The Biochemical Journal is conducted by the Biochemical Society and is published by the Cambridge University Press. Under present conditions the parts of each volume will not necessarily appear at regular intervals but will be issued as frequently as possible. During 1943 it is hoped that six parts will be published.

The Biochemical Society was instituted solely for the advancement of the Science of Biochemistry, and holds meetings at different centres for the communication of original papers, and for the discussion of current problems. Persons interested in Biochemistry are eligible for election. Members whose subscriptions are not in arrears are entitled to receive the Biochemical Journal without further payment. Further information may be obtained from the Hon. Secs., Dr W. T. J. Morgan, Lister Institute, Chelsea Bridge Road, London, S.W. 1, and Dr W. Robson, Dept. of Physiology, King's College, Strand, London, W.C. 2, or from the Hon. Treas., Mr J. Addyman Gardner, 35 Bullingham Mansions, Church Street, London, W. 8.

Subscriptions to the Biochemical Journal. For non-members of the Biochemical Society the subscription to the Biochemical Journal is £3. 10s. 0d. per volume, payable in advance to the Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1, to Mr J. Addyman Gardner, 35 Bullingham Mansions, Church Street, London, W. 8, or to any bookseller. In the United States of America the Journal may be purchased from the University of Chicago Press, 5750 Ellis Avenue, Chicago, Ill., the American agents of the Cambridge University Press for the sale of the Biochemical Journal.

Communications respecting the sale of single issues or back numbers of the Journal should be addressed to the Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1.

Claims for the replacement of Journals lost in transmission will not be entertained if they are received later than three months after the date of the posting of the Journal.

Prices of back numbers of the Journal.

In paper covers

<table>
<thead>
<tr>
<th>Volumes</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>I–VI</td>
<td>31s. 6d. net per vol. (Out of print.)</td>
</tr>
<tr>
<td>VII–X</td>
<td></td>
</tr>
<tr>
<td>Index of Authors and Subjects in Volumes I–X.</td>
<td>5s. 3d. net. (By post, 5s. 5d.) (Out of print.)</td>
</tr>
<tr>
<td>XI–XVI</td>
<td>60s. net per vol. (Out of print.)</td>
</tr>
<tr>
<td>XVII–XVIII</td>
<td></td>
</tr>
<tr>
<td>XIX</td>
<td></td>
</tr>
<tr>
<td>XX–XXV</td>
<td>70s. net per vol.</td>
</tr>
<tr>
<td>XXVI–XXXVI</td>
<td></td>
</tr>
<tr>
<td>Index of Authors and Subjects in Volumes XI–XX.</td>
<td>10s. net. (By post, 10s. 4d.)</td>
</tr>
</tbody>
</table>

Binding. Quotations can be given by the publishers for bound copies of back numbers; also for buckram binding cases, and for binding subscribers' sets.
DIRECTIONS TO CONTRIBUTORS

Owing to restrictions in the supply of paper at present in force it is essential that all papers submitted for publication should be as concise as possible. In the interests of the *Journal* it will be necessary for the Editors to return any paper which does not satisfy this condition.

**Communications.** Papers submitted for publication should be sent to Professor F. G. Young, St Thomas's Hospital Medical School, Manor House, Godalming, Surrey. Communications respecting the purchase of reprints should be addressed to the University Press, Cambridge.

**Official Secrets Act.** Authors are required to make themselves familiar with the Official Secrets Act, and to submit a signed statement that their communication contains nothing which contravenes the provisions of that Act.

**General.** Submission of a paper to the Editorial Board will be held to imply that it is not under consideration for publication elsewhere, and that if accepted for the *Biochemical Journal* it will not be published otherwise in the same form, either in English or in any other language, without the consent of the Editorial Board.

Contributors who reside outside Great Britain are requested to nominate somebody in Great Britain who is willing to correct the proofs of their papers. Papers from such contributors should be accompanied by a statement of the number of reprints required.

Unless confusion would otherwise arise, contributors' names should appear as initials and surnames only, without titles or suffixes. The name and address of the laboratory where the work was performed should be given. Any necessary descriptive material regarding the author, e.g. Beit Memorial Fellow, should appear in brackets after the author's name, or at the end of the paper, and not in the form of a footnote.

Typescripts should carry an indication of the name and address of the person to whom the proof of the paper is to be sent, and should give also a shortened version of the paper's title, not exceeding forty-five letters and spaces in length, suitable for a running title for the published pages of the work.

**Format of Papers Submitted for Publication.** Papers intended for publication must be in double-spaced typing, and in the English language. They should, in general, be divided into the following parts: (a) Introductory paragraph, containing the reasons for publication of the work; (b) Experimental methods adopted: with chemical papers the experimental part will normally appear towards the end, but with other types of publication Methods should appear after Introduction; (c) Results: these should be given as concisely as possible, preferably in the form of figures or tables. Tables and figures illustrating the same data will only rarely be permitted. Illustrative protocols only should be included; (d) Discussion: it is desirable that the presentation of the results and the discussion of their significance should be considered separately; (e) Summary: a brief self-contained summary, amounting to not more than 3 % of the length of the paper, should be included. The paragraphs of the summary should be numbered; (f) References: these should be given in the text thus: Barnett & Robinson [1942], [Culbertson & Thomas, 1933]; where a paper to be cited has more than two authors, the names of all the authors should be given when reference is first made, e.g. [Osborne, Mendel & Ferry, 1919]; subsequent citations should appear thus: [Osborne et al., 1919]. Where more than one paper by the same authors has appeared in one year the reference should be given as follows: Osborne & Mendel [1914a]; Osborne & Mendel [1914b]; or Osborne & Mendel [1914a,b].

[p.t.o.]
References. At the end of the paper references should be given in alphabetical order according to the name of the first author of the publication quoted, and should include the authors’ initials; the title of the paper should not be included. Titles of journals should be abbreviated in accordance with the system used in the World List of Scientific Periodicals. References to books and monographs should include the town of publication and the name of the publisher, as well as the date of publication and the number of the edition to which reference is made. Thus:


Illustrations. Illustrations, which should be approximately twice the size of the finished block, should each be on a separate sheet bearing the author’s name. Diagrams should be in Indian ink and should be drawn on plain white paper, Bristol board, or faint blue-lined paper. Letters, numbers, etc., should be written faintly in pencil. Legends and captions should be typed separately from the illustrations, each on a separate sheet, and numbered correspondingly with the relevant illustration.

Tables. Tables should normally carry headings describing their contents. The dimensions of the data, e.g. g./100 ml., should be given at the top of each column, and not repeated on each line of the table. Tables should not normally be included in the body of the text, but should appear separately. Their approximate position in the text should be indicated.

Chemical Formulae. These should be written as far as possible on a single horizontal line. They may be employed instead of the names of substances wherever their use saves space and their interpretation is clear; but with salts it must be stated whether or not the anhydrous material is used, e.g. anhyd. CuSO4, or which of the different crystalline forms is indicated, e.g. CuSO4.5H2O, CuSO4.H2O.

Description of Solutions. Solutions of common acids, bases and salts are preferably defined in terms of normality (N) or molarity (M). The term ‘%’ must be used in its correct sense, i.e. g./100 g. of solution. 10 % HCl means 10 g. of hydrogen chloride in 100 g. of aqueous solution, and should never be used to indicate a ten-fold dilution of laboratory concentrated hydrochloric acid. For ‘per cent by volume’, i.e., ml./100 ml., the term ‘% (by vol.)’ may be employed. To indicate that a given weight of substance is contained in 100 ml. of solution, the term ‘% (w/v)’ (weight per volume) may be used.

Symbols and Abbreviations. In general, symbols and abbreviations should be those adopted by the Chemical Society and by British Chemical and Physiological Abstracts. The attention of authors is particularly drawn to the following symbols: m = (milli) = 10⁻³ and μ = (micro) = 10⁻⁶. Note also that ml. (millilitres) should be employed instead of c.c., and μg. (microgrammes) instead of γ.

Reprints. Where at least one author of a paper is a member of the Biochemical Society, twenty-five reprints are supplied free of cost. If the supply of paper permits an author may purchase additional reprints if he notifies the Press on the appropriate form immediately the proof of the paper is received, but until the present restrictions on the supply of paper are relaxed, only in exceptional circumstances will more than a total of 100 additional reprints be supplied.
CONTENTS

Proceedings of the Biochemical Society

Vitamin B₁ in malt extract. By F. Wokes and J. G. Organ .......... iii
The vitamin P activities of some British fruits and vegetables. By M. E. Coates and A. L. Bacharach .......... iv
The state of tyrosine in egg albumin and insulin as shown by spectrophotometric titration. By J. L. Cramer and A. Neuberger .......... iv
A rat growth method for the assay of pantothenic acid. By J. S. D. Bacon and G. N. Jenkins .......... v
Propylene glycol as a solvent for the intravenous injection of DOCA. By E. P. Sharpey-Schafer .......... v
'March' haemoglobinuria in a soldier. By H. S. Mitchell and R. A. Palmer .......... v
Phenolphthalein phosphate as a reagent for studying the phosphatase content of organisms. By J. Bray and E. J. King .......... v
Concentration of sulphanilamide derivatives in bile of rabbits. By Mary Barber, J. H. Dible and G. A. D. Haslewood .......... vi

INDEX OF AUTHORS

Albericci, V. J. .......... 243
Bacharach, A. L. .......... v
Bacon, J. S. D. .......... vi
Barber, Mary .......... 254
Bray, J. .......... v
Carruthers, C. .......... 295
Chattaway, F. W. .......... 298
Coates, M. E. .......... 278
Conway, E. J. .......... 302, iv
Crammer, J. L. .......... 243
Curtin, T. P. .......... 271
Davidson, J. N. .......... 230
Davies, R. .......... 278
Dible, J. H. .......... vi
Elliot, Jennie F. .......... 209
Fitzgerald, O. .......... 198
Goodwin, L. G. .......... 186
Gutfreund, H. .......... 298
Happold, Frank C. .......... 249
Haslewood, G. A. D. .......... 225
Haurowitz, F. .......... 293
Henry, Kathleen M. .......... 256
Hilditch, T. P. .......... 177
Hind, H. G. .......... 177
Holman, W. I. M. .......... 256
Humphrey, J. H. .......... 250
Jaques, L. B. .......... 189
Jasperson, H. .......... 238
Jenkins, G. N. .......... v
Jones, J. I. M. .......... 200
Keilin, Joan .......... 281
Kilbride, Doreen A. .......... 195
King, E. J. .......... v
Kon, S. K. .......... 225
Kosterlitz, H. W. .......... 181
Long, C. .......... 215
Lutwak-Mann, Cecilia .......... 246
McCLean, D. .......... 169
McIlwain, H. .......... 265
Macrae, T. F. .......... 225
Milder, B. .......... 295
Mitchell, H. S. .......... v
Moore, T. .......... 166
Neuberger, A. .......... 302, iv
O'Malley, E. .......... 278, v
Organ, Joan G. .......... 259, iii
Page, J. E. .......... 198, v
Palmer, R. A. .......... v
Philpot, Flora J. .......... 250
Firle, Antoinette .......... 250
Reilly, D. .......... 243
Reilly, J. .......... 195
Ritchie, Caroline M. .......... 181
Robinson, F. A. .......... v
Rodahl, K. .......... 166
Sandford, Mary .......... 298
Schwerin, Paula .......... 249
Sharpey-Schafer, E. P. .......... v
Tunca, M. .......... 249
Urban, F. .......... 295
Waymouth, Charity .......... 271
Wilson, J. P. .......... 195
Wokes, F. .......... 259, iii
PURE VITAMINS
for
RESEARCH

PACKINGS
(weight in grams)

Aneurin hydrochloride 1·0
Riboflavin 0·5
Calcium d-pantothenate 0·2
Nicotinic acid 5·0
Nicotinamide 5·0
Pyridoxin (limited quantities) 0·5
Ascorbic acid 1·0 and 10·0
α-Tocopheryl acetate 1·0

Limited quantities of other bio-
chemicals, particularly amino-acids
are also available.

DETAILS ON REQUEST

Pioneers in Vitamin Research

ROCHE PRODUCTS LTD.
WELYWN GARDEN CITY, HERTS.

BIOCHEMISTRY AND
MORPHOGENESIS

By JOSEPH NEEDHAM

324 illustrations. 52s. 6d. net

This book, though not a continuation of
Dr Needham’s earlier work, Chemical Em-
brymology, is still concerned with the great
problem of the relation between morpho-
logy and chemistry. Of possible approaches
to this problem greatest attention is here
given to the most recent line of research,
the biochemical investigation of the
morphogenetic hormones. The study of
these chemical substances, of fundamental
importance for all animal and plant de-
velopment, including its hereditary aspect,
occupies the greater part of the present
book.

CAMBRIDGE UNIVERSITY PRESS

LONDON
CAMBRIDGE UNIVERSITY PRESS
BENTLEY HOUSE, N.W. 1

CHICAGO: The University of Chicago Press
(Agents for the United States)
BOMBAY, CALCUTTA, MADRAS: Macmillan

All rights reserved