

Radiocarbon

An International Journal of Cosmogenic Isotope Research



Editor

AUSTIN LONG

Consulting Editor

A J T JULL

Managing Editor Emerita

RENEE S KRA

Managing Editor

DAVID R SEWELL

Associate Managing Editor

KIMBERLEY TANNER ELLIOTT

QC
798
D3
448
Sci
Current
Journal

Department of Geosciences
The University of Arizona
17 East Ft. Lowell Road
Tucson, Arizona 85712-1201 USA



ISSN: 0033-8222

RADIOCARBON

An International Journal of Cosmogenic Isotope Research

Editor: AUSTIN LONG

Consulting Editor: A J T JULL

Managing Editor Emerita: RENEE S KRA

Managing Editor: DAVID R SEWELL

Associate Managing Editor: KIMBERLEY TANNER ELLIOTT

Published by

Department of Geosciences

The University of Arizona

Published three times a year at The University of Arizona, Tucson, AZ 85712-1201 USA.

© 1999 by the Arizona Board of Regents on behalf of the University of Arizona.

All rights reserved.

Subscription rate (1999): \$120.00 (for institutions), \$65.00 (for individuals). Foreign postage is extra. A complete price list, including Proceedings of International Conferences, special publications and back issues, appears on the inside back cover of this issue. *Advertising rates* available on request, or see <http://www.radiocarbon.org/adrates.html>.

Missing issues will be replaced without charge only if claim is made within three months (six months for India, New Zealand and Australia) after the publication date. Claims for missing issues will not be honored if non-delivery results from failure by the subscriber to notify the Journal of an address change.

Authors: See our "Information for Authors" document at <http://www.radiocarbon.org/Authors/> for guidelines concerning manuscript submission and format. All correspondence and manuscripts should be addressed to the Managing Editor, *RADIOCARBON*, Department of Geosciences, The University of Arizona, 4717 East Ft. Lowell Road, Tucson, AZ 85712-1201 USA. Tel.: +1 520 881-0857; Fax: +1 520 881-0554; Internet: editor@radiocarbon.org

List of laboratories. Our comprehensive list of laboratories is published annually, and is also available on the WWW at <http://www.radiocarbon.org/Info/lablist.html>. We ask all laboratory directors to provide their laboratory code designation, as well as current telephone and fax numbers, and e-mail addresses. Changes in names or addresses, additions or deletions should be reported to the Managing Editor. Conventional and AMS laboratories are now arranged in alphabetical order by country and we include laboratories listed by code designation.

RADIOCARBON on the World Wide Web: <http://www.radiocarbon.org/>

RADIOCARBON is indexed and/or abstracted by the following sources: *Anthropological Index; Anthropological Literature; Art and Archaeology Technical Abstracts; Bibliography and Index of Geology (GeoRef); British Archaeological Bibliography; Chemical Abstracts; Chemistry Citation Index; Current Advances in Ecological and Environmental Sciences; Current Contents (ISI); FRANCIS (Institut de l'Information Scientifique et Technique - CNRS); Geographical Abstracts; Geological Abstracts; Oceanographic Literature Review; Science Citation Index; Social Sciences Citation Index.*

CONTENTS

FROM THE EDITOR

<i>Austin Long</i>	iii
--------------------------	-----

ARTICLES

Methods, Materials, and Instruments

Reliability of Bone Gelatin AMS Dating: <i>Rattus exulans</i> and Marine Shell Radiocarbon Dates from Pauatahanui Midden Sites in Wellington, New Zealand <i>Nancy Beavan Athfield, Bruce McFadgen, Rodger Sparks</i>	119
Radiocarbon Dating of "Old" Charcoal Using a Wet Oxidation, Stepped-Combustion Procedure <i>M I Bird, L K Ayliffe, L K Fifield, C S M Turney, R G Cresswell, T T Barrows, B David</i>	127
Changes in ¹⁴ C Activity over Time during Vacuum Distillation of Carbon from Rock Pore Water <i>G R Davidson, I C Yang</i>	141
Radiocarbon Age Anomalies in Land Snail Shells from Texas: Ontogenetic, Individual, and Geographic Patterns of Variation <i>Glenn A Goodfriend, G Lain Ellis, L J Toolin</i>	149

Archaeological and Historical Studies

Change of Diet of the Greenland Vikings Determined from Stable Carbon Isotope Analysis and ¹⁴ C Dating of Their Bones <i>Jette Arneborg, Jan Heinemeier, Niels Lynnerup, Henrik L Nielsen, Niels Rud, Árný E Sveinbjörnsdóttir</i>	157
Use of Radiocarbon Dating in Assessing Christian Connections to the Dead Sea Scrolls <i>G A Rodley, B E Thiering</i>	169
AMS ¹⁴ C Dating of Equipment from the Iceman and of Spruce Logs from the Prehistoric Salt Mines of Hallstatt <i>Werner Rom, Robin Golser, Walter Kutschera, Alfred Priller, Peter Steier, Eva M Wild</i>	183

DATE LIST

Rudjer Bošković Institute Radiocarbon Measurements XIV <i>Nada Horvatinčić, Bogomil Obelić, Ines Krajcar Bronić, Dušan Srdoč, Romana Čalić</i>	199
---	-----

NOTES AND COMMENTS

Radiocarbon Calibration by the Date Distribution Method <i>Paul Muzikar</i>	215
--	-----

LETTER TO THE EDITOR

Bias, Accuracy, and Precision <i>Marian Scott</i>	221
--	-----

RADIOCARBON UPDATES	223
---------------------------	-----

CORRECTION	225
------------------	-----

EDITORIAL BOARD

EDOUARD BARD	<i>Aix-en-Provence, France</i>
OWEN K DAVIS	<i>Tucson, Arizona, USA</i>
ELLEN R M DRUFFEL	<i>Irvine, California, USA</i>
CALVIN J HEUSSER	<i>Tuxedo, New York, USA</i>
SHEELA KUSUMGAR	<i>Ahmedabad, India</i>
STEVEN W LEAVITT	<i>Tucson, Arizona, USA</i>
ANN P McNICHO	<i>Woods Hole, Massachusetts, USA</i>
ANDREW M T MOORE	<i>New Haven, Connecticut, USA</i>
PAVEL POVINEC	<i>Bratislava, Slovakia</i> <i>Monaco</i>
MICHAEL B SCHIFFER	<i>Tucson, Arizona, USA</i>
E MARIAN SCOTT	<i>Glasgow, Scotland</i>
RODGER SPARKS	<i>Lower Hutt, New Zealand</i>
JOHANNES VAN DER PLICHT	<i>Groningen, The Netherlands</i>
JOHN S VOGEL	<i>Livermore, California, USA</i>
WEIJIAN ZHOU	<i>Xi'an, China</i>

FROM THE MANAGING AND ASSOCIATE MANAGING EDITORS

Austin Long is one of those people who is notoriously averse to having a fuss made over him, but we did not want to let the occasion of his retirement pass without a few quiet words of appreciation.

As an editor, Austin has been unwavering in his devotion to concision, clarity, and exact language. We have learned from him not to tolerate calling a bar graph without class intervals a “histogram”, and to substitute the more accurate “uncertainty” for what has often been called “error” in the reporting of radiocarbon dates. Whenever he has returned a set of proofs to the *RADIOCARBON* office, we knew that we would find pencil marks through any flabby language that we had let slip through: the idle “there are”, the pretentious “it is to be expected that”, and their kin.

He has been unwavering also in his devotion to objectivity and proper scientific method. The most difficult part of a scientific journal editor’s job is to adjudicate the occasional paper where authors and reviewers violently disagree or accuse one another of bias. More than once Austin has put in long hours soliciting and reading second, third, or even fourth reviews of disputed papers, along with authors’ revisions and explanations, before finally judging a submission to be publishable or not. And although we may have heard him grumble in private about the lunacy of a particular author or reviewer, he never allowed himself to reject a paper because of personal objections to it.

The radiocarbon community is a highly diverse and sometimes contentious one; Austin’s ability to remain calm and fair-minded has helped prevent its infrequent disputes from becoming serious. We thank him for bringing order out of chaos for this past decade, in the outside world as well as in our journal office.

David Sewell
Managing Editor

Kimberley Elliott
Associate Managing Editor