The Biochemical Journal is conducted by the Biochemical Society and is published by the Cambridge University Press. The Journal is issued in multiple volumes per year. Each volume consists of approximately 640 pages, published in five parts at intervals of one month.

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., Professor J. N. Davidson, Department of Biochemistry, The University, Glasgow, W. 2, and Professor Leslie Young, St Thomas’s Hospital Medical School, London, S.E. 1, or from the Hon. Treas., Dr J. H. Bushill, 149 Hammersmith Road, London, W. 14.

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 Dr J. H. Bushill, The Laboratories, 149 Hammersmith Road, London, W. 14, or to any bookseller. In the United States of America the Journal may be purchased from the Cambridge University Press American Branch, 32 East 57th Street, New York, 22 (subscription price $12.25 per volume).

Communications respecting the sale of single issues or back numbers of the Journal, Volumes 17–47, should be addressed to the Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1. Volumes 1–15 have been reproduced and are available from Messrs William Dawson & Sons, Ltd., 102 Wigmore Street, London, W. 1, at the prices given below.

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.

<table>
<thead>
<tr>
<th>Volumes 1–15 complete.</th>
<th>£22. 10s. bound, £75 unbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate volumes.</td>
<td>£6 each bound, £5. 10s. each unbound</td>
</tr>
</tbody>
</table>

Reduced terms are available to members of the Biochemical Society, who should apply to the Honorary Secretaries.

In paper covers (except Vol. 38)

<table>
<thead>
<tr>
<th>Volumes 16–19.</th>
<th>A few odd parts only are available, prices on application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volumes 20–28.</td>
<td>The reprinting of these volumes is under consideration</td>
</tr>
<tr>
<td>Volumes 29–35.</td>
<td>£2 per volume of 6 parts at £1. 12s. each if sold separately</td>
</tr>
<tr>
<td>Volume 36.</td>
<td>£2 per volume of 12 parts at 16s. each if sold separately</td>
</tr>
<tr>
<td>Volumes 37 &amp; 40.</td>
<td>£5 per volume of 12 parts at 10s. each if sold separately</td>
</tr>
<tr>
<td>Volumes 41–43.</td>
<td>£5 per volume of 6 parts at £1 each if sold separately</td>
</tr>
<tr>
<td>Volumes 38, 39, 44–47.</td>
<td>£5 per volume of 4 parts at £1. 10s. each if sold separately</td>
</tr>
<tr>
<td>Index to Volumes 11–20.</td>
<td>£5 per volume of 5 parts at £1. 4s. each if sold separately</td>
</tr>
<tr>
<td>Index to Volumes 21–30.</td>
<td>10s. net</td>
</tr>
<tr>
<td>Index to Volumes 31–40.</td>
<td>15s. net</td>
</tr>
<tr>
<td>History of the Biochemical Society</td>
<td>£1. 15s. net</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. (Suspended.)
## INDEX OF AUTHORS

<table>
<thead>
<tr>
<th>Author</th>
<th>Page</th>
<th>Author</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anguiano, G.</td>
<td>12</td>
<td>Kaushal, R.</td>
<td>128</td>
</tr>
<tr>
<td>Astrup, T.</td>
<td>5</td>
<td>Kenten, R. H.</td>
<td>29</td>
</tr>
<tr>
<td>Cama, H. R.</td>
<td>48, 60</td>
<td>Kornberg, H. L.</td>
<td>119</td>
</tr>
<tr>
<td>Chanda, R.</td>
<td>95, 100</td>
<td>Lea, C. H.</td>
<td>67</td>
</tr>
<tr>
<td>Cheshire, J. D.</td>
<td>12</td>
<td>Lederer, M.</td>
<td>60</td>
</tr>
<tr>
<td>Clapham, H. M.</td>
<td>95</td>
<td>Mann, P. J. G.</td>
<td>29</td>
</tr>
<tr>
<td>Collins, F. D.</td>
<td>48, 60</td>
<td>McIlwain, H.</td>
<td>12, 24, 132</td>
</tr>
<tr>
<td>Creasey, N. H.</td>
<td>74</td>
<td>McNaught, M. L.</td>
<td>95</td>
</tr>
<tr>
<td>Dalvi, P. D.</td>
<td>43</td>
<td>Morton, R. A.</td>
<td>43, 48, 60</td>
</tr>
<tr>
<td>Davies, R. E.</td>
<td>119</td>
<td>Mounter, L. A.</td>
<td>122</td>
</tr>
<tr>
<td>Dickens, F.</td>
<td>81</td>
<td>Nicholas, J. W.</td>
<td>1</td>
</tr>
<tr>
<td>Drummond, D. G.</td>
<td>128</td>
<td>Owen, E. C.</td>
<td>95, 100</td>
</tr>
<tr>
<td>Gale, E. F.</td>
<td>34</td>
<td>Reid, R. L.</td>
<td>60</td>
</tr>
<tr>
<td>Glock, G. E.</td>
<td>81</td>
<td>Synge, R. L. M.</td>
<td>109</td>
</tr>
<tr>
<td>Gore, M. B. R.</td>
<td>18, 24</td>
<td>Van Halteren, M. B.</td>
<td>34</td>
</tr>
<tr>
<td>Gray, C. H.</td>
<td>74</td>
<td>Walker, T. K.</td>
<td>128</td>
</tr>
<tr>
<td>Hamoir, G.</td>
<td>140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawke, J. C.</td>
<td>67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>James, A. T.</td>
<td>109</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUGGESTIONS TO AUTHORS

Papers submitted for publication in the Biochemical Journal should be written concisely. Special attention is directed to the sections below concerning the preparation of the typescript. Strict observance of these requirements will shorten the interval between the receipt of a paper and its publication. Typescripts which are not concise or which do not conform to the conventions of the Biochemical Journal will be returned to authors for revision.

The attention of authors is drawn to a pamphlet entitled General Notes on the Preparation of Scientific Papers published for the Royal Society by the Cambridge University Press (2s. 6d., post free 2s. 9d.).

Communications. Papers submitted for publication should be sent to Prof. E. J. King (Biochemical Journal), Postgraduate Medical School, Ducane Road, London, W.12. Communications respecting the purchase of reprints should be addressed to the University Press, Cambridge.

General. Submission of a paper to the Editorial Board will be held to imply that it presents the results of original research not previously published, 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 (but female authors may use one given name in full) 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 in the published pages of the work.

Form of Papers Submitted for Publication. The onus of preparing a paper in a form suitable for sending to press lies in the first place with the author. Authors should consult a current issue in order to make themselves familiar with the Biochemical Journal’s practice concerning typographical conventions, use of cross-headings, lay-out of tables, citation of references, etc. The need for editorial revision of badly prepared typescript will lead to delay in publication for which the Editors cannot accept responsibility. Papers on specialized subjects should be presented so that they are intelligible to the ordinary reader of the Journal. Sufficient information should be included to permit repetition of the experimental work.

Papers intended for publication should be in doublespaced typing on sheets of uniform size with wide margins. Top copies only should be submitted. The paper should be written in English. It should be divided clearly into parts: (a) Introduction, containing the reasons for publication of the work; (b) Experimental methods: with chemical papers the experimental part will normally appear towards the end, but otherwise should follow the introduction; (c) Results: these should be given concisely: tables or figures are often the best form, but the use of both to illustrate 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 summary, about 3% of the length of paper, should be included; the paragraphs of the summary should be numbered; (f) Acknowledgements; (g) References.
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); (Osborne & Mendel, 1914a, 1916; Barnett & Robinson, 1942).

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, but not the title of the paper. Titles of journals should be abbreviated in accordance with the system used in the World List of Scientific Periodicals (1935, 2nd ed., Oxford: University Press). Examples of such abbreviations will be found in the current numbers of the Biochemical Journal, and a useful list has been issued by the Biological Council and is obtainable from the Editorial Office, Biochemical Journal, Postgraduate Medical School, Ducane Road, London, W.12, price 2s. 6d. post free. 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:


Statistical Treatment of Data. In general it is not necessary to publish the individual results of a number of similar experiments. A statement of the number of individual results, their mean value, the standard error of the mean, and the extreme range of values is usually sufficient. Alternatively, it is often better, if possible, to include a brief frequency distribution.

A statement that a significant difference exists between the mean (or other) values of two groups of data should be accompanied by the probability derived from the test of significance applied.

Illustrations. Illustrations, which should be approximately twice the size of the finished block, should each be on a separate sheet trimming to the smallest area and packed flat; they should bear the author's name and the title of the paper on the back. Diagrams should be in Indian ink and should be drawn on plain white paper, Bristol board or faintly blue-lined paper. Curves based on experimental data should carry clear indications of the experimentally determined points. Letters, numbers, etc., should be written lightly in pencil. Legends and captions should be typed on a separate sheet from the illustrations and numbered correspondingly. Figures should be comprehensible without reference to the text. Unsuitable figures will be redrawn by the Press and the expense charged to the author.

Tables. Tables should carry headings describing their content and should be comprehensible without reference to the text. 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 be typed on separate sheets and their approximate position in the text should be indicated.

Chemical Formulae. These should be written as far as possible on a single horizontal line. With inorganic substances and CHCl₃, CO₂ and O₂, formulae may be used in the text as abbreviations, particularly in the experimental portion, at the discretion of the editors. With salts it must be decided whether or not the anhydrous material is used, e.g. anhydrous CuSO₄, or which of the different crystalline forms is indicated, e.g. CuSO₄·5H₂O, CuSO₄·H₂O.

Description of Solutions. Solutions of common acids and bases should always be expressed in terms of normality (N), and salts preferably in terms of molarity (M), e.g. N-HCl; 0.1 m-NaH₂PO₄. Fractional concentrations should preferably be expressed in the decimal system, e.g. 0.25 N-HCl (not N/4 HCl). The term % must be used in its correct sense, i.e. g/100 g. of solution. For ‘per cent by volume’, i.e. ml./100 ml., the term % (v/v) 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. Authors should refer to current numbers of the Biochemical Journal for information in this connexion, and to the pamphlet of abbreviations and symbols published with the Biochemical Journal, 45, Part 3. Copies may be obtained from the Editorial Office, Biochemical Journal, Postgraduate Medical School, Ducane Road, London, W.12, price 1s. post free. The chemical nomenclature adopted is that given in Principles of Abstracting (1948, London: Bureau of Abstracts). Much further information is given by Mitchell in British Chemical Nomenclature (1948, London: Arnold). Spectrophotometric terms and symbols are those proposed by the Society of Public Analysts and other Analytical Chemists (see Analyst, 1942, 67, 164). The attention of authors is particularly drawn to the following symbols: m = (milliliter)=10⁻³ and μ = (micro)=10⁻⁶. Note also that ml. (milliliters) should be employed instead of c.c., and μg. (micrograms) instead of y.

Nomenclature of Micro-organisms. Binomial Latin names of micro-organisms, the generic name only with a capital, must be used in accordance with the International Rules of Nomenclature. Binomials should be underlined (for italic) in the typescript. A name must be given in full at the first mention in a paper; in subsequent mention the generic name may be abbreviated, but the abbreviation must be unambiguous. Single initial letter abbreviations should, in general, be avoided (thus: Staph. aureus, Strept. pyogenes not S. aureus, S. pyogenes). Scientific epithets or trivial names are not underlined and should be without capitals. Microfungi should be designated as in Ainsworth & Bisby's A Dictionary of the Fungi (1945, 2nd ed., Kew: Imperial Mycological Institute).

Bacteria. The Editorial Board prefers that the nomenclature of Bergey's Manual of Determinative Bacteriology (1948, 6th ed., London: Bailliére, Tindall & Cox) should be followed. Where authors wish, for good reasons, to use a name other than that in Bergey's Manual, the name as in Bergey's Manual should be inserted in brackets at the first full citation, thus: Chromobacterium prodigiosum (Serratia marcescens).

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 only in exceptional circumstances will more than a total of 175 additional reprints be supplied.
FORTHCOMING PAPERS

It is hoped to publish the following papers in the next issue of the *Biochemical Journal*:

Pathways of pyruvate metabolism in the mammary gland. By C. Ternер

Hippuric acid synthesis in the rat. By H. R. V. Arnstein and A. Neuberger


Isolation of antibiotics from a species of *Cephalosporium*. Cephalosporins P₁, P₂, P₃, P₄ and P₅. By H. S. Burton and E. P. Abraham

Tissue fractionation studies:
1. The existence of a mitochondria-linked, enzymically inactive form of acid phosphatase in rat-liver tissue. By J. Berthet and C. De Duve
2. The nature of the linkage between acid phosphatase and mitochondria in rat-liver tissue. By J. Berthet, L. Berthet, F. Appelmans and C. De Duve

The function of carbonic anhydrase in the stomach. By R. E. Davies and J. Edelman

Isolation of unequivocal uroporphyrin. 3. A further study of turacin. By R. E. H. Nicholas and C. Rimington

A study of the porphyrins excreted in the urine by a case of congenital porphyria. By C. Rimington and P. A. Miles

The branched-chain fatty acids of butterfat. 1. The isolation from butterfat of branched-chain fatty acids with special reference to the C₁₇ acids. By R. P. Hansen and F. B. Shorland

The virulence-enhancing factor of mucins. 4. The role of particulate insoluble matter and a viscous medium in virulence enhancement, with a revised assay of the third factor involved. By H. Smith, Patricia W. Harrison-Smith and J. L. Stanley.

*Addendum*—Statistical analysis of the biological assay of virulence-enhancing activity. By S. Peto

Amino-acid requirements of amylase synthesis by pigeon-pancreas slices. By L. E. Hokin

Studies in detoxication:
39. Nitro compounds. (a) The metabolism of o-, m- and p-nitrophenols in the rabbit. (b) The glucuronides of the mononitrophenol and observations on the anomalous optical rotations of triacetyl β-o-nitrophenylglucuronide and its methyl ester. By D. Robinson, J. N. Smith and R. T. Williams

40. The metabolism of nitrobenzene in the rabbit. o-, m- and p-nitrophenols, o-, m- and p-aminophenols and 4-nitrocatechol as metabolites of nitrobenzene. By D. Robinson, J. N. Smith and R. T. Williams


Ethanolamine O-phosphoric acid in rat brain. By G. B. Ansell and R. M. C. Dawson

The preparation and some properties of purified micrococcin. By N. G. Heatley and Hazel M. Doery

Metabolic effects of electrical stimulation of mammalian tissues in *vitro*. By C. C. Kratzing

The L-amino-acid oxidase of *Neurospora*. By K. Burton

Studies in carotenogenesis. 2. Carotene production by *Phycomyces blakesleeanus*: the effect of different amino-acids when used in media containing low concentrations of glucose. By T. W. Goodwin and W. Ljinsky


A study of the cytochrome system and some other aspects of the respiration of *Aerobacter aerogenes*. By A. Tissières
THE BIOCHEMICAL JOURNAL

Edited for
THE BIOCHEMICAL SOCIETY

Editorial Board
R. K. CALLOW M. G. MACFARLANE
R. E. DAVIES R. A. MORTON
D. HERBERT A. NEUBERGER
R. A. KEKWICK A. PIRIE
E. J. KING (Chairman) R. L. M. SYNGE
W. KLYNE T. S. WORK

VOLUME 50, 1952
INDEX

CAMBRIDGE.
AT THE UNIVERSITY PRESS
1952