Records in Stone
Papers in memory of Alexander Thom

Alexander Thom.

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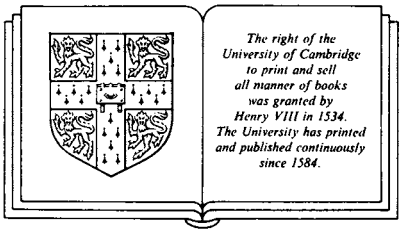
Edited by

C. L. N. RUGGLES

University of Leicester



CAMBRIDGE UNIVERSITY PRESS

Cambridge

New York *New Rochelle*

Melbourne *Sydney*

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, UK
40 West 20th Street, New York NY 10011–4211, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain
Dock House, The Waterfront, Cape Town 8001, South Africa

http://www.cambridge.org

First published 1988
First paperback edition 2002

A catalogue record for this book is available from the British Library

Library of Congress cataloguing in publication data
Records in stone: papers in memory of Alexander Thom / edited by
C. L. N. Ruggles.
p. cm.
Bibliography: p.
ISBN 0 521 33381 4 hardback
1. Megalithic monuments. 2. Leys. 3. Astronomy, Prehistoric.
4. Thom, A. (Alexander) I. Thom, A, (Alexander)
II. Ruggles, C. L. N. (Clive L. N.)
GN790.R43 1988
936.1-dc19 88-1723 CIP

ISBN 0 521 33381 4 hardback
ISBN 0 521 53130 6 paperback

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Foreword

Alexander Thom died on 7 November, 1985, aged 91. He had had a distinguished academic career, holding the Chair of Engineering Science at the University of Oxford from 1945 to 1961. He had also developed, quite independently, a deep and active interest in the prehistoric megalithic sites of his native Scotland, and upon his retirement this spare-time interest became his principal one. Ironically perhaps, it is for his contribution to archaeology that he will be best remembered by many.

The volume opens with appreciations from two people who knew Alexander Thom both as an engineer and as a field worker passionately interested in megalithic sites. One of these, his son Archie, was his devoted helper and collaborator for many years.

Between the 1930s and the 1970s Thom visited and surveyed hundreds of megalithic sites in Britain and Brittany. These sites - stone rings, stone rows and single standing stones, together with burial monuments such as chambered tombs and cairns - were erected in considerable numbers in the British Isles and north-western France during the third and second millennia BC. Thom's surveys, which accurately record sites many of which are in a continuing state of deterioration, give students of British prehistory an invaluable corpus of field data which is of lasting value. His field notebooks and most of his original plans are now deposited with The National Monuments Record of Scotland, in Edinburgh, and the centrepiece of the current volume is the catalogue for this collection which has been prepared by Mrs. Lesley Ferguson of the Royal Commission on the Ancient and Historical Monuments of Scotland.

Thom's interpretations of his field data have led to widespread interest and debate in three areas: geometry (the methods used to set out the megalithic rings, many of which are clearly non-circular), mensuration (the possible use of 'standard' units of measurement in setting out megalithic rings and rows), and astronomy (the possible alignment of structures upon the horizon rising

and setting positions of certain celestial bodies). All three topics are controversial, and continue to arouse strong and even impassioned debate. It is fitting that two of them are covered in Alexander Thom's last paper, written together with his son Archie, which is published here for the first time.

Many advances have been made since Thom's work first became widely recognised. It is now generally realised, for instance, that studies of prehistoric astronomy and geometry are meaningless if they take place in a cultural vacuum, and discussions about these topics have moved beyond their original narrow confines. What then of Thom's contribution to archaeological research? It would be short-sighted indeed to attempt to measure this simply by comparing his own conclusions with current or future consensus amongst prehistorians. Instead, we must look to his success in opening up new fields of enquiry which have important implications for the study of the people who, through a long and changing period of north-west European prehistory, constructed and used monuments in stone.

Thom's conclusions, particularly concerning astronomy, have also been the catalyst for a number of new areas of investigation stretching far beyond the British megalithic sites that were of such interest to Thom himself. Recent years have seen the rise of 'archaeoastronomy' - the study of astronomical practice in past societies - as a recognised field of enquiry in its own right. The *Archaeoastronomy* supplement to *Journal for the History of Astronomy* was created in 1979 and the first 'World Archaeoastronomy Symposium' was held in Oxford in 1981. This provided a forum for interaction between European and American archaeoastronomers, who had developed different methodologies for dealing with the study of astronomical practice in very different cultural contexts. The second such symposium was held in Merida, Mexico in 1986, and underlined the interdisciplinary involvement which is now prevalent in the field. The third World Archaeoastronomy Symposium is planned for 1990 and promises to be truly global both in content and participation. All these developments can be traced back to the impetus given by Alexander Thom's work.

The larger part of this volume contains material which, it is hoped, will serve as a memorial to Thom's contribution by illustrating current work in areas which it has inspired, both directly and indirectly. It is hoped that the contributions represent a fair cross-section of current opinion and the contributors a representative selection of the people actively involved. Most of the contributions relate to the megalithic sites of Britain and Brittany; the final two papers from American contributors concern world archaeo-astronomy.

It has become clear from the many points of view expressed over the years about Thom's ideas that the nature of admissible evidence, and of the conclusions that can reasonably be derived from that evidence, seems very different for a person trained in, say, the physical sciences from that for a colleague trained in a discipline such as social anthropology. Yet the astronomer, the statistician and the anthropologist each have a point of view which is undeniably relevant to the study of the nature of prehistoric astronomy. How then should their evidence be collated and what conclusions should be reached?

After many initial misunderstandings and fruitless exchanges, the wheels of interdisciplinary communication and collaboration necessary to confront this question have at last been set in motion. In many archaeoastronomical papers today one sees attempts to consider the astronomical and statistical evidence alongside, and on equal terms with, the anthropological and the ethnohistoric. There is far to go: but in drawing attention to problem areas where such collaboration is necessary, Thom's work may prove in the longer term to have opened up the interdisciplinary arena for a fascinating exchange of views across the 'two cultures' which could have methodological consequences far beyond the mere study of megalithic remains and archaeoastronomy. In the longer term this may well prove to be the most significant benefit of all to be derived from the work of Alexander Thom.

In the meantime his contribution to megalithic studies bears witness to his own remarkable range of skills, both theoretical and practical, as well as to his sheer enthusiasm and determination. It is hoped that this volume, as well as commemorating Thom's endeavours, will contribute significantly to their continuation.

I wish to record my sincerest thanks to those without whose help *Records in Stone* would simply not have been possible: to Archie Thom, who acted as advisor and consultant throughout; to Susan Kruse, who acted as editorial assistant; to the referees, who gave me invaluable help in selecting a worthy and representative cross-section of papers for inclusion; to Jackie Macklin, who re-typed those manuscripts (the great majority) which were not received in 'soft' form; and to Paul Warren, who helped considerably in the conversion of these manuscripts to a format suitable for the laser printer. The manuscript was prepared using the facilities of the Computing Studies Department at Leicester University.

The catalogue of the Alexander Thom archive (Chapter 4) and the article by Ritchie on Brodgar (Chapter 15) are published by courtesy of the Commissioners and with the assistance of a grant from the Royal Commission on the Ancient and Historical Monuments of Scotland. Shorter versions of the

personal note by Archie Thom (Chapter 1) and the list of publications (Chapter 3) have appeared in *Archaeoastronomy*, the journal of the Center for Archaeoastronomy, Maryland, USA, and the relevant passages are reproduced with permission. The Astronomical Society of Australia have given permission to reproduce parts of the review by Norris, which were first published in their Proceedings.

I should like to thank the following for their kind permission to publish or reproduce illustrations: the British Library Board (Ritchie, Figs. 2 & 3); the Landsbókasafn Islands, Reykjavík (Ritchie, Fig. 4); Oxford University Press (Thom & Thom, Figs. 1 & 2; Myatt, Figs. 3, 6, 8 & 9); Science History Publications Ltd. (Thom & Thom, Fig. 4); the Photographic Unit of the University of Glasgow (Thom & Thom, Fig. 6); the Historic Monuments and Buildings Branch, Department of the Environment for Northern Ireland (Burl, Fig. 5); the Royal Commission on the Ancient and Historical Monuments of Scotland (Ritchie, Figs. 1 & 5-8); the Scottish Development Department, Historic Buildings and Monuments Branch (Curtis, Fig. 9); the Royal Statistical Society (Myatt, Fig. 4); the National Museums of Scotland (Ponting, Figs. 9 & 11); the Society of Antiquaries of Scotland (Ponting, Fig. 10); and the Danish National Museum (Ponting, Figs. 12 & 13).

Clive Ruggles

Notes about contributors

Anthony Aveni is Charles A. Dana Professor of Astronomy and Anthropology at Colgate University, Hamilton, New York. Since 1970 he has worked in Mesoamerican and Andean archaeoastronomy and is the author/editor of eight texts and numerous articles on the subject. Most recently he has edited *World Archaeoastronomy*, the proceedings of the 2nd Oxford International Conference on Archaeoastronomy, and *The Lines of Nazca*, contributing two articles to both.

Aubrey Burl, formerly Principal Lecturer in Archaeology at Hull College of Higher Education but now retired, is an authority on prehistoric stone circles. As well as many papers and articles he has written *The Stone Circles of the British Isles*, *Prehistoric Avebury* and *Megalithic Brittany: A Guide*. His most recent book, *The Stonehenge People*, was published in 1987.

Thaddeus M. Cowan teaches in the Department of Psychology at Kansas State University. He received his doctorate in experimental psychology from the University of Connecticut in 1965. His interests in archaeology extend over seventeen years. They include megalithic design analysis and the astronomical significance of the effigy mounds of North America.

G. Ronald Curtis is a chartered civil engineer with the North of Scotland Hydro-Electric Board in Edinburgh. For over fifteen years, both privately and on behalf of the Scottish Development Department, he has organised and undertaken field surveys, archaeological excavations and restoration work on historic masonry bridges and old roads in the Highlands. He has also made precise surveys of many megalithic sites in the Outer Hebrides.

Alan Davis teaches Physics and Mathematics at Lancaster Royal Grammar School. He graduated in Physics at Sheffield University in 1968, and received an M.Sc. in Radio Astronomy at Manchester University in 1970. Since 1980 he has worked, in his spare time, on various aspects of the Thoms'

metrological hypotheses. He is currently attempting a reassessment of their work on the stone rows in Britain and Brittany.

Lesley Feguson graduated from Edinburgh University and is a member of the curatorial staff of the Archaeology Section of the National Monuments Record of Scotland, Royal Commission on the Ancient and Historical Monuments of Scotland.

David Fraser, after studying geography at Aberdeen University, was awarded his Ph.D from Glasgow University for a study of the Neolithic monuments of Orkney and their surrounding landscape. He is now an Inspector of Ancient Monuments with the Historic Buildings and Monuments Commission for England.

Peter Freeman is Professor of Statistics at the University of Leicester and has a long-standing interest in the application of statistical ideas to archaeology in general and the data of Professor Thom in particular.

Pierre-Roland Giot is Professor of Archaeology at the University of Rennes. A leading authority on the archaeology of Brittany for over forty years, he has worked on all periods from the Palaeolithic to the Medieval. His special interest is in the use of geological methods in archaeological science.

Chris Jennings is a freelance artist who lives and works in Oxford. He studied fine art at Hornsey College of Art, London. His work - photographs, prints, drawings and sculpture - has been exhibited widely in this country and abroad. He has recently completed a major sculpture commission for the main courtyard at Southampton General Hospital.

Ed Krupp is an astronomer and the Director of the Griffith Observatory in Los Angeles. He is editor/co-author and author of several books on ancient and prehistoric astronomy and also writes astronomy books for children.

Euan MacKie is Senior Curator in Archaeology and Anthropology at the Hunterian Museum, Glasgow.

Hans Motz is an Emeritus Professor of Engineering at Oxford University and an Emeritus Fellow of St. John's College and of St. Catherine's College, Oxford. He was born in Vienna, Austria, in 1909 and is also an Honorary Professor at the Technical University of Vienna.

Leslie Myatt is Head of the Engineering and Building Department at Thurso Technical College. A graduate of London University and a Chartered Electrical Engineer, he has lived in Caithness for the past twenty-two years. He has been inspired by the research of Professor Thom to continue the work on the stone settings in the north of Scotland.

Ray Norris is a Senior Research Scientist at CSIRO Division of Radiophysics, Australia, where he is studying the astrophysics of active

galaxies, and is involved in the design and software of the Australia telescope. He was previously at Jodrell Bank, University of Manchester, where he spent much of his spare time surveying megalithic sites.

Jon Patrick is Senior Lecturer in Computing at Deakin University, Victoria, Australia. As a qualified surveyor, he has produced much valuable data on Irish megalithic sites and made the first survey of the astronomical alignment of the great passage grave at Newgrange. His Ph.D. thesis applied the concepts of minimum message length to evaluate Professor Thom's hypotheses about the shapes of stone rings.

Margaret Ponting lives at Callanish, and has acquired a detailed knowledge of the archaeological sites in the area. She has taken part in and directed excavations at some of the local stone rings.

Graham Ritchie has worked since 1965 surveying in Argyll as an archaeological investigator with the Royal Commission on the Ancient and Historical Monuments of Scotland, Edinburgh. He has undertaken excavations on stone circles including Stenness in Orkney and Balbirnie in Fife.

Clive Ruggles has recently been appointed editor of *Archaeoastronomy*, the supplement to *Journal for the History of Astronomy*. He has worked for several years reassessing the ideas of Professor Thom, and has himself surveyed some three hundred Scottish megalithic sites. More recently he has undertaken archaeoastronomical fieldwork at Teotihuacan in Mexico and Nazca in Peru. He is currently Lecturer in Computing Studies at the University of Leicester.

Archibald S. Thom is Honorary Senior Research Fellow in the Department of Aeronautics and Fluid Mechanics in the University of Glasgow, having retired in 1979. A Chartered Civil and Mechanical Engineer, he has specialised in the measurement of the hydraulic efficiency of hydro-electric turbines and pumps. He often helped his father, Alexander Thom, with fieldwork and, in later years, he co-authored his father's books and papers on archaeoastronomy.