V. LABOUR, D.Sc.
Dr A. C. REDFIELD
Prof. G. THORSON, D.Phil.
Sir C. MAURICE YONGE, Kt., C.B.E., D.Sc., F.R.S.
Prof. L. A. ZENKEVITCH

COUNCIL

Elected Members

Prof. R. B. CLARK, Ph.D.
G. E. R. DEACON, C.B.E., D.Sc., F.R.S.
Prof. J. M. DODD, Ph.D.
R. S. GLOVER
Prof. Sir JAMES GRAY, Kt., C.B.E.
M.C., Sc.D., LL.D., F.R.S.
J. P. HARDING, Ph.D.
Rear Admiral Sir EDMUND G. IRVING, K.B.E., C.B.

Prof. O. E. LOWENSTEIN, D.Sc., F.R.S.
C. E. LUCAS, C.M.G., D.Sc., F.R.S.
J. W. LUND, D.Sc., F.R.S.
Prof. R. A. MORTON, D.Sc., F.R.I.C., F.R.S.
Prof. G. E. NEWELL, T.D., D.Sc.
J. C. SWALLOW, Ph.D.
Sir C. MAURICE YONGE, Kt., C.B.E., D.Sc., F.R.S.

Governors

W. C. TAME (Ministry of Agriculture, Fisheries
and Food)
The Worshipful Company of Fishmongers:
Sir EDWARD R. CHADWYCK-HEALEY, Bt., M.C.
Col. Sir JOHN G. CAREW POLE, Bt., D.S.O., T.D.
The Hon. HUGH WALDORF ASTOR, J.P.
Prof. J. W. S. PRINGLE, M.B.E., Sc.D., F.R.S.
(Oxford University)

S. SMITH, Ph.D. (Cambridge University)
EDWARD HINDLE, Sc.D., F.R.S. (British
Association)
Prof. G. P. WELLS, Sc.D., F.R.S. (Zoological
Society)
Prof. B. KATZ, M.D., D.Sc., F.R.S. (Royal Society)
Prof. E. J. DENTON, Sc.D., F.R.S.
(Physiological Society)

Hon. Treasurer: Sir EDWARD R. CHADWYCK-HEALEY, Bt., M.C., The Mill House,
Hook, Basingstoke, Hants.

Secretary: J. E. SMITH, Sc.D., F.R.S., The Laboratory, Citadel Hill, Plymouth, Devon

SCIENTIFIC STAFF

Director: J. E. SMITH, Sc.D., F.I.Biol., F.R.S.

D. P. WILSON, D.Sc., F.I.Biol., F.R.P.S. (*Zoologist*)
L. H. N. COOPER, D.Sc., F.R.I.C., F.G.S., F.I.Biol.,
F.R.S. (*Chemist*)
G. M. SPOONER, M.B.E., M.A., F.R.E.S. (*Zoologist*)
MARY W. PARKE, D.Sc., Ph.D., F.L.S., F.I.Biol.
(*Botanist*)
P. G. CORBIN, B.A. (*Zoologist*)
J. A. C. NICOL, D.Sc., M.A., D.Phil., F.R.S. (*Ex-
perimental Zoologist*)
N. A. HOLME, M.A. (*Zoologist*)
G. R. FORSTER, B.Sc. (*Zoologist*)

E. D. S. CORNER, M.Sc., Ph.D. (*Biochemist*)
A. J. SOUTHWARD, D.Sc., Ph.D. (*Zoologist*)
J. V. HOWARTH, B.Sc. (*Physiologist*)
Q. BONE, M.A., D.Phil. (*Zoologist*)
G. T. BOALCH, B.Sc., Ph.D. (*Botanist*)
G. W. BRYAN, B.Sc., Ph.D. (*Zoologist*)
A. G. DAVIES, B.Sc., Ph.D. (*Physical Chemist*)
P. E. GIBBS, B.Sc., M.A., Ph.D. (*Zoologist*)
B. L. ROBERTS, B.A. (*Physiologist*)
P. R. DANDO, Ph.D. B.Sc. (*Special appointment,
Biochemist*)

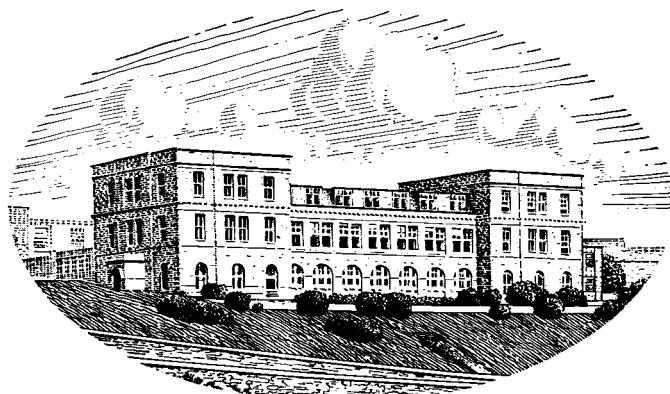
J. H. WICKSTRADE, D.Sc., Ph.D., Ministry of Overseas Development (*Zoologist*)
Prof. E. J. DENTON, Sc.D., F.I.Biol., F.R.S. (*Physiologist*),
Royal Society Research Professor of Bristol University

**JOURNAL OF THE
MARINE BIOLOGICAL ASSOCIATION
OF THE UNITED KINGDOM**

PUBLISHED BY
THE SYNDICS OF THE CAMBRIDGE UNIVERSITY PRESS
Bentley House, P.O. Box 92, 200 Euston Road, London, N.W.1
American Branch: 32 East 57th Street, New York, N.Y. 10022

Printed in Great Britain at the University Printing House, Cambridge

JOURNAL OF THE
MARINE BIOLOGICAL ASSOCIATION
OF THE UNITED KINGDOM



THE PLYMOUTH LABORATORY

VOLUME 47

1967

CAMBRIDGE
AT THE UNIVERSITY PRESS
1967

The Council of the Marine Biological Association wish it to be understood that they do not accept responsibility for the accuracy of statements published in this Journal, excepting when those statements are contained in an official report of the Council.

CONTENTS OF VOLUME 47

Number 1, pp. 1–253, 24 February 1967

Number 2, pp. 255–468, 22 June 1967

Number 3, pp. 469–766, 22 October 1967

	PAGE
Report of the Council: 1966–67	737
Income and Expenditure Account and Balance Sheet: 1966–67	763
Obituary: Carl Frederick Abel Pantin 1899–1967	255
ALEXANDROWICZ, J. S.	
Receptor organs in the coxal region of <i>Palinurus vulgaris</i>	415
ARMSTRONG, F. A. J., <i>see</i> WOOD, ARMSTRONG and RICHARDS	23
ASHTON, P. A., <i>see</i> MANWELL, BAKER, ASHTON and CORNER	145
BAILEY, JULIE, H., <i>see</i> CRISP, BAILEY and KNIGHT-JONES	511
BAKER, C. M. ANN	
<i>See</i> MANWELL, BAKER, ASHTON and CORNER	145
<i>See</i> MANWELL and BAKER	659
BARNES, H. and EVENS, R.	
Studies in the biochemistry of cirripede eggs. III. Changes in the amino-acid composition during development of <i>Balanus balanoides</i> and <i>B. balanus</i>	171
BATTIN, G. A. W.	
Nomograms for chlorophyll determinations	407
BITTAR, E. E., CALDWELL, P. C. and LOWE, A. G.	
The efflux of sodium from single crab muscle fibres	709
BLAXTER, J. H. S. and JONES, M. PATTIE	
The development of the retina and retinomotor responses in the herring	677
BONEY, A. D. and WHITE, E. B.	
Observations on an endozoic red alga	223
Observations on <i>Kylinia rosulata</i> from S.W. England	591
BRAFIELD, A. E. and CHAPMAN, G.	
Gametogenesis and breeding in a natural population of <i>Nereis virens</i>	619
BURNETT, ALLISON, L., SINDELAR, WILLIAM and DIEHL, NORMA	
An examination of polymorphism in the hybrid <i>Hydractinia echinata</i>	645
CALDWELL, P. C., <i>see</i> BITTAR, CALDWELL and LOWE	709
CAREFOOT, T. H.	
Studies in a sublittoral population of <i>Aplysia punctata</i>	335
Growth and nutrition of <i>Aplysia punctata</i> feeding on a variety of marine algae	565
CHAPMAN, G., <i>see</i> BRAFIELD and CHAPMAN	619
CHAU, Y. K., CHUECAS, L. and RILEY, J. P.	
The component combined amino acids of some marine phytoplankton species	543
CHUECAS, L., <i>see</i> CHAU, CHUECAS and RILEY	543
CORNER, E. D. S. and NEWELL, B. S.	
On the nutrition and metabolism of zooplankton. IV. The forms of nitrogen excreted by <i>Calanus</i>	113

	PAGE
CORNER, E. D. S., COWEY, C. B. and MARSHALL, S. M.	
On the nutrition and metabolism of zooplankton. V. Feeding efficiency of <i>Calanus finmarchicus</i>	259
CORNER, E. D. S., <i>see</i> MANWELL, BAKER, ASHTON and CORNER	145
COWEY, C. B., <i>see</i> CORNER, COWEY and MARSHALL	259
CRISP, D. J., BAILEY, JULIE H., and KNIGHT-JONES, E. W. The tube-worm <i>Spirorbis vitreus</i> and its distribution in Britain	511
CUSHING, D. H.	
The grouping of herring populations	193
DALES, R. PHILLIPS, <i>see</i> LEE, GILCHRIST, and DALES	33
DENTON, E. J., GILPIN-BROWN, J. B. and HOWARTH, J. V.	
On the buoyancy of <i>Spirula spirula</i>	181
DIEHL, NORMA, <i>see</i> BURNETT, SINDELAR, and DIEHL	645
DOYLE, JEAN D., and KAY, R. H.	
Some studies on the bioluminescence of the euphausiids <i>Meganyctiphanes norvegica</i> and <i>Thysanoessa raschii</i>	555
DRING, M. J.	
Effects of daylength on growth and reproduction of the conchoecelis-phase of <i>Porphyra tenera</i>	501
EDWARDS, C.	
A calycopiid medusa from the Firth of Clyde	367
EVENS, R., <i>see</i> BARNES and EVENS	171
EWINS, P. A. and SPENCER, C. P.	
The annual cycle of nutrients in the Menai Straits	533
FISH, JOHN D.	
The biology of <i>Cucumaria elongata</i> [Echinodermata: Holothuroidea]	129
FLEMMING, N. C. and STRIDE, A. H.	
Basal sand and gravel patches with separate indications of tidal current and storm-wave paths, near Plymouth	433
FORSTER, G. R.	
A new deep-sea ray from the Bay of Biscay	281
The growth of <i>Haliotis tuberculata</i> : results of tagging experiments in Guernsey 1963-65	287
A note on two rays lacking part of the snout	499
GEORGE, J. DAVID	
Cryptic polymorphism in the cirratulid polychaete, <i>Cirriformia tentaculata</i>	75
GIBSON, RAY	
Occurrence of the entocommensal rhynchocoelan, <i>Malacobdella grossa</i> , in the oval piddock, <i>Zirfaea crispata</i> , on the Yorkshire coast	301
GIBSON, R. N.	
Experiments on the tidal rhythm of <i>Blennius pholis</i>	97
GILCHRIST, M., <i>see</i> LEE, GILCHRIST and DALES	33
GILMOUR, T. H. J.	
The defensive adaptations of <i>Lima hians</i> (Mollusca, Bivalvia)	209
GILPIN-BROWN, J. B., <i>see</i> DENTON, GILPIN-BROWN and HOWARTH	181
HEDLEY, R. H. and WAKEFIELD, J. ST J.	
Clone culture studies of a new rosalind foraminifer from Plymouth, England and Wellington, New Zealand	121
HEPPER, B. T.	
On the growth at moulting of lobsters (<i>Homarus vulgaris</i>) in Cornwall and Yorkshire	629

CONTENTS OF VOLUME 47

vii

	PAGE
HINTON, H. E. F.R.S.	
Plastron respiration in the marine fly <i>Canace</i>	319
Spiracular gills in the marine fly <i>Aphrosylus</i> and their relation to the respiratory horns of other Dolichopodidae	485
HOBDEN, D. J.	
Iron metabolism in <i>Mytilus edulis</i> . I. Variation in total content and distribution	597
HOLLIDAY, F. G. T. and JONES, M. PATTIE	
Some effects of salinity on the developing eggs and larvae of the plaice (<i>Pleuronectes platessa</i>)	39
HOLME, N. A.	
Changes in the bottom fauna of Weymouth Bay and Poole Bay following the severe winter of 1962-63	397
HOWARTH, J. V., see DENTON, GILPIN-BROWN and HOWARTH	181
JONES, D. A. and NAYLOR, E.	
The distribution of <i>Eurydice</i> [Crustacea: Isopoda] in British waters, including <i>E. affinis</i> new to Britain	373
JONES, M. PATTIE	
See HOLLIDAY and JONES	39
See BLAXTER and JONES	677
KAY, R. H., see DOYLE and KAY	555
KNIGHT-JONES, E. W., see CRISP, BAILEY and KNIGHT-JONES	511
LEE, WELTON L., GILCHRIST, BARBARA M. and DALES, R. PHILLIPS	
Carotenoid pigments in <i>Sabella penicillatus</i>	33
LOWE, A. G., see BITTAR, CALDWELL and LOWE	709
LUCAS, I. A. N.	
Two new marine species of <i>Paraphysomonas</i>	329
McLACHLAN, J. and PARKE, M.	
<i>Platymonas impellucida</i> sp.nov. from Puerto Rico	723
MCCLUSKY, DONALD S.	
Some effects of salinity on the survival, moulting and growth of <i>Corophium volutator</i> (Amphipoda)	607
MANTON, IRENE, see PARKE and MANTON	445
MANWELL, CLYDE, BAKER, C. M. ANN, ASHTON, P. A. and CORNER, E. D. S.	
Biochemical differences between <i>Calanus finmarchicus</i> and <i>C. helgolandicus</i> . Esterases, malate and triosephosphate dehydrogenases, aldolase, 'peptidases', and other enzymes	145
MANWELL, CLYDE, and BAKER, C. M. ANN	
A study of detergent pollution by molecular methods: starch gel electrophoresis of a variety of enzymes and other proteins	659
MARSHALL, S. M., see CORNER, COWEY and MARSHALL	259
MAUCHLINE, J.	
The biology of <i>Schistomysis spiritus</i> [Crustacea, Mysidacea]	383
MILLAR, R. H. and SCOTT, J. M.	
The larva of the oyster <i>Ostrea edulis</i> during starvation	475
NAYLOR, E., see JONES and NAYLOR	373
NEWELL, B. S., see CORNER and NEWELL	113
NEWELL, B. S.	
The determination of ammonia in sea water	271

	PAGE
PARKE, MARY and MANTON, IRENE The specific identity of the algal symbiont in <i>Convoluta roscoffensis</i>	445
PARKE, MARY <i>see</i> McLACHLAN and PARKE	723
RICHARDS, F. A., <i>see</i> WOOD, ARMSTRONG and RICHARDS	23
RILEY, J. P. and WILSON, T. R. S. The pigments of some marine phytoplankton species	351
RILEY, J. P., <i>see</i> CHAU, CHUECAS and RILEY	543
RUSSELL, F. S. On the occurrence of the scyphomedusan <i>Pelagia noctiluca</i> in the English Channel in 1966	363
On a remarkable new scyphomedusan	469
RUSSELL, G. The genus <i>Ectocarpus</i> in Britain. II. The free-living forms	233
SCOTT, J. M., <i>see</i> MILLAR and SCOTT	475
SIMPSON, T. H. and WARDLE, C. S. A seasonal cycle in the testis of the spurdog, <i>Squalus acanthias</i> , and the sites of β -hydroxysteroid dehydrogenase activity	699
SINDELAR, WILLIAM, <i>see</i> BURNETT, SINDELAR and DIEHL	645
SOUTHWARD, A. J. Recent changes in abundance of intertidal barnacles in south-west England: a possible effect of climatic deterioration	81
SPENCER, C. P., <i>see</i> EWINS and SPENCER	533
SPENCER DAVIES, P. Physiological ecology of <i>Patella</i> . II. Effect of environmental acclimation on the metabolic rate	61
STRIDE, A. H., <i>see</i> FLEMMING and STRIDE	433
THOMPSON, T. E. Direct development in a nudibranch, <i>Cadlina laevis</i> , with a discussion of develop- mental processes in Opisthobranchia	I
TREVALLION, ANN An investigation of detritus in Southampton Water	523
WAKEFIELD, J. ST J., <i>see</i> HEDLEY and WAKEFIELD	121
WARDLE, C. S., <i>see</i> SIMPSON and WARDLE	699
WHITE, E. B., <i>see</i> BONEY and WHITE	223, 591
WICKSTEAD, J. H. <i>Branchiostoma lanceolatum</i> larvae: some experiments on the effect of thiouracil on metamorphosis	49
WILSON, T. R. S., <i>see</i> RILEY and WILSON	351
WOOD, E. D., ARMSTRONG, F. A. J. and RICHARDS, F. A. Determination of nitrate in sea water by cadmium-copper reduction to nitrate	23

**ABSTRACTS OF MEMOIRS
RECORDING WORK DONE AT THE PLYMOUTH LABORATORY**

ARMSTRONG, F. A. J., WILLIAMS, P. M. & STRICKLAND, J. D. H., 1966. Photo-oxidation of organic matter in sea water by ultra-violet radiation, analytical and other applications	251
ARMSTRONG, F. A. J. & LAFOND, E. C., 1966. Chemical nutrient concentrations and their relationship to internal waves and turbidity off southern California	465

CONTENTS OF VOLUME 47

ix

	PAGE
BRYAN, G. W., PRESTON, A. & TEMPLETON, W. L., 1966. Accumulation of radio-nuclides by aquatic organisms of economic importance in the United Kingdom	465
BRYAN, G. W., 1966. The metabolism of Zn and ^{65}Zn in crabs, lobsters and freshwater crayfish	735
BRYAN, G. W., 1967. Zinc concentrations of fast and slow contracting muscles in the lobster	735
COOPER, L. H. N., 1966. Re-calibration of deep-sea reversing thermometers	251
COWEY, C. B. & CORNER, E. D. S., 1966. The amino-acid composition of certain unicellular algae, and of the faecal pellets produced by <i>Calanus finmarchicus</i> when feeding on them	251
EDMUND, M., 1966. Protective mechanisms in the Eolidacea [Mollusca: Nudibranchia]	465
GAGE, J., 1966. Seasonal cycles of <i>Notodelphys</i> and <i>Ascidicola</i> , copepod associates with <i>Ascidia</i> (Asciidae)	466
HUGHES, G. M. (1966. The dimensions of fish gills in relation to their function	466
KRASNE, F. B. & LAWRENCE, P. A., 1966. Structure of the photoreceptors in the compound of <i>Branchioma vesiculosum</i>	735
KUZNETSOV, A. P., CORNER, E. D. S. & HOLME, N. A., 1966. Material on the ecology and amino acid composition of protein in the commercial mollusc <i>Pecten maximus</i> in the Plymouth region	466
MARTIN, A. L., 1966. Feeding and digestion in two intertidal gammarids; <i>Marinogammarus obtusatus</i> and <i>M. pirloti</i>	252
MEVES, HANS, 1966. The effect of veratridine on internally perfused giant axons	252
PALING, J. E., 1966. The functional morphology of the genitalia of the spermatophore-producing monogenean parasite <i>Diplectanum aequans</i> (Wagener) Diesing, with a note on the copulation of the parasite	467
PALING, J. E., 1966. The attachment of the monogenean <i>Diplectanum aequans</i> (Wagener) Diesing to the gills of <i>Morone labrax</i>	467
PARKE, M., 1966. The genus <i>Pachysphaera</i> (Prasinophyceae)	252
SACCHI, C. F., 1964. <i>Littorina obtusata</i> (L.) [Gastropoda, Prosobranchia]: a problem of variability and its relation to ecology	467
SACCHI, C. F., 1966. Sur le dimorphisme du pénis chez <i>Littorina obtusata</i> (L.)	468
SACCHI, C. F. 1966. Contribution à l'étude des rapports entre variabilité et écologie chez un Prosobranche intertidal <i>Littorina obtusata</i> (L.). V. Recherches dans le Plymouth Sound (Angleterre S.-W.)	468
SHAW, T. I., 1964. Core conductor properties of tissue reticulum	253

CORRIGENDA

Vol. 47

- Page 47, paragraph 3, line 4, for Coleman read Colman.
- Page 122, line 12, for *praemolecta* read *primolecta*.
- Page 455, line 20, for P. read Pl.
- Page 680, 6 lines up from 'RESULTS': for without read with.
- Page 684, line 2, for IVB read IVA.
- Page 687, 3rd line from bottom, for Wisbey read Wisby.
- Page 690, legend for Text-fig. 12, line 2, for 390 read 290.
- On the front page of the first wrapper, below 'VOLUME 47, No. 1', insert 'issued February 1967'.
- On the front page of the second wrapper, below 'VOLUME 47, No. 2' insert 'issued June 1967'

JOURNAL OF THE MARINE BIOLOGICAL ASSOCIATION
INSTRUCTIONS FOR THE PREPARATION
OF MANUSCRIPTS

TITLE

The title of the paper should be kept as short as possible.

The name of the author at the beginning of the paper should be followed only by senior qualifications.

TEXT

Manuscripts must be typed (double-spaced) on one side of the paper, leaving ample margins, with the folios numbered. Words to be printed in italic should be underlined. The first mention of Latin names of species should be followed by the authority, except where reference is made to a work in which the authority appears (e.g. *Plymouth Marine Fauna*).

Manuscripts should be as concise as possible. Undue length will undoubtedly lead to delay in publication as the paper will be returned to the author for shortening.

All linear measurements and weights should be in the metric scale.

For symbols and abbreviations, the recommendations of the Royal Society (1951) are followed.

TABLES

Tables should be set out on separate sheets numbered in Arabic numerals, and given a concise heading.

TEXT-FIGURES

Text-figures should be in black ink. It is important to make the lines sufficiently black. Areas to be mechanically stippled should be indicated by light-blue pencil shading.

No drawing should be so large that it must be reduced to less than one-third of its original size. The degree of reduction need not be inserted by the author.

The size of the printed area of the *Journal* page is 18 x 12 cm. The maximum size for a full-page figure (with legend) is 19½ x 13½ cm.

Lettering, numerals, etc., should be marked clearly in blue pencil and indicating the position in which they are to be inserted by an arrow in blue pencil. This should be kept to a workable minimum, all details being included in the legend.

Axes and graduation marks on graphs must be inked in. The lines on graph paper

are not normally reproduced, and should be blue or faint grey.

Legends for figures must be typed all together on a separate sheet, and not inserted on the actual illustrations.

Text-figures are numbered in arabic numerals, and referred to in the text as 'Fig. 1', etc. Where there is a plate containing several figures, the text-figures are referred to as 'Text-fig. 1', etc.

All line-drawings are printed as text-figures, as well as photographs for which fine detail is not required.

PLATES

Photographs should be on smooth-surfaced paper, semi-matt or glossy. The edges of the photograph must be trimmed square. It is important that the background in the photograph be of a uniform tone and free from blemishes. Where several photographs make up a single plate, they are numbered 'Fig. 1', etc.

SUMMARY

Each paper must be accompanied by an informative Summary, giving the main results of the work published.

REFERENCES

References are listed alphabetically at the end of the paper. The full title of the paper must be given. Titles of papers, but not of books, are decapitalized. Titles of Journals are abbreviated as in the *World List of Scientific Publications* (4th ed., 1963 on). Volume (Vol.), Band (Bd.), or Tome (T.) numbers are in Arabic numerals. Where a volume appears in parts the part need only be specified where each has separate pagination. References to books should include the publisher. Citations in text to be given by author's name followed by date in brackets.

Examples:

MARSHALL, S. M., NICHOLLS, A. G. & ORR, A. P., 1939. On the growth and feeding of young herring in the Clyde. *J. mar. biol. Ass. U.K.*, Vol. 23, pp. 427-55.

RUSSELL, F. S. & YONGE, C. M., 1928. *The Seas.* 379 pp. London: Frederick Warne.

Authors are requested to see that their manuscripts are in finished form and completely ready for publication so that corrections may be reduced to a minimum, and these are confined as far as possible to the first proof. If the cost for corrections exceeds a reasonable figure, the author is liable to be charged to the full extent of the excess.

The Society for the Bibliography of Natural History

Sherborn Fund Facsimile Number 2

JOHN VAUGHAN THOMPSON'S ZOOLOGICAL RESEARCHES

In his *Zoological Researches*, a series of six memoirs published in Cork between 1828 and 1834, John Vaughan Thompson presented his discoveries in marine biology. His relegation of the cirripedes to the Crustacea (in opposition to Cuvier's concept of them as a class of Mollusca), his recognition of the Polyzoa as a distinct group, the elucidation of the larval development of the decapod crustaceans, studies on *Artemia*, *Nebalia* and the mysid shrimps were the outcome of extraordinary genius. Controversial in his time, Thompson's discoveries were fundamental to the development of marine biology.

Zoological Researches is a scarce book of great interest to marine biologists; this reproduction will make it readily accessible.

The facsimile of 160 pages includes 20 pages of figures. It will be published early in 1968 at £2 (\$6) including postage.

Orders to the Society for the Bibliography of Natural History, c/o British Museum (Natural History), Cromwell Road, London, S.W. 7.

ANNOUNCING A NEW REPRINT

MARINE BIOLOGICAL ASSOCIATION OF THE UNITED KINGDOM. JOURNAL

In Preparation

Old Series. Nos. 1, 2, Plymouth 1887, 1888

New Series. Vols. 1-21, 1889-1936/37

Cloth bound set	£232. 18s. 6d.
Paper bound set	£215. 0s. 0d.

Old Series. Nos. 1, 2, 1887, 1888

Per number, paper bound	£3. 12s. 0d.
-------------------------	--------------

New Series. Vols. 1-21, 1889-1936/37

Per volume, paper bound	£10. 15s. 0d.
-------------------------	---------------

JOHNSON REPRINT CORPORATION

111 Fifth Avenue, New York, N.Y. 10003

JOHNSON REPRINT COMPANY LTD.

Berkeley Square House, London, W.1, England

PROCEEDINGS OF THE MALACOLOGICAL SOCIETY OF LONDON

Vol. 37, Part 5, August 1967

£1. 5s. net, or \$4 U.S.

C. M. Yonge. Observations on *Pedum spondyloideum* (Chemnitz) Gmelin, a scallop associated with reef-building corals.

A. J. Berry, S. C. Loong and H. H. Thum. Genital systems of *Pythia*, *Cassidula* and *Auricula* (Ellobiidae, Pulmonata) from Malayan mangrove swamps.

J. Green. Activities of the siphons of *Scrobicularia plana* (Da Costa).

W. H. Ewers. Shell pattern and intra-specific recognition in Gastropods.

J. S. Bleakney and K. H. Bailey. Rediscovery of the salt-marsh sacoglossan *Alderia modesta* Lovén in eastern Canada.

Lothar Forcart. *Veronicella (Leidyula) kraussii* (Férussac) on Grand Cayman Island, West Indies.

Annual subscription (three parts) 60s. (\$10) post free.

BLACKWELL SCIENTIFIC PUBLICATIONS LTD.

5 Alfred St., Oxford

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

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

The Journal of General Microbiology

Editors: B. C. J. G. KNIGHT and A. F. B. STANDFAST

Contents of Volume 48, No. 3, September 1967

- J. R. Mencher and J. A. Alford. Purification and Characterization of the Lipase of *Pseudomonas fragi*.
- J. M. Hirst, O. J. Stedman and W. H. Hogg. Long-distance Spore Transport: Methods of Measurement, Vertical Spore Profiles and the Detection of Immigrant Spores.
- J. M. Hirst, O. J. Stedman and G. W. Hurst. Long-distance Spore Transport: Vertical Sections of Spore Clouds over the Sea.
- B. R. Grant. The Action of Light on Nitrate and Nitrate Assimilation by the Marine Chlorophyte, *Dunaliella tertiolecta* (Butcher).
- J. G. Voss. Effects of Organic Cations on the Gram-negative Cell Wall and their Bactericidal Activity with Ethylenediaminetetra-acetate and Surface Active Agents.
- R. C. Lawrence, T. F. Fryer and B. Reiter. The Production and Characterization of Lipases from a *Micrococcus* and a *Pseudomonad*.
- D. O. Hall and J. W. Greenawalt. The Preparation and Biochemical Properties of Mitochondria from *Neurospora crassa*.
- Ellen I. Garvie. *Leuconostoc oenos* sp.nov.
- Ellen I. Garvie. The Growth Factor and Amino Acid Requirements of Species of the Genus *Leuconostoc*, including *Leuconostoc parmesenteroides* (sp.nov.) and *Leuconostoc oenos*.
- Cynthia H. O'Callaghan and P. W. Muggleton. The Action of Cephaloridine with Cloxacillin or Methicillin against β -Lactamase-Producing Gram-Negative Bacteria.

The subscription price is £5 net per volume of 3 parts. Single parts 45s. each, plus postage. Four volumes are issued each year.

Orders should be sent to a bookseller or to the publishers

CAMBRIDGE UNIVERSITY PRESS
BENTLEY HOUSE, 200 EUSTON ROAD, LONDON, N.W.1
32 EAST 57TH STREET, NEW YORK, N.Y. 10022

Journal of Cell Science

Edited by

H. G. CALLAN & A. V. GRIMSTONE

Volume 2, Number 3, September 1967

M. G. P. Stoker. Transfer of growth inhibition between normal and virus-transformed cells: autoradiographic studies using marked cells

W. K. Blenkinsopp. Effect of tritiated thymidine on cell proliferation

Elizabeth MacIntyre & J. Pontén. Interaction between normal and transformed bovine fibroblasts in culture. I. Cells transformed by Rous sarcoma virus

R. B. Kemp, B. M. Jones, I. Cunningham & M. C. M. James Quantitative investigation on the effect of puromycin on the aggregation of trypsin- and versene-dissociated chick fibroblast cells

A. W. Clark The fine structure of the eye of the leech, *Helobdella stagnalis*

R. M. Eakin, Jane A. Westfall & M. J. Dennis Fine structure of the eye of a nudibranch mollusc, *Hermisenda crassicornis*

J. A. Chapman, M. W. Elves & J. Gough An electron-microscope study of the *in vitro* transformation of human leucocytes. I. Transformation of lymphocytes to blastoid cells in the presence of phytohaemagglutinin

J. A. Chapman, J. Gough & M. W. Elves An electron-microscope study of the *in vitro* transformation of human leucocytes. II. Transformation to macrophages

Patricia V. Johnston & Betty I. Roots Fixation of the central nervous system by perfusion with aldehydes and its effect on the extracellular space as seen by electron microscopy

J. Heslop-Harrison & A. Mackenzie Autoradiography of soluble (2-¹⁴C)thymidine derivatives during meiosis and microsporogenesis in *Lilium* anthers

E. A. Nunez, R. P. Gould, D. W. Hamilton, J. S. Hayward & S. J. Holt Seasonal changes in the fine structure of the basal granular cells of the bat thyroid

Irene Manton Further observations on scale formation in *Chrysochromulina chiton*

R. L. Hayes & E. R. Allen Electron-microscopic studies on a double-stranded beaded filament of embryonic collagen

Doreen E. Ashhurst The fibrillar flight muscles of giant water-bugs: an electron-microscope study

F. W. Gay & J. T. Attridge The fine structure of cytoplasmic inclusions in a mycoplasma-like infection in mice

R. M. Spanswick & J. W. F. Costerton Plasmodesmata in *Nitella translucens*: structure and electrical resistance

50s. (\$8.50) net.

Annual Subscription £8 (\$27.50)

Published for

The Company of Biologists Ltd

CAMBRIDGE UNIVERSITY PRESS

The Journal of Experimental Biology

Edited by

V. B. WIGGLESWORTH & J. A. RAMSAY

Volume 47, No. 1. August 1967

C. Gans & G. M. Hughes The mechanism of lung ventilation in the tortoise *Testudo Graeca* Linné.

James Edward Heath & Phillip A. Adams Regulation of heat production by large moths.

R. H. Stobart The effect of some anions and cations upon the fluxes and net uptake of chloride in the larva of *Aëdes Aegypti* (L.), and the nature of the uptake mechanisms for sodium and chloride.

H. C. Bennet-Clark & E. C. A. Lucey The jump of the flea: A study of the energetics and a model of the mechanism.

Werner Nachtigall & Donald M. Wilson Neuro-muscular control of dipteran flight.

Martin C. Michener & Charles Walcott Homing of single pigeons—analysis of tracks.

Donald M. Wilson Stepping patterns in tarantula spiders.

John Brady Control of the circadian rhythm of activity in the cockroach. I. The role of the corpora cardiaca, brain and stress.

John Brady Control of the circadian rhythm of activity in the cockroach. II. The role of the sub-oesophageal ganglion and ventral nerve cord.

Robert K. Josephson Conduction and contraction in the column of hydra.

V. G. Dethier & A. Gelperin Hyperphagia in the blowfly.

30s. net (\$5.00)

Annual subscription £8 (\$28.00)
for six issues

Published for
The Company of Biologists, Limited

CAMBRIDGE UNIVERSITY PRESS