Volume 5 - 1963

# RADIOCARBON

Published annually by
THE AMERICAN JOURNAL OF SCIENCE

Editors

EDWARD S. DEEVEY — RICHARD FOSTER FLINT

IRVING ROUSE

Managing Editor
THELMA M. PFENNINGER

QC 198 D3 A48

YALE UNIVERSITY
NEW HAVEN, CONNECTICUT

### RADIOCARBON

Editors: Edward S. Deevey—Richard Foster Flint—Irving Rouse
Managing Editor: Thelma M. Pfenninger

Published annually by

### THE AMERICAN JOURNAL OF SCIENCE

Editor: JOHN RODGERS

Published annually, in June, at Yale University, New Haven, Connecticut. Subscription rate \$10.00 beginning with Volume 6.

All correspondence and manuscripts should be addressed to the Managing Editor, Box 1905A, Yale Station, New Haven, Connecticut.

#### INSTRUCTIONS TO CONTRIBUTORS

Manuscripts of radiocarbon papers should follow the recommendations in Suggestions to Authors, 5th ed.\* All copy must be typewritten in double space (including the bibliography): manuscripts must be submitted in duplicate by December 1, 1963.

Descriptions of samples, in date lists, should follow as closely as possible the style shown in this volume. Each separate entry (date or series) in a date list should be considered an abstract, prepared in such a way that descriptive material is distinguished from geologic or archaeologic interpretation, but description and interpretation must be both brief and informative. Date lists should therefore not be preceded by abstracts, but abstracts of the more usual form should accompany all papers (e.g. geochemical contributions) that are directed to specific problems.

Each description should include the following data, if possible in the order given:

- 1. Laboratory number, descriptive name (ordinarily that of the locality of collection), and the date expressed in years B.P. (before present, i.e. before A.D. 1950) and, for finite dates, in years A.D. or B.C. The standard error following the date should express, within limits of  $\pm 1_{\sigma}$ , the laboratory's estimate of the accuracy of the radiocarbon measurement, as judged on physicochemical (not geologic or archaeologic) grounds.
- 2. Substance of which the sample is composed; if a plant or animal fossil, the scientific name if possible; otherwise the popular name; but not both. Also, where pertinent, the name of the person identifying the specimen.
  - 3. Precise geographic location, including latitude-longitude coordinates.
  - 4. Occurrence and stratigraphic position in precise terms.
- 5. Reference to relevant publications. Citations within a description should be to author and year, with specific pages wherever appropriate, except that references (e.g. to published date lists that are frequently repeated) may be simplified by use of a code (e.g. Groningen III) that is explained in the bibliography. Full bibliographic references are listed alphabetically at the end of the manuscript, in the form recommended in Suggestions to Authors.
  - 6. Date of collection and name of collector.
- 7. Name of person submitting the sample to the laboratory, and name and address of institution or organization with which submitter is affiliated.
- 8. Comment, usually comparing the date with other relevant dates, for each of which sample numbers and references must be quoted, as prescribed above. Interpretive material, summarizing the significance and implicitly showing that the radiocarbon measurement was worth making, belongs here, as do technical matters, e.g. chemical pretreatment, special laboratory difficulties, etc.

Illustrations, in general, should be originals, but photographic reproductions of line drawings are sometimes acceptable, and should accompany the manuscript in any case, if the originals exceed 9 by 12 inches in size.

Reprints. Thirty copies of each article, without covers, will be furnished without cost. Additional copies and printed covers can be specially ordered.

\* Suggestions to authors of the reports of the United States Geological Survey, 5th ed., Washington, D. C., 1958 (Government Printing Office, \$1.75).

Volume 5 - 1963

RADIOCARBON

Published annually by
THE AMERICAN JOURNAL OF SCIENCE

Editors

EDWARD S. DEEVEY — RICHARD FOSTER FLINT IRVING ROUSE

Managing Editor
THELMA M. PFENNINGER

YALE UNIVERSITY
NEW HAVEN, CONNECTICUT

Vol. 5 1963

# Radiocarbon

## CONTENTS

UCLA Radiocarbon Dates II	1
Miami Natural Radiocarbon Measurements II  Gene A. Rusnak, Albert L. Bowman and H. Göte Östlund	<b>2</b> 3
National Physical Laboratory Radiocarbon Measurements I	
W. J. Callow, M. J. Baker and D. H. Pritchard	34
Geological Survey of Canada Radiocarbon Dates II  W. Dyck and J. G. Fyles	39
Texas Bio-Nuclear Radiocarbon Measurements I	0)
John B. Chandler, Russell Kinningham, and Don S. Massey	56
Isotopes, Inc. Radiocarbon Measurements IIIMilton A. Trautman	62
Radiocarbon Dating at the University of Washington, II	02
A. W. Fairhall and W. R. Schell	80
University of Pennsylvania Radiocarbon Dates VI	
Robert Stuckenrath, Jr.	82
British Museum Natural Radiocarbon Measurements IV  Harold Barker and John Mackey	104
Gakushuin Natural Radiocarbon Measurements II	104
Kunihiko Kigoshi and Kunihiko Endo	109
New Zealand Natural Radiocarbon Measurements I-V	109
T. L. Grant-Taylor and T. A. Rafter	118
Groningen Radiocarbon Dates IVJ. C. Vogel and H. T. Waterbolk	163
Stockholm Natural Radiocarbon Measurements V	105
H. Göte Östlund and Lars G. Engstrand	203
University of Michigan Radiocarbon Dates VIII	
H. R. Crane and James B. Griffin	228
La Jolla Natural Radiocarbon Measurements III	
Carl L. Hubbs, George S. Bien, and Hans E. Suess	254
Tata Institute Radiocarbon Date List I	
S. Kusumgar, D. Lal, and R. P. Sarna	273
Arizona Radiocarbon Dates IV	
Paul E. Damon, Austin Long and Joel J. Sigalove	<b>28</b> 3
Geological Survey of Finland Radiocarbon Measurements II	
E. Hyyppä, A. Isola, and V. Hoffrén	302
Bern Radiocarbon Dates III	305
Yale Natural Radiocarbon Measurements VIII	
Minze Stuiver, Edward S. Deevey, Jr., and Irving Rouse	312
Pretreatment of Wood and Char Samples (Abstract)	0.42
Hyman Schultz, L. A. Currie, F. R. Matson, and W. W. Miller List of Laboratories	342
LIST OF LABORATORIES	343