Hans Albert Einstein

Other Titles of Interest

Washington Roebling's Father: A Memoir of John A. Roebling, edited by Donald Sayenga. (ASCE Press, 2009). Portrays the life and achievements of a legendary engineer through the eyes of his equally accomplished son, with annotations for hundreds of people, places, events, and technologies. (ISBN 978-0-7844-0948-0)

Karl Terzaghi: The Engineer as Artist, by Richard E. Goodman. (ASCE Press, 1999). Biographical account of the friendships, conflicts, and enormous successes of the man who laid the groundwork for soil mechanics. (ISBN 978-0-7844-0364-8)

America Transformed: Engineering and Technology in the Nineteenth Century, by Dean Herrin. (ASCE Press, 2003). Displays a visual sampling of engineering and technology from the 1800s that demonstrates the scope and variety of the U.S. industrial transformation. (ISBN 978-0-7844-0529-1)

Engineering Legends: Great American Civil Engineers, by Richard G. Weingardt. (ASCE Press, 2005). Chronicles the personal lives and professional accomplishments of 32 great U.S. civil engineers from the 1700s to the present. (ISBN 978-0-7844-0808-8)

Designed for Dry Feet: Flood Protection and Land Reclamation in the Netherlands, by Robert J. Hoeksema. (ASCE Press, 2006). Explores Holland's unique challenges in water control and management across the centuries. (ISBN 978-0-7844-0829-2)

Hans Albert Einstein

His Life as a Pioneering Engineer

Robert Ettema Cornelia F. Mutel



Cataloging-in-Publication Data on file with the Library of Congress.

Ettema, R. Hans Albert Einstein : his life as a pioneering engineer / Robert Ettema,
Cornelia F. Mutel. pages cm Includes bibliographical references and index. ISBN 978-0-7844-1330-2 (print : alk. paper) – ISBN 978-0-7844-7829-5 (PDF) –
ISBN 978-0-7844-7830-1 (EPUB) 1. Einstein, H. A. (Hans Albert), 1904– 2. Hydraulic engineers–United States–Biography. 3. Hydraulic engineers–Switzerland– Biography. I. Mutel, Cornelia Fleischer. II. Title. TC140.E38E88 2014 627.092–dc23 [B]

2014006613

Published by American Society of Civil Engineers 1801 Alexander Bell Drive Reston, Virginia, 20191-4382 www.asce.org/bookstore | ascelibrary.org

Any statements expressed in these materials are those of the individual authors and do not necessarily represent the views of ASCE, which takes no responsibility for any statement made herein. No reference made in this publication to any specific method, product, process, or service constitutes or implies an endorsement, recommendation, or warranty thereof by ASCE. The materials are for general information only and do not represent a standard of ASCE, nor are they intended as a reference in purchase specifications, contracts, regulations, statutes, or any other legal document. ASCE makes no representation or warranty of any kind, whether express or implied, concerning the accuracy, completeness, suitability, or utility of any information, apparatus, product, or process discussed in this publication, and assumes no liability therefor. The information contained in these materials should not be used without first securing competent advice with respect to its suitability for any general or specific application. Anyone utilizing such information assumes all liability arising from such use, including but not limited to infringement of any patent or patents.

ASCE and American Society of Civil Engineers-Registered in U.S. Patent and Trademark Office.

Photocopies and permissions. Permission to photocopy or reproduce material from ASCE publications can be requested by sending an e-mail to permissions@asce.org or by locating a title in ASCE's Civil Engineering Database (http://cedb.asce.org) or ASCE Library (http:// ascelibrary.org) and using the "Permissions" link.

Errata: Errata, if any, can be found at http://dx.doi.org/10.1061/9780784413302.

Copyright © 2014 by the American Society of Civil Engineers. All Rights Reserved. ISBN 978-0-7844-1330-2 (paper) ISBN 978-0-7844-7829-5 (PDF) ISBN 978-0-7844-7830-1 (EPUB) Manufactured in the United States of America.

21 20 19 18 17 16 15 14 1 2 3 4 5

Cover photo credit (inset). Elizabeth Einstein used with permission

Dedicated to John Fisher Kennedy (1933–1991) Student and statesman of hydraulic engineering

This page intentionally left blank

Contents

PREFACE		ix
ACKNOWLEDGMENTS		xiii
	Prologue	1
1	Early Life	11
2	Divided Family	29
3	Beginning as an Engineer	55
4	In Meyer-Peter's Laboratory	73
5	On the Enoree River	103
6	Mountain Creek, A Very Small River	119
7	Pasadena's Promise	139
8	Move toward Prominence	159
9	Berkeley Professor	175
10	Mr. Sediment Movement	193

vii

11 Parents, Students	217
12 Broadened Interests	239
13 At Home in Berkeley	263
14 Last Years	281
Epilogue	293
Appendix A. Timeline	305
Appendix B. Glossary	
APPENDIX C. Publications by Hans Albert Einstein	
APPENDIX D. Graduate Students and Dissertations Guided by Hans Albert Einstein	
Index	
About the Authors	

Preface

This book is the result of a long-standing project to examine the life of Hans Albert Einstein and the importance of his work to our understanding of rivers. Elements of his life story, which was strongly influenced by his father Albert Einstein, are interwoven with technical aspects of his chosen research field—transport of alluvial sediment by flowing water—and with discussions of how that transport affects rivers and the interaction of humans with rivers. Whereas these technical aspects of the book will engage engineers, this is not a book for engineers alone; scientific information is written in a style that should appeal equally well to lay readers. The book is meant to intrigue, educate, and entertain—and above all to be a thoroughly good read.

Its narrative is a chronological exploration of Hans Albert's life and work, encompassing approximately the first three-quarters of the twentieth century. Many of the chapters include both family and technical content, although these two types of information are restricted to larger sections of each chapter. A timeline of major life events (Appendix A) should help readers place major characters and events in context. Appendix B, a glossary, can assist readers with deciphering technical terms. Extensive endnotes and citations for each chapter provide additional information. The book's Prologue and Epilogue

stretch the book's time frame by looking more broadly at the historic understanding of rivers and considering sediment transport research and its modern accomplishments.

This book makes two major claims. First, it is one of few current treatises offering a historical perspective on how twentieth-century engineers and scientists came to better understand river flow and transport of alluvial sediment. Second, Hans Albert's story is based in part on a large number of heretofore-unpublished original sources—personal and professional documents and interviews with Hans Albert's family members, colleagues, students, and friends. At present, it is the only treatise accurately placing Hans Albert within the larger Einstein family and considering his complex relationship with his father Albert. Because many of the sources of firsthand information are now deceased, this book may remain the only such treatise.

The seeds of this book date back to 1990. They were first planted at IIHR–Hydroscience & Engineering, a research and teaching institute within the University of Iowa's College of Engineering. Then-director Professor John Fisher (Jack) Kennedy, like his predecessors at IIHR, was drawn to the history of hydraulic engineering and enjoyed recording the life stories of several of his professional colleagues who had shaped this field. Thus, when Hans Albert's widow Elizabeth asked Kennedy if he might publish her memoir (which focused largely on her late husband), he eagerly accepted the challenge. Elizabeth's memoir, *Hans Albert Einstein: Reminiscences of His Life and Our Life Together*, was published in 1991 by IIHR and the University of Iowa.

Preparing Elizabeth's memoir for publication was more of a task than Kennedy had anticipated. Hence he hired Cornelia Mutel, who had authored several science-based books, to edit Elizabeth's manuscript. As Mutel dove more deeply into Hans Albert's life story, she was required to learn a great deal about the Einstein family. She quickly realized that there was a far larger story to be told and that she was rapidly gathering the information necessary to tell it. Thus Kennedy and Mutel planned to follow Elizabeth's memoir with a more scholarly book on Hans Albert's life and contributions. Mutel would write the personal and family elements, and Kennedy would write the scientific information.

This is that second book. Like the rivers that Hans Albert Einstein and Jack Kennedy studied, it has meandered extensively, taking its time to reach its eventual destination. Jack tragically died in 1991, at age 57, before having the opportunity to work on the book. His leadership at IIHR was adopted until mid-1994 by Professor Robert Ettema, who had served as associate director during the last years of Jack's tenure. Ettema agreed to