

HENRY
CHANDLER COWLES
PIONEER ECOLOGIST



VICTOR M CASSIDY



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Kedzie Sigel Press
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England

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The author dedicates this book to his wife

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Whom he will love forever.



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CONTENTS



Part One: Biography	1
Introduction	3
Ecological Questions; Born to Botanize; Field Teacher; Why this Book? Acknowledgments; Note on Sources	
Chapter One: Before the Dunes	13
The Congregational Church; New Britain High School; Oberlin College; The University of Chicago; Scandal at Gates College; John Merle Coulter; Origin of Ecology.	
Chapter Two: In High Gear	30
“The Ecological Relations;” Right Man, Place, and Time; “Plant Societies of Chicago and Vicinity;” Marriage; In Classroom and Field; Personal Research; “Causes of Vegetative Cycles;” Connections, Local and International; Frederic E. Clements.	
Chapter Three: Citizen Cowles	57
Sunk Lands Cases; Red River Border Dispute; Friends of Our Native Landscape; Saving the Dunes; Stephen A. Forbes; “Conservation of Our Forests;” George Damon Fuller; Harriet Elizabeth Cowles; Ecological Society of America; Botany 36; Conservation Advocate; Botany Department Chairman; Last Years.	

Part Two: Anthology	97
Note	99
The Core	100
The Ecological Relations of the Vegetation on the Sand Dunes of Lake Michigan (1899)	100
The Plant Societies of Chicago and Vicinity (1901)	171
The Influence of Underlying Rocks on the Character of the Vegetation (1901)	204
Ecology	221
The Causes of Vegetational Cycles (1912)	221
The Economic Trend of Botany (1915)	240
The Succession Point of View in Floristics (1926)	248
Persistence of Prairies (1927)	253
Conservation	257
Conservation of Our Forests (February 1912)	257
Testimony of Henry Chandler Cowles Report on the Proposed Sand Dunes National Park, Indiana (October 30, 1916)	261
Contemporaries	265
Eugene Warming	265
• Oecology of Plants; An Introduction to the Study of Plant Communities (1909) <i>Botanical Gazette</i> August 1909	
A.F.W. Schimper	269
• Pflanzengeographie auf Physiologischer Grundlage [Plant Geography on a Physiological Basis] (1898) <i>Botanical Gazette</i> Mar 1899	
Frederic E. Clements	271
• The Phytogeography of Nebraska (1898) <i>Botanical Gazette</i> May 1898	271
• The Development and Structure of Vegetation (1904) <i>Botanical Gazette</i> October 1904	273

CONTENTS

• Research Methods in Ecology (1905) <i>Botanical Gazette</i> November 1905	274
• Plant Succession (1916) <i>Botanical Gazette</i> December 1919	276
The International Phytogeographical Excursion in the British Isles: Impressions of the Foreign Members of the Party <i>The New Phytologist</i> January 1912	278
A. G. Tansley	279
• Types of British Vegetation (1911) <i>Botanical Gazette</i> April 1912	
John Merle Coulter	280
• Obituary <i>Botanical Gazette</i> March 1929	
Plant list	284
Part Three: Reference	295
Books, Pamphlets, and Contributions to Books	297
Contributions to Periodicals	307
Chronology; Professional Societies; Editorial Work	342
Index	350

PART ONE:
BIOGRAPHY



INTRODUCTION



Photographs always show him outdoors—and always wearing a tie. In his professorial mode as Henry Chandler Cowles of the University of Chicago, he wears a dark suit, vest, white shirt, bowler hat, and tie as he escorts his European colleagues through the Indiana Dunes under the summer sun. In his role as “Doctor Cowles,” the jovial, cigar-smoking mentor to generations of ecology students, he leads expeditions in calf-high boots, knickers, white shirt, floppy hat—and tie. Short and a bit stout, with a large, well-shaped head and a ready grin, he’s someone who seems easy to like.

Cowles (it’s pronounced “coals”) was a botanist, ecologist, field teacher, and conservationist. At the end of the nineteenth century, he made hundreds of field observations of the sand dunes landscape that rings the southern and eastern shores of Lake Michigan. His study demonstrated that the outdoor environment is a dynamic system in which plants, soil, moisture, climate, and topography interact.

Ecological Questions

Ecology, which Cowles helped to pioneer in North America, investigates the interrelationships between living organisms and the natural environment.

Before Cowles came on the scene, botanists had asked why plants grow where they do, how vegetation changes over time, and whether there is a pattern to the changes, but no one had systematically investigated these questions. Science had yet to clarify the role of vegetation in creating sand dunes—and the effect of the dunes environment on the plants that grow there. The role of wind in shaping dunes vegetation was incompletely understood.

As Cowles looked for answers, he discovered a natural phenomenon called *plant succession*. Though succession was observed and described in antiquity—and was known to many scientists before Cowles—he investigated and described it more comprehensively than anyone else be-

fore him. Succession studies have advanced dramatically since Cowles' day, but ecologists still acknowledge his pioneering contributions.

Plant succession denotes the way that communities of plants come into a landscape, flourish, and create conditions for their replacement by other plant communities. Succession is easy to follow in the lightly vegetated dunes landscape. No plants grow at the lake edge, because waves wash constantly over the land. At the back of the beach, where waves come less often, a few plants grow on the sand and stabilize it with their root systems. Over many generations of growth, reproduction, and decay, these pioneers produce humus, which makes it possible for a new group of plants to move in and replace them. A third generation eventually follows this second generation, and a fourth replaces the third, until an ending point, called *climax*, is reached. The climax community—at the dunes it's an oak forest—does not change until something disturbs or destroys it. If the forest burns down, for example, succession starts all over again, but usually from an intermediate stage.

Cowles could face away from Lake Michigan, hike inland, and see the results of centuries of plant succession. As he walked through space, he walked through time. Today, visitors to the Indiana Dunes National Lakeshore can follow his footsteps on a "Succession Trail" that starts on the beach and passes through the successive plant communities.

Cowles' basic ideas, which he published in a long, multipart article called "The Ecological Relations of the Vegetation on the Sand Dunes of Lake Michigan" (1899)¹ have withstood more than a century of testing, discussion, and refinement. He followed "Ecological Relations" with important studies of Chicago-area plant communities, underlying rock and its effects on vegetation, the causes of vegetative cycles, prairies, and more.²

Through his publications, lectures, teaching, travels, and leadership of an International Phytogeographic Excursion that brought European scientists to the United States in 1913, Cowles won professional respect for the new science of ecology and a place for American ecologists in the international scientific community. A great joiner, he signed on with many scientific organizations, made presentations at conferences, and helped to found the Association of American Geographers and the

¹ Henry Chandler Cowles, "The Ecological Relations of the Vegetation on the Sand Dunes of Lake Michigan," Parts 1–4. *Botanical Gazette* 27 (February, March, April, May 1899): 95–117, 167–202, 281–308, 361–91. Reprinted in this volume.

² Henry Chandler Cowles, "Plant Societies of Chicago and Vicinity"; "The Influence of Underlying Rocks on the Character of the Vegetation"; "The Causes of Vegetative Cycles"; and "The Persistence of Prairies" are reprinted in this volume.

INTRODUCTION

Ecological Society of America. He forged connections with every important ecologist of his time and leading botanists, geologists, and geographers.

Later in his career, Cowles advanced scientific education and conservation through the Illinois State Academy of Science, Friends of Our Native Landscape, Geographical Society of Chicago, Chicago Academy of Sciences, and other organizations. He surveyed Illinois natural areas, providing expert data that convinced the state legislature to purchase ecologically important lands for parks. Prior to his time, only historic sites were preserved. During 1916, he testified in federal hearings on behalf of the proposed Sand Dunes National Park in Indiana.³ This initial effort, though unsuccessful, strengthened the movement to save the dunes that triumphed long after his death.

Born to Botanize

Born in 1869, Cowles was the son of a Connecticut market gardener. His earliest memories were of walks in the woods with his mother, where she taught him the names of plants and trees. In youth, he raised flowers and vegetables on the family farm and roamed the woods, where he found, identified, and collected wild plants. He began reading *Gray's Manual of Botany*, the authoritative flora, when he was just seventeen years old.

High school geology helped Cowles to see relationships between rock, soil, topography, and plant life. In college and graduate school, he outgrew simple plant identification and learned how to read vegetative patterns in the landscape. He evolved an intuitive method of nature study, much like Darwin's, that relied upon close observation, experience, and a highly disciplined thought process. This method brought him success at the Lake Michigan dunes and in other early studies.

As Cowles was completing his dunes work, Frederic E. Clements, a Nebraska grasslands ecologist, developed the numerical and statistical survey techniques used in science today. As Clements' statistical methodology supplanted the intuitive approach, Cowles responded by training students in Clements' techniques, but resisted them in his own work. He published relatively little after 1901, transferred his ambition to his students, and employed his field skills to teach, do personal research, and survey natural areas.

³ Cowles' testimony is reprinted in this volume.

HENRY CHANDLER COWLES: PIONEER ECOLOGIST

Colleagues always wondered why Cowles published so little of his research. A few weeks after his death in 1939, his widow, Elizabeth, told a friend that she too regretted that he had not published more. "I feel that one reason that he did not ... was that the recognition of his authorship of an idea did not have for him the urgency which the testing of that idea and its promulgation among his colleagues and students, if found sound, held." He did not "hunger and thirst" for recognition, she added, but preferred doing research and teaching to writing up his results.

There was talk, during Cowles' final years, of "shaping his voluminous notes on his particular contribution to physiographic ecology into book form," but this did not happen. He "said more than once 'All I have done is written in my students, it is not lost because I have not published it; they have published it for me.'" However, "Being his student as well as his wife," Elizabeth "privately felt that nobody else could say it quite so clearly and well."⁴

Though Cowles' intuitive approach to nature study is completely out of professional fashion, it's alive and well in today's environmental restoration movement. The professionals and volunteers who restore damaged natural areas venture daily into the unknown. They never know how nature will respond to their initiatives—whether an endangered plant will grow where they place it, for example, or what will happen when they remove invasive species. In making site management decisions, these people combine observation, intuition, and experience with their knowledge of botany and ecology. Cowles is thus very relevant to the most challenging ecological work of our time. His spirit helps heal the land.

Field Teacher

Between 1897 and 1934, Cowles taught physiographic ecology, ecological anatomy, geographical botany, experimental ecology, applied ecology, field ecology, and related courses at the University of Chicago. His students included Victor E. Shelford, the father of animal ecology; George D. Fuller, who became his assistant and successor at Chicago; William Skinner Cooper, who refined his theory of plant succession

⁴ Elizabeth Cowles to C. C. Adams, 1 November 1939. C. C. Adams Papers, University of Western Michigan, Kalamazoo.

INTRODUCTION

with fieldwork on Isle Royale in Lake Superior; Paul B. Sears, who became professor of conservation at Yale University and an eloquent writer on ecological subjects; Walter P. Cottam, who became chair of the botany department at the University of Utah and co-founder of the Nature Conservancy; and many others. In 1980, Douglas D. Sprugel published a “pedagogical genealogy” that traced Cowles’ influence to 1950 on some fifty American plant ecologists.⁵ These men and women completed their careers in the 1970s and there is now no living memory of Cowles’ teaching.

Students flocked to Cowles because he gave vivid, authoritative lectures, had incomparable field skills, and was happy to be alive. Instead of pushing his opinions on students, he encouraged them to think independently and welcomed a variety of viewpoints. He took many weekend research trips to sites near Chicago and often brought some of his better students along. When he made a discovery in the field that might become a research project, he encouraged students to pursue it, guided their work, and delighted in their successes.

Cowles was best known for Botany 36, a four-week field ecology course that took students into wilderness areas all over North America. In August of 1916, May Thielgaard (Watts) enrolled for Botany 36.⁶ Led by the Professor, as the class called him, a party of about fifteen students traveled through the Lake Superior region of Michigan and Wisconsin to study plant communities in beaches, canyons, bogs, forests, and more. The group worked hard all day, cooked over open fires, slept in tents, endured rain, mosquitoes and black flies—and had a wonderful time. Thielgaard wrote this admiring ditty about her teacher:

Get on your boots and follow him,
He’s half a mile in front,
It’s our own Dr. Cowles himself
Out on a lichen hunt.

It’s our own Dr. Cowles you know;
They’ve lost the pattern since
Of all our friends afar and near
He surely is the prince.

⁵ Douglas D. Sprugel, “A ‘Pedagogical Genealogy’ of American Plant Ecologists,” *Bulletin of the Ecological Society of America* 61, no. 4 (December 1980): 197–200.

⁶ The papers of May Thielgaard Watts at the Sterling Morton Library of the Morton Arboretum in Lisle, Illinois, include May Thielgaard’s student notebook from Botany 36.

HENRY CHANDLER COWLES: PIONEER ECOLOGIST

CHORUS

Each year we hunt for courses.
Not that we may learned be.
But if you want the reason,
It's not the course, it's he.⁷

Photographers, including Cowles' wife, Elizabeth, accompanied these expeditions and some 10,000 images have survived. Of these, 4,500 are now digitized and available on the Internet as *American Environmental Photographs, 1891–1936*. Though most of the photos show plants and landscapes, the Professor and his students appear in many. We see groups in Packard touring cars traveling on a narrow mountainside road, a mock wedding ceremony with the Professor presiding, a laughing gang of wilderness explorers gathered around a No Trespassing sign, and May Thielgaard (Watts) poling the Professor through a Wisconsin wetland on a raft.⁸

Why this Book?

After Cowles' died, his widow apparently discarded or destroyed most of his papers, saving only his diaries, a few letters, and some family photographs. None of his manuscripts survived and we have just a few tiny pages of undated, barely readable field notes. Some papers were left behind in the Cowles' family house near the University of Chicago when Elizabeth Cowles moved out near the end of her life. These somehow ended up on the curb and were taken away as garbage. A lack of primary material has retarded work on Cowles and made a book-length biography impossible.⁹

⁷ Ibid.

⁸ See <http://memory.loc.gov/ammem/collections/ecology/index.html>. According to Judith Dartt of the University of Chicago Library (UCL), the botany department ecology photographs were taken by a number of different individuals who were typically members of the field party. Roughly 10,000 photographs exist, but the 4,500 on the website were chosen because they conform to the standards set for the Library of Congress/Ameritech American Memory grant that funded the scanning project. In original format, the images are a mix of glass lantern slides, glass plate negatives, and prints in a variety of sizes. The American Environmental Photographs, 1891–1936, were digitized by the Special Collections Research Center, UCL, for the Library of Congress American Memory website.

⁹ Nobody knows why she did this. Harriet Cowles, the daughter, who probably helped destroy the papers, apparently felt that nobody would be interested in her father's work and that there was little point in saving his manuscripts and letters. During the 1980s, the

INTRODUCTION

Three scholars have done important research on Cowles. In 1999, Sarah Gibbard Cook published *Henry Chandler Cowles (1869-1939) and Cowles Bog, Indiana*, a 93-page booklet. Largely biographical, Cook's text includes an appendix with a partial chronology and bibliography. Cook was the starting point for this book.¹⁰

Professor Eugene Cittadino of New York University has published two long papers about Cowles: "A 'Marvelous Cosmopolitan Preserve': The Dunes, Chicago, and the Dynamic Ecology of Henry Cowles" (1993) and "Borderline Science: Expert Testimony and the Red River Boundary Dispute" (2004). The author has drawn on both of these papers, especially in his accounts of Cowles' activities as an expert witness. *Sacred Sands: The Struggle for Community in the Indiana Dunes* (1983) by J. Ronald Engel, describes the long battle for the Indiana Dunes National Lakeshore and Cowles' role in it. Professor Engel kindly supplied some original materials that he used in writing *Sacred Sands*.¹¹

Fortune smiled on this project. Just as the author began, Cowles' daughter, Harriet, gave family papers to the University of Chicago Library. Soon after, the Ecological Society of America donated class notebooks of several of Cowles' students to the University of Chicago Library. The University of Illinois Archives supplied materials that illuminated Cowles' working partnership with Stephen A. Forbes, the father of Illinois ecology.

As research proceeded, the author decided to reunite Cowles' fragmented legacy—to write a biography, reprint the best of his written

UCL began to collect historical materials on Cowles. At that time, the complete botany department photograph collection (found in a basement on campus) was preserved and transferred to the Department of Special Collections. In the 1990s, records of the botany department and papers of Professor Paul Voth were acquired. In 1997, the botany department photographs were digitized and put on the *American Environmental Photographs* web site, which includes an online essay on HCC and his contributions to ecology, a chronology of field trip courses, a biographical guide with links to individuals in the photographs, and a selected bibliography on the history of American ecology. This work was done by Daniel Meyer, Associate Director, Special Collections Research Center and University Archivist at the UCL, and Judith Dartt. We thank Mr. Meyer for supplying this information.

¹⁰ Sarah Gibbard Cook, *Henry Chandler Cowles (1869–1939) and Cowles Bog, Indiana*. Revised 1999 [original manuscript was written in 1980.]

¹¹ Eugene Cittadino, "A 'Marvelous Cosmopolitan Preserve': The Dunes, Chicago, and the Dynamic Ecology of Henry Cowles," *Perspectives on Science* 1, no. 3, (1993): 520–59; Eugene Cittadino, "Borderline Science: Expert Testimony and the Red River Boundary Dispute," *Isis* 95 (2004): 183–219; and J. Ron Engel, *Sacred Sands: The Struggle for Community in the Indiana Dunes* (Middletown, CT: Wesleyan University Press, 1983).

work, and publish updated reference material. If this book is a success, it will inspire and facilitate future work on Cowles—and a reconsideration of his role in ecological history. Ecology has grown immensely since his day, but he remains a great pioneer who gave this important branch of science an excellent start. Through his teaching he birthed an entire generation of ecologists. Through his conservation advocacy he helped protect Illinois wilderness for his own generation, for ours, and for those yet to come. Most of all, he loved the land and taught us to cherish it.

Acknowledgments

This book would have been impossible without the full cooperation of the University of Chicago Library, Special Collections Research Center, and its staff. Thanks go to Daniel Meyer, Associate Director, Judith Dartt, David Pavelich, and especially Barbara Gilbert. Linda Estelle, Executor of the Cowles Estate, was tremendously helpful as was Harriet Cowles (Waller), who gave the Cowles family papers to the University of Chicago and met with me in St. Louis. On behalf of the Ecological Society of America, Prof. Robert K. Peet of the University of North Carolina donated student notebooks from Cowles' classes to the University of Chicago that enabled me to bring the reader into his classroom. Daniel Meyer, Noel Pavlovic, and Eugene Cittadino read an earlier draft of this manuscript, found errors, and made valuable suggestions. Others who helped include Dr. John Arnold, Julia S. Bachrach, Lee Botts, Patricia P. Burg, Sarah Gibbard Cook, L. Ron Engel, Roberta Fountain, Christine Giannoni, Sheila Hoyos, Corasue Nicholas, Randy Nyboer, Joanna Olmsted, Laurel Ross, Tim E. Smith, Michael Steibert; and George Yaskievich. Help also came from the following institutions: Bancroft Library, University of California-Berkeley; Berlin-Peck Memorial Library, Berlin, CT; Chesterton Public Library, Chesterton, IN; Chicago Academy of Sciences; Chicago Historical Society; Filson Historical Society, Louisville, KY; John Crerar Library, University of Chicago; Johns Hopkins University Library, Baltimore, MD; Indiana University Northwest Library, Gary, IN; Nebraska Historical Society, Omaha, NE; Newberry Library, Chicago, IL; New York Botanical Gardens Library, New York, NY; Northwestern University Archives, Evanston, IL; Oberlin College Archives; Prairie Club, Elmhurst, IL; Sterling Morton Library, Morton Arboretum, Lisle, IL; University of Georgia Library; University of Illinois Archives; University of Western Michigan Archives; Wisconsin Historical Society; and Yale University Library.

INTRODUCTION

I would also like to thank my publisher, Thomas Sigel, Josh McClary, Production Editor, and Jessica Sanchez, Marketing Manager at Kedzie-Sigel Press for making this project a reality. I also extend thanks to Harp Mando for creating the cover and interior design.

Note on Sources

Abbreviations used after first reference in notes

HCC Henry Chandler Cowles
HCW Harriet Cowles Waller
UCL University of Chicago Library

In citing works in the notes, short titles are generally used. Works frequently cited are identified by the following abbreviations after first reference:

EC Borderline

Eugene Cittadino, "Borderline Science: Expert Testimony and the Red River Boundary Dispute," *Isis* 95 (2004): 183–219.

EC Dunes

Eugene Cittadino, "A 'Marvelous Cosmopolitan Preserve': The Dunes, Chicago, and the Dynamic Ecology of Henry Cowles," *Perspectives on Science* 1, no. 3, (1993): 520–59.

HCC Papers

The primary source for original material on Cowles is the Henry Chandler Cowles Papers at the University of Chicago Library, Department of Special Collections.

HCW Address

Harriet Cowles Waller, "An Address To Be Given by Harriet Cowles Waller During the Henry Chandler Cowles Memorial Symposium at the Annual Meeting of the Ecological Society of America on August 11, 1983." The University of Chicago Library has a transcript of this talk.

SAF Papers

The Stephen A. Forbes Papers in the University of Illinois Archives, Champaign.

HENRY CHANDLER COWLES: PIONEER ECOLOGIST

Sacred Sands

J. Ron Engel, *Sacred Sands: The Struggle for Community in the Indiana Dunes* (Middletown, CT: Wesleyan University Press, 1983).

UCBDR

The University of Chicago Department of Botany records are housed in the University of Chicago Library, Department of Special Collections.

USSC

Cowles gave testimony before the Supreme Court of the United States. The transcript of his remarks (In The Supreme Court Of The United States *State of Oklahoma* Complainant v. *State of Texas* Defendant United States of America Intervener No. 20 Original October Term 1921). Stenographic Report of Proceedings Had Before Hon. Frederick S. Tyler, Special Commissioner Vol. 27 September 1921, Oklahoma City, Oklahoma.

Chapter 1

BEFORE THE DUNES



Henry Chandler Cowles grew up on a farm in Connecticut during the years that followed the American Civil War. Kensington, where he was born on 27 February 1869, is a hamlet in the scenic, somewhat hilly, center of the state. Nearby are Berlin (population 1,869 in 1850), an early manufacturing town known for tinware, and New Britain, a production center for builders' hardware and carpenters' tools. Hartford, a major city, lies about ten miles northeast of Kensington, and New Haven is roughly twenty-five miles to the south.¹

Henry was the elder son of Henry Martyn Cowles (1831–1915) and Eliza Whittlesey (1839–1888). The family traces itself to a John Cowles who emigrated from England in 1640. According to a genealogy, Henry Martyn Cowles was “a farmer and market gardener; member of the Legislature; deacon in the Congregational Church; Sunday school superintendent; Prohibitionist; constable; assessor; justice of the peace; selectman, and member of the board of relief.” Dwight (1874–1930), the younger Cowles son, lived locally and never married.²

Eliza Whittlesey was the daughter of a Cleveland judge. While she was visiting a relative in Kensington, she met Henry Martyn Cowles and they married on 31 May 1866. Active in church, Eliza was a teacher in Sunday school. She loved the outdoors and taught her son the names of plants and trees as they walked in the woods. Eliza fell ill while Henry was still a boy and became a permanent invalid. After

¹ *The Connecticut Guide* (Meriden, CT: Emergency Relief Commission, 1935), 167–71; Arthur S. Hughes and Morse S. Allen, *Connecticut Place Names* (Hartford: The Connecticut Historical Society, 1976), 15–19; and John C. Pease and John M. Niles, *A Gazetteer of the States of Connecticut and Rhode Island* (Hartford: William S. Marsh, 1819), 55–58.

² Colonel Calvin Duvall Cowles, *Genealogy of the Cowles Families in America*, 2 vols. (New Haven, CT: Tuttle, Morehouse & Taylor, 1929), 779–80. HCC filled out forms for this volume and corresponded with the author.

eight to ten years as a shut-in, she died on 13 September 1888. Henry was devastated by her death.³

The Congregational Church

The Cowles were members of the Kensington Congregational Church, the center of their community. This church, which arose in England in the late sixteenth and seventeenth centuries, came to New England soon after the Pilgrims did and set up many communities, such as Kensington, which were based on its religious principles. Congregationalists believe in the spiritual autonomy of each congregation; that is, its right and responsibility to decide about its own affairs without submission to any higher human authority. They oppose state establishment of religion and advocate civil and religious liberty.

Congregationalist principles regulated community life as Henry was growing up. Kensington's people worked hard and late, went to church every Sunday, and made civic decisions by consensus in town meetings. The young were expected to participate in church and to become self-reliant. Henry was a committed Christian, who remained a member of the Kensington Congregational Church throughout his life. In Chicago, he joined the University Congregational Church and sometimes worshipped at the Hyde Park Presbyterian Church.⁴

According to a history of the state, Connecticut farmers had "a hard time holding their own" while Henry was growing up. In 1874 the Connecticut Bureau of Labor Statistics surveyed farmers, finding that most of them worked from dawn to dusk and earned less than their counterparts in manufacturing. Farms farther west were more productive, so Connecticut adjusted by raising crops that were "suited to the distinct soil, climate, and seasons of the state such as vegetables, fruits, tobacco, and dairy products," the history states. The Cowles family grew fruits and vegetables in summer and winter crops in heated greenhouses, selling its produce locally. The family always had enough to eat, but there

³ The account of Eliza Whittlesey Cowles comes from the Kensington Congregational Church, *Church Record*, 15 October 1888. The description of Henry as a child comes from HCW Address. The University of Chicago Library Department of Special Collections has a transcript of this talk.

⁴ *Encyclopedia Britannica*, 15th ed., s.v. "Congregationalists." See also Clarence M. Webster, *Town Meeting Country* (NY: Duell, Sloan & Pierce, 1945).

BEFORE THE DUNES

was never much for extras. Henry needed jobs and scholarships to finance his higher education.⁵

Like most farm boys, Henry (family name: Harry) had plenty to do. He liked growing vegetables and flowers, checked the fields and greenhouses daily, and became his father's precociously capable assistant. Off and on, from 1880, when he was eleven years old, until 1896, when he was a graduate student, Henry kept a diary in small notebooks. Most of the narrative in this chapter, especially the personal parts, is based upon these diaries.⁶

At the age of eleven and twelve, Henry tended beets, onions, kale, spinach, and flowers, delivered orders in a horse-drawn cart, and kept careful track of the seed supply. "I sent another letter to W. Atlee Burpee & Co. for Cuban Queen Watermelon, Turks Turban tomato, and *dianthus chinensis* [pink] double dwarf mixed," he wrote on 22 January 1882. He described his activities with academic exactitude—"pulled 175 beets," "potted 242 of my tomatoes." He rarely expressed an opinion in his diary, had little to say about his father, and only mentioned his mother when she died.

Each week Henry visited the local library, returned one book, and withdrew another. He favored nonfiction—*Leaders of Men*, *African Adventurers and Explorers*, *Curiosities of Human Nature*, and *History of London*. Without comment, he recorded the deaths of local people, also the famous: Mary Todd Lincoln, Charles Darwin, Ralph Waldo Emerson, and the Bey of Tunis. He subscribed to several periodicals, including a now-forgotten magazine about bird's-egg collecting called *The Young Oologist*.

In 1883, when he was fourteen years old, Henry joined the Young Peoples' Society for Christian Endeavor at church. Quite new at the time, this interdenominational missionary organization was founded, in 1881, primarily as an activity for youth. Society policy stated that young people were expected to run their own meetings and every member was strongly encouraged to participate. Christian Endeavor

⁵ Ruth O. M. Andersen, *From Yankee to American: Connecticut, 1865 to 1914* (Chester, CT: Pequot Press, 1975), 47–48. In 1894, Henry Martyn Cowles, who was then a sixty-three-year-old widower with grown children, apparently sold the farm and moved to nearby Southington, where he remarried and lived for the rest of his life.

⁶ Henry Chandler Cowles, Papers at the University of Chicago Library, Department of Special Collections. HCC Papers include diaries dated 1880, 1881–82, 1882–83, 1883–85, 1885–86, 1886–87, 1888, 1890–91, 1892–93, 1894, 1895, 1895–96, and 1898. There are datebooks for later dates, but these contain only brief notations and addresses in back.

HENRY CHANDLER COWLES: PIONEER ECOLOGIST

gave Henry experience in group activities and public speaking. Presentations about Christian Endeavor missions in China and other foreign countries broadened Henry's view of the world. Years later, he told his daughter that he had learned a lot in church.

Throughout his life, Henry joined organizations and used personal contacts to advance his career, creating opportunities for himself by the impression that he made on his elders. Fully grown he was five feet seven inches tall, with brown hair and eyes, a pleasant open face, and a ready laugh. People liked him, but he was never a leader and he functioned best when men with more forceful personalities gave him direction. His father was the first such influence in his life. John M. Coulter, professor of botany at the University of Chicago, introduced him to ecology. Jens Jensen and Stephen Forbes got him into conservation.

Henry always took time for fun. He saw Barnum's circus and listed every single act in his diary. In the sideshow, he saw "a fat woman with whiskers," "a girl with two heads," "trained monkeys, Zulus, [and] the tortures of Inquisition." With chums, he founded the Kensington Weeding Association and was elected president. For several years, the association had an annual picnic. He and his brother, Dwight, merged their respective "museums of curiosities" into The Cowles National Museum. He attended numerous community gatherings where the people of Kensington entertained themselves with group singing, poetry recitals, oratorical contests, and the like.

New Britain High School

Kensington and New Britain were legally united during the 1880s, so Henry was able to attend New Britain High School. John H. Peck, A.M., a classical scholar and pedagogical martinet, was principal of this first-class institution. According to Edith A. Adams in *The High School, New Britain Connecticut, 1850–1950*, a pamphlet that was apparently produced and circulated in New Britain, Peck "never spared himself nor expected others to coddle themselves. Students knew they were in high school on trial, and they must meet the scholastic and citizenship requirements or be expelled."

Henry took the Classical Course, which included Latin prose composition, Caesar, Virgil, and Cicero. He learned to read and write ancient Greek, studying Homer's *Iliad* and Xenophon's military histories. Other courses included mathematics, bookkeeping, English and American literature, composition, singing, drawing, and penmanship.