

SpringerBriefs in Environment, Security, Development and Peace

Volume 19

Series editor

Dr. Hans Günter Brauch, Mosbach, Germany

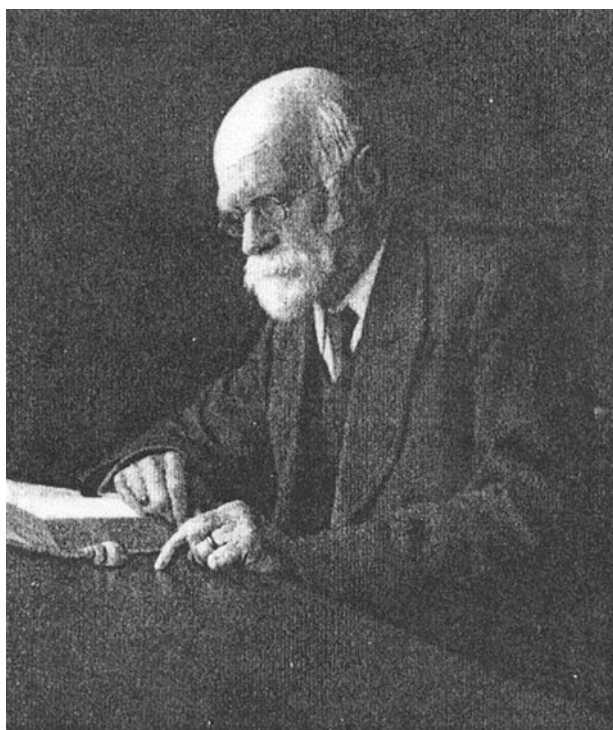
For further volumes:

<http://www.springer.com/series/10357>

http://www.afes-press-books.de/html/SpringerBriefs_ESDP.htm

John A. Kington

Frederic W. Harmer: A Scientific Biography



 Springer

UEA University of
East Anglia



John A. Kington
School of Environmental Sciences
University of East Anglia
Norwich
UK

ISSN 2193-3162 ISSN 2193-3170 (electronic)
ISBN 978-3-319-07703-1 ISBN 978-3-319-07704-8 (eBook)
DOI 10.1007/978-3-319-07704-8
Springer Cham Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014941310

© The Author(s) 2014

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law. The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

This photograph of Frederic William Harmer was taken (it is inferred) at his home in Cringleford, near Norwich. Harmer, appropriately, is pointing with his left hand to a mollusc shell (M. Harmer, 1998). The permission to use this photo was granted by the British Geological Survey 2013. Photographs from the Frederic William Harmer Collection are reproduced by permission of the British Geological Survey. © NERC. All rights reserved. CP13/050.

Copyediting: PD Dr. Hans Günter Brauch, AFES-PRESS e.V., Mosbach, Germany

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Foreword

Frederic W. Harmer (FWH) lived in an era of all-rounder education. The educated Victorian Englishman aspired to be a polymath, competent in Classics, Mathematics, Literature, Art, Poetry, The Grand Tour, Business, Civics, Politics, Philanthropy, Domesticity, Science, and Religion. Reading their biographies and their printed works brings forth the feeling that as we moderns progress in our education, we learn more and more about less and less.

John Kington's biography and its forerunner article in the *Bulletin of the Geological Society of Norfolk* (2013) builds a picture of the 'all-roundness' of FWH. He was a clothing manufacturer in Norwich, whose first factory was on the site of the current City Hall and whose second one is now a multi-storey car park. He served as Alderman of Norwich, as a Magistrate and for 1 year as its Mayor. He was a Congregational Church member who in 1881, as Alderman, laid the foundation stone of Shipdham Congregational Church (now United Reformed), and was a founder of the Norwich YMCA. He was a renowned amateur geologist, palaeontologist and palaeometeorologist, involved in the scientific societies of his time, later an honorary M.A. of Cambridge University. A family man, he had five children. One of his four sons, Sir Sidney, KBE, was a Professor of Zoology and Director of the London Natural History Museum, another, William, was a consultant surgeon and pioneer radiologist specialising in the treatment of throat cancer. His daughter, Edith is known to me only in a memorial note which I found in my copy of volume 2, part 3 of the *Pliocene Mollusca*, published in December 1925. It reads 'In Memory of Frederic William Harmer, M.A., F.G.S, who died peacefully on April 11, 1923, in his 88th year'.

My initiation into the personality and achievements of FWH came when I, freshly graduated in Zoology from Trinity College, Dublin, joined the Sub-Department of Quaternary Research housed in the Botany Department of the University of Cambridge.

I spent months reading the classic literature on the 'Crag' deposits of East Anglia and devising ways of extracting information from their fossil Mollusca. I made myself familiar with the works of "SVW"—S. V. Wood (senior and junior), three volumes of the *Crag Mollusca* (1848–1882) and of FWH, two volumes of the *Pliocene Mollusca of Great Britain* (1914–1925)—these books, placed side by side, take up 19 cms on my bookshelves, and weigh 8.8 kgs.

My 'Harmer' was part of FWH's household goods and contains interesting inscriptions and correspondence preceding and following his death.

Harmer's interest in geology lasted much of his lifetime, from his meeting with Searles Wood (Jnr) to SVW's death in 1884 and continued, after a furlough of almost 10 years of intense involvement in business and civic affairs, until the end of his life.

Harmer and the geologists of his time were fortunate to have access to many surface exposures of fossiliferous material, but little material was available from depth. Recent research has progressed as a result of numerous boreholes.

Many of the Victorians were primarily collectors, wanting new species and varieties for their 'Cabinets' and sometimes omitting to give details of their provenance. In some cases they tipped out from their boxes specimens whose subsequent discovery by others gave rise to spurious distribution records. Nevertheless, the sifting of many tons of material gave rise to a list of Mollusca archived in the monographs referred to above. Harmer estimated that he researched some 200 tons of material from Little Oakley. His chauffeur appears to have done a great deal of the digging. Harmer named many new species and varieties, his tendency being that of a taxonomic 'splitter' rather than a 'lumper'. I examined his *Littorina littorea* var. *distorta* from Bramerton which I found to be not varietal but pathological, owing to a clearly observable barnacle which settled on the inner lip of its aperture.

To Harmer's efforts we owe a stratigraphic division of the East Anglian Early Pleistocene into Gedgravian, Boytonian, Waltonian, Newbournian, Butleyan, *Scobicularia* Crag, Icenian, the Icenian subdivided into Norwich Horizon, Chillesford Horizon and Weybourne Horizon. The days of a malacologically based stratigraphy are now past, despite my attempts to arrange one on the basis of palaeoecologically based Mollusc Assemblage Biozones. The emphasis in recent years has been on sedimentology. Palaeoecological investigation using Mollusc Analysis and Pollen Analysis may in future examine the various environmental facies in the lithostratigraphic units, while researches on sodium and strontium in mollusc shells yield new information on palaeosalinity and Palaeotemperature.

In times past, as one approached a school, a road sign would be encountered, depicting a flambeau torch, signifying the Flame of Learning which is passed from one generation to another. From the Victorian times into the New Elizabethan, this torch has passed from one generation of geologists to another. I express my gratitude to and admiration of those, including Harmer, from whom I took up the torch and I salute those to whom it has since passed. My gratitude is especially to John Kington, who has written this part of the Torch's Journey for us. To his readers, I wish that a flame of future research may enlighten your times also.

Wicklow, Republic of Ireland, February 2014

Peter Norton

Acknowledgments

The author is grateful to the following colleagues for their kind help and support: Peter Banham; Hans Günter Brauch; Peter Brimblecombe; Stanley Cornford; Paul Crofts; Gaston R. Demarée; Peter Humphries; Kathy Maxwell; Peter E. P. Norton; Mike Salmon; Malcolm Walker; and Tim Holt-Wilson.

British Geological Survey 2013. Photographs from the Frederic William Harmer Collection are reproduced by permission of the British Geological Survey. © NERC. All rights reserved. CP13/050.

Finally, my sincere thanks to my dear wife, Beryl for her devoted interest and encouraging support during all stages of the work.

Norwich, February 2014

John A. Kington

Contents

1 Introduction	1
References	3
2 Family Background and Public Life	5
2.1 Introduction	5
2.2 Charles Darwin	11
2.3 Death of Harmer	13
References	13
3 Geology	15
3.1 General	15
3.2 Geological Classification	16
3.2.1 Introduction	16
3.2.2 Pliocene and Pleistocene Deposits of East Anglia	16
3.3 The Pliocene Epoch in East Anglia	21
3.3.1 Pliocene Crag	21
3.3.2 The Red Crag	22
3.3.3 The Norwich Crag	30
3.3.4 The Chillesford and Cromer Forest Beds, and Weybourne Crag	31
3.3.5 The Icenian Crag	36
3.4 The Pleistocene Epoch in East Anglia	37
3.5 Pro-glacial Lakes, Cañon-like Valleys and Gorges	51
3.6 The Pre-glacial Course of the Thames	54
3.7 Amstelian Stage	56
3.8 Renewed Geological Research	57
References	60
4 Palaeometeorology	63
4.1 Introduction	63
4.2 The Red Crag	64
4.3 Weather and Climate in the Pliocene and Pleistocene Epochs ..	65
4.4 Conclusion	81
References	81

5 Final Years	83
5.1 Volume I	84
5.2 Volume II.	85
5.3 General Remarks.	85
References	86
Glossary	87
Bibliography of the Writings of Frederic W. Harmer	91
About the Author	95
About the Book.	97