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HENRY WILLIAM RAVENEL, 1814-1887: SOUTH CAROLINA SCIENTIST
IN THE CIVIL WAR ERA

Rice University

PH.D. 1983

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RICE UNIVERSITY

Henry William Ravenel, 1814-1887:
South Carolina Scientist
in the Civil War Era

by

Tamara Miner Haygood

A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE

Doctor of Philosophy

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March, 1983

This dissertation is dedicated
with love and gratitude to
my parents
W. A. Miner
and
Mimi Louise Miner

ABSTRACT

Henry William Ravenel, 1814-1887: South Carolina Scientist
in the Civil War Era
by
Tamara Miner Haygood

Recent historical interest in science in the Old South inspired this biography of mycologist Henry Ravenel (1814-1887). Prior writing on antebellum southern science was done without the benefit of strong monographs on southern scientists or institutions. Writing done in such a vacuum was necessarily very general and distorted in its perspectives. T. Carey Johnson exaggerated the importance of southern science, while Clement Eaton denigrated it, attributing the South's supposed lack in scientific contributions to the effect of two of her major institutions: slavery and religious orthodoxy.

Henry Ravenel, though a South Carolina slaveholder and a devout Episcopalian, was also one of a small group of leaders in antebellum American botany. He was a familiar correspondent to such other top American botanists as Asa Gray, Edward Tuckerman, William Sullivant, Moses Ashley Curtis and Alvan Wentworth Chapman. He also corresponded with a number of European scientists, particularly Miles Joseph Berkeley. To Berkeley he sent specimens of fungi together with detailed notes and descriptions. Berkeley would examine his collections and name new species, sometimes sharing authorship with Ravenel. Between 1852 and

1860 Ravenel published a five volume fungus exsiccati, or collection of dried plants. During this early period of his career, Ravenel's residence in the South, ownership of slaves and religious piety presented no impediment to his pursuit of botany.

Civil War nearly bankrupted the once-wealthy man. Ravenel returned to botany after the Civil War to earn money by selling collections. He no longer had time to study the theoretical foundations of taxonomy nor the money to purchase botanical books. In addition, for the first time Ravenel suffered some discrimination from northern botanists. The postbellum period, then, is revealed as the time when residence in the South first became a liability to Ravenel's pursuit of botany.

ACKNOWLEDGEMENTS

My work on Ravenel has given me many enjoyable and rewarding moments. One of the greatest of these pleasures has been meeting other scholars, including archivists, historians and botanists, as well as many who would not consider themselves scholars but who, in the best tradition of unselfish scholarship, shared information on areas of mutual interest. I am very glad to have this chance to thank them for their help.

Personnel at all the archives I consulted were, without exception, patient and encouraging and often went to much trouble on my account. I should mention in particular Allen Stokes of the South Caroliniana Library, Donald Pfister of the Farlow Herbarium and Betsy Shaw of the Gray Herbarium. In addition, staff at the Philadelphia Academy of Science and the Hunt Institute in Pittsburgh took time to look for Ravenel material in their collections. The Herbarium and the Humanities Research Center at the University of Texas in Austin on several occasions provided access to some of the rarer published works. Larry Davenport of the Mohr Herbarium at the University of Alabama helped me with Ravenel's Alabama correspondent Thomas Minott Peters, as did Alexander Sartwell of the Alabama Geological Survey. Among librarians, special mention must be made of Fondren Library's Ferne Hyman, Kay Flowers and Janet Pollens.

For food, shelter and companionship as I toured the archives I must thank my college friends Maureen Burke, Mary Spencer and Sharon Price. Phoebe Tussey kept me warm and dry in Austin, as did Susan Schweitzer in Spartanburg. Michael McVaugh and his wife settled me into their guest room for a few days while I explored the Southern Historical Collection in Chapel Hill.

Joseph and Nesta Ewan gave me their hospitality on two trips to New Orleans. They opened their magnificent botanical library to me and sent me back to Houston both times loaded with xeroxes and ideas. Their friendship and guidance was invaluable as I sought a niche in the history of botany. I am indebted as well to many others for information, encouragement or guidance. At the risk of neglecting some, let me note Edmund Berkeley, A. Hunter Dupree, Jerry Stannard, Ronald Numbers, Ronald Petersen, Harry Shealy, William Culberson, and Nancy Reid. For insights into the history of South Carolina I particularly wish to thank James J. Ravenel, Albert E. Sanders, Albert Cannon, Mrs. Roy E. Daniell and Mrs. Hugh C. Minton, Jr.

My own professors have freely given me much valuable direction and encouragement. Thomas Haskell and Roger Storck read my manuscript with more attention and care than is, I think, customary among secondary committee members, while S. W. Higginbotham, John Boles and Evelyn Nolen kindly wielded their editorial pens without even the compulsion of official membership on the dissertation committee. Above

all others, however, I am grateful to Albert Van Helden, my committee chairman. With an unerring psychological sense, he always knew when to push me and when to back off, and there were moments when that talent was crucial. As the chapters came out, he read each draft with acuity and saw gaps in logic and flaws in historical interpretation that others missed. I would also like to remember some of my undergraduate professors: Nora Howell, who encouraged me to use my talents; Earl Pittman, who showed me that history could be an adventure; Kit Carter, who said, "If you want to do history, how about history of science?" and Harry Sherman, who, after recovering from the shock of finding that I was not going to be a botanist, steered me into the very study that has led to this dissertation.

For financial assistance I want to thank the Department of History of Rice University and Vinson & Elkins, a Houston law firm that has employed me for the past two and a half years as a legal assistant and has patiently accepted the sometimes conflicting needs of my graduate student existence. My parents have paid many times over for their "free" copy of this dissertation, and their emotional support was even more important to me. My husband Mike has cheerfully shouldered more than his share of our household and financial burdens. I am keenly aware of what he sacrificed in spending the first year of our married life competing for my attention with Henry Ravenel. Finally, I want to thank my friends who tolerated great neglect and

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INTRODUCTION

My interest in the history of botany in the American South dates from my senior year at Mississippi University for Women when I undertook, upon the urging of biology-department Professor Harry Sherman, a semester's research on the lives of scientists important to the taxonomy of southern plants. Postgraduate study in the history of science and the history of the South brought sharply to mind a smoldering argument concerning the place of science and other intellectual activities in pre-Civil War southern society and the effect of this society upon the scientific work of its members. It is this argument that I have chosen to address in my dissertation.

Arguments begin only with the appearance of the second of two (or more) opposing views on a subject. Thomas Cary Johnson's Scientific Interests in the Old South opened debate in 1936 by attacking Samuel Eliot Morison's historical conception of the Old South as intellectually dead and rotting, with little or no interest in science.¹ To understand cotton was to understand the South, Morison felt, for the former had by the late antebellum period killed off all higher pursuits with the exception of proslavery apologetics and the study of the Greek and Roman classics.²

Johnson countered this idea by showing that there was widespread interest in science among southerners throughout

the entire antebellum period. Many southerners, he argued, enjoyed attending scientific lectures, viewing natural history exhibits, or collecting plants and animals. In the colleges, courses in science seemed to be overtaking the classics in popularity. Furthermore, as the nineteenth century neared the halfway mark, southerners actually became more, not less, interested in science.

Numerous historians of the colonial period have defended and expanded Johnson's thesis by writing on the colonial South's scientists.³ Compared with this attention given to the colonial period, science in the nineteenth-century South has until very recently been neglected or denigrated by historians. Only four years after the publication of Scientific Interests in the Old South, Clement Eaton published Freedom of Thought in the Old South, which claimed that the South's refusal after the mid-1830s to tolerate heterodoxy on religion and slavery stifled creative thought in all other aspects of southern intellectual life. Eaton did not bother to criticize Johnson directly and even made a bow in his direction by listing a few southern science teachers, but he ignored the larger implications of Johnson's thesis. He stated blandly that the classics reigned supreme in southern colleges while science languished and that, in any case, the colleges' "emphasis on the classics at the expense of the exact sciences ... was not so great an abuse as the suppression of academic freedom" under which all southern professors labored. They were

unable to discuss slavery unfavorably or free-soil favorably without the danger of being fired or harassed into resignation. Many professors, annoyed by this state of affairs, left the South to teach in the North. Presumably, suppression of academic freedom and subsequent loss of personnel could affect any branch of learning, or any department in a college, but by combining this discussion with remarks on the neglect of science by southern schools and by using the chemist Benjamin Sherwood Hedrick as his prime example, Eaton seemed to indicate that his thesis was most readily applicable to science.⁴

In 1964 he made this connection explicit. In The Mind of the Old South, Eaton conceded that Johnson was correct about the high level of scientific interest in southern colleges and among the general populace. He maintained, though, that the efforts of serious scientific workers were limited by "a special influence that militated against the development of the scientific attitude, namely, the subtle and pervasive effect of slavery." The South's need to defend slavery from northern criticism closed the southern mind to new and liberal ideas, creating an atmosphere unfavorable to the pursuit of science. Another factor contributing to this unfavorable climate, according to Eaton, was the South's rural environment. Furthermore, said Eaton, the predominant romanticism of the South made her people disinclined to do the close, painstaking observation necessary in serious science.⁵

Eaton's views on science in the Old South represented only one facet of a larger thesis. This "Cotton Curtain" version of antebellum southern history has found wide acceptance in its entirety among historians of the South and has been very commonly presented in undergraduate texts on the subject.⁶ His ideas have also found favor with some historians of science. They have expanded his list of the South's faults with regard to science to include her hot climate.⁷

Now, however, discriminating scholars are subjecting Eaton's conclusions with regard to science, as well as his approach to his subject, to closer examination and revision. Todd Savitt in his recent work on slavery and medicine in the Old South has argued that slavery may have had some stimulating effect upon medical science through the use of slaves as subjects of medical experiments. Similarly, Ronald and Janet Numbers's article in the May 1982 issue of the Journal of Southern History presented evidence that the antebellum South supported a significant amount of scientific activity. If the growth of Southern science failed to keep up with northern science, demographic and environmental factors had more to do with that than did the proslavery orthodoxy. In addition, scholars attending the first annual Barnard/Millington Symposium on Southern Science and Medicine at the University of Mississippi in March, 1982, produced from learned discourse and at times heated debate one conclusion: Both Eaton and Johnson committed the sin of

exaggeration. Eaton grossly exaggerated whatever negative impact southern views on slavery and religion may possibly have had on science, while Johnson's error, in the Numbers' words, "lay in implicitly trying to prove equality with the North."⁸

Johnson and Eaton's use of scientific development in the South to argue politico-historical positions also caused them to distort somewhat their portrayal of southern scientists. Though neither applied statistical methods to their information nor attempted to define an "average" southern scientist, each allowed a rather different composite picture to emerge from the many examples with which he illustrated his point of view. Johnson was concerned to show that the southern people, as a group, had a vague, diffuse interest in science. He was less concerned with the contributions of the South's capable, serious scientists. Names were mentioned with brief descriptions, but it was difficult to distinguish the varying levels of commitment existing among southerners interested in science.

In contrast, Eaton, especially in Freedom of Thought, was concerned with the plight of college teachers, and his Mind of the Old South shows traces of the earlier work, not only in repeating some of its conclusions, but also in its frequent use of college professors for illustration. Eaton's model southern scientist was a Yankee professor of the physical sciences who was striving manfully to resist the South's social pressures for conformity, especially with

regard to slavery. Of course such individuals would feel alienated from their environment and would be subject to some psychological stress! Ironically, it was southern-born scientists and those with southern inclinations whom Eaton treated as oddities.

Most unfortunately, Eaton paid scant attention to the South's numerous naturalists. From the time of the Revolution onward there was actually more interest in natural history south of the Mason-Dixon line than north of it, and many competent botanists and zoologists lived and worked in the South.⁹ Indeed, the natural historian was much more the typical American scientist than was the physicist or chemist, and this was even more true in the South than in the North.

Because naturalists were so typical of southern scientists, they are the ideal group to study in an attempt to characterize southern science. I have turned to the botanists, among whom, Henry William Ravenel (1814-1887) stood out as one of the best possible choices. For one thing, though his fame cannot be compared with that of many other southerners of the period, he has never sunk into obscurity. Often on mentioning his name to a group of systematic botanists I have elicited pleased smiles and exclamations of recognition. Southern historians have from time to time spiced their books with quotations from his manuscript diary, and many may be familiar with a good, one-volume edition by Arney Robinson Childs that particularly concen-

trates on his political views.¹⁰ Historians of science may recall an article on him that appeared in Isis many years ago.¹¹ More important than his familiarity was the impression he gave of having been not only an American botanist of the first rank, but also a very representative member of the southern planter or professional class. Ravenel's scientific credentials will become apparent in later chapters, but with regard to his position as the quintessential upper-class southerner, it is interesting to note that his societal and political outlook was so characteristic of the group that historians Francis Butler Simkins, Kenneth Stampf, Steven Channing, and even Clement Eaton himself have on different occasions used him as a spokesman for the planters' views of the world. Making similar use of quotations from Ravenel's diary, South Carolina historian Herbert Ravenel Sass explicitly characterized him as "by birth and position as completely a member of the Low-country planter 'oligarchy' as any man could be." Indeed, wrote Sass, "One could find no truer representative of that society than Henry William Ravenel...."¹²

Slaveholder, planter, South Carolina aristocrat, Ravenel was also a scientist. In telling the story of his life, I hope to address the issue of Ravenel's interaction with his society and of how the changing fortunes of the South, including its growing conservatism in the late antebellum period, the frustrating defeat of its bid for independence, and its reacceptance of the Union, affected

him personally and as a scientist. The answer to these questions has bearing upon the historical problem of the role of science in southern society. Further historiographical argument, however, will be reserved for the conclusion. Constant overt grinding of historical axes would detract far too much from the second and equally important task that this dissertation will undertake, that is, the presentation of a readable biography, which I hope will interest a wider audience than historians and historically inclined botanists.

INTRODUCTION

Footnotes

- 1 Thomas Cary Johnson, Jr., Scientific Interests in the Old South (New York and London, 1936).
- 2 Johnson, Scientific Interests, 1-10.
- 3 Edmund and Dorothy Smith Berkeley have written several solid, well-researched biographies of early southern naturalists, including studies of the Reverend John Clayton (1657-1727), an acquaintance of Nehemiah Grew and Robert Boyle who visited Virginia between 1684 and 1686, and his younger namesake (1694-1773/1774), co-author with John Frederick Gronovius of the Flora Virginica (1739, 1743). They also wrote on Alexander Garden of Charleston, South Carolina, and Virginia's John Mitchell. See The Reverend John Clayton, A Parson with a Scientific Mind: His Scientific Writings and Other Related Papers (Charlottesville, 1965); John Clayton: Pioneer of American Botany (Chapel Hill, 1963); Dr. Alexander Garden of Charles Town (Chapel Hill, 1969); Dr. John Mitchell: The Man who Made the Map of North America (Chapel Hill, 1974). Joseph and Nesta Ewan have contributed a scholarly biography of John Banister (1650-1692), who from 1678 to 1692 made large collections of Virginia's flora, much of which he sent back to England; John Banister and his Natural History of Virginia, 1678-1692 (Urbana, Chicago and London, 1970). Much valuable information on science in the colonial South and its integration into the Anglo-American scientific community is available in Raymond Phineas Stearns, Science in the British Colonies of America (Urbana, Chicago and London, 1970). Richard Beale Davis has also contributed to our knowledge of the integration of science with all aspects of southern, especially Virginian, intellectual life during the colonial period; Intellectual Life in Jefferson's Virginia (Chapel Hill, 1964) and Intellectual Life in the Colonial South, 1585-1763 (3 Vols., Knoxville, Tenn., 1978).
- 4 Clement Eaton, Freedom of Thought in the Old South (New York, 1951, reprint of 1940 edition), 196-217, quote on p. 199.
- 5 Clement Eaton, The Mind of the Old South ([Baton Rouge], revised ed., 1967), 224-44, quote on p. 243.

- 6 See for example William B. Hesseltine, The South in American History (2nd ed.; New York, 1943), who states that "Although the South had more colleges than the North, the southern institutions regarded disinterested scholarship with suspicion." p. 296; Francis Butler Simkins, A History of the South (2nd ed.; New York, 1953), in his chapter entitled "The Old South Turns Orthodox," gives a number of footnotes to Eaton and states that "The most significant development in the thinking of the Old South through the early decades of the nineteenth century was the establishment of orthodox and conservatism." Simkins devotes a couple of paragraphs to science, saying that several southern colleges employed able science teachers, but that science was not allowed to interfere with orthodox religious views on such matters as the age of the Earth, p. 153, 161, 169. Clement Eaton's own text, A History of the Old South: The Emergence of a Reluctant Nation (3rd ed.; New York, 1975), again treats science principally as a area of possible conflict with religious orthodoxy, p. 456. Another recent text echoing the same view is I. A. Newby, The South, A History (n.p., 1978) which says "... in the antebellum period ... every institution of any significance came under the influence of sectional and religious orthodoxists. ... By the 1850s the South's educational system at all levels was more concerned with defending the established order than seeking truth," p. 163 and "... southerners were not a scientific people ..." p. 181. A subchapter entitled "The Mind of the Old South" gives a thoughtful analysis, going beyond Eaton's early works, but not contradicting them.

- 7 On climate see Joseph Ewan, "The Growth of Learned and Scientific Societies in the Southeastern United States to 1860," in Alexandra Oleson and Sanborn C. Brown (eds.), The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War (Baltimore and London, 1976), 210, and Robert V. Bruce, "A Statistical Profile of American Scientists, 1846-1876," in George H. Daniels (ed.), Nineteenth-Century American Science: A Reappraisal (Evanston, 1972), 79.

- 8 Todd L. Savitt, Medicine and Slavery: The Diseases and Health Care of Blacks in Antebellum Virginia (Urbana, Chicago and London, 1978). Todd L. Savitt, "The Use of Blacks for Medical Experimentation and Demonstration in the Old South," Journal of Southern History XLVIII (August, 1982), 331-48. Ronald L. Numbers and Janet S. Numbers, "Science in the Old South: A Reappraisal," Journal of Southern History XLVIII (May, 1982), 163-84, quote on 184.

- 9 Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill, 1956), 16-17; William Martin Smallwood, Natural History and the American Mind (New York, 1941), 129.
- 10 The manuscript diary is available at the South Caroliniana Library, University of South Carolina, Columbia, South Carolina. The edited version is The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947).
- 11 Neil E. Stevens, "The Mycological Work of Henry W. Ravenel", Isis XVIII (1932), 133-49.
- 12 Simkins, History of the South, 161, 162; Kenneth M. Stamp, The Era of Reconstruction, 1865-1877 (New York, 1975), 69; Steven A. Channing, Crisis of Fear: Secession in South Carolina (New York, 1974), 28-29, 63, 67, 271-72; Eaton, Freedom of Thought, 308, 330; Herbert Ravenel Sass, The Story of the South Carolina Low-country (3 Vols., West Columbia, S.C., n.d.), 208.

GROWING UP IN THE LOW COUNTRY

1814 - 1829

Country fever, with teeth-chattering chills and soaring fevers, forced a nomadic existence upon the early nineteenth-century planter families of South Carolina's swamp-ridden tidewater plain. Winters were passed at the plantation, but in May the planters fled to tiny settlements on pine-covered islands of higher ground to spend the unhealthy summer months. For those who could afford it, a townhouse in Charleston offered an elegant alternative to pine-woods villages, as did summer trips to popular resorts, Asheville, Limestone Springs, even Saratoga. Fieldhands, considered by their masters immune to the fever and chills, were left on the plantation to tend gardens and cash crops of rice and fine-fibered sea island cotton. The overseer might also remain, to take refuge with his family in whatever tiny pine grove the plantation might provide.

For children the migratory life meant periodic disruption and uprooting, but also exposure at routine intervals to a more lively society than obtained on the relatively isolated plantations. Socializing was an especially important part of life in the summer villages. The men rode out daily to inspect the plantations, their own and their neighbors', and to gather fresh food; the older children were in school; thus the ladies and young children were free to visit one another. There was, in fact, little else for

them to do, for the simplicity of life in the pinelands freed the women from many of their usual, demanding duties as mistress of a plantation. Evenings did not end the fraternizing. The whole family would then enjoy informal dances and parties.¹

November winds blew the planters back to the more elegant but also more isolated life on the plantation. Winter visiting was of a different order than summer tea parties. Two to three family members from the next estate might come and stay a night or two, then next week the visit would be returned.² Children, no longer in close proximity to white playmates, renewed friendships with young slaves and spent the short days playing.³

At six or seven, most plantation sons and daughters began even more regular traveling. Weekends and the holiday months of April and December⁴ were spent at home, while on weekdays many of the children boarded at school. Their parents respected and valued an education based upon English grammar, the Greek and Roman classics and mathematics. Such an education was considered to be, if not a birthright, then an expected asset of their class.

Many were members of a church that steadfastly insisted on a learned ministry and recognized the value of universal acquisition of at least rudimentary learning. The Episcopal Church in South Carolina, as in the rest of the eastern United States, began in the second decade of the nineteenth century a twenty-year period of expansion in its religious

education programs. South Carolina was not backward in its promotion of this work. In 1814 South Carolina delegates to the Episcopal General Convention urged (unsuccessfully at that time) the foundation of a General Theological Seminary for the better training of ministers.⁵

Self-conscious patriotism fostered among South Carolinians, as among other Americans, by the encouraging outcome of the War of 1812, was a further spur to their interest in education. They looked to science and to its dissemination through education to create an intellectual freedom from Great Britain that would complement the political freedom so painfully won in the Revolution and confirmed in the War of 1812.⁶

Family tradition also handed down to many of the low country planters a respect for education. The family to whom Henry William Ravenel was born in 1814 was very typical of the time and place. His mother's people were French Huguenot and British, while his father was of pure French Huguenot descent, the fifth generation in America. The Ravenels, like other Huguenots who settled in South Carolina and along the American coast, were driven from France by a mounting tide of political and religious persecution. Though temporarily stemmed by dissension among the Catholic majority and by the Edict of Nantes, issued April 13, 1598, persecution gained momentum through the seventeenth century, and even the protective Edict was revoked October 17, 1685. Approximately two hundred thousand Huguenots fled France

during the late seventeenth and early eighteenth centuries. The loss to France and gain to other countries was enormous, for the Calvinist Huguenots were hard-working, ambitious people.⁷

Rene Ravenel, born September 26, 1656, to Daniel and Marie Ravenel of Vitre in Brittany, was among those who fled France's unfriendly shores. He emigrated in 1685, going first to Holland, then to England and finally to South Carolina where he joined a large number of French Protestants settled between Charles Town and the Santee River north of the city.⁸ Soon after his arrival Rene married Charlotte St. Julien, also from Vitre, who came to South Carolina with her family, including her brothers Pierre and Louis.⁹

Rene, Pierre and Louis all prospered and became landowners. Pierre's land included a thousand-acre tract located in the area which soon became the Parish of St. John's, Berkeley. Through further intermarriage it passed to Rene's son Rene Louis Ravenel, and, as the plantation "Pooshee," became a principal seat of the Ravenel family.¹⁰ Rene Louis passed Pooshee on to his son Henry. Known as Henry of Hanover, he and his wife Mary de St. Julien¹¹ did not reside at Pooshee, and that plantation did not go to the eldest son and namesake but to Rene, Henry William's grandfather. Born April 14, 1762, Rene, though the eighth of fifteen children, was only the second to live to adulthood and the first to marry. He married his first cousin

Charlotte Jacque Mazyck February 14, 1788, and together they had two sons and four daughters, all of whom survived to adulthood.¹²

Second and third generation Huguenots mixed easily with their British neighbors, adopting their language and even giving up their Calvinist religion for the Episcopal church. Rene and Charlotte were evidently Episcopalian. They had their children baptized as infants, carrying the eldest, their son Henry, born May 23, 1790, to Charleston when only four months old to be baptized by the Reverend Robert Smith.¹³ The couple also educated each child, often sending them to take lessons at one or another nearby plantation. When the number of school-aged Ravenels reached four, their father hired a private tutor who gave them lessons for about two years before moving on again.¹⁴

When Henry aspired to become a doctor, his father sent him off at the age of 18 to Charleston to study medicine with Dr. Samuel Wilson. After a little less than a year with Dr. Wilson, Henry sailed to Philadelphia where he spent the winters of 1809-1810 and 1810-1811 and earned the M.D. degree. Following the completion of his education, Henry returned to South Carolina to begin his medical career.¹⁵

On June 17, 1813, Dr. Henry Ravenel married twenty-one-year-old Catherine Stevens, daughter of Oneil Gough Stevens and his wife Catherine Richbourgh. The couple lived at Woodville plantation and in less than a year had their first child.¹⁶ Grandfather Rene Ravenel noted in his diary

May 19, 1814, "My Grand Son Henry was born at 1/2 past 4 O Clock in the Afternoon."¹⁷ That September Henry William was baptized at the Trinity chapel-of-ease at the little cross-roads known as Black Oak just outside the gates of Pooshee by Episcopal Reverend Charles Snowden. He was sponsored by his father and by his father's brother John and sister Susan.¹⁸ In April 1816 the young family moved to Pineville, one of the planters' summer towns in St. Stephen's parish, evidently to take up permanent residence, but Catherine died June 12, 1816.¹⁹ Two-year-old Henry William was sent to live with his grandparents, Rene and Charlotte Ravenel.²⁰

Dr. Henry Ravenel soon remarried. His little son later remembered attending his wedding January 19, 1819, to twenty-one-year-old Mary Esther Dwight. Mary Esther was dead within a year, and again on May 21, 1821, Ravenel remarried. Now seven, Henry William remembered clearly the marriage between his father and Elizabeth Catherine Porcher, daughter of Thomas Porcher and Charlotte Mazyck of Ophir plantation in St. Stephens Parish. Though twice remarried, young Henry's father left him with his grandparents until November 1826 when his grandmother died, Rene Ravenel having predeceased her in 1822. At that time, his father, who inherited Pooshee, turned entirely to planting as a career and moved out to the plantation with his wife and Henry's small step-brothers and sisters.²¹

There is no evidence that Dr. Ravenel's decision to leave Henry with his grandparents indicated any lack of

affection for his little son; indeed his material generosity with Henry William and his obvious desire in his old age for frequent visits from this eldest son indicate the opposite. He could feel sure of the boy's good treatment from his grandparents and unmarried aunts and uncles, one of whom, Susan Mazyck, continued to feel quite motherly towards Henry William all her life, though she married his maternal uncle Charles Stevens October 31, 1816, and soon started a family of her own in Pineville.²² If Henry William resented the apparent neglect from his father, he gave no indication of it later in diary or letters. This separation from his father in childhood does seem, however, to have stunted development of affection for his father, though respect, filial obligation, and concern for his father's health and well-being were all present later.

A favorite childhood activity of Henry's was to go to the Pooshee slave quarters and beg stories from the old men and women. Some were native Africans who gave him fantastic accounts of giant snakes, elephants, and fierce lions. They told grimmer stories, too, of their capture and march to the sea and of the middle passage. Of all their tales, though, the ones which had the greatest effect on him were of the American Revolution. The area around Charleston had been overrun by British troops, and men of fighting age, including Ravenel's grandfather, had gone into the surrounding swamps to join Francis Marion. The slaves' tales highlighted their own efforts on behalf of the colonials, as in

one story of a groom who saved a thoroughbred filly from the British by hiding her in the swamps. Henry William's hours spent listening to their stories permanently impressed upon him a feeling that the old men and women were worthy of, in his words, "respect and veneration." The tales of the American Revolution also inculcated in the young boy a great, patriotic love for his native land. By manhood that feeling had been enlarged to include the United States, a relatively abstract concept for a little child to understand, but it was always associated first and foremost with the very swamps and plantations where Marion and the British once skulked. Pooshee and its immediate neighborhood were home and country to young Ravenel.²³

Home, proper, was a twelve hundred-acre rice and sea island cotton plantation. The house, though easily visible from Black Oak Road, was located nearly a mile from the gate, a broad sand and gravel drive leading up to it from the public road. It was of simple, semi-colonial architecture, the first floor high enough off the ground to allow a man to walk under it. The interior was plain, with only wood-carved decorations, and rooms at ground level, under the living quarters, served as store-house, meat-room, dairy and woodhouse. On each side a strip of lawn separated the drive from the first cultivated fields. Old water oaks, sycamores and elms dotted the lawn and surrounded the house, each tree provided with a hitching ring for visitors' horses. Stables stood to one side and carriage houses to

Plantation House at Pooshee
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I wish to express appreciation to Harry Shealy
and David Mellenberg for help in selecting
and reproducing the photographs

the other side of the house, providing a symmetrical appearance but imposing an inconvenient distance between the two. Slave quarters were located one or two hundred yards from the plantation house and consisted of rows of wooden houses about eighteen by thirty feet, each divided down the middle to accommodate one large family or two small ones.²⁴

One unusual and nearly tragic incident stood out during Henry Ravenel's childhood years at Pooshee. On June 23, 1818, when Henry William had just turned four, he was thrown from a horse and severely injured. The scalp was torn back from his forehead and had to be replaced and held securely by stitches and tape until it healed. The serious nature of the injury was obvious to all, and it was recorded in tones of concern by both his father and grandfather. The wound apparently healed without complications, though it left a scar, but his family long remembered the frightening incident and linked it with his much later attacks of deafness. The accident's dramatic effect was also apparent from the impression it made upon the Ravenels' slaves, who told the story so often that, according to legend, they eventually convinced themselves that Henry William had a silver plate in his head.²⁵

When the time came for the boy to begin school, his grandfather sent him to Pineville Academy, where his younger aunts Maria and Catherine had received instruction only a few years before.²⁶ Private schools such as the one in Pineville were a common institution in antebellum South

Carolina, for there was only a very limited system of free public education. South Carolinians' general recognition of the importance of education to the public interest was combined with a feeling that its provision was basically a parental responsibility.²⁷ South Carolina's private academies varied considerably in quality. Some were poor, but others achieved a great reputation and attracted students from throughout South Carolina and neighboring states. The most celebrated was the academy run by Moses Waddel in a forested retreat near Willington. Between 1804 and 1819, when Waddel departed Willington to serve as president of the University of Georgia, about one hundred fifty boys gathered each year at the school to live in rude log huts and recite Homer and Virgil.²⁸

Pineville Academy, where Henry William began lessons on June 25, 1820,²⁹ was operated by a board of trustees who functioned also as the town council of Pineville. It was equipped with a schoolhouse and a house for the teacher. New teachers came fairly frequently and varied greatly in ability. Frederick Augustus Porcher, a near neighbor of Ravenel's, five years his senior, recalled with fondness John Service, an assistant teacher, who had charge of the youngest children and whose patient instruction inspired him in reading. Service was also Henry William's first teacher. The schoolmaster during the same period was Jacob Gillett, a graduate of Dartmouth. Gillett's major asset was an amiable wife who won the affection of his students. His major

liability was his inability to teach Greek. For a time he simply restricted his subject matter to English and Latin, but when finally he embarked with his older pupils upon the study of Greek, his deficiency became apparent to all within a year or two. Hoping to obtain a better instructor, the trustees refused to reelect Gillett at the end of the 1823 term.³⁰ Ravenel, only nine years of age and too young to have begun Greek when Gillett was dismissed in December 1823, probably suffered no serious setback due to his faulty instruction.

Most of the male students at coeducational Pineville Academy were college bound, and the curriculum reflected their needs. The youngest children were schooled in English grammar, reading and arithmetic. Latin was soon added to their studies, and then Greek. Both were necessary to enter college, and both fulfilled a major requirement of the dominant philosophy of education in nineteenth-century America. This philosophy held that the value of elementary education lay as much in the development of studious habits of so-called "mental discipline" as in the mastery of particular fields of knowledge. To be effective in this regard, study had to include much tedious memorization so students would develop concentration and patience. Latin and Greek, therefore, were taught at Pineville through endless drills and oral recitation.³¹ In order to prepare pupils to enter college, some geography, history, algebra and geometry were probably also part of the curriculum.

Science, however, does not seem to have been taught at Pineville. By the late 1820s a few academies or high schools in the United States had begun teaching some science, but it was ordinarily considered too difficult for children. Christopher Cotes did experiment briefly with teaching science in his academy at Charleston but gave it up as a study more suited for college-level students.³² Even colleges ordinarily confined it to the junior and senior curriculum.

Though science may not have been taught to Ravenel formally during his childhood, the atmosphere in which he grew up was conducive to the development of any innate interest a child might have in natural history. Low country South Carolina had a rich native flora and fauna. In many places, including the swamps and pine forests, this wilderness was left in its natural state. Outdoor childhood games, as well as adults' outdoor agricultural work, brought people into frequent contact with nature. In addition, the Charleston area had at the time a scientific, particularly a natural history, tradition going back a century.³³ Thomas Walter (1740-1789) of St. John's Parish had contributed greatly to this tradition. Many years of collecting and observing plants culminated in 1788 in the publication of his Flora Caroliniana, a Latin catalogue of the plants of the locale, arranged according to the Linnaean system. Rene Ravenel, Henry William's grandfather, was in his twenties when Walter died and might have had stories to tell of his

botanist neighbor. Walter's grave and the barely discernible remnants of his botanical garden were only a few miles from Pooshee, an easy trip for a curious boy on a pony, had Ravenel been so inclined.³⁴

Many things more interesting than a grave and tangled garden could be seen on occasional trips to Charleston. America's oldest museum collection, begun in the 1770s, was on display in Chalmers Street. Fossils, sea shells, an Egyptian mummy, a polar bear, a duck-billed platypus, and bright minerals and birds, things many children saw only in picture books, were parts of a growing collection. Charleston's position as a major seaport was an important aid to the museum, and rare specimens were often procured from voyagers and sea captains. While the museum opened up new worlds to Charleston children, it also acquired research collections to aid its scientifically inclined adult patrons. In 1816 it purchased the natural history collections of Felix Louis L'Herminier (1779-1833), whose shipments of South Carolina birds and mammals also enriched the holdings of the Museum of Natural History in Paris. Gifts of specimens from Stephen Elliott (1771-1830) and Joel R. Poinsett (1779-1851) also enlarged the Museum of South Carolina's collection.³⁵

As Ravenel grew to young manhood in low country South Carolina, he lived a life not very different from the lives of other children in his place and time, yet many advantageous circumstances combined at his birth to produce a

situation favorable to the full development of his in born abilities. He was male and white in a society rigidly dominated by white men; his family was wealthy in a society where even the rudimentary education of poor children was uncertain. To be male, white, and wealthy was a distinct advantage anywhere in nineteenth-century America, but the intellectual implications of these advantages could easily have been lost on Ravenel had he not lived in an old, settled part of the country where schools were available and where the concentrated labor of establishing profitable agriculture had been done years before, freeing the minds and hands of Ravenel's generation for other tasks. To live within fifty miles of Charleston was in itself a special advantage for anyone with an inclination to study natural history, for the Charleston scientific community exuded an atmosphere of sympathy unmatched in any American city with the possible exceptions of Boston and Philadelphia. Finally, Ravenel was lucky in belonging to a church that encouraged learning and education and in being born into a family that had received from its Huguenot forebears a respect for education and for determined application to one's life work. Ravenel looked forward to a life whose limits would be set, to an enviable degree, by his own talents and desires.

GROWING UP IN THE LOW COUNTRY

1814 - 1829

Footnotes

- 1 Planters' seasonal migrations and life in pineland villages have been mentioned in many historical/descriptive works on low country South Carolina. I know of no monographic treatment of this phenomenon, though George Terry shared some interesting insights on the problem with me and is, I believe, preparing an article on the topic. "Country fever," of course, was malaria. See, for example, Samuel Gaillard Stoney, Plantations of the Carolina Low Country (Charleston, 3d ed., 1945), 34-36; Herbert Ravenel Sass, The Story of the South Carolina Lowcountry (3 Vols., West Columbia, S.C., n.d.) I, 186; Samuel Gaillard Stoney (ed.), "The Memoirs of Frederick Adolphus Porcher," South Carolina Historical Magazine XLVI (April, 1945), 85-86; Robert Wilson, Half Forgotten By-Ways of the Old South (Columbia, 1928), 124-44.
- 2 This pattern of winter-time visiting becomes readily apparent upon reading the Private Journal of Henry William Ravenel (South Caroliniana Library, University of South Carolina, Columbia, S.C.; hereinafter cited as Manuscript Private Journal of HWR). It covers the period 1859-1887, and, despite the interruption of the Civil War, the socializing which I have so tersely described remained in effect.
- 3 Not surprising. See Henry William Ravenel, "Recollections of Southern Plantation Life," Yale Review XXV (Summer, 1936), 749.
- 4 D. E. Huger Smith, A Charlestonian's Recollections, 1846-1913 (Charleston, 1950), 9.
- 5 Clifton Hartwell Brewer, A History of Religious Education in the Episcopal Church to 1835 (New York, 1969), 83-93, 143-48, 226-46.
- 6 Sally Gregory Kohlstedt, The Formation of the American Scientific Community: The American Association for the Advancement of Science, 1838-60 (Urbana, Chicago and London, 1976), 1-24; George H. Daniels, Science in American Society: A Social History (New York, 1971), 126-51; Stanley M. Guralnick, Science and the Ante-Bellum American College (Philadelphia, 1975), viii-ix.

- 7 Professor Charles Garside; Mary Winkler, a fellow doctoral candidate at Rice University; and John Fowler (Ph.D., Rice, 1980) kindly helped with information on Reformation France. They particularly recommended the following very helpful books: G. A. Rothrock, The Huguenots: A Biography of a Minority (Chicago, 1979); John T. McNeill, The History and Character of Calvinism (London, Oxford and New York, 1954), 237-54; N. M. Sutherland, The Huguenot Struggle for Recognition (New Haven and London, 1980). On refugees in South Carolina, see Arthur Henry Hirsch, The Huguenots of Colonial South Carolina (Hamden and London, 1962) 10-13.

- 8 [Theodore Gaillard Thomas, editor and compiler], "Liste des Francois et Suisses" from an old Manuscript List of French and Swiss Protestants Settled in Charleston, on the Santee and at the Orange Quarter in Carolina who Desired Naturalization Prepared Probably About 1695-6 (Baltimore, 1968, reprint of Charleston 1868 edition), 57; Henry Edward Ravenel, Ravenel Records: A History and Genealogy of the Huguenot Family of Ravenel, of South Carolina; with some Incidental Account of the Parish of St. Johns, Berkeley, Which Was Their Principal Location (Atlanta, 1898), 131, 141.

- 9 William Montgomery Clemens, North and South Carolina Marriage Records from the Earliest Colonial Days to the Civil War (New York, 1927), 228. Charlotte's hometown is mentioned in [Thomas, (ed.)], Liste, 57.

- 10 A. S. Salley, Jr., Warrants for Lands in South Carolina, 1672-1711 (Columbia, 1973), 564, 582, 599, 615, 654, 655. In this list of land warrants, Pierre is given the English name Peter, and Louis is Lewis. The derivation of Pooshee by the Ravenels from Pierre is well accepted, but the date given for its original acquisition by Pierre is 1705, leaving open the possibility that this thousand-acre tract (two hundred acres added later) was acquired by Pierre in addition to the acreage listed here, acquired in 1696, 1701, and 1703/4. On Pooshee see Samuel Wilson Ravenel, "Christmas at Pooshee," (1903; typescript), 2, in Box 5, Thomas Porcher Ravenel Collection (South Carolina Historical Society, Charleston, S.C.; hereinafter cited as S. W. Ravenel, "Christmas at Pooshee"); Frederick A. Porcher, "Upper Beat of St. John's, Berkeley," Huguenot Society of South Carolina, Transactions, XIII (1906), 72; George D. Terry, "Eighteenth Century Plantation Names in Upper St. John's, Berkeley," Names in South Carolina XXVI (Winter, 1979), 17.

- 11 Married 13 September, 1750, at Hanover. H. E. Ravenel, Ravenel Records, 142, 163. Clemens, Carolina Marriage Records, 228.
- 12 H. E. Ravenel, Ravenel Records, 164-65; Clemens, Carolina Marriage Records, 228.
- 13 Diary of Rene Ravenel, entries of May 23, 1790, and September 23, 1790, Box 1, Thomas Porcher Ravenel Collection (South Carolina Historical Society; hereinafter cited as Diary of Rene Ravenel). On Robert Smith see Frederick Dalcho, An Historical Account of the Protestant Episcopal Church in South Carolina, from the First Settlement of the Province, to the War of the Revolution; ... (n.p., 1970, Tricentennial edition, original publication Charleston, 1820), 214-219. The Robert Smith described by Dalcho may not, of course, have been the same man who baptized Henry Ravenel, but he seems to have been the only Episcopal priest of that name in Charleston at the time. He was consecrated Bishop in 1795.
- 14 Diary of Rene Ravenel, June 23, 1794; November 17, 1794; May 24, 1802; October 31, 1804, and passim.
- 15 Ibid., January 14, 1809; November 18, 1809; December 3, 1809; March 11, 1810; October 21, 1810; June 15, 1810. Wilson may have been an acquaintance of Rene's from Revolutionary War days; he too, was said to have been one of Marion's men. Joseph Ioor Waring, A History of Medicine in South Carolina, 1670-1825 (Columbia, S.C., 1964), 329-30, on Wilson. Henry Ravenel apparently did not study at the famous University of Pennsylvania medical school, or, at least, he did not graduate there. For this information I am indebted to the staff of the medical library of the University of Pennsylvania who checked for Ravenel in the Catalogue of Medical Graduates of the University of Pennsylvania, with an Historical Sketch of the Origin, Progress and Present State of the Medical Department (Philadelphia, 1836).
- 16 Diary of Rene Ravenel, June 17, 1813; June 21, 1813; May 19, 1814; Clemens, Carolina Marriage Records, 228; H. E. Ravenel, Ravenel Records, 165.
- 17 Diary of Rene Ravenel, May 19, 1814.
- 18 Ibid., September 25, 1814.
- 19 Catherine Ravenel apparently died of complications of childbirth. An infant daughter, born on June 8, died on the 9th, and the two were buried in the same grave.

- Ibid., April 5, 1816; June 8, 1816; June 12, 1816; H. E. Ravenel, Ravenel Records, 165; Brent H. Holcomb, Marriage and Death Notices from the (Charleston) Times, 1800-1821 (Baltimore, 1979), 298.
- 20 Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), xiv-xv.
 - 21 Ibid., xv; H. E. Ravenel, Ravenel Records, 165-66; Clemens, Carolina Marriage Records, 228.
 - 22 Diary of Rene Ravenel, October 31, 1816; H. E. Ravenel, Ravenel Records, 174; Porcher, "Upper Beat," 50-51; Aunt Susan Stevens' love for her nephew was quite warmly returned. On the occasion of her death Ravenel reminisced; "I have always looked to her as one of those few bright and shining lights which we may safely take as standards of earthly excellence. I never knew any one more unsuspicious of others, or more unselfish & ... I cannot recollect ever hearing her speak an evil word of another, or exhibit anger ... I have always had a love & affection for her, but little less than that of filial love." Childs (ed.), Private Journal of HWR, 24-25.
 - 23 H. W. Ravenel to Edward Tuckerman, March 23, 1857, Edward Tuckerman Papers (American Antiquarian Society, Worcester, Massachusetts). The letter is quoted in parts in Childs (ed.) Private Journal of HWR, xiv, and by Neil E. Stevens, "Two Southern Botanists and the Civil War," The Scientific Monthly IX (August, 1919), 157-58. H. W. Ravenel, "Recollections," quotation p. 450. Porcher mentions Rene Ravenel's service with Marion, "Upper Beat," 73.
 - 24 Porcher, "Upper Beat," 72-73; Terry, "Eighteenth Century Plantation Names," 17; The description of Pooshee is from S. W. Ravenel, "Christmas at Pooshee," 2-3; Pooshee's physical appearance was fairly typical of plantation homes in St. John's. See Harriette Kershaw Leiding, Historic Houses of South Carolina (Philadelphia and London, 1921), 131-54; a sketch of Pooshee is available in Childs (ed.), Private Journal of HWR, 35; on slave quarters see H. W. Ravenel, "Recollections," 750-51.
 - 25 Diary of Rene Ravenel, June 23, 1818; Childs (ed.) Private Journal of HWR, xiii-xiv; Elizabeth Teague, "Henry W. Ravenel," (transcript memoir kindly furnished by Prof. Harry Shealy, University of South Carolina at Aiken), 2, 3.

- 26 Diary of Rene Ravenel, June 1, 1813; June 25, 1820.
- 27 South Carolinians recognized the necessity of a high literacy rate among the white population for the preservation of a free and peaceful government. Commissioners of the free schools in St. Philip's and St. Michael's Parish, Charleston, exhorting the legislature in 1848 to increase aid to free schools, praised "the importance and advantages of a good English education, to the poor white population of our beloved State. Suffice it to say, that without it, they cannot exercise the Elective Franchise with independence or discrimination, and must always be an easy prey to political seduction, and liable, under the excitement of general elections, or the promptings of an unprincipled leader, to break out into excesses, and to put to defiance the authority of the law. ... Without education, moreover, our poor youth could neither make skilful farmers, nor enterprising and successful merchants, nor ingenious and intelligent Mechanics; but would be fit only for the drudgery of bodily labor, or be confined to the narrow limits of manual dexterity." Edgar W. Knight, A Documentary History of Education in the South Before 1860 (5 vols., Chapel Hill, 1949-1953), V, 122. A later writer stressed the education of South Carolina's white population as a tool in the proper control and direction of the slaves. William H. Trescott, "The States Duties in Regard to Popular Education," De Bow's Review, N.S., X (February 1856), 148. On the operation of the free schools see Knight, Documentary History V, 24-26; Colyer Meriwether, History of Higher Education in South Carolina with a Sketch of the Free School System (Washington, 1889), 111-12; B. James Ramage, "Local Government and Free Schools in South Carolina," in Herbert B. Adams (ed.), Johns Hopkins University Studies in Historical and Political Science I, No. 12 (October, 1883), 34-38.
- 28 Meriwether, Higher Education, 29-44.
- 29 Diary of Rene Ravenel, June 25, 1820.
- 30 Ibid., on John Service as Ravenel's first teacher; Stoney (ed.), "Memoirs of F. A. Porcher," XLIV (October 1943), 215-18.
- 31 W. H. Heck, Mental Discipline & Educational Values (New York, 1909); Walter B. Kolesnik, Mental Discipline in Modern Education (Madison, 1958), 10-23. Stoney, "Memoirs of F. A. Porcher," XLIV (October 1943), 215-18.
- 32 Meriwether, Higher Education, 30-33.

- 33 The scientific orientation of colonial and antebellum Charleston is well known. See, for example, Thomas Cary Johnson, Jr., Scientific Interests in the Old South (New York and London, 1936); William Martin Smallwood, Natural History and the American Mind (New York, 1941); 102-109; Kenneth W. Hunt, "The Charleston Woody Flora," The American Midland Naturalist XXXVII (May, 1947), 671-74; Brooke Hindle, The Pursuit of Science in Revolutionary America, 1735-1789 (Chapel Hill, 1956); Edmund Berkeley and Dorothy Smith Berkeley, Dr. Alexander Garden of Charles Town (Chapel Hill, 1969).
- 34 Thomas Walter and Rene's older brother Henry, it is interesting to note, were both elected in 1788 to serve on St. John's Road Commission. Walter, who may have been in failing health by then, never attended a meeting. David H. Rembert, Thomas Walter, Carolina Botanist (Columbia, S. C., 1980).
- 35 Albert E. Sanders, "The Charleston Museum and the Promotion of Science in Antebellum South Carolina" (presented at the third Citadel Conference on the South, April 25, 1981), 5-8, cited by permission of the author.

COLLEGE YEARS

1829 - 1832

Ravenel left Pineville Academy at the end of the 1828 term, and in January, 1829, his father escorted him, in company with his neighbors Isaac and Edward Porcher, to Columbia, where they continued their studies privately under James M. Daniels, who had taught the year before at Pineville.¹ The boys' study with Daniels was evidently directed at polishing their lower-school education to prepare them to enter South Carolina College, now the University of South Carolina soon after they turned fifteen, the minimum age for enrollment.

South Carolina College, where Ravenel was to spend the years from December, 1829, until his graduation in December, 1832, was founded as a deliberate attempt by low country planters, who controlled a disproportionate number of seats in the legislature, to resolve sectional disputes between the coastal region and the Piedmont. The latter, growing year by year in its numerical superiority over the low country, clamored for a more equitable distribution of power. With this problem in mind, Governor John Drayton (1766-1822) addressed the Assembly of South Carolina on November 23, 1801. The state, he asserted, lacked a college worthy of the name, though she had incorporated five private colleges: two were no longer operating, and three were little more than secondary academies. He suggested that

South Carolina should establish a college at the Piedmont town and state capitol of Columbia. There, he hoped, "the friendships of young men would thence be promoted and strengthened throughout the State, and our political union be much advanced...." Acting with amazing rapidity on the advice of the governor, both houses of the South Carolina Assembly read and approved a bill to establish the college. Final legislative approval came on December 19, less than a month following the governor's address.²

South Carolina was not the first state to found a college for by 1801 both North Carolina and Georgia had state universities. The degree of control exercised by the state over the college at Columbia, however, as well as the splendid financial support given by the legislature, placed South Carolina College on a firmer initial footing than the other two. With fifty thousand dollars in hand the trustees of the new institution, all members of the government or elected by the legislature, proceeded to put the new college on its feet. They chose a site, received bids from architects and contractors, and by January, 1805, had constructed a substantial building, Rutledge College. South Carolina College opened on January 10, 1805, with a faculty of two and a student body of nine.³ From this small beginning, the college had grown considerably by 1829. The student body numbered nearly one hundred, and the faculty had increased to six.

Before these six men, on the first of December 1829, Ravenel appeared with several other prospective students to be examined for entrance into the sophomore class. The faculty's examination took two days, and at the end, Ravenel was among the successful candidates and a sophomore at South Carolina College.⁴ To enter the sophomore class directly, as Ravenel did, was not quite the accomplishment it might seem in these days when four year college courses are very much the norm. Improved preparation of students by South Carolina's academies had resulted in a generally very low enrollment in the freshman class, and in 1831 the president reported to the trustees that the freshman class had been dispensed with entirely.⁵

Ravenel's entry at the age of fifteen into the sophomore class does indicate that his years at Pineville had given him a strong, though by no means outstanding, background in English and other basic subjects and that he knew his Greek and Latin well. Thomas Cooper (1783-1839), elected a professor in 1819 and president of the college from 1821 through 1833, had in 1820 persuaded the Board of Trustees to establish fifteen as the minimum age for enrollment and to erect tough entrance requirements including extensive translation in Latin and Greek. Admission to the freshman class required legible handwriting, correct spelling, and an acquaintance with mathematics, including common and decimal fractions and the extraction of roots. Accurate knowledge of English, Latin and Greek grammar was a

necessity, and the prospective freshman also had to be able to translate into English from Latin the Commentaries of Cosias, Virgil's Aeneid, and from Greek the four Evangelists and the Acts of the Apostles.⁶ Requirements for admission into the sophomore class were not specifically established by the trustees, but the minutes of faculty meetings during these years give indications of what was considered an acceptable level of expertise beyond the freshman requirements. Familiarity with more of the ancient authors was a necessity. A candidate for the sophomore class might be required to translate from the Odes of Horace, or his Art of Poetry, from Cicero's Orations, Lucian's Dialogues or Xenophon. A somewhat more rigorous knowledge of mathematics was also in order, and one young man was disappointed in his sophomoreic ambitions because he was deficient not only in Cicero's Orations, but also in quadratic equations.⁷

South Carolina College's physical plant, like its student body and faculty, had also expanded dramatically between 1805 and 1829. DeSaussure College, whose construction was begun in 1806, mirrored Rutledge College across the grassy mall which, then as now, was called the Horseshoe. These two large structures were flanked by smaller ones, a Steward's Hall, houses for the President and faculty, and the Library and Science Building, arranged to preserve the harmonious symmetry of the Horseshoe. An observatory huddled behind two of the other new buildings.⁸

That this still-small campus possessed an observatory and a separate building housing library and science facilities hints that South Carolina College was a remarkably scientifically oriented institution for its time. The composition of the faculty, administration of the library, and the subjects studied by the students all point, as well, to this scientific orientation, but perhaps the single most revealing clue was the professorial pay scale. South Carolina College was one of the few colleges in the United States which as early as 1812 made it a policy to pay science professors as much as others. The president received \$3000 annually, professors each \$2000 and tutors \$1000, salaries that compared well with those offered at other colleges of the period.⁹

South Carolina's hundred students were taught by a capable faculty. They included the English chemist Thomas Cooper, who served as president and taught chemistry, belles lettres and political economy; Thomas Park, professor of ancient languages; Robert Henry, a young, ambitious professor of mathematics; Henry Junius Nott, teacher of the "Elements of Criticism, Logic and Philosophy," and Robert W. Gibbes who taught chemistry, geology and mineralogy but was given only the status of "assistant to Dr. Cooper," and half the salary of a professor. During 1829 and 1830 Edward Michaelowitz, styled, "Teacher of Oriental Literature and Modern Languages," offered instruction in German, French and Hebrew. In addition there were always one or two tutors who

lived among the students and taught mathematics or classics to the two lower classes.¹⁰ Two graduates of this period, James H. Hammond, later governor of South Carolina, and James H. Thornwell, both found the Cooper-era faculty to be highly stimulating. Ravenel's own classmate J. Marion Sims, later a famous pioneer in the field of gynecology, however, was favorably impressed only by Cooper and Henry,¹¹ perhaps because of a budding physician's understandable preference for their scientific subject matter.

Library resources, aided by a substantial grant in 1823 from the legislature, included modern authors of physical science and mathematics, the most widely respected critical editions of ancient works, and current literature. Particularly in the physical sciences an attempt was made to establish a research library sufficient for the needs of the professors as well as their students. Library hours, which allowed teachers much greater access to the building than students, also reflected the attempt to meet professors' research needs. Poor administration during the 1820s threatened the continued usefulness of the library. The books were disorganized, and no careful record had been kept of those taken out and those returned. In December 1829 the trustees ordered that a librarian be hired to call in and arrange the collection. This was successfully accomplished, and in November 1830 the trustees received the report that "The management of the Library. . .during the last season

fully answered all the reasonable expectations of the faculty."¹²

Despite liberal support for the physical sciences, library resources indicate a certain inattention to natural history at the South Carolina College of the late 1820s. The 1823 appropriation granted by the Assembly for purchasing books was used partly to enhance the collection of scientific works, particularly in astronomy and mathematics, but natural history was neglected. The Committee of Trustees who selected the books mourned that:

In the important and daily increasing department of Natural History a few of the most valuable elementary works have been inserted. It is greatly to be regretted that in this department in which the most important treatises are too costly for the acquisition of private individuals, some public Collection could not be made.¹³

These remarks, addressed to the legislature, perhaps were designed to bring forth additional money with which to buy works in natural history. They clearly recognize the importance of those studies of animals, plants and minerals that went under the combined name of natural history, but considered them subordinate to the physical sciences.

Faculty members certainly had a hand in recommending books for the library, so it is scarcely surprising that South Carolina College's faculty also reflected a preference for the physical sciences. There was, in fact, no member specializing in life sciences. This was not unusual, however, when the relative roles of the two areas of study in other contemporary schools are considered. America's first

colleges, Harvard, Yale, William and Mary, and those relative newcomers of the eighteenth century, Princeton, the College of Philadelphia, Columbia, Brown, Rutgers, and Dartmouth, concerned themselves much more with physical science than with natural history, and the tradition they established was carried into the nineteenth century. This was hardly surprising, for biology did not emerge as a discrete science until the nineteenth century,¹⁴ and comparative anatomy and botany were considered mainly the province of the medical curriculum. Only in 1816 did the College of Philadelphia, for example, begin to offer instruction in natural history outside the medical school.¹⁵ From 1805 Harvard provided some form of natural history instruction, but only in 1842 was a separate chair of botany created when Asa Gray (1810-1888) refused to teach zoology.¹⁶ In the South as in the North, devotion to the physical sciences often came at the expense of botany and zoology. Early southern teachers of natural history were often polymaths who taught several subjects in addition to natural history and whose specialty might actually lie outside the area. Constantine Samuel Rafinesque (1784- 1840), for example, taught botany in addition to modern languages at Transylvania University in Lexington, Kentucky, from 1817 through 1825; Gerard Troost (1776-1850), though best known as a geologist, lectured on natural history, particularly zoology, at the University of Nashville from about 1828 through 1849.¹⁷ Not until 1846 when Richard Owen Currey began

teaching at East Tennessee University was laboratory-based botanical instruction available anywhere in Tennessee, though laboratory classes in chemistry were offered twenty years earlier by George Thomas Bowen of the University of Nashville.¹⁸ When the University of Mississippi opened its doors in the late 1840s, three of its five professors taught some aspect of physical science or mathematics, but, like South Carolina College, there was no teacher of natural history.¹⁹

Obviously whatever botany or other natural history Ravenel may have learned at college, he picked up informally. Some opportunity may have existed in this regard. Lewis Reeves Gibbs (1810-1894) the kinsman of faculty member Robert W. Gibbs, joined the faculty between 1831 and 1835, first as tutor of mathematics then, for a year, as acting professor of mathematics. Lewis Gibbs's dominant interest was astronomy, but from boyhood botany had also claimed his attention, and his plant studies were continued in Columbia. In October, 1835, Gibbs published a small pamphlet entitled A Catalogue of the Phoenagamous [sic] Plants of Columbia, S. C. and Its Vicinity. From time to time Gibbs published other papers on botanical subjects. He and Ravenel later corresponded regularly on natural history topics, but it is not known whether they worked together during the year that their stays at South Carolina College overlapped. Ravenel was not among the few individuals whom Gibbs credited with having helped him on the

"Catalogue," however, since he was there for only one of the four years in which Gibbes worked on the botanical study, this is scarcely evidence that he was not involved. The two very likely did know each other, as Ravenel later confided to Gibbes that his laboratory at the College of Charleston brought back pleasant memories of college days.²⁰

Robert Gibbes's scientific interests also extended beyond the physical sciences. Paleontology and ethnology engaged his interest, and he developed a wide reputation for his contribution to the former discipline of an article on a mysterious fossil animal that was discovered in 1845 on the Santee Canal plantation of R. W. Mazyck and that seemed to combine the dental characteristics of mammals and reptiles. The naming of the beast threw Gibbes into an argument with the great British comparative anatomist Richard Owen (1804-1892), an argument that seems to have been settled by the combatants' successors in favor of Gibbes.²¹

Ravenel applied himself fairly diligently to those studies formally offered at South Carolina College. His habit of hard work was well known to his family. His uncle Charles Stevens wrote him in 1829, while he was studying with Daniels, and devoted most of a four-page letter to advice that he not study too hard. "No person can be always engaged in elevated pursuits. Periods of relaxation are absolutely necessary, not only to the health of the animal system; but to the healthful operations of the mind itself," suggested Uncle Charles.²² Ravenel apparently had some

trouble adjusting to the relative freedom of college, however, for his first semester, which he later admitted had been spent slothfully, resulted in his failing the faculty's examination in mathematics, though he passed in Greek, Latin and modern geography. He made up this deficiency over the summer and never failed another college exam. Ravenel compensated for his earlier failure by especially hard work in the chemistry, mineralogy, natural philosophy and metaphysics that were reserved for the senior curriculum.²³

Following a tradition as old as universities themselves, college students in the early nineteenth century were raucous and disruptive. Open rebellion, physical threats against professors, assaults upon townspeople and drunkenness were not uncommon.²⁴ South Carolina College had its share of disorder. Even when first president Jonathan Maxcy in 1816 effusively praised the students, saying that after thirty years as an educator he had never known "an instance in which a College was conducted with such order, peace, and industry, as this has been during the past year," he had to make an exception because of "the resort of certain individuals to taverns and other places of entertainment."²⁵ In 1827 an organized boycott of the dining hall led to the expulsion of such a large proportion of students that only thirteen graduated that year.²⁶

While Ravenel walked its hallways, however, South Carolina College was remarkably peaceful. In 1828, the year before he entered, the trustees finally defused the yearly

discontent that had sparked rebellion in 1827 and lesser disturbances in prior years by eliminating compulsory attendance at the steward's hall, a relaxation of pseudo-parental control that they had resisted for years. Students who preferred could thenceforth take their meals at licensed boardinghouses.²⁷ Discipline problems facing the faculty in these years were relatively minor. Students were frequently called up and admonished for late returns from home, riding about campus at night, neglect of studies or absence from chapel or recitations.²⁸ Nothing more serious was mentioned in the faculty minutes, but the students of these years did love to remove (often by burning) the wooden staircase leading to the door to Rutledge College. They enjoyed watching the unathletic professors, particularly stout Thomas Cooper, struggle up a makeshift ladder to teach classes or attend assemblies.²⁹

When not burning down staircases, the college boys upheld a long and honored South Carolina College tradition by retiring to Isaac Lyons's "oyster saloon" for oysters and wine. The well-heeled young man who invited his friends would treat them, and if, upon having done so, he found his pocket unequal to the occasion, he need have no worries. Lyons was never so crass as to ask for money and would even make loans when needed. The students' conception of honor was such that they might happily destroy both private and public property, but reportedly none ever failed to repay their host and benefactor Lyons.³⁰

The sociable yet quiet tenor of Ravenel's later life would suggest that he took a moderate part in these student frolics. Though probably well known at the oyster saloon, surely he was not a burner-of-staircases. If he caused mischief, it escaped the censorious attention of the faculty who never once singled him out for admonishment.³¹

Like many nineteenth century colleges, South Carolina College had two active debating societies, the Clariosophic Society and the Euphradian Society, and all the students seem to have taken part in one or the other of them. On November 28, 1829, several days before his acceptance as a student at the college, "H. Ravenel of Pineville" was unanimously elected an honorary member of the Clariosophic Society and had an introduction to college debating. His fellow society members considered the issues of whether Napoleon had been justified in repudiating Josephine and whether it would be beneficial to South Carolina to secede from the Union. Both questions were decided in the negative. At the meeting of December 5, Ravenel, again by unanimous vote, was made a regular member of the society.³²

Ravenel remained an active member in the Clariosophic Society throughout his college years. He served the society as a critic, treasurer, and then as a recorder³³ and participated in his turn in the debates. The subject matter of these oratorical exercises testified to the students' wide ranging concerns. National and international politics, moral issues, and the promotion of human progress were

frequent themes. Hopefulness and idealism were readily apparent, as when the society decided that free religious discussion should be allowed, as well as an unlicensed freedom of the press, and that it was probable that the whole world would become civilized and enlightened.³⁴

Although not particularly successful in debate, losing more than he won the first year, Ravenel evidently enjoyed the meetings. Minute books of the society, available for Ravenel's sophomore year, but not for the later two, record that he attended more often than many of the other members, being present about two-thirds of the time.³⁵ His enjoyment of this activity is hardly unexpected, accustomed as he was from childhood to friendly social exchange, particularly the summertime round of socializing in Pineville. During his college years, he continued to pass the summer vacations in Pineville. There he fell one summer into the pleasant habit of gathering with four or five other young men to make late-evening rounds of the neighborhood, serenading the eligible young ladies. Frederick Porcher played the flute, Ravenel accompanied him on the same instrument, while others sang. Out of politeness they were careful to give their musical attentions to all the young ladies, not merely to the more beautiful or charming among them, though these received the best songs and longer serenades. That fall, when Ravenel went back to college, the group dispersed.³⁶

Though the students of 1829-1832 were comparatively peaceful, Thomas Cooper, their president, chose that very

time to commence, or really, to recommence after several years of abstinence, a vitriolic and apparently unprovoked attack upon the clergy. Presbyterians were singled out for special criticism, but all religions were touched by his acid pen. Public opinion, angered by this bitter parading of his unusual anticlerical views, forced him to resign from the presidency of South Carolina College in 1833. He maintained for a year a position teaching chemistry then dropped all connection with the college.³⁷

Cooper claimed that he never tried to influence the religious feelings of his students, but his position of authority over them made his denials ring hollow, the more so since his unorthodox views, both religious and political, were known to all. His anticlericalism was no secret even at the time he was invited to South Carolina College. By 1824 he was publicly known to be an extreme states' rightist who, in 1827, long before it was fashionable to do so, urged his fellow citizens of his adopted state to "calculate the value of the Union." During the Nullification crisis of 1830 he, naturally, sided with the nullifiers. Cooper's racial views were also more extreme than those of many of his contemporaries. He believed the black race to be permanently inferior to the white and defended slavery by stating its economic necessity and by comparing favorably the lives of American slaves with those of their ancestors in Africa and European laborers. These views, put forth in 1826, influenced the proslavery arguments of later writers

including Thomas R. Dew, William Harper and Cooper's student, James H. Hammond.³⁸ Many South Carolina College students, like Hammond, accepted Cooper's opinions on states' rights and slavery and were later to be found in the ranks of the most ardent secessionists.³⁹ Henry Ravenel, however, found Cooper's religious views to be abhorrent,⁴⁰ and rejected along with them his political and racial ideas. During Nullification, while he was yet a student, Ravenel, like many of his family and neighbors in St. John's, favored continuation of the Union. By 1860 his patience had worn thin, but even then he stood among the more moderate of South Carolinians. With regard to slavery and race, Ravenel maintained an older southern opinion that blacks were at a less civilized stage of development than whites, but could show progress, both as individuals and as a race.

Ravenel graduated from South Carolina College in December, 1832, placing seventh in his class.⁴¹ His formal education, now ended, had been directed more at preparing him to live as an enlightened member of society, take part in Vestry, engage in intelligent conversation and exercise with some degree of awareness the duties of citizenship than at training him for a specific career. Its value to him and his classmates was that it gave these future leaders a common intellectual background, and, as Governor Drayton had hoped, solidified political and cultural ties within the state.

Ravenel returned home from Columbia hoping to study medicine and actually made a beginning that winter reading a physiology textbook. His father, however, feared that his son's health was too delicate to withstand the rigors of a country medical practice, with the midnight calls, traveling and exposure to disease that it entailed. He advised him to turn instead to planting and offered to set him up on a plantation, where slave labor would largely free him from physical work.⁴²

It is curious that delicate health was the reason cited by Ravenel's father for dissuading him from medicine. No record has survived of childhood illness, and certainly there was none so serious as to impede the normal progress of Ravenel's schooling. College debates and flute playing indicate, too, that he did not yet suffer any inconvenience from the deafness that would plague him in later years. To the nineteenth-century mind, however, health was by its nature a delicate balance, easily upset, and it is likely that Ravenel's father had many reasons to worry about his son's health, reasons born, however, more of his own fears than of any actual weakness in Ravenel's constitution. The father had already lost two wives in childbirth and their infants with them. In addition, two little daughters had died within days of each other in the fall of 1827.⁴³ These losses, combined with the memory of Ravenel's serious injury at the age of four, may easily have made him overly concerned about his son's safety. At the same time, however,

it must be admitted that, having himself retired from medical practice at least partly because of the toll it took upon his own strength, the father was in a good position to judge the effect such a career might have upon his son. Certainly he had no other reason to discourage Ravenel from medicine; the career was both a remunerative and a respected one, physicians being acknowledged as members of the same class as the planters they served.⁴⁴ Rene Ravenel, one of his younger sons, did follow his father's career and became a physician.⁴⁵ For his namesake, however, the elder Ravenel obviously wanted an easier life.

From the standpoint of the botanist that Ravenel later became, medical school might have been a very desirable finish to his education. In the 1820s nearly all medical schools included at least a semester of botany and materia medica in the curriculum. Many of Ravenel's later colleagues in science received preliminary training in medical study. Asa Gray, for example, graduated from a small, country medical school in 1831, while Francis Peyre Porcher took his degree from the Medical College of South Carolina in 1847.⁴⁶ When he graduated from college Ravenel was not yet a botanist, however, and probably had no idea of the turn his life would shortly take. While the botanist later regretted a missed opportunity, the youth of eighteen was happy to settle down at Northampton and begin farming.⁴⁷

COLLEGE YEARS

1829 - 1832

Footnotes

- 1 Diary Notes of Dr. Henry Ravenel, entry of January 12, 1829, Box 1, Thomas Porcher Ravenel Collection (South Carolina Historical Society, Charleston, S.C.); Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), xv.
- 2 Daniel Walker Hollis, University of South Carolina (2 vols., Columbia, 1951), I, 16-19, quote on 18.
- 3 Hollis, University, I, 22-24; John Morrill Bryan, An Architectural History of the South Carolina College, 1801-1855 (Columbia, 1976), 27-42.
- 4 Minutes of the faculty of the South Carolina College Commencing on the Thirtieth of May 1814, entries dated December 1, 1829; December 2, 1829 (University Archives, University of South Carolina, Columbia, S.C.; hereinafter cited as Faculty Minutes, USC).
- 5 Proceedings of the Board of Trustees, University of South Carolina, Nov. 24, 1813 - Nov. 27, 1837, entry dated November 30, 1831 (University Archives, University of South Carolina; hereinafter cited as Trustees' Proceedings, USC).
- 6 Ibid., April 26, 1821.
- 7 The faculty did not give a full list of what was needed for entrance to the various classes, but they often mentioned the points on which they found specific applicants to be unprepared. See Faculty Minutes, USC, November 14, 1831; November 22, 1831, November 26, 1832.
- 8 Bryan, Architectural History, 59-63.
- 9 For a general treatment of the question of salaries see Stanley M. Guralnick, Science and the Ante-Bellum American College (Philadelphia, 1975), 142-43. For salaries at South Carolina see Hollis, University, I, 79. Professors at Harvard during this period received \$600-\$1,500, Seymour E. Harris, Economics of Harvard (New York and other cities, 1970), 157. At Brown

University the president received \$1,400-\$1,500 plus graduation fees and use of a house, while professors were paid \$800-\$1,000, Walter C. Bronson, The History of Brown University, 1764-1914 (Providence, 1914), 231-32. Professors at Yale were paid \$1,100, termed by historian Brooks Kelley as "among the best of the time," though "far below salaries at South Carolina, Virginia, and Harvard," Brooks Mather Kelley, Yale, a History (New Haven and London, 1974), 143.

- 10 Edgar W. Knight, A Documentary History of Education in the South Before 1860 (5 vols., Chapel Hill, 1949-1953), III, 81; Hollis, University I, 78-79; M. La-Borde, History of the South Carolina College, from its Incorporation, Dec. 19, 1801, to Dec. 19, 1865, Including Sketches of its Presidents and Professors (Charleston, 1874), 527-28.
- 11 Hollis, University I, 80; J. Marion Sims, Story of My Life (New York, 1884), 82.
- 12 Knight, Documentary History, III, 220-21; Trustees' Proceedings, USC, December 16, 1829; November 24, 1830.
- 13 Knight, Documentary History, III, 220.
- 14 Guralnick, Science and the Ante-Bellum American College, 3-14; Howard Miller, The Revolutionary College: American Presbyterian Higher Education, 1707-1837 (New York, 1976), 92-94.
- 15 Joseph Carson, A History of the Medical Department of the University of Pennsylvania from its Foundation in 1765. With Sketches of the Lives of Deceased Professors (Philadelphia, 1869), 134.
- 16 A. Hunter Dupree, Asa Gray. 1810-1888 (Cambridge, Mass., 1959), 105-110.
- 17 T. J. Fitzpatrick, Rafinesque, A Sketch of his Life with Bibliography (Des Moines, 1911), 27-31; David Starr Jordan, Science Sketches (Chicago, 1896), 158-60; James X. Corgan, "Some Firsts? In the Colleges of Tennessee," Journal of the Tennessee Academy of Science LV (July, 1980), 89; Henry Grady Rooker, "A Sketch of the Life and Work of Dr. Gerard Troost," Tennessee Historical Magazine, S.2, III (October, 1932), 3-19 speaks of Troost's interest in zoology.
- 18 Corgan, "Some Firsts?" 87-88.
- 19 James Allen Cabaniss, A History of the University of Mississippi (University, Mississippi, 1949), 9-11.

- 20 LaBorde, History of South Carolina College, 528; Wilson Gee, "South Carolina Botanists: Biography and Bibliography," Bulletin of the University of South Carolina, No. 72 (September, 1918), 42-45 includes a useful biographical sketch of Gibbes; Hollis, University, I, 119-21; Lewis R. Gibbes, A Catalogue of the Phoenagamous Plants of Columbia, S.C. and its Vicinity (Columbia, 1835) (copy in Box 10, Natural History Pamphlet Collection, Charleston Museum, Charleston, S.C.).
- 21 Richard M. Jellison and Philip S. Swartz, "The Scientific Interests of Robert W. Gibbes," South Carolina Historical Magazine LXVI (April, 1965), 77-79.
- 22 Charles Stevens to H. W. Ravenel, June 11, 1829, Papers of Henry William Ravenel (Special Collections, Robert Muldrow Cooper Library, Clemson University, Clemson, S.C.).
- 23 Childs (ed.), Private Journal of HWR, 290; Faculty Minutes, USC, June 14-18, 1830; December 9, 1830; June 17, 1831, December 12-16, 1831; November 27-30, 1832.
- 24 Frederick Rudolph, The American College and University: A History (New York, 1962), 96-99.
- 25 Knight, Documentary History, III, 128.
- 26 Hollis, University, I, 90-96; (compared with 28 graduating seniors in 1826 and 32 in 1825, Knight, Documentary History, III, 81).
- 27 Hollis, University, I, 91.
- 28 Faculty Minutes, USC; a quick perusal of the entries from December 1829 - December 1832 will confirm this statement.
- 29 Bryan, Architectural History, 74; LaBorde, History, 132-34. Sims, Story, 82.
- 30 Sims, Story, 83-85.
- 31 Faculty Minutes, USC, December 1829 - December 1832.
- 32 Clariosophic Society Minutes: 1826-1831, entries for November 28, 1829 and December 5, 1829, in Accession Group 167, Record Group 13SL, Vice President, Student Affairs - Student Activities and Organizations (University Archives, University of South Carolina; hereinafter cited as Clariosophic Society Minutes).

- 33 Clariosophic Society Membership List, 1806-1892, 140, in Accession Group 171, Record Group 13SL, Vice President, Student Affairs - Student Activities and Organizations (University Archives, University of South Carolina).
- 34 Clariosophic Society Minutes, December 5, 1829; February 27, 1830; January 16, 1830.
- 35 Clariosophic Society Minutes, pp. 174, 175, 189, 198, 208, 224, 225, 236, 239, 242-43, 248-49, 253, 258, 268, 273.
- 36 Samuel Gaillard Stoney (ed.), "The Memoirs of Frederick Adolphus Porcher," South Carolina Historical Magazine XLVI (April, 1945), 85-86.
- 37 Dumas Malone, The Public Life of Thomas Cooper, 1783-1839 (Hartford, 1923, reissued Columbia, 1961), 339.
- 38 Malone, Public Life, 194-300, 307, 331, 285-89.
- 39 Hollis, University, I, 95.
- 40 H. W. Ravenel to Moses Ashley Curtis, July 3, 1847, in Folder 22, Box 2, Moses Ashley Curtis Papers (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C.).
- 41 Faculty Minutes, USC, December 1, 1832; December 17, 1832.
- 42 Childs (ed.), Private Journal of HWR, 289-90.
- 43 Henry Edmund Ravenel, Ravenel Records: A History and Geneology of the Huguenot Family of Ravenel, of South Carolina; With Some Incidental Account of the Parish of St. John's Berkeley, Which was Their Principal Location (Atlanta, 1898), 165-66.
- 44 D. E. Huger Smith, A Charlestonian's Recollections, 1846-1913 (Charleston, 1850), 30.
- 45 Frederick A. Porcher, "The Upper Beat of St. John's, Berkeley," Transactions of the Huguenot Society of South Carolina XIII (1906), 73; Robert Wilson, An Address Delivered Before the St. John's Hunting Club, at Indianfield Plantation, St. John's Berkeley, July 4, 1907, Together with an Historical Sketch of the Club, Rules and List of Members (Charleston, 1907), "Rene Ravenel, M.D.," appears in the list of members in the midst of his brothers, p. 24. Rene was also listed as a physician in the 1850 census. National Archives

Microfilm Publications, Microcopy No. 432, Population Schedules of the United States, 1850, Roll 850, South Carolina, Charleston County (Washington, 1864), p. 397, family #61.

- 46 Dupree, Asa Gray, 11-18; Wilson Gee, "South Carolina Botanists," 46, Howard A. Kelly, Some American Medical Botanists Commemorated in our Botanical Nomenclature (Boston, 1977, reprint of Troy, N.Y., 1915 edition) gives sketches of the lives of numerous botanists of greater or lesser repute who received their early training in medical school.
- 47 Childs (ed.), Private Journal of HWR, 290.

FITTING IN

1832 - 1839

Americans of all ages, all conditions, and all dispositions constantly form associations. They have not only commercial and manufacturing companies, in which all take part, but associations of a thousand other kinds, religious, moral, serious, futile, general or restricted, enormous or diminutive. The Americans make associations to give entertainments, to found seminaries, to build inns, to construct churches, to diffuse books, to send missionaries to the antipodes; in this manner they found hospitals, prisons, and schools.

In 1810 when Alexis de Tocqueville wrote this famous passage,¹ it was as applicable to low country South Carolina as to the rest of the country. Long-lasting, formal associations managed Pineville Academy and the parish church, provided entertainment, and policed the area against runaway slaves. Shorter lived, less formal groups shared fresh meat in the summer, built chapels, and dealt with occasional communal problems. On the individual level, neighborliness often took the form of mutual help in times of personal distress or during planting or harvest.

Henry Ravenel returned home from college in December 1832, ready to take up an adult's place in St. John's society. The relatively easy life of a planter which, on the advice of his father, he chose over the demanding life of a rural physician, allowed him leisure time for involvement in the activities of his community.

The second Thursday of every month, for example, was dedicated to the meetings of the St. John's Hunting Club.

Ravenel, his father, and all his brothers, were members of this all-male organization. For men of the Ravenels' social strata, this was an accomplishment of no great distinction, for ordinarily every planter within ten miles was a member. The club was originally formed in 1800, modeled on a similar organization already in existence in St. Stephen's Parish.²

By the 1830s even members were somewhat unclear regarding its original purpose. Frederick A. Porcher avowed that such clubs at first held monthly hunts, dined together afterwards and divided the spoils,³ but Ravenel's father, writing in 1860, disagreed with Porcher's historical notions, believing that the original and continuing purpose of the club was social and quite unrelated to hunting. He exhorted the younger members not to let slip the high social standards of the club. "You must be aware," he wrote, "that our ancestors in forming their club had principally in view a society for social intercourse..."⁴ Whatever the original purpose may have been, by the 1830s club meetings were clearly devoted to socializing, while any hunting that took place was not directly related.⁵ The central event of each meeting was the dinner provided by individual members in rotation according to precise directions laid out in the rules of the club.⁶

Ravenel's father seldom missed a club day and served for some time as secretary. His son, it may be supposed, also enjoyed the occasions, for even in years following his move to Aiken, when he was no longer a member, he continued

to attend the meetings when in St. John's and not otherwise occupied.⁷

Simple enjoyment, of course, was only one reason to attend. Membership and attendance at the functions of the St. John's Hunting Club were freely available, but to planters and their sons only, and were a valuable public recognition of one's station in life. In addition, club days provided occasions upon which neighborhood men would gather to relax and converse, the talk settling on agriculture or politics. To avoid the meetings would mean to avoid having a say in many matters of community life not directly related to the club. Conclusions reached there on common problems could easily be as binding as if reached formally at meetings of other organizations, for the membership of all St. John's leadership groups was nearly identical. The influence exerted by the hunting club in this manner was heightened by the tradition that the St. John's, St. Stephen's and St. Thomas's clubs met at different times so members of each club could attend the meetings of the others. The custom ensured that a larger group of men representing a broader geographical area could meet together more frequently than would have been the case had each club held its meetings entirely privately.⁸

Two other formal associations claimed some of Ravenel's time in the years following his return from college, though neither was as influential or as time-consuming as the hunting club. The St. Stephen's Jockey Club was a purely

social organization. It met once a year in October for the sole purpose of planning two days of horse races and dancing in Pineville. Ravenel was drafted as a member in 1834 and promptly elected a manager of the ball. After 1834 he took no more active part in the club and in 1840 resigned his membership. Ravenel also joined the Pineville Police Association. Formed in 1823 in the wave of fear following the Denmark Vesey slave uprising of 1822, the organization set ambitiously to its task of protecting the local population against similar rebellions. It acquired a thick book in which to record the details of anticipated meetings, duly noted its own formation, and then fell silent for 17 years. In 1839 some zealous member wrote out an Association constitution and lists of officers and members, Ravenel among the latter. Silence again descended. The very few written pages in the very big book say much about the activities of the Association.⁹

For a young bachelor, other social events held more promise than the meetings of all-male clubs and associations. Dancing, carriage drives and horseback riding were favorite activities for young people and provided excuses for young men and women to spend time together in less formal surroundings than the ladies' parlor.¹⁰ Dances and serenading produced results for Ravenel not long after college. In April, 1835, he became engaged to Elizabeth Gaillard Snowden. Elizabeth was a South Carolina girl; like Ravenel she hailed from a wealthy family. She was the middle

child of five, the daughter of William Snowden and Lydia Gaillard.¹¹ The location of the Snowdens' home is uncertain; St. John's¹² and St. Stephen's¹³ parishes are possible, and the family spent at least part of the year in Charleston. Elizabeth and her two younger brothers, Charles and Peter, were all born in Charleston,¹⁴ and it was there that Elizabeth and Henry Ravenel were married December 1, 1835. The Episcopal ceremony took place in Elizabeth's father's house and was performed by the Reverend, soon-to-be Bishop, Christopher Gadsden,¹⁵ an indication that the young couple shared a common religious background.

As is often the case in marriages between two members of a wealthy class, there were business considerations to be thought of. As trustee Ravenel received substantial property under the marriage settlement arranged with the Snowdens including:

- 18 Negro slaves
- 2 Bonds of Mrs. Susan Stevens \$683.33 and \$741.38
- 22 Shares Planters & Mechanics Bank
- 5 Shares Bank of South Carolina
- 2 old & 4 new shares Bank of Charleston
- 2 Shares State Bank
- 41 Shares Commercial Bank of Columbia
- 6 Shares Bank of U.S. of America.¹⁶

Ravenel also brought considerable property to the marriage. His principal material asset was his plantation, Northampton, a gift from his father. It was customary that if the father could afford it, each son would be established as a planter or in another profession. Northampton, then, with the equipment and fieldhands necessary to run it, was

Ravenel's in 1835, presumably free of debt or obligation.¹⁷
A tract of quite respectable size, 800 acres, two-thirds the size of Pooshee, Northampton had the potential to be profitable. When Ravenel acquired it, however, its reputation was poor. It was first noted to have been the scene of William Moultrie's dismally unsuccessful experiment with sea island cotton in 1793, seven years before Peter Gaillard's remarkable success with the same crop at the nearby Rocks Plantation. A bad growing season and unskillful management have been variously cited as reasons for Moultrie's failure, but behind these excuses, local stories hint that the land itself was to blame. A fairly rapid succession of several owners between Moultrie and Ravenel also boded ill.¹⁸

In the 1830s, ancient knowledge of fertilizers was just being rediscovered in America. Virgin land had been so easily available that it did not pay farmers to protect their soil too actively. Yet land in many old, settled regions of the South had been under constant cultivation for four or five generations. As cotton and rice became established as staple crops, even proper regimens of crop rotation were skimped. Thus treated, farmland throughout the older regions of the South, particularly Virginia and South Carolina, was wearing out. Northampton was apparently a victim of poor, transient management and depleted soil. It would be a challenge, but not an insurmountable one, for Ravenel to be successful at Northampton.

Ravenel and his bride spent the winters of 1835-36 and 1836-37, and perhaps the following one or two as well, with Ravenel's father at Pooshee.¹⁹ The household which received them was a large one with six children. The eldest, Thomas Porcher, was just short of his twelfth birthday, Rene was nine, William Francis was seven, Elizabeth Charlotte was five, Maria Catherine was three, and the youngest, John Charles, was not yet a year and a half old. By modern standards this made a large group to live under one roof, but it was not an unusually big family for the time or for the Ravenel clan, nor had it stopped growing. On December 20, 1835, Ravenel's stepmother, Elizabeth Porcher, gave birth to another daughter, Henrietta Mary. The family soon suffered the loss of the youngest boy, John Charles, who died March 29, 1836, and of Elizabeth Charlotte who, at the age of six, died less than five months after her brother. Still another daughter was added to the family by the birth of Rowena Elizabeth on November 22, 1837.²⁰

During these years Ravenel and Elizabeth started their own family. Catherine Stevens was born January 10, 1837, followed by Lydia Snowden, July 14, 1839. Catherine died when five years old, the only child Ravenel ever lost at a tender age.²¹

Like other planters, the Ravenels spent their summers away from the plantation. An outbreak of malaria in the summer of 1834, however, had put Pineville, their usual place of retreat, in disfavor. Pineville's summer residents

deserted the town for several years seeking safer quarters. Ravenel's father built a rough house at Raccoon Hill, north of Pooshee, but his eldest son and daughter-in-law went to Charleston to summer with her family. During the summer of 1838, the Ravenels were again united at a small settlement called Jack's Hole. The following year, the young couple began to live a much more settled existence. Ravenel built a summer home at Pinopolis. A smaller settlement than Pineville, Pinopolis had only a dozen houses or so, but the Ravenels returned to spend every summer there from 1839 until their move to Aiken in 1853. The winters, too, they began to spend in their own house at Northampton, a two-story building, the bottom floor of stone and the top of wood.²²

Marriage and participation in St. John's social activities did not prevent Ravenel from developing, apparently very soon after he left college, a casual interest in natural history. As he put it, "I lived in the country & took up a fondness for Botany making a few collections - plants & fossils."²³ In this pursuit he was not alone. A short walk southwest along the public road that passed just north of Northampton took Ravenel between Cedar Spring and Brunswick directly to Sarazen, the home of William Porcher, Isabella, his wife, and their six children. Unquestionably Ravenel was acquainted with the Porchers; they had been near neighbors all their lives, Ravenel's stepmother, Elizabeth Catherine Porcher, was William's sister, and Ravenel and

William were both members of the St. John's Hunting Club. William was about fourteen years older than Ravenel, a physician and, like him, a graduate of South Carolina College. He had a local reputation as a zealous botanist.²⁴

William's enthusiasm was shared by his wife. Isabella was the daughter of Francis Peyre of St. Stephen's Parish and a granddaughter of the botanist Thomas Walter. She picked up from her grandfather a great liking for botany, and with her husband spent many hours out in the woods studying the wild plants.²⁵

Frederick Porcher also had an interest in the science. A distant, but very fond, cousin of William, Frederick had grown up on Cedar Spring plantation and had caught some of his cousin's devotion to botany. Frederick had found that some knowledge and awareness of plants could make a favorable impression upon young ladies. During the summer he was courting his wife, he never failed to bring her a bouquet of wild flowers when he returned to Pineville after a ride to the plantation. She, in turn, perhaps hoping to flatter him or merely looking for an excuse to communicate, would occasionally send over a flower with the request that he identify it for her.²⁶

William Porcher died June 4, 1833, while on a trip to Charleston. Without his continued encouragement Frederick Porcher gradually lost interest in botany, but how much ill effect, if any, his death had upon Ravenel's botanical career is hard to calculate. William Porcher's local

reputation as a botanist was not supported by publication, nor does he seem to have entered into extensive correspondence with any of the nationally famous botanists of his own time.²⁷ The depth, accuracy and timeliness of his information are, therefore, open to question, and all that is certain is his enthusiasm. This alone, however, could have been a valuable spur to Ravenel's interest.

Even after William's death and Fredrick's defection, Ravenel was not totally without sympathetic botanical friends. Isabella communicated some of her own interest to her second son, Francis Peyre, called Frank, who was only eight when his father died. When he was about ten, Frank began attending Mt. Zion Academy, but during holidays at home he and Ravenel fell into the habit of taking walks together. Strolling about, chatting of things of mutual interest, the boy and young man embarked upon a botanical comradeship that lasted until Ravenel's death.²⁸

During the years between late 1832 and 1839, Ravenel found his place as an adult member of the St. John's planter aristocracy. Taking advantage of the numerous social opportunities available, Ravenel entered into the complex net of friendships and mutual obligation, of favors done and favors returned, that bound together the low country planters into a cohesive group. He was making a living as a planter of rice and sea island cotton and began to learn at first-hand how to manage a large plantation, by no means an easy task when the labor force was, at best, unenthusiastic about

their work. He married a young woman of similar background and they had two baby girls. At the same time he cast about for an activity that would fill his leisure time and exercise his intelligence. Natural history presented itself, and he recognized in it a study well suited to his tastes and abilities. It remained for the time a hobby; an expression of his individuality, it was submerged in the more important work of establishing himself within a social group, shouldering the responsibilities and assuming the privileges that were withheld from schoolboys and reserved for mature members of the society. By the end of 1839 Ravenel, at the age of twenty-five, had a wife and family, land, slaves and the equipment and knowledge necessary to raise cotton, a winter house at the plantation and a summer house in Pinopolis. He was established, settled, as secure as any man could be, and he could easily have stagnated in that situation and done nothing more than grow cotton for the rest of his life. The rest of this dissertation is the story of what he did instead.

FITTING IN

1832 - 1839

Footnotes

- 1 Alexis de Tocqueville, Democracy in America (2 Vols., New York, 1946), II, 106.
- 2 Robert Wilson, An Address Delivered Before the St. John's Hunting Club, at Indianfield Plantation, St. John's, Berkeley, July 4, 1907, Together with an Historical Sketch of the Club, Rules and a List of Members (Charleston, 1907), 3, 17-19, 23-25; Francis Marion Kirk, A History of the St. John's Hunting Club. An Address Delivered by Francis Marion Kirk at the Sesqui-centennial Celebration held April 29, 1950 at the Club House, Pooshee Plantation, St. John's, Berkeley (n.p., 1950), 3-5.
- 3 Stoney, Small Gaillard (ed.), "The Memoirs of Frederick Adolphus Porcher," South Carolina Historical Magazine XLV (January, 1944), 37.
- 4 Wilson, Address, 20.
- 5 Stoney (ed.), "Memoirs," (January, 1944), 37.
- 6 Wilson, Address, 8-9.
- 7 Wilson, Address, 13, 20; Manuscript Private Journal of HWR, May 8, 1860.
- 8 Stoney (ed.), "Memoirs," (January, 1944), 37 mentions the clubs' custom of meeting at staggered times. Harriette Kershaw Leiding also comments on the political influence of these private hunting clubs. As she writes: "...the clubs were undoubtedly effective in keeping alive the fraternal feeling, and contributed to the public spirit of the district." Historic Houses of South Carolina (Philadelphia and London, 1921), 144.
- 9 St. Stephens Jockey Club-the Santee Jockey Club, Rules and Minutes, Collection 34-111, and Pineville Police Association Minutes, 1823-1840, Collection 34-301 (South Carolina Historical Society, Charleston, S.C.).
- 10 Stoney (ed.), "Memoirs," (June, 1945), 85.

- 11 From a rather confused handwritten family tree in a volume called "Genealogical Notes and Clippings, Yates and Snowden Families and Connected Families, Seiler (Saylor), Leiber, Atman, Drake, Blair, Lequeux, Laurence, Jones, Warley." In Kirkland-Withers-Snowden-Trotter Families Papers (South Caroliniana Library, University of South Carolina, Columbia, S.C.; hereinafter cited as Snowden Family Genealogy).
- 12 The Aiken Recorder, in a short obituary of Ravenel, mentioned that Elizabeth had been from St. John's. Her family, though, does not appear on lists of planters living in upper St. John's, and the only Snowden appearing as a member of the St. John's Hunting Club was Yates Snowden (1858-1933). Charles and Peter both lived in St. John's. National Archives Microfilm Publications, Microcopy No. 432, Population Schedules of the United States, 1850, Roll 850, South Carolina, Charleston County (Washington, 1964), p. 403, lists Peter Snowden, physician, family #163, Charles Snowden, planter, family #164.
- 13 St. John's and St. Stephen's were so close, both geographically and socially, as to make any confusion the Recorder may have had quite understandable. There were Snowdens in St. Stephen's about this time, including the St. Stephen's Parish minister, Charles Blair Snowden, a relative of Elizabeth's. Albert Sidney Thomas, A Historical Account of the Protestant Episcopal Church in South Carolina, 1820-1957: Being a Continuation of Dalcho's Account (Columbia, 1957), 403; Snowden Family Genealogy.
- 14 Population Schedules, 1850, Roll 850, p. 397, family #60; p. 403, family #163; p. 403, family #164.
- 15 Childs (ed.), Private Journal of HWR, xv. Ravenel says they were married by Bishop Gadsden, but Gadsden did not actually become bishop until 1840. Thomas, Account of the Protestant Episcopal Church, 705-706.
- 16 This list of property, in Ravenel's handwriting, is found in Folder 4, Henry William Ravenel Papers, April 1844 - 25 July 1887 and n.d. (South Caroliniana Library, University of South Carolina, Columbia, S.C.). It is unknown whether this is the full extent of property given by the Snowdens. One would expect, in addition, linens or other household goods, perhaps a horse or two, particularly if Elizabeth had a personal riding horse before the marriage.
- 17 Will of Dr. Henry Ravenel dated November 19, 1856, confirmed a prior deed of gift to Henry William Ravenel

- of Northampton and confirmed his ownership of all the slaves which had been his father's and were then his. Folder 15, Box 3, Thomas Porcher Ravenel Collection (South Carolina Historical Society, Charleston, S.C.). On the not-too-surprising custom of trying to settle sons on a plantation or in a profession see Porcher, "Upper Beat," 70-71; Samuel Gaillard Stoney, Plantations of the Carolina Low Country (Charleston, 1938), 39.
- 18 Porcher, "Upper Beat," 70-71; Whitemarsh B. Seabrook, A Memoir on the Origin, Cultivation and Uses of Cotton, from the Earliest Ages to the Present Time, with Especial Reference to the Sea-Inland Cotton Plant, ... (Charleston, 1844), 18-20; Henry Savage, Jr., River of the Carolinas: The Santee (Chapel Hill, 1956), 245; The Rocks plantation had the advantage over Northampton in being planted among outcroppings of limestone, whence came its name. Stoney, Plantations, 39.
 - 19 Childs, Private Journal of HWR, xv.
 - 20 Henry Edmund Ravenel, Ravenel Records: A History and Genealogy of the Huguenot Family of Ravenel, of South Carolina; With some Incidental Account of the Parish of St. John's, Berkeley, Which was Their Principal Location (Atlanta, 1898), 166.
 - 21 Birth dates come from Jane Searles Misenhelter, St. Stephen's Episcopal Church, St. Stephen, S.C. including Church of the Epiphany, Upper St. John's, Berkeley and Chapel of Ease, Pineville, S.C. (Columbia, 1977), 77, 78. On Catherine's death see Childs (ed.), Private Journal of HWR, xvi.
 - 22 Childs (ed.), Private Journal of HWR, xv, xvi; On malaria see also memoirs entitled "The Days of Long Ago," in folder labeled "Thomas Walter," Box 11-318, Porcher Family Papers (South Carolina Historical Society, Charleston, S.C., hereinafter cited as "The Days of Long Ago"); on Pinopolis see Stoney, "Memoirs," (April, 1943), 72.
 - 23 Childs (ed.), Private Journal of HWR, 290.
 - 24 On William Porcher's local reputation as a botanist see Stoney (ed.), "Memoirs," (July, 1945), 144; Porcher, "Upper Beat," 40. On the family relationship between Ravenel and the Porchers, see Porcher, ibid., 39-40 and H. E. Ravenel, Ravenel Records, 165-66. Porcher, like Ravenel, was listed as a member of the St. John's Hunting Club in Wilson, Address, 23.

- 25 Stoney (ed.), "Memoirs," (July, 1945), 144; "The Days of Long Ago," 2, 17.
- 26 Stoney (ed.), "Memoirs," (June, 1945), 87.
- 27 F. A. Porcher mentioned William Porcher's death and the discouraging affect it had upon his botanical interest in Stoney, (ed.), "Memoirs," (July, 1945), 144 (April, 1946), 102. The exact date of William's death was supplied by Wanda Leeper Flint, Cleo Corley Flint and Linda Flint Powell, Readings From the Stones... Inscriptions from St. Stephen's Protestant Episcopal Church Cemetary (Typescript, St. Stephen's, S.C., February, 1970, Xerox copy in Clayton Library, Houston, Texas), 57. William Porcher is not mentioned in John Hendley Barnhart, (Comp.), The New York Botanical Garden Biographical Notes upon Botanists (3 Vols., Boston, 1965), a very comprehensive source for biographical references occurring before 1945, later references being treated less thoroughly, nor is Porcher mentioned in Max Meisel's very dependable Bibliography of American Natural History, Pioneer Century, 1789-1865 (3 Vols., New York, 1924-1929, reprinted New York, 1967).
- 28 On F. P. Porcher see Joseph Ioor Waring, A History of Medicine in South Carolina, 1825-1900 (Columbia, 1967), 282; Francis Peyre Porcher Biography (ca. 1935; Typescript), 2 (South Caroliniana Library, University of South Carolina, Columbia, S.C.).

AMERICAN SCIENTIST

1839 - 1849

"I cannot sufficiently admire the patient courage of Henry W. Ravenel who in the isolation of St. Johns made a distinguished botanist of himself." Frederick A. Porcher.¹

For about three years after settling with his wife and daughters Catherine and Lydia at Northampton, Henry Ravenel lived quietly as a planter. He and his wife had more children, including Charlotte St. Julien, born in 1841, Henrietta Elizabeth, born in 1844, followed by Emily in 1846 and Henry St. Julien in 1848.² He continued to take an unexceptional part in local activities and otherwise tended to his plantation. For a careful planter, cultivation was not something to be left to the unsupervised attentions of slaves and overseers. Growing crops were inspected almost daily, and many planters kept meticulous records on the care of plants and animals and the health of their slaves.³ Occasional additional duties claimed a large portion of time and energy, as when managing the trial of some local blacks diverted Ravenel's attention at cotton-picking time in 1842.⁴ Ravenel apparently made a comfortable living with his plantation. In April 1840, he was able to afford eight additional hands, bought from William Jervey for \$6,800. He paid half in cash, and signed a bond for the remainder. After paying interest each year, he was able to pay off the note in 1849.⁵

Despite the purchase of slaves, indicating personal prosperity for Ravenel, the early 1840s were not generally auspicious years for planters of rice and sea island cotton. Market prices on cotton were remarkably low during the first half of the decade, and rice prices were still in a slump that had begun in 1830. Difficulties were compounded for growers in St. John's. That parish, which marked the northern boundary of the sea island cotton region, was unable to produce as fine a fibre as the more southerly islands of South Carolina and Georgia. Factors in Charleston differentiated the St. John's product from the better-quality island cotton, calling it "Santee cotton." Planters in Ravenel's area brought in new seed from the sea islands every year or two to prevent degeneration of their crop.⁶

In 1842 planters in Ravenel's neighborhood decided to take positive action to improve the agriculture of their region. They formed an association to serve as a rallying point for their efforts. On February 10, the planters gathered to listen to a committee's report on the advantages of forming an association and to their proposed constitution. Both were accepted, officers were elected to serve until March 1843, and thus the Black Oak Agricultural Society came into existence.⁷

Samuel Dubose, elected president at this first meeting, was 42 and a planter who, as a young man with only six field hands and much ambition, had doubled his worth in two years.

Later he acquired a large plantation, Harbin, a gift to his first wife Eliza from her father. Two accounts of Dubose relate that he was universally respected and a popular companion to young and old alike. His election as president was a tribute to his success in planting, his position as a leader and servant of the community, and the affection of his neighbors. Dubose did not play a very active role in the society, though he did present a paper, more interesting from the standpoint of local history than of agriculture, on the introduction of cotton planting.⁸

Younger men than Dubose played the major roles in the Black Oak Agricultural Society. The vice president was Ravenel's classmate, Isaac Porcher, and Ravenel himself, at the age of twenty-seven, was elected secretary and treasurer. Dubose, Porcher and Ravenel were reelected to their offices annually until 1848 when James Ferguson replaced Porcher as vice president, and in 1849 the offices of secretary and treasurer were divided. Ravenel retained the secretary's office, while Thomas Walter Peyre became treasurer.⁹ Other particularly active members included Frederick Porcher and Morton Waring.

At the first meeting of the society, March 7, 1842, Ravenel focused members' attention on the need to produce, as well as to disseminate, knowledge. He introduced a resolution encouraging experimentation by individual members, and the resolution carried. Ravenel also accepted appointment to committees to inspect growing crops and to study the

problem of crop rotation. The latter committee had a chemical analysis made of cotton, corn and sweet potatoes to determine the best means of rotating the three crops. Soil analyst C. U. Shepard carried out the investigation and reported to the Black Oak society in 1846.¹⁰

Strategy adopted for this study of crop rotation would suggest that Black Oak, South Carolina, was familiar with the work of Justus Liebig. His Organic Chemistry in Its Applications to Agriculture and Physiology (London, 1840) focused on the role of minerals in the growth of plants, asserting, in contradiction to the work of the popular British chemist, Humphrey Davy, that they were actually absorbed from the soil and were crucial to the development of plants. Even soils rich in organic matter could be infertile if deficient in particular minerals. Fertility could be preserved by crop rotation arranged so that minerals excreted by one plant were a necessary food to the second crop.¹¹

As agricultural society secretary, Ravenel in December 1842 read a paper before the State Agricultural Society in Columbia. Its purpose was to describe to the state society the work of the Black Oak planters in order to encourage other local societies to take up similar experiments. He began with a description of the soils of St. John's, using the type of native forest growth as evidence of the quality of the soil, as well as its location with respect to rivers or ridges. Apparent in his discussion was a naturalist's

knowledge of wild plants and awareness of ecological succession. Though already capable of throwing out occasional Latin binomials, he also demonstrated that he possessed the good judgment to use English names when addressing non-biologists.

Whenever the pine has had possession for any length of time, and fires are excluded, a young growth of oak, hickory, gum, or of some other plant, which indicates good land, invariably springs up; and at the time the pines are disappearing from old age, this second growth is ready to take possession of the soil. ...

Replacement of pines by hardwoods, Ravenel noted, was consistent with Liebig's theories concerning the exhaustion of particular nutrients from soil by long-continued growth of one plant.

Liebig was not the only contemporary agricultural chemist whose work was known to Ravenel. His discussion of the action of quick-lime, slaked-lime, and marl as fertilizers indicated knowledge of Humphrey Davy's Elements of Agricultural Chemistry in a Course of Lectures for the Board of Agriculture (London, 1813) and of the work of Americans Charles T. Jackson, Edmund Ruffin, and, hardly surprisingly, C. U. Shepard. In reading their contributions, Ravenel reaped the benefits of his college acquaintance with chemistry.

As intended, Ravenel's Memoir also described crops grown in St. John's, especially the Santee cotton. In addition, Ravenel touched on a theme that would in the following two decades become common in southern agricultural

and states' rights literature. The soil of St. John's, he asserted, was quite capable of producing crops other than the three or four usual staples. He urged diversification for South Carolina agriculture, suggesting a return to indigo culture and that silk, tobacco, wheat, and the castor bean plant, Palma christi could also be valuable additional crops. Ravenel suggested, as well, that rice production could be expanded by planting in the inland swamps, a habitat abundantly available in St. John's.¹²

Diversification and renewal of southern agriculture was a rallying cry for men anticipating secession. It was the key to establishing within the borders of the slave states an economy capable of serving an independent country. James H. Hammond, already noted in the early 1840s as a hot-headed secessionist, organized the State Agricultural Society in 1839 to rouse interest in the revitalization of South Carolina agriculture. When he was elected governor in 1842, he turned for help with his pet project to Edmund Ruffin, Virginia's prophet of marl whose advice had aided Hammond in restoring fertility to his own worn-out plantation. Ruffin was invited to come to South Carolina to conduct a survey of marl beds and to instruct planters and farmers in the use of the valuable calcareous earth. The invitation reached him when he was sunk in self-pity over Virginia's lack of appreciation for his efforts on her behalf, and he accepted with alacrity. Armed with 500 copies of his Essay on Calcareous Manures (Petersburg, 1832)

to distribute along with his words of wisdom, the new State Agricultural Surveyor of South Carolina went south to take up his task.¹³

Ruffin's duties as agricultural surveyor of South Carolina occupied him for the greater part of 1843 and brought him into direct contact with many of the state's planters. He greatly needed to persuade these men of the value of his work. His sensitive ego was in need of stroking, and he looked forward to the gratitude to come from them. More basically, he realized that the success of the survey was dependent on help from others; Ruffin alone could not perform the extensive and detailed observation necessary to bring the survey to completion. Through Whitemarsh Seabrook, president of the State Agricultural Society, he appealed to local societies for aid. Their response was gratifying, and several submitted reports on the marl beds of their area in time for inclusion in Ruffin's report to Hammond.

Gentlemen of the Black Oak Agricultural Society were among those who offered help, and most prominent among them was Ravenel. Already well enough impressed with Ruffin's Essay to cite it in his 1842 Memoir to the State Agricultural Society, Ravenel naturally was interested in the Virginian's survey work. He provided marl samples from Northampton and apparently tested them and other samples for carbonate of lime. In addition he kept his eyes open for any signs of marl and passed his observations on to Ruffin.

If Ravenel appreciated Ruffin's work, it is equally clear that Ruffin appreciated Ravenel. He credited Ravenel in his report on the Agricultural Survey, and he also expressed his regard for Ravenel privately. In May 1843, he wrote to Ravenel of his desire to organize a group of South Carolina planters to travel to Virginia to see Ruffin's results with marl. "I should be particularly gratified," Ruffin pleaded, "if you would join in the visit - & I know no one whom it would more benefit, or who could by it do more public good to S. Ca." If Ravenel could finance his own transportation to Coggins Point, Ruffin and his son would pay his expenses in Virginia.¹⁴

Ruffin's visit to the St. John's area stimulated the interest of local planters in marl and other fertilizers. Frederick Porcher had begun a successful trial of marl on 17 acres in 1840, but no one else followed his example until Ruffin spread the gospel in 1843. Philip Porcher then commenced an experiment with the new fertilizer. Keeping one acre of a seven-acre field unmarled for comparison, he applied marl to the remaining six acres at the rate of 250 or 130 bushels per acre and obtained encouraging results. On another, six-acre field, he applied 120 bushels per acre of marl together with stable manure and cotton seed, and reaped 20 bushels of corn per acre. Application of an additional 100 bushels of marl per acre the following year resulted in a yield of 44 bushels per acre of corn. Two other planters also began experiments but kept less accurate

records of their efforts. S. G. Darant achieved an apparent four or five fold increase in cotton production on a 15-acre tract, and Robert Mazyck approximately doubled his cotton crop on his experimental field. In a letter dated November 22, 1844, Ravenel communicated to the State Agricultural Society the results of these experiments by Black Oak planters and told the society that about 1,200 acres of land had been marled in his locality during the past year. By the following spring, he expected the amount to double. Ravenel evinced great enthusiasm for marl, "a vast mine of agricultural wealth has been unfolded, which only requires the energy and industry of the planter to be made available." If he, himself, undertook any such experiments, and it is hard to think why he would not, modesty prevented him from describing them.¹⁵ Popular though marl became, it did not eclipse other, more traditional fertilizers. In a series of complicated trials carried on in 1844 and 1845, Thomas Peyre used imaginative combinations of marl from a number of different plantations, stable manure, cotton seed, gypsum, bone dust, urine and oak ashes. Frederick Porcher, in a report read to the Black Oak Agricultural Society November 19, 1844, particularly recommended horse manure, gypsum, cotton seed and oak ashes as fertilizer for cotton.¹⁶

Ruffin's agricultural survey also created, as a by-product, an unusual focusing of geological attention on St. John's. Marl is composed of clay combined with fossil shells, some microscopically small, others much larger.

Excavation of a number of marl beds in the area yielded fossils interesting from the point of view of their taxonomy and useful as an indication of the age of various deposits. Ruffin realized that the study of such fossils would be a useful tool in categorizing groups of marl beds varying in their value as fertilizer. He had begun a private collection of fossil shells in Virginia, and his Report to the governor of South Carolina indicated a fairly detailed knowledge of marl-bed geology, including acquaintance with the work of Lyell and of South Carolina geologists Edmund Ravenel (1797-1871) and Michael Tuomey.¹⁷ Robert Gibbes's controversy with Richard Owen was sparked by an odd fossil animal discovered in the marl pits of Robert Mazyck's plantation. Edmund Ravenel also found specimens to interest him in marling operations on his own plantation, the Grove, located only a few miles outside of Charleston, and made several trips to St. John's, where he inspected the local marl beds. Henry Ravenel took advantage of the visits of Edmund to renew his acquaintance with this elder, distant cousin and one-time hunting companion whose medical practice had removed him from his home in St. John's to Charleston and the Grove. They shared fossil-hunting expeditions and discussions on marl geology, and when Edmund returned to his practice, he wrote back to Henry with a list of recommended works on geology. Charles Lyell's Elements of Geology (London, 1838) received strong recommendation, as did the works of Samuel Morton, including his papers in the Journal

of the Academy of Natural Sciences of Philadelphia. Edmund also recommended that his cousin peruse Silliman's Journal for its many valuable papers on American geology, and William Buckland's Bridgewater Treatise, which he thought "quite a remarkable work--." In the hope of setting up an exchange, Edmund also sent a box of shells to "assist you in your studies of one of the most dilightful [sic] branches of Natural History, ..."18

Edmund Ravenel's apparent desire to turn Henry into a geologist was doomed to frustration. A chance meeting in 1842 or 1843 transformed Henry's recreational interest in plants into a self-appointed task which, in the intensity of its demands, prevented him from developing more than a mild interest in any other science. As Ravenel told the story, jotting down the details in his diary about twenty-five years after the event, the transformation was begun by a single, unusual incident:

I had a visit from a travelling naturalist a Mr. Olmstead who was collecting plants. He initiated one fairly in the mode of making collections, & so interested me in the subject that I commenced then to collect & study.19

A visitor, then, broke in upon "the isolation of St. Johns" one day and in only a short time stirred Ravenel's interest to new proportions. The exact identity of the visiting naturalist is unimportant. Neil Stevens has identified him tentatively as Charles Hyde Olmstead (1798-1878) of East Hartford, Connecticut, who, Stevens wrote, was known to have made a botanizing trip to the South about this time.

In any case, there was in the 1840s no botanist of importance named Olmstead, and there is no indication of continued correspondence between Ravenel and Olmstead, so any mutual influence was exerted during a very short period of time.²⁰ During only a few days Olmstead "initiated ... [Ravenel] fairly in the mode of making collections,..." Ravenel had already done some collecting, but he had apparently not yet learned proper technique for the drying, mounting, and preserving of plant specimens.

If a flowering plant is to be useful year after year as an object of scientific study, it must be dried flat, with a minimum of wrinkling, bending or twisting. A small branch, or a few leaves, should be turned so that the underside is exposed to view. If the plant is not prohibitively large, the entire specimen should be preserved, roots and all, and including several individuals showing all stages of development. After the plant is thoroughly dry, it must be mounted on heavy paper and stored away safe from the depredations of rodents and insects. Although these procedures were simple, they were not obvious to the uninitiated, and in the nineteenth century they were often the subject of correspondence between botanists as older men tried to coach the younger ones who sent them specimens for naming. Exchange of specimens served as a valuable form of non-verbal transmission of vast quantities of information between botanists, for a specimen could tell another scientist things that its collector had not even noticed. Shipment of

specimens from Ravenel to colleagues in the North or Europe could take two months or more,²¹ and plants improperly mounted or packed were liable to be damaged during the long trip. Specimens arriving broken, detached from their labels, or chewed by mice would be next to useless to their recipient, while those retained by the collector but allowed to degenerate to such a condition would also become useless. It was this permanent collecting to which Ravenel was introduced by his visitor Olmstead. But Olmstead had more to teach than technique. He conveyed the idea that Ravenel's botany was valuable and interesting to others and worth cultivating as more than a hobby.

When Olmstead left, Ravenel's newly strengthened interest was sustained by neighbors who had also become involved in collecting plants, some, perhaps, through the influence of the same Mr. Olmstead. Francis Peyre Porcher, Ravenel's younger friend from Sarazens plantation, was attending South Carolina College at the time of Olmstead's visit. He graduated from that institution in 1844 and went on to take the M.D. from the Medical College of South Carolina in Charleston in 1847. Summer vacations gave him time to go on collecting excursions with his neighbor Ravenel. Isabelle Porcher, Francis's mother, who enjoyed a local reputation in botany, may also have been an inspiring presence, but it was her brother, Walter Peyre, a friend of Ravenel's for many years, who accompanied him on many collecting trips. Ravenel's much younger sister, Rowena, remembered later how the

two men would go off botanizing together and happily bear home specimens that she, at least, thought quite uninteresting. Peyre actually lived with Ravenel in Pinopolis through the summer of 1844.²²

Of more long-term significance to Ravenel was the assistance and encouragement of the Reverend Cranmore Wallace. Born in Atworth, New Hampshire, in 1802, Wallace came to South Carolina as a young man to take charge of a school at Cheraw. He was ordained a minister of the Protestant Episcopal Church in 1836. He held in succession several teaching and ministerial positions then in 1842 was made rector of St. John's Parish, Berkeley. Wallace regularly held services at the parish church, known as Biggin Church due to its location near Biggin Creek, and at three chapels of ease, Strawberry, Cordesville, and Whiteville, as well as on four plantations. In 1842 he also held several services at St. Stephen's Church in Pineville, the parish to which the Ravenels would have belonged due to the detachment of the chapels of ease at Black Oak in Middle St. John's and at the Rocks plantation in Upper St. John's from St. John's, Berkeley, and their attachment to St. Stephen's Parish early in the nineteenth century.²³ Wallace played no more than a small part in the history of botany. His parish duties imposed such constraints on his time that he actually seems to have devoted less time to the science in the three or so years immediately following his removal to St. John's than he had before that time. Yet, during his years in

St. John's, especially during 1846 and 1847, he maintained an herbarium, did some collecting and entered into a botanical correspondence with another young Episcopal minister named Moses Ashley Curtis (1808-1872). Wallace and Ravenel traded specimens and conferred on matters of identification and useful literature. Ravenel's herbarium of this period, preserved at the Charleston Museum, contains a few of Wallace's specimens, while Wallace's herbarium, or that portion of it which has survived, much of it having been destroyed, contains many examples from Ravenel's collections.²⁴ In addition to Francis Peyre Porcher, Isabelle Porcher, Walter Peyre, and Cranmore Wallace, there was an unnamed young lady botanist, one of Wallace's parishioners.²⁵ With Ravenel included, this was a group large enough to provide effective encouragement of each other's interest. Of the six, two went on to become significant botanists, but the other four did not have this opportunity. Wallace's duties as a clergyman demanded too much of his time; Walter Peyre gradually lost enthusiasm and died young; and the last two of the group were ladies. Society forbade ladies of their time to become accomplished botanists, though dabbling was desirable.

Encouragement from others was vital to the dramatic deepening of Ravenel's interest in botany that occurred in the early 1840s. Little less important to any botanist is the accumulation of the tools of his trade. Collecting equipment was cheaply and easily available: a knife, trowel,

blotting paper, a basket or some other container. Books were less readily accessible, often expensive, and only a very limited number were suitable to a novice student. Amos Eaton's Manual of Botany (Albany, 1829, many later editions) had fallen into disfavor among botanists for its simplistic presentation of Linnaean sexual taxonomy and neglect both of plant physiology and of the natural taxonomy of Jussieu. A young professor at Harvard, Asa Gray, published in 1836 a text, the Elements of Botany (New York) which replaced Eaton's Manual in his classroom, but it, too, had flaws. It provided discussion of physiology but was inadequate as a field guide. In addition, both it and the Manual were written by northern authors and neither treated knowingly or fully the characteristic flora of the South. The best southern flora was Stephen Elliott's Sketch of the Botany of South Carolina and Georgia (Charleston, 1821-1824). A two-volume work written in both Latin and English, Elliott's Sketch would not have been an easy book for a beginner. Yet it was, and until 1860 remained, the standard source on the botany of the South. It received the approval of Elliott's botanical contemporaries, and though it followed the Linnaean system, it avoided the disrepute heaped upon Eaton for that offense, perhaps because Elliott had the good grace to die in 1830 while working on an appendix utilizing the natural system.²⁶

With Elliott's Sketch as his surest field companion, Ravenel entered a very exciting period of his career. Each

new plant was an adventure and its identification a triumph. Frederick Porcher later wrote admiringly of Ravenel's "patient industry and habits of observation" during this early period. "He never left home without a satchel or convenient paste-board box in which he collected whatsoever struck his eye. He would take it home and there diligently examine and study it, and record it, if it had not already been noticed by his predecessors."²⁷

Plants collected and studied in this manner were stored away to create an herbarium, which, with books and the simple tools of collecting, was an indispensable aid to a botanist and a resource which would become more valuable with each passing season of collecting. Unfortunately Ravenel lost plants, books and other personal belongings the first winter after he began his serious botanical work. Fire broke out in the middle of the night and consumed the upper, wooden floor of Northampton. The family, including on that night Ravenel's stepmother and her younger children, all escaped the house safely, but the whole plant collection and most of Ravenel's books went up in flames. The Ravenels moved to Pooshee where they lived for the next few winters, until Northampton was rebuilt.²⁸

Ravenel's calm, sensible personality did not let him become long discouraged over his loss. He began collecting with renewed vigor the next spring and by 1846 had achieved familiarity with the phanerogams. That term, from the Greek phaneros for visible and gamos for marriage, has become

somewhat outmoded, but was used commonly in the nineteenth century to describe plants with sexual organs, flowers, visible to the naked eye. These relatively large and showy plants include herbs, trees and shrubs and were the usual first objects of study for young botanists. They were distinguished as a group from those plants such as the mosses, lichens, ferns and fungi which reproduce by spores readily observable only with a microscope. To these, the cryptogams, Ravenel began to turn some of his attention in 1846. Like all interested in this area, however, he was, with only a few years' experience as a botanist, in a little-studied field. Where was he to begin, and where could he turn for help?

If Ravenel had not yet discovered the value of correspondence with other scientists and of exchanging small favors with them, he soon did. A box of shells dutifully sent to his kinsman Edmund along with a letter mentioning his new interest in mosses produced an enthusiastic reply. Two pages on geology were followed by a rambling paragraph on botany:

I am gratified that you are attending to the Mosses - I have always looked at them with much interest, and once hoped that our own Species would have been illustrated by Mr. S. Elliott, he was long in correspondence with Schweinitz upon the subject, & received from him quite an extensive collection of European Species, & must have written much upon our own, as he habitually thought upon paper - but what has become of his Notes upon this branch I have never heard - ...29

What a tempting possibility! If Edmund did not know what had become of Elliott's material, Henry apparently was pretty sure. Edmund's letter was written on the fourteenth of December and hand-carried to Henry. On the fifteenth Henry fired off a letter to John Bachman, Lutheran minister and noted mammologist in Charleston, who also replied with speed:

The Herbarium of Elliott is still in my possession & it will afford me great pleasure to assist you in comparing your plants with it. My own Herbarium is rather more full than that of Elliott and has been compared with the other. Both are in one room & both very freely at your service. ... Come in the mornings - take pot luck with me & work all day ...

Such generosity, of course, had to have some small string attached. Could Ravenel, perhaps, obtain some pregnant opossums during the coming spring?³⁰

Another South Carolinian who encouraged Ravenel during this period was State Geological Surveyor Michael Tuomey (1805-1857). The Irish-born geologist and Ravenel might have met on the edge of a marl pit, introduced by their mutual friend Edmund Ruffin. Each recognized the other as a potential source of help, though their major interests lay in separate fields. Ravenel helped Tuomey collect fossils from the Pooshee marl beds, and Tuomey wrote friendly letters to Ravenel describing unusual plants he had seen. Tuomey apparently received specimens from Ravenel occasionally.³¹

Ravenel also began to write to Harvard's Asa Gray, sending his first letter through Benjamin Silliman, whose Journal featured numerous articles and short notices from Gray's pen. Gray soon responded. As usual for the Cambridge botanist, he was willing to help. If Ravenel would send plants, as full a set of his duplicates as possible, Gray would name them, select some for his own herbarium and pass the others on to two other Northeast botanists. For mosses, Gray suggested, Ravenel might try William Starling Sullivant (1803-1873) who would likely be glad to correspond. Don't forget lichens, he added, probably thinking of his fellow Massachusetts botanist Edward Tuckerman (1817-1886). As though proof were needed of his sincerity, he also sent to Ravenel a copy of the text of Sullivant's Musci Alleghaniensis (Columbus, Ohio, 1846) which he had just reviewed favorably in Silliman's Journal.³²

Gray, Tuomey, and Cranmore Wallace were all in touch with an Episcopal clergyman and botanist in Hillsboro, North Carolina. Moses Ashley Curtis (1808-1872), like Ravenel, had begun his botanical study with the phanerogams. Two early publications, the "Enumeration of Plants Growing Spontaneously Around Wilmington, North Carolina," of 1835 and his "Account of Some New and Rare Plants of North Carolina," of 1843, both dealt almost exclusively with the flowering plants. By 1845, however, he had become interested in the cryptogams, apparently at the urging of Edward Tuckerman who wrote to him in October to try to induce him

Asa Gray
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I wish to express appreciation to Harry Shealy
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and reproducing the photographs.

to send lichens from North Carolina in exchange for named species from New England. Tuckerman's idea was accepted, and Curtis became a willing collector of lichens, joking with Gray that December, "I am not sure but I have deranged my head somewhat (I am sure I have my fingers) in getting Lichens off my fire-wood for Tuckerman. I am getting interested in these things, which I have long wanted the means of understanding."³³

Eighteen forty-six found Curtis clamoring for a cyptogamic correspondent. Tuckerman, Curtis was certain, could help him out of any difficulties he encountered with the lichens, but, he begged Gray, "can I get the like help on the Fungi? Can you introduce me to any botanist, American or foreign, who understands these things & will exchange with me, or will name my specimens for the gift of them?"³⁴ Gray recommended the British mycologist Miles Joseph Berkeley (1803-1889) and the Swede Elias Magnus Fries (1794-1878).

When Ravenel wrote to Gray the following August, he, knowing of Curtis's interest in the fungi, recommended him as a correspondent for Ravenel. This reinforced Tuomey's suggestion of a year earlier that Ravenel write to Curtis, and Wallace had apparently been making the same suggestion, so on the eighth of September, 1846, Ravenel wrote the first letter in a long correspondence with the North Carolina botanist. He desired, Ravenel wrote, to exchange and compare all of their plants, of which he had some 800 or 900 in

possession, including lichens, ferns and fungi. He would send Curtis the duplicates left after he made up packages for Tuomey and Gray.³⁵

Ravenel's letter could not have been entirely unexpected. Curtis had heard of him at least by reputation from Tuomey, and Wallace had written of him in glowing terms only days before and mentioned that Ravenel had some plants that he wished Curtis to determine.

I can also obtain a good many [plants] from H. W. Ravenel, Esq. a young gentleman of great industry & sagacity, who has nearly exhausted the phaenogamous plants of this Parish. If he lives, I see not why he should not equal MacBride or Elliott in acquirements. He is at the same time an excellent planter & a devout communicant of the Church -
...³⁶

At about the same time that Ravenel wrote him, days before he received the letter, Curtis sent a message through Wallace indicating his own willingness to begin a correspondence.³⁷

Ravenel's letter to Curtis suggested exchange and comparison, Ravenel apparently anticipating a trade in which he and Curtis would participate as equals. Curtis hardly possessed the sort of reputation which made Ravenel somewhat deferential towards Gray, nor did he, so far as Ravenel knew, have the resources available to make a collector-authority relationship worth Ravenel's while. In his response, however, Curtis hastened to lay his cards on the table. He confessed himself a beginner and admitted that he expected it to take some years before he was an accomplished

Moses Ashley Curtis
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and reproducing the photographs.

mycologist. He had, however, secured the assistance of Berkeley, "the finest Mycologist in Great Britain," and hoped also to enlist the aid of Fries. Sullivant and Tuckerman were among his correspondents, and with the help of these worthies, he expected to accomplish something of value. "If I am successful," he enthused, "I may elaborate all the known American species, & furnish a *Mycologia Americana*, which is a great desideratum." Ravenel's role, as Curtis then saw it, was to contribute specimens from South Carolina and wait patiently while Curtis or his correspondents examined and identified them. Unlike Gray who freely suggested correspondence with others, Curtis desired to act as a go-between, reserving to himself a direct relationship with the main authorities in the field.³⁸ At the same time, he was willing to be quite deferential to those authorities and seemed, perhaps because of his own position as a New Englander transplanted to the South, to be convinced that foreigners and northerners could do a better job on the fungi than he could, with or without Ravenel's help. In November 1846, he wrote to Gray and begged him to try to persuade William Oakes (1799-1848) to devote himself to the fungi, even suggesting that Oakes produce the *Mycologia Americana*.

He shall have all my aid, if he will fairly give himself to the work. I am accumulating material & knowledge pretty well, & am in fine humor with the subject. I only want a little more sympathy from

some one or two good fellows. Berkeley is too far off for frequent conference.³⁹

The hierarchical scheme that Curtis envisioned could work, with considerable softening of the corners, for a correspondent like Wallace whose botanical interest was little more than a hobby. For the more serious student, like Ravenel, it was doomed to failure. From Ravenel's other correspondents, especially Gray, would come suggestions and invitations to enter into exchange with an ever-widening circle of other botanists, including the very men whose correspondence Curtis so cherished. In fact, only a month after Curtis appealed to Gray to enlist Oakes as a mycologist, Gray wrote to Ravenel. Both Oakes and Stephen Thayer Olney (1812-1878) would gladly exchange with Ravenel, Gray believed. Oakes, he said, had a large collection, but was slow; Olney was prompt, "and a truly good fellow."⁴⁰

Curtis's desire for leadership, rather than partnership, with Ravenel, eventually lead to a low-key, but at times unpleasant, rivalry between them. At first, however, the role was reasonably justifiable, for, though Curtis's lead was not large, he was the more experienced man, and Ravenel undoubtedly realized that he had much to gain by accepting the role assigned him, for Curtis was by no means miserly with his help. His first letter contained advise on literature. If Ravenel could get hold of it, the "Synopsis fungorum Carolinae superioris" of Lewis David von Schweinitz, published in Leipzig in 1822, was very valuable, as

was his more accessible "Synopsis fungorum in America boreali media degentium," in the Transactions of the American Philosophical Society for 1832. Also essential to the study of fungi were Fries's Systema Mycologicum (3 vols., Lund and Gryphiswald, 1821-1832) and Elenchis Fungorum (Gryphiswald, 1828). "If you are willing to go to any expense for books, Greville's Illustrations of the Cryptogamiae of Scotland [see bibliography hereinbelow] with finely drawn figures & analyses would be a great assistance. I never saw it. It costs some \$50!" Eaton Curtis dismissed as "a quack. His Botany has been only valuable because we have had no other Manual." As an after-thought Curtis recommended Sprengel's Botany as a cheaper, and therefore perhaps preferable, alternative to Fries's Systema.

Curtis also commented on the preservation of fungi. Drier species could best be saved in alcohol, though this method was objectionably expensive and required too much room. Fleshy fungi, the mushrooms, could best be preserved by pressing between sheets of blotting paper. Good results could not be guaranteed, for the specimens lost shape, faded, and had to be coated with poison to protect against insects. To make determination of such preserved specimens easier, Ravenel should be sure to note the color and dryness or moistness of the various parts, the color of the spores, whether or not the gills attached to the stipe, and whether the stipe were solid or hollow. A note on the habitat was also desirable.⁴¹

Letters flew swiftly between Curtis and Ravenel, and the latter did his best to provide a large number of specimens for study and to be sent on to Curtis's correspondents. In June 1847, Curtis assured Gray that "Ravenel is constantly sending, & is collecting vigarously [sic]." ⁴²

Many of the letters touched on the same two problems on which Curtis had advised Ravenel in his first, that is, the preservation of fungi, and botanical literature. Fleshy agarics, the gilled fungi such as common table mushrooms, presented the worst problems for preservation. They disfigured too badly on drying, Ravenel complained. Ignoring Curtis's considerate counsel that alcohol was too expensive, Ravenel experimented with whiskey as a preservative. To try to stop the rapid and seemingly inevitable degeneration of the inky-cap mushrooms, he tried very rapid drying and using younger specimens, but without success. He also had trouble with insects lunching on his fungi but found that a concoction of the roots and berries of Pride of India would discourage them. A shelved cabinet made especially for fungi storage helped with organization. Ravenel took his correspondent's advice and ordered Fries's works. When they had not arrived in time for the spring collecting in 1847, he complained that he felt "as if my hands were tied & I was groping in the dark." Causing, perhaps, some surprise to Curtis, eaking out a living on a minister's salary, Ravenel ordered Greville's beautifully illustrated book that fall. ⁴³

A microscope quickly became an obvious need. The many small details to be observed, and the need to determine spore coloration in order to fit the gilled fungi into the proper group according to Fries's organization made some kind of magnification imperative. "Without good glasses how do you find specific differences between these little items of organized matter?" Ravenel mused. Schweinitz enumerated 680 species of Sphaeria. What specific differences could he have seen between them? Even without a microscope, Ravenel demonstrated a good eye for detail. "Well what do you make of those Sphaenoidal dots on the upper surface [of Aecidium pynatum]?" he asked. Still, he would like to own a microscope, if not too costly. When, after trying for months, Russel's bookstore in Charleston was unable to find a doublet, a then-popular type of simple microscope consisting of one double lens, Ravenel asked Curtis to try to get him one through Berkeley. Berkeley apparently also had some trouble finding one and sent back a recommendation for a microscope by Chevalier, a French manufacturer, but the cost was more than Ravenel could afford in the fall of 1848. He repeated his desire for a doublet exactly like that sent by Berkeley to Curtis. Only if it couldn't be had would he try to get a Chevalier.⁴⁴

Identification and technical details concerning the specimens each collected, and particularly those sent by Ravenel to Curtis, were the most common topics of their discussions. For one who confessed a former horror even of

touching fungi, which had reminded him of toads and lizards, Ravenel quickly developed an appreciation of their beauty. The variety of their colors amazed him, "I believe the most fanciful calico printer would be at fault in imitating their changeful hues," and the growth of the tiny plants was reason for praising God. Close observation of the variations among them led to a quick development of his understanding of the different degrees of similarity which might place two individuals in the same species, the same genus, or entirely different genera. Curtis's help in identifying plants and correcting errors was especially valuable in this early period, and in Ravenel he had an apt pupil. By July 1847, however, the pupil ventured to question the teacher. Curtis had identified one of Ravenel's plants as Cantharellus cornucopioides. "But can it be a Cantharellus?" Ravenel asked. "It has no lamellae or pores & the outer, which I take for the fruit bearing surface, is merely roughened as in Tremella -- See my 'C. cibarius' (No. 171). There is no generic character by which these two plants can be assimilated."⁴⁵

Doubts expressed by Ravenel may have indicated that he had studied a publication either not owned, or slighted by, Curtis. After receiving in October 1847 a copy of Gray's 1835 monograph on Rhynchospora, a genus of Cyperaceae, the sedge family, Ravenel in December questioned Curtis's determination of some plants of that genus. At the same time, a look at Augustin-Pyramus and Alphonse De Candolle's

Prodromus (1824-1873) made him wonder about four species all referred to one species by De Candolle. Worried that Curtis might not be receptive to his thoughts, he hastened to assure him that he freely expressed his doubts and questions only in "eliciting information and establishing truth ...". The arrival of his European mycological books in February 1848 helped considerably. Greville's plates he thought were "splendidly executed," and in May they came in useful. Ravenel found an inky-cap mushroom of unusually large size and identified it with the help of one of the Scottish illustrations as a probable variety of Coprinus comatus.⁴⁶

Increasing ability and familiarity with botanical literature brought a similar increase in self-confidence and a desire to enter directly into correspondence with Curtis's own contacts. Through the evident agency of Gray, Ravenel had been in direct contact with William S. Sullivant in early 1847 and had passed along to Curtis some of Sullivant's wisdom on mosses. Direct communication had also been established with Edward Tuckerman by mid-1848.⁴⁷ Ravenel wished, in addition, to establish contact with a European mycologist and may have brought the subject up while visiting at Curtis's new home in Society Hill, South Carolina, in March, 1848. Curtis still wished to act as Berkeley's sole American agent, but he brought Ravenel's request to Berkeley's attention and suggested the French botanist Camille Montagne (1784-1866) as a possible correspondent. Berkeley

preferred to suggest his own new co-worker, Christopher Broome (1812-1886), and Curtis was agreeable:

Mr. Ravenel merely wishes to enlarge his collection by exchanging with some Mycologist. He will send only such species as are determined. All his unknown species come to me, and thence to yourself. At my suggestion he will send abroad no unnamed species. This plan will save confusion to us. ... If then Mr. Broome will exchange with Mr. Ravenel, Mr. R will be glad to commence as soon as he learns it will be acceptable to Mr. B.

While arranging for the exchange between Ravenel and Broome, Curtis tried to squelch whatever desire Berkeley may have had for direct communication with Ravenel, but his words may have actually made the idea sound tempting!

I will say again, in reference to Ravenel, it will be no advantage to you to concern yourself at all about his proposal, because all his species of any interest to you will go to you through my hands. He has lately made me a visit of some days, bringing several hundred species, some of them very fine, and new to me.⁴⁸

Ravenel assured Curtis that he would be pleased to have Broome's address, but in July he asked Curtis about the possibility of direct communication with Berkeley. His request was waived aside, to the considerable inconvenience of all parties when he had to go through Curtis to procure the Englishman's assistance in finding a microscope. A seven-week collecting trip through northern Georgia found Ravenel back in Pineville in late October and ready to begin his exchange with Broome. He also expected to assume a more equal role with Curtis in the description of new species. Apparently unaware of Curtis's agreement with Berkeley that he should send only determined species to Broome, Ravenel

explained to Curtis his intention to send to Broome only such plants as had not already been sent to Berkeley so that the two Englishmen would not separately describe the same plant. With regard to any sent to Berkeley in the future, Ravenel desired to put in a joint claim with the English mycologist, though Ravenel and Curtis should share credit for jointly discovered species. He also wrote that he was sending Broome's first package to Curtis to be forwarded to England, but would Curtis please send Broome's address?⁴⁹

Curtis's reply to Ravenel's stated intentions has not survived, but it evidently was scathing. Ravenel wrote back in tones of injured innocence. He acknowledged the debt he owed Curtis for his assistance and encouragement and assured him of his satisfaction with the disposition which had been made of his specimens. He appreciated the compliment which Curtis paid him by acknowledging his contribution in a November article in Silliman's Journal. As for the joint claim he had hoped to have on new species, had Curtis not mentioned laying down a claim to some sent in his last package to Berkeley? Was such a claim entirely without foundation when he or Curtis might find a plant, examine and describe it fully in its fresh state, search for it diligently in literature at their disposal, and only then send it, along with a description and provisional name, to a European mycologist for his opinion, which could, in such a new science, prove wrong in any case? Should providing an opinion transfer all credit away from the discoverer and

first describer, especially when the very characteristics upon which the new species would be founded might be unclear in the preserved specimen and have to be taken from the description of the fresh plant? If this was common usage, Ravenel was ignorant of it, but willing to adhere to the rules. He closed with a curt remark that he would make up a package for Broome containing only ascertained species.⁵⁰

Curtis wrote to soothe Ravenel, and relations were soon cordial again. Ravenel was willing to settle back into the role of faithful collector, at least temporarily:

Your last letter has made me feel quite easy again & I shall continue to send you my collections, perfectly satisfied with whatever disposition Berkeley & yourself may make of them. ... As long as I continue to send, it will be with this understanding, that they are wholly at your disposal.⁵¹

If Ravenel was agreeable, he was not cowed. Scarcely a month after the unpleasant incident, he expressed disagreement with Berkeley's identifications of two species.⁵²

Despite the resistance which he experienced in trying to establish communication with Berkeley, Ravenel's botanical correspondents grew dramatically in number during the late 1840s. Edward Tuckerman was one of the most valuable of these. Though two years younger than Ravenel, he had begun serious botanical work at a much earlier age. By 1845, when he persuaded Curtis to begin collecting lichens for him, the young resident graduate of Harvard, as he styled himself, had decided that these small plants were to be his life's work and that he could not afford to devote

time or attention to any others. The interest, however, was even then not a new one. Tuckerman had begun to make his reputation in lichenology as early as 1839 and 1840 with the publication of a short series of articles in the Boston Journal of Natural History.⁵³

Tuckerman had received a share of the lichens sent by Ravenel to Gray with other plants in 1846, and it would have been very strange indeed had he not desired to open a direct tap to a new source of lichens. Tuckerman, in fact, had special reasons to desire communication with Ravenel. He was openly curious about the lichens of the South and had evident ambitions to be recognized as an authority of national proportions. In addition, his correspondence with Curtis had proven less than satisfactory. When preparing a package for Tuckerman, Curtis would rifle through his large box of recently collected specimens, often selecting things quite at random and sending them off without examination and in excessively large quantities. This careless approach meant that he often sent the same species on several occasions without recognizing the fact and in August 1848 received embarrassing complaints from Tuckerman for having sent in his last package as many fungi as lichens. In July 1848, the exasperated Tuckerman began a correspondence with Ravenel, whose collections had already won praise and a promise of European plants from Asa Gray.⁵⁴

Correspondence with Tuckerman gave Ravenel an alternative to Curtis as a connection with European cryptogamic

botany. When the Massachussetts botanist wrote that he was preparing for a lengthy trip to Europe and offered to take some of Ravenel's plants, the South Carolinian jumped at the chance. He sent off another bundle of plants and particularly urged Tuckerman to take one strange specimen which he had thought a fungus but Curtis had opined was a lichen. He also asked Tuckerman to record the title and place of publication of European works on fungi and to give out his name and address to anyone mentioning a desire to trade specimens, especially Fries.

If M. Fries would accept a full sett of my Fungi & give me his opinion upon them, it would be only a partial return to him for the great profit I have derived from his works on this order.⁵⁵

In phanerogamic botany, also, Ravenel's correspondence and expertise increased. As early as 1846 Ravenel had had in mind the compilation of a catalogue of the plants of St. John's. Impetus in this direction came from his friend and botanizing companion Frank Porcher. Preparing to receive the M.D. from the Medical College of South Carolina, Porcher had chosen the medical botany of South Carolina as his thesis topic. He graduated in 1847, taking top honors in his class, and his thesis was chosen by the faculty for publication. Ravenel helped on the project, allowing Porcher access to his own herbarium and catalogue so as to include a number of grasses and other plants which his friend had not seen. He also arranged for Gray to examine and send an opinion on Ravenel's plants, and when the opinion was slow

in coming wrote to the Harvard botanist to urge haste. The "Medico-Botanical Catalogue of the Plants and Ferns of St. John's, Berkeley, South Carolina," appeared in the May and July numbers of the Charleston Medical Journal and Review and included Gray's determinations, arrived back just barely in time. Porcher included a warm acknowledgement of Ravenel's help in determining species and adapting Elliott's species to the nomenclature used by Eaton and, more especially by John Torrey and Asa Gray. Ravenel's pleasure at his friend's success and the kind words was marred, however, by disappointment at the large number of typesetting errors which, he feared, made the "Catalogue" nearly worthless.⁵⁶

Ravenel's own first botanical publication, with the exception of a short letter in the Southern Journal of Medicine and Pharmacy of 1846, appeared in 1849. A short article of the type known as a "state record," it recorded his discovery in South Carolina of a number of phanerogamic plants not previously known to have been found in the state. In several cases the species themselves were only newly established, split off from older species by taxonomic revision. An unremarkable article in itself, Ravenel's 1849 contribution does give clues to the depth of his acquaintance with literature. Walter and Elliott, of course, were the standard references for South Carolina. Michaux was mentioned, but Ravenel seemed to be familiar with him only through Elliott. In his introduction Ravenel politely credited both Gray and Curtis for help in determining doubt-

ful species, but the text made clear that Torrey and Gray were the systematists to be followed when considering the flowering plants. Gray's revision of the Rhynchosporae, his recent Manual of the Botany of the Northern States (Boston, 1848), Torrey's revision of the Cyperaceae (1836), his report on the botany of New York (Albany, 1840), and the Flora of North America (New York, 1838-1843) for which they shared authorship, were each cited as authority for newly established species. Other notations indicated Ravenel's familiarity with the work of two other botanists whose careers and reputations would grow alongside Ravenel's own: George Englemann (1809-1884) of St. Louis and Alvan Wentworth Chapman (1809-1899) of Florida. The much-maligned Constantine Samuel Rafinesque (1783-1840) was not accorded a mention.⁵⁷

John Torrey, whose work on the Cyperaceae had so impressed the South Carolina botanist, was drafted into the ranks of Ravenel's correspondents in late 1848 when Ravenel took the liberty of shipping off to him a number of southern members of that family for his opinion. Torrey was happy to cooperate, and offered rare northern plants in return, but his responses did not arrive in time to be included in Ravenel's article. S. B. Mead of Illinois and Edward Tatnell of Delaware exchanged plants with Ravenel, and he found Olney quite generous in sending specimens.⁵⁸

Even as Ravenel's contacts with other botanists increased, the small group of local collectors, whose compani-

onship had sustained him in the early 1840s, dwindled away. Following his graduation from medical school, Frank Porcher went to Europe to study for two years. Cranmore Wallace resigned his ministry in St. Stephen's Parish November 1, 1848, and took charge of St. Stephen's Church in Charleston.⁵⁹ Thomas Peyre's interest apparently faded, and as for the two ladies, they were scarcely suitable companions for a young married man's strolls through the woods. Ravenel was actually beginning to see that there could be certain advantages to collecting by himself. As he wrote to Curtis in May, 1849, "I sighed once for company in my rambles, but I believe it is better to be alone - No one would have stood patiently with me for 5 hours Last Saturday, in a Pineland branch among the Snakes & red bugs - & all that for only some bits of bark & rotten wood!" At the same time, however, he was cheered by the affectionate interest of his three little daughters, "large enough to run about & say Agaricus & Boletus," who were fond of hunting fungi in hopes of finding something that their father had not seen before.⁶⁰

Among his neighbors and other Carolinians, Ravenel's interest in botany was received with friendly sympathy. Frederick Porcher's admiration was plain, while another planter donated specimens of one of the plants treated in his 1849 state record. When Ravenel began to think of publishing the article, he received a very encouraging letter from P. C. Gaillard of the Charleston Medical Journal

and Review. He declared the Journal's willingness to publish the article and praised Ravenel for the example he had set by his interest in science and particularly for the aid he had given Porcher in his well-received thesis.⁶¹

Members of the Black Oak Agricultural Society also appreciated Ravenel's efforts in science and realized their potential value to agriculture. In 1845, for example, they appointed him with Morton Waring and Frederick Porcher to form a committee to study the problem of cotton rust, a very destructive disease of then unknown cause. Many causes were suggested. The Black Oak planters looked to the soil, while Edmund Ruffin blamed "the depredations of myriads of very minute insects." After studying the problem, however, Ravenel became convinced that the agent was a fungus and turned some of his attention to the investigation of this and other fungi affecting crops. He also kept tables recording rainfall and temperature, which were published by the Black Oak Agricultural Society, and in 1849 the Society published a paper in which he explained in simple terms some of the principles and techniques of meteorology and urged others to collect similar data:

It may be said that, as we have no control over the seasons and weather, such information is useless. We contend that every kind of positive information is useful. If we cannot prevent these causes which affect us injuriously, we can, at any rate, know what they are and how they affect us. It is a notorious fact, that when statistical information is collected and preserved, it is never useless. It sets men to thinking - it opens new lights to them - it gives them often a hint which may be improved to some valuable purpose.⁶²

Sympathetic friends and family, contact with Edmund Ravenel, John Bachman, Michael Tuomey and eventually others of South Carolina's intelligentsia, and correspondence with many of America's prominent botanists brought Ravenel in the 1840s out of "the isolation of St. Johns" and into America's scientific community.

AMERICAN SCIENTIST

1839 - 1853

Footnotes

- 1 Samuel Gaillard Stoney (ed.), "The Memoirs of Frederick Adolphus Porcher," South Carolina Historical Magazine XLIV (July, 1945), 144.
- 2 Charlotte's birthdate was January 9, 1841, Henrietta's January 4, 1844, Emily's September 26, 1846, and Henry St. Julien's April 29, 1848. See Private Journal of Henry William Ravenel, April 29, 1867, September 26, 1869, January 9, 1871, and January 4, 1885 (South Caroliniana Library, University of South Carolina, Columbia, S.C.). See also Henry Edmund Ravenel, Ravenel Records: A History and Genealogy of the Huguenot Family of Ravenel, of South Carolina; With Some Incidental Account of the Parish of St. Johns Berkeley, Which was Their Principal Location (Atlanta, 1898), 167.
- 3 See, for example, the Plantation Journal, 1834-51, of Thomas Walter Peyre, 1812-51 (microfiche 50-7, South Carolina Historical Society, Charleston, S.C.; herein-after cited as "Plantation Journal").
- 4 H. W. Ravenel to Dr. Henry Ravenel, September 3, [1842], Folder 14, Box 3, Thomas Porcher Ravenel Collection (South Carolina Historical Society).
- 5 Bill of Sale and Bond, each dated April 15, 1840, Folder 9, Box 11-331, Henry Ravenel Papers (South Carolina Historical Society).
- 6 On prices see Lewis Cecil Gray, History of Agriculture in the Southern United States to 1860 (2 vols., New York, 1941), II, 726, 738. On St. John's cotton see Whitemarsh B. Seabrook, A Memoir on the Origin, Cultivation and Uses of Cotton, from the Earliest Ages to the Present Time, with Especial Reference to the Sea-Island Cotton Plant, ... (Charleston, 1844), 18-19; H. W. Ravenel to M. A. Curtis, May 14, 1847, Folder 21, Box 2, Moses Ashley Curtis Papers (Southern Historical Collection, University of North Carolina, Chapel Hill, N. C.; hereinafter cited as Curtis Papers, UNC).

- 7 The Constitution, Acts and Proceedings of the Black Oak Agricultural Society, During the Past Year, Published by Order of the Society (Charleston, 1843), 2.
- 8 List of officers elected, Ibid., 2. On Dubose see Frederick A. Porcher, "Upper Beat of St. John's, Berkeley," Huguenot Society of South Carolina, Transactions, XIII (1906), 43-46, Robert Wilson, An Address Delivered Before the St. John's Hunting Club, at Indianfield Plantation, St. John's, Berkeley, July 4, 1907, Together with an Historical Sketch of the Club, Rules and List of Members (Charleston, 1907); 12-13.
- 9 The Constitution and Proceedings of the Black Oak Agricultural Society, for 1846 & 1847 (Charleston, 1847), 8-9, 10-12.
- 10 Proceedings of the Black Oak Agricultural Society, (1843), 6; C. U. Shepard, Report of an Analysis of Cotton-Wool, Cotton-Seed, Indian Corn and the Yam Potato, Made for the Black Oak Agricultural Society (Charleston, 1846).
- 11 On Liebig see Margaret W. Rossiter, The Emergence of Agricultural Science: Justus Liebig and the Americans, 1840-1880 (New Haven and London, 1975), 23-25. Liebig's work quickly became popular throughout America.
- 12 H. W. Ravenel, A Memoir from the Black Oak Agricultural Society, Read Before the State Agricultural Society, at its Meeting in December, 1842, at Columbia (Charleston, 1843), 23 pp., quote on p. 4.
- 13 Avery Craven, Edmund Ruffin, Southerner: A Study in Secession (Baton Rouge, 1966), 77-82; Betty L. Mitchell, Edmund Ruffin, A Biography, (Bloomington, 1981), 44-48.
- 14 Edmund Ruffin, Report of the Commencement and Progress of the Agricultural Survey of South Carolina for 1843 (Columbia, 1843), 4, 12, 36, and acknowledgements appearing on unnumbered back page; Edmund Ruffin to H. W. Ravenel, May 13, 1843, Folder 1, Box 1, Botany Department of the University of North Carolina Historical Collection (Southern Historical Collection, University of North Carolina; hereinafter cited as Botany Department Historical Collection, UNC).
- 15 H. W. Ravenel, "Mr. Ravenel's Letter on Marlling," Proceedings of the Agricultural Convention and of the State Agricultural Society of South Carolina, from 1839 to 1845 - Inclusive ... (Columbia, 1846), 289-91.

- 16 Plantation Journal, 233-43; F. A. Porcher, Report on Manures, Read Before the Black Oak Agricultural Society, by F. A. Porcher, Chairman of the Committee on Manures (Charleston, 1844).
- 17 Mitchell, Ruffin, 55; Ruffin, Report.
- 18 Edmund Ravenel, Echinidae, Recent and Fossil, of South Carolina, January, 1848 (Charleston, 1848); Edmund Ravenel, "On the Medical Topography of St. John's, Berkley, S.C., and its Relations to Geology," Charleston Medical Journal and Review IV (November, 1849), 701-703. For a brief sketch of Edmund Ruffin see Joseph Ioor Waring, A History of Medicine in South Carolina, 1825-1900 (Columbia, 1967), 287-88. On Edmund's relationship with Henry see H. E. Ravenel, Ravenel Records 144; Plantation Journal, diary-like entries on unnumbered page near the front, dated April 8 and April 16, 1834. Quotations are from Edmund Ravenel to H. W. Ravenel, April 8, 1844 (mislabelled April 4, 1844), Folder 1, Ravenel, Henry William (1814-1887), Papers, Apr. 1844 - 25 July 1887 and n.d. (South Caroliniana Library, University of South Carolina; hereinafter cited as H. W. Ravenel Papers, USC).
- 19 Childs (ed.), Private Journal of HWR, 290.
- 20 Neil E. Stevens, "The Mycological Work of Henry W. Ravenel," Isis XVIII (1932), 146. I, personally, know of no significant botanist named Olmstead, nor do Barnhart's few entries under that name indicate anyone of importance. John Hendley Barnhart, The New York Botanical Garden Biographical Notes Upon Botanists (3 vols., Boston, 1965).
- 21 A. Hunter Dupree, "The National Pattern of American Learned Societies, 1769-1863," in Alexandra Oleson and Sanborn C. Brown (eds.), The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War (Baltimore and London, 1976), 25, gave me the idea of plants as transmitters of information. The idea seemed obvious after I read his article. It is common knowledge that until the use of steam vessels six weeks was not an unusual time for crossing the Atlantic. Storms, or a wait at either end, made two months. A shorter trip could be anticipated, but not always attained, for packages sent North. H. W. Ravenel to Edward Tuckerman, December 16, 1851, and February 24, 1852, Edward Tuckerman Papers (American Antiquarian Society, Worcester, Mass.; hereinafter cited as Tuckerman Papers, American Antiquarian Society).

- 22 "Reminiscences of Mrs. Richard Y. Dwight (Rowena Ravenel), Pinopolis, March 23, 1924," in Neil E. Stevens, collection entitled "Henry W. Ravenel," (South Carolina Library, University of South Carolina; hereinafter cited as "Reminiscences of Mrs. Dwight,"); Frederick A. Porcher, "Upper Beat,"; 38; Stoney (ed.), "Memoirs,"; XLVII (April, 1946), 101-102.
- 23 Laura M. Bragg, "The Museum Herbaria," Charleston Museum, Bulletin, VIII (May, 1912), 47; Albert Sidney Thomas, A Historical Account of the Protestant Episcopal Church in South Carolina, 1820-1957; Being a Continuation of Dalcho's Account, 1670-1820 (Columbia, 1957), 187, 403-404. Bragg and Thomas disagree on the year when Wallace took over at St. John's; Bragg says 1841.
- 24 Bragg, "Museum Herbaria," 47-48.
- 25 Wallace to M. A. Curtis, March 19, 1846, Folder 17, Box 1, Curtis Papers, UNC.
- 26 H. W. Ravenel, "Some North American Botanists. VII, Stephen Elliott," Botanical Gazette VIII (July, 1883), 253.
- 27 A. W. Chapman to H. W. Ravenel, June 13, 1885, Henry William Ravenel Papers (Special Collections, Robert Muldrow Cooper Library, Clemson University, Clemson, S.C.; hereinafter cited as Ravenel Papers, Clemson); Stoney (ed.), "Memoirs," XLVII (April, 1946) 101-102.
- 28 Childs (ed.), Private Journal of HWR, 290; "Reminiscences of Mrs. Dwight;" Cranmore Wallace referred to the fire in a letter to Moses Ashley Curtis, which gives the impression the fire occurred approximately in August, 1843. Wallace to Curtis, August 29, 1846, Folder 18, Box 1, Curtis Papers, UNC. Ravenel also referred to the fire, but as though it had occurred during the winter of 1844-45. Ravenel to Curtis, December 1, 1846, Folder 19, Box 1, Curtis Papers, UNC. The vagueness and obvious discrepancies in these accounts indicate that Ravenel did not dwell on his misfortune, but actually tended to minimize its importance.
- 29 E. Ravenel to H. W. Ravenel, December 14, 1846, Ravenel Papers, Clemson.
- 30 J. Bachman to H. W. Ravenel, December 17, 1846, Ravenel Papers, Clemson.

- 31 Ruffin refers to Tuomey as a friend in his Report, p. 41; Michael Tuomey, Report on the Geology of South Carolina (Columbia, 1848), 156; M. Tuomey to H. W. Ravenel, November 25, 1845, Folder 2, Box 1, Botany Department Historical Collection, UNC; M. Tuomey to M. A. Curtis, July 9, 1846, Curtis Papers, UNC.
- 32 A. Gray to H. W. Ravenel, 24 August, 1846, Botany Department Historical Collection, UNC; H. W. Ravenel to A. Gray, September 7, 1846, Asa Gray Papers (Gray Herbarium, Harvard University, Cambridge, Mass.; hereinafter cited as Gray Herbarium).
- 33 Curtis, "Enumeration of Plants Growing Spontaneously Around Wilmington, North Carolina, With Remarks on Some New and Obscure Species," Boston Society of Natural History, Journal, I (May, 1835), 82-141; Curtis, "An Account of Some New and Rare Plants of North Carolina," American Journal of Science and Arts XLIV (January, 1843), 80-84; E. Tuckerman to M. A. Curtis, October 29, 1845, Folder 17, Box 1, Curtis Papers, UNC; M. A. Curtis to A. Gray, December 22, 1845, Gray Herbarium.
- 34 M. A. Curtis to A. Gray, January 13, 1846, Gray Herbarium.
- 35 A. Gray to H. W. Ravenel, August 24, 1846, Folder 2, Box 1, Botany Department Historical Collection, UNC; M. Tuomey to M. A. Curtis, October 24, 1846, Folder 19, Box 1, Curtis Papers, UNC; C. Wallace to M. A. Curtis, August 29, 1846, Folder 18, Box 1, Curtis Papers, UNC; H. W. Ravenel to M. A. Curtis, September 8, 1846, Folder 18, Box 1, Curtis Papers, UNC.
- 36 C. Wallace to M. A. Curtis, August 29, 1846, Folder 18, Box 1, Curtis Papers, UNC.
- 37 C. Wallace to M. A. Curtis, September 19, 1846, Folder 18, Box 1, Curtis Papers, UNC.
- 38 M. A. Curtis to H. W. Ravenel, September 17, [1846], Ravenel Papers, Clemson. A notation in Ravenel's handwriting, as well as the subject matter of the letter, clearly identify this as Curtis's first letter to Ravenel.
- 39 On attitude re northerners and foreigners, ibid. Quote from M. A. Curtis to A. Gray, November 23, 1846, Gray Herbarium.
- 40 A. Gray to H. W. Ravenel, December 23, 1846, Botany Department Historical Collection, UNC.

- 41 M. A. Curtis to H. W. Ravenel, September 17, [1846], Ravenel Papers, Clemson.
- 42 M. A. Curtis to A. Gray, June 24, 1847, Gray Herbarium.
- 43 H. W. Ravenel to M. A. Curtis, June 8, 1847, Folder 21; May 5, 1848, Folder 25; December 17, 1847, Folder 23; November 22, 1847, Folder 23; quote from June 1, 1847, Folder 21; November 3, 1847, Folder 23; Box 2, Curtis Papers, UNC.
- 44 H. W. Ravenel to M. A. Curtis, quotes from July 31, 1847, Folder 22; and November 3, 1847, Folder 23; see also November 13, 1847, Folder 23; August 8, 1848, Folder 26; October 31, 1848, Folder 26; December 29, 1848, Folder 26; Box 2, Curtis Papers, UNC.
- 45 H. W. Ravenel to M. A. Curtis, September 13, 1847; first quote from July 3, 1847; July ?, 1847; second quote from July 23, 1847; Folder 22, Box 2, Curtis Papers, UNC.
- 46 Asa Gray, "A Monograph of the North American Species of Rhynchospora," Lyceum of Natural History, New York, Annals, III (1835), 191-219. H. W. Ravenel to M. A. Curtis, first quote from December 22, 1847, Folder 23; second quote from February 22, 1848, Folder 24; May 5, 1848, Folder 25; Box 2, Curtis Papers, UNC.
- 47 H. W. Ravenel to M. A. Curtis, February 22, 1847, Folder 20, Box 2, Curtis Papers, UNC. The earliest letter that I have found from Ravenel to Tuckerman is dated July 12, 1848. Its tone indicates that it is one of their earliest communications, probably the first from Ravenel. Ravenel, however, makes reference to a letter of Tuckerman's dated July 1. Tuckerman Papers, American Antiquarian Society.
- 48 R. H. Petersen, B&C: the Mycological Association of M. J. Berkeley and M. A. Curtis (Vaduz, 1980), 47. The letter from Curtis to Berkeley was dated April 27, 1848, and I have taken the quotations from Petersen.
- 49 H. W. Ravenel to M. A. Curtis, May 5, 1848, Folder 25; July 11, 1848, Folder 26; October 17, 1848, Folder 26; October 31, 1848, Folder 26; Box 2, Curtis Papers, UNC.
- 50 H. W. Ravenel to M. A. Curtis, November 25, 1848, Folder 26, Box 2, Curtis Papers, UNC; M. A. Curtis, "Contributions to the Mycology of North America," American Journal of Science and Arts LVI (November, 1848), 349-53, 444-45.

- 51 H. W. Ravenel to M. A. Curtis, December 15, 1848, Folder 26, Box 2, Curtis Papers, UNC.
- 52 H. W. Ravenel to M. A. Curtis, December 29, 1848, Curtis Papers, UNC.
- 53 E. Tuckerman to M. A. Curtis, October 29, 1845, Folder 17, Box 1, Curtis Papers, UNC. Edward Tuckerman, Jr., "An Enumeration of Some Lichenes of New England, with Remarks," "A Further Enumeration of Some New England Lichenes," and "Further Notices of Some New England Lichenes," all in Boston Journal of Natural History, II (February, 1839), 245-62, III (July 1840), 281-306, and III (November, 1840), 438-64, respectively.
- 54 Edward Tuckerman, "A Synopsis of the Lichenes of the Northern United States and British America," American Academy of Arts and Sciences, Proceedings, I (1846-1848), 195-285, especially 213-14, 226, 249, 252, 261; M. A. Curtis to E. Tuckerman, November 15, 1845; January 8, 1846; April 12, 1846; April 27, 1846; August 4, 1846; typescripts of such letters are in Box labeled "Letters of Dr. Moses A. Curtis, Dr. J. H. Mellichamp, Gilbert Rossignol," Letters and Diaries, South Carolina Collection (Charleston Museum, Charleston, S.C.); A. Gray to H. W. Ravenel, December 14, 1846; December 23, 1846; Folder 2, Box 1, Botany Department Historical Collection, UNC. See also n. 47 above.
- 55 H. W. Ravenel to E. Tuckerman, June 14, 1848, Tuckerman Papers, American Antiquarian Society.
- 56 A. Gray to H. W. Ravenel, August 24, 1846, Folder 2, Box 1, Botany Department Historical Collection, UNC; H. W. Ravenel to A. Gray, March 19, 1847, Gray Herbarium; Porcher, "A Medico-Botanical Catalogue of the Plants and Ferns of St. John's, Berkley, South-Carolina," Charleston Medical Journal and Review II (May, 1847), 257; H. W. Ravenel to M. A. Curtis, August 20, 1847, Curtis Papers, UNC.
- 57 H. W. Ravenel, "Polygonum Punctatum," Southern Journal of Medicine & Pharmacy I (1846), 629-30. Dr. Harry Shealy kindly called my attention to this publication. H. W. Ravenel, "An Enumeration of some few Phanegamous Plants, not Heretofore Published as Inhabiting this State, Found in the Vicinity of the Santee Canal," Charleston Medical Journal and Review IV (1849), 32-38.
- 58 H. W. Ravenel to J. Torrey, November 14, 1848; January 12, 1849; August 17, 1849, Torrey Correspondence (New York Botanical Garden, New York, N.Y.); S. B. Mead to

H. W. Ravenel, February 28, 1848 and E. Tatnall to H. W. Ravenel, February 18, 1848, Ravenel Papers, Clemson.

- 59 Thomas, Historical Account, 187, 261.
- 60 First quote from H. W. Ravenel to M. A. Curtis, May 22, 1849, Folder 27, Box 2, Curtis Papers, UNC. Second from H. W. Ravenel to M. A. Curtis, July 23, 1847, Folder 22, Box 2, Curtis Papers, UNC.
- 61 H. W. Ravenel, "Enumeration of Some Few Phanegamous Plants," 36; P. C. Gaillard to H. W. Ravenel, November 28, 1848, Ravenel Papers, Clemson.
- 62 Constitution and Proceedings of the Black Oak Agricultural Society, for 1844 & 1845 (Charleston, 1845), 11; Ruffin, Report, 79; H. W. Ravenel to M. A. Curtis, July 3, 1847, Folder 22, Box 2, Curtis Papers, UNC; H. W. Ravenel, A Meteorological Journal for the Year 1848. Kept in St. John's, Berkley, So. Ca. for the Black Oak Agricultural Society (Charleston, 1849). (Similar papers appeared for 1849, 1850 and 1851. See bibliography hereinbelow); H. W. Ravenel, "A Paper on the Subject of Meteorology in its Connection with Agriculture & c." in Constitution and Proceedings of BOAS for 1848 & 1849, 14-20, quote p. 19.

INTERNATIONAL MYCOLOGY

1850 - 1859

"We must all bestir ourselves." 1850.

Henry Ravenel's circle of American scientific contacts grew to significant proportions in the 1840s as he became acquainted with established botanists. Asa Gray and John Torrey helped him through the maze of phanerogamic botany, while William Starling Sullivant helped with mosses and Edward Tuckerman with lichens. Moses Ashley Curtis gave him such constant guidance on the fungi that, despite occasional tension, their relationship grew into a warm friendship. Valuable though these contacts were, Ravenel coveted direct correspondence with a European authority, but, though he began to write to Christopher Broome, the leaders of mycology, Miles Berkeley, Elias Fries and Camille Montagne eluded him.

Efforts to use Curtis or Tuckerman as a go-between largely failed, but when Ravenel acceded to Curtis's wishes and began to send material to Broome, his plants spoke more loudly for him than had either of his friends. By the end of 1849 Berkeley wanted to correspond with Ravenel as badly as Ravenel wanted to correspond with him. "I wish... [Ravenel] would send me duplicates of many of his new species," Berkeley wrote to Curtis in December 1849, complaining that he had "mere scraps" of the specimens Broome had received

from Ravenel.¹ Curtis could no longer stand in the way, and the elusive contact was soon made. In March, 1850, Ravenel took full advantage of the new situation, sending Berkeley the greater part of his undetermined collection and additional samples of a few species that he thought Berkeley may have pronounced on incorrectly.²

Eighteen fifty also brought to Ravenel public confirmation of his position in the American scientific community. In January Ravenel's former college professor Robert Gibbes wrote to say he had nominated Ravenel for membership in two prestigious scientific societies, the Academy of Natural Sciences of Philadelphia, and the American Association for the Advancement of Science. Membership in the AAAS was an especially interesting prospect for residents of South Carolina in 1850, for the young association had voted to hold its third meeting in Charleston. For Ravenel it was a rare opportunity to meet other scientists who would come from a distance to attend the meeting. Of course, there was some feeling that attendance was a duty as much as a pleasure. Hospitality demanded that when so many scientists were to journey to Charleston, their South Carolina colleagues must welcome them with a fitting demonstration of the scientific glory of the city. "I hope you are preparing some papers for the Scientific meeting in Charleston in March," Robert Gibbes prodded his ex-student. "We must all bestir ourselves."³

Miles Joseph Berkeley
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I wish to express appreciation to Harry Shealy
and David Mellenberg for help in selecting
and reproducing the photographs.

Though Robert Gibbes need scarcely have worried about Ravenel's taking an active part in the upcoming meeting, the latter's attention in January was directed partly to another, much smaller, scientific conference he hoped to arrange. The Episcopal diocese of South Carolina was meeting in convention at St. Michael's Parish, Charleston, in February. Hearing that his friend Curtis, an Episcopal priest, planned to attend, he wrote to urge him to stop for a visit on his way. Though living in the same state, the two had met only twice before, once when Ravenel visited Curtis in Society Hill in 1848, and briefly at the Episcopal convention of 1849. Ravenel was now anxious to play the host and introduce Curtis to his family, friends and favorite botanical haunts.⁴

Curtis accepted the invitation and arrived in St. John's early enough to preach the Sunday sermon at Black Oak chapel of ease on February 17. Monday Ravenel sent his family over to Pooshee to spend the week, and he and Curtis went to Charleston. The Episcopal convention was not scheduled to begin until Wednesday the 22nd, so the two had at least one full day to tour Charleston and visit other scientists. Curtis had met John Bachman briefly when, as a young man living in Wilmington, he had made a trip to Charleston. Now that the two had found themselves allied, for reasons both religious and scientific, as supporters of the traditional idea of a single creation of mankind, over the rival theory of multiple creations put forth by the American

school of ethnologists, Curtis was probably hoping for a second meeting with Bachman. The three-day convention was over and Ravenel and Curtis were back in St. John's in time for another Sunday sermon by Curtis.⁵

In St. John's, Ravenel had at least two things to show off to his friend. One was a new microscope. The doublet that Ravenel so desired in December 1848 had arrived by the following May. Its ability to sharpen detail and allow a more sophisticated comparison of similar plants pleased him at the same time that it demanded he sharpen his own analytical ability. Months before its arrival, however, he had already decided he would need a more powerful instrument. At Berkeley's recommendation, he had a simple microscope made to order by the best of French instrument makers, Vincent and Charles Chevalier of Paris. Good quality French microscopes by such makers as Chevalier, Oberhauser and Nichat were among the best available in the world at the time and had the advantage over their equally high quality British counterparts in being cheaper due to having less decorative detailing. Ravenel's new microscope was fitted with five doublet lenses that could be exchanged to give magnification of five different powers, the highest being about 300 diameters. Ravenel fretted impatiently until it came, complaining that he was working to disadvantage with his smaller glass. Russell's bookstore in Charleston finally sent the microscope through their Paris branch. Ravenel was so well pleased with its clarity and power that he kept

it even though it exceeded by \$5.00 the \$35.00 to \$40.00 price limit he had set. Again, as when he had acquired the lower-powered doublet, he was impressed by the minute details he was able to discover and by its value in aiding identification. He tried it out on the spore-bearing sacs, or sporidia, of the mushroom he and Curtis had been calling Agaricus mimosus and became convinced that it was not, in fact, the same species as that described under the name by Greville in his Scottish cryptogamic flora.⁶

Acquisition of a well-made, powerful microscope was an important step in bringing Ravenel's mycological work closer to the standards set in the mid-nineteenth century by European workers. The most influential taxonomic scheme of that period was the system of Elias Fries. He made extensive use as diagnostic tools of the color and shape of the extremely tiny spores. While he assumed the possession of a good microscope, his system was elaborated before the perfection in the 1830s of techniques to correct spherical and chromatic aberration, so by the early 1850s, the classification system most commonly used in Sweden, England and the United States lagged behind state-of-the-art microscope technology. Descriptions of new species were, however, already beginning to make use of observations of the spore-sacs, the tiny features of which were impossible to discern without a high-power microscope with good definition. Ravenel's enthusiasm for his new instrument was, unfortunately, not enough to

convince Curtis of its desirability, and neither Ravenel nor Berkeley was ever able to persuade him to acquire one.⁷

Ravenel received a much more satisfying response when he showed Curtis a particular pine tree that had been the object of much recent discussion between them. During 1849, partly out of his own interest and partly to oblige a request from Asa Gray, Ravenel had studied the trees of his region. Coming one day upon a new pine, he had recognized immediately, from its form of growth, that it was different from the relatively common Pinus mitis described by Michaux. He identified it as Pinus glabra of Thomas Walter, a species missing since Walter's description of it in the eighteenth century. Ravenel sent cuttings to both Curtis and Gray, but they were skeptical about his discovery of Walter's pine and believed he had found Michaux's instead. Not wanting to contradict them both at once, Ravenel allowed himself to be silenced but not convinced. Ravenel took advantage of Curtis's visit to reopen the case. He showed him the pine and, to his everlasting pleasure, Curtis conceded at once. His friend even wrote to Gray to tell him that Ravenel had, indeed, discovered the rare tree.⁸

That Ravenel should have been able to tell Pinus glabra Walt. from Pinus mitis Mchx. should not have astounded either him or Curtis. Though trees were by no means his specialty, he had developed enough proficiency, for example, to spot a new oak when he saw it, despite its marked resemblance to two other species. He had discovered the rare

dwarf oak Quercus georgiana growing on Stone Mountain, Georgia, during his collecting trip in 1848. It was published the next year by Curtis as a new species.⁹

The Pinus glabra incident had personal significance for Ravenel, for it helped him put into perspective the roles of field observation and analytical diagnosis in the proper identification of specimens. Ravenel's extensive experience in collecting had given him an eye for the small and great differences that could indicate separate species but were not readily reducible to terse botanical description. Such characteristics as the precise color of flower or leaf, the size of a plant, its overall shape and texture, and the relative sizes of its different parts were learned as easily, and as well, as people learned to distinguish the faces of their friends. Color, size, shape, and texture can all vary markedly between individuals unquestionably of the same species, however, as Ravenel was aware. Just months before the victory of the pines he had discovered for himself the possible shortcomings of too heavy a reliance upon a collector's sixth sense in the identification of plants. Two specimens of the cryptogamic genus Podisomata gave every outward appearance of being distinct species. Size, color and texture were all different, and his magnifying glass had shown just the outlines of detailed anatomies that seemed, also, quite different. Yet when his first, relatively low-power microscope was applied to the task, fuzzy outlines crystallized, and it became plain that the two specimens

were much more closely related than he had at first thought. Ravenel's successful identification of Pinus glabra was, however, based precisely on the same sort of variable and relatively intangible evidence that had failed with Podisomata. It therefore helped in future years to bolster his faith in the value of observations of plants in their natural state. He did not, however, place such confidence in field observations as to allow them to eclipse more rigorous examination and comparison with herbarium specimens and published descriptions. As indicative first impressions, or when close study yielded ambiguous results, however, the intangibles could gain weight and importance.¹⁰

Less than one month after Curtis's visit, the AAAS descended on Charleston for its third meeting. The city's scientific men turned out in force to greet the visitors. Ravenel apparently took no active part in the organization of the meeting, but he lead off with the first paper, delivered on the afternoon of Tuesday March 12. He took as his subject the presentation of a list of families of plants he had discovered within about a twenty-mile radius of his home. The genera within each family were also named, and he gave the number of species he had found belonging to each genus. For the phanerogams, he believed the search had been sufficiently diligent that few species were missed. The cryptogams presented rather a different case. He numbered more cryptogams than phanerogams, 1338 to 1075, but even so felt himself standing on the edge of many more discoveries.

Three years of devotion to the fungi had not diminished the ease with which he could add new types to his herbarium, and he expected that in the course of time the 1,000 different species he had estimated could be doubled.¹¹

In an attempt to make the paper interesting to as wide a spectrum of scientists as possible and to provide an introduction to the Charleston area, Ravenel for the first time publicly placed his work on the flora of the St. John's area within the context of larger scientific goals. Through the 1840s the practical thrust of his work had been to familiarize himself with the contributions of his predecessors in taxonomy. Yet, just as determination and description of taxa had provided a groundwork for his own career, so did he believe it functioned as a necessary foundation to the whole science of botany. At least for phanerogamic botany the foundation was now well enough set that botanists could build upon it to study the geographical distribution of plants over the surface of the earth. His hope was that his paper, as a part of a detailed study of one geographical area, would be a contribution to the development of an understanding of plant distribution.

Few in attendance at that 1850 meeting could have argued with Ravenel, for long standing concerns with the question of evolution had already made botanists aware of the significance of plant geography. Ravenel, however, brought to the question a different perspective. His agri-

cultural orientation was clear as he urged the importance of collecting data on the meteorological and topographical factors that could influence the growth and distribution of plants. Rainfall, humidity, average temperature at different seasons, temperature range, and the direction of the prevailing winds could all determine the types of plants able to grow in a locality. Depth of the surface soil, its chemical composition, and proximity to bodies of water were physical features of the land that could, as well, impact on the flora. Ravenel, in his work with the Black Oak Agricultural Society, had already discussed the connection between meteorology and agriculture, and now he extended the principle to the growth of plants in nature.¹²

Absent, however, from the coordinants of measurement that he proposed, was any mention of the element of time. He was, of course, aware of contemporary theories extending the antiquity of the earth and of the changes in fossil life forms that had occurred over the eons. Modern geology caused him no religious qualms, and like many pious scientists of his time, he did not doubt that the views of geologists could, indeed must, accord with the biblical creation story. Apparent discrepancies were due to error in interpretation of either nature or scripture, and with time and further research by both scientists and theologians, they would be ironed out.¹³ It would appear, therefore, that the time dimension was not left out of his scheme through either ignorance or misplaced piety. The reason, we

may suppose, lay instead in the way in which, throughout his career, he linked his interest in botany with an equally lively interest in agriculture. Promotion of agricultural improvement, unlike the study of the development of changing species, was an essentially ahistorical concern. Ravenel did not make science the slave of agriculture. His own botanical efforts were not directed at providing information immediately useful to agriculture, nor did he feel that his research was any less meaningful for his inability to turn much of it to practical good. He did seem, however, to carry over an assumption that botany and agriculture were kindred subjects and that inquiries and methods of study applicable to one might easily be applicable to the other.

The questions of how plants grow and the range of particular species were potentially relevant to both disciplines. Naturally rainfall and temperature seemed to him to be more relevant parameters of investigation than geological time. In contrast to the four measurement grids proposed by A. Hunter Dupree as the major guides for natural history research in nineteenth century America: land and sea spacial relationships, taxonomy and geological time,¹⁴ Ravenel substituted for the last weather and topography. His time-static measurement grids placed him on the fringe of the tradition of study leading, nine years later, to Darwin's Origin of Species.

Though Ravenel's AAAS paper left hints that his approach to natural history was a little outside the main-

stream, the meeting increased his contacts with fellow scientists and, in that sense, moved him closer to the international scientific community. One new acquaintance was William Henry Harvey (1811-1866), keeper of the University Herbarium of Dublin University. A friend of William Jackson Hooker and a noted specialist on algae, Harvey was a competent botanist, though his influence was not so great as that of Hooker, Robert Brown, or the mycologist Berkeley. Since 1849 he had been in the United States giving a series of lectures in Boston and New York, and had traveled to Charleston where he attended the AAAS meeting and was enrolled as a member. Ravenel's knowledge of the plants of his neighborhood made a favorable impression on the Irish botanist. "You ask after Southern Botanists," he wrote to Hooker soon after his return to Ireland. "There are not many. There is a Mr. Ravenel of Black Oak, S. Carolina who has done very well in his neighborhood but who is now bitten with a love of lichens & fungi, to the neglect of nobler game. ... He is a good botanist & knows the southern flora well."¹⁵ Soon after the Charleston meeting broke up, Ravenel wrote to Harvey, sending along a box of plants. Harvey reciprocated and asked another favor. He hoped that directly or through his own correspondents Ravenel would be able to procure some dried specimens of Dionaea muscipula, the Venus fly-trap. Ravenel and Harvey's interaction was short-lived, perhaps limited to one exchange, for in 1853 Harvey

set sail for an extended trip to the Indian Ocean and Australasia.¹⁶

At the AAAS meeting Ravenel also met Mathew Fontaine Maury with whom he had been corresponding on meteorology. Maury's primary interest, the study of ocean currents, was so far from Ravenel's field that the two could have but little impact on one another, aside from their common interest in weather patterns. Joseph Henry of the Smithsonian was, Maury later wrote, trying to start an extensive system of meteorological observation all over the country and would no doubt be glad of Ravenel's help.¹⁷

Other valuable contacts that Ravenel gained through the Charleston meeting were with members of Charleston's intellectual elite. Some, of course, he already knew. For many years Edmund Ravenel, Michael Tuomey, and John Bachman had been among his acquaintances. St. Julien Ravenel (1819-1882), a nephew of Edmund's then on his way to a notable career in agricultural chemistry, was by 1849 also an acquaintance.¹⁸ Frank Porcher's attendance at medical school in Charleston and his eventual opening of a practice in that city also had provided Ravenel with a chance to meet other scientists.

Though Ravenel lived less than a day away from Charleston, his trips to the city were apparently infrequent, only when he had specific business to transact. Before the 1850 meeting, therefore, there probably were still a number of Charleston scientists whom Ravenel did not know, who did not

know Ravenel, and who, just perhaps, did not know each other. The March 1850 meeting brought Ravenel together with all of Charleston's scientific community. In particular, Ravenel's long correspondence with Lewis R. Gibbes grew directly out of the AAAS meeting, when Gibbes kindly sent Ravenel a number of printed copies of his paper.¹⁹

"A name & authority." 1850-1852.

As William H. Harvey realized, Ravenel's main love by 1850 was the fungi. In 1848 he had promised Curtis and Berkeley exclusive use of his new species, and until he began to correspond directly with Berkeley he continued to send doubtful specimens through Curtis.

With the concurrence of Berkeley, Curtis in November 1848 brought out in Silliman's Journal the first of a short series of papers on North American mycology. In it he listed twenty species not before published as inhabiting North America and described ten new species. There were some errors, and Berkeley decided that afterwards they would publish together, first in the London Journal of Botany, afterwards transferring the article to the American Journal of Science and Arts. Three more articles appeared, one in 1842 and the last two in 1850, bringing the total number of species so treated to 130.²⁰ The specimens examined in preparation of the articles came mostly from Curtis's own collections, but Ravenel's contribution was by no means small. In 19 cases, including 8 new species, the material

came from the herbaria of both men, and in 21 other instances, including 4 new species, Ravenel alone had gathered the specimens. Curtis and Berkeley generously acknowledged Ravenel's help, and, not for the first time, he was paid the standard compliment given by one botanist to another. Not just one, but two, of the new species published in this series bore his name. Helminthosporium ravenelii Curt. was christened in November 1848 and Lentinus ravenelii B&C in March 1850.

Though the team of Berkeley and Curtis had charge of his new material, Ravenel at this time came out with his own small series of articles. They, like the AAAS paper, were preliminary studies that Ravenel hoped would lead eventually to a complete flora of the St. John's region. His first paper in the series had been his January 1849 article on newly encountered phanerogamic plants of the Santee Canal. Three more articles, published in July 1849, May 1850 and March 1851, and appearing like the first in the Charleston Medical Journal and Review, dealt with the cryptogamic plants. In the first of these three he took up the mosses and liverworts, most of his species of which had been examined by William S. Sullivant of Ohio. Lichens, determined with the aid of Edward Tuckerman, were the topic of the second paper, and in the third he turned finally to the fungi.²¹

In all these articles, Ravenel wrote very much in the style of the collector. Latin he eschewed, aside from

obligatory binomials. Except where he found a few specimens particularly interesting and worthy of an aside, he also avoided giving descriptions of species that were, after all, already published and described elsewhere when first determined. Always, though, he noted when and where or on what sort of substrate the species could be found. The fungus Hydnum gelatinosum Schw., for example, would be found in winter, "on putrid logs of pine," while H. erinaceus Fr. must be sought in autumn, "on dead standing trunks of oak."²² The well-organized, business-like, and authoritative style of these articles did not mask the enjoyment their author took in the plant hunts necessary to the elaboration of a local flora. As he wrote to Tuckerman, "My labors are ... more in the woods than in the closet--I love to follow them in their haunts, in the deep forrests watch their development, & there to study their 'ways.'"²³

At the time of its writing, Ravenel intended his March 1851 article on fungi to be followed by additional papers of the same type, leading eventually to a complete flora of the Santee Canal. It was not to be. That March article was the last in the series, and the flora of St. John's was never written. By the close of 1851, another project had forced aside the flora. First proposed by Moses Curtis, the new project was the issuance of a set of dried plants illustrating the fungal flora of South Carolina.

Such sets, called *exsiccati*, were a common and very useful form of publication particularly popular among botan-

ists in the nineteenth century. Simple in concept, they were nothing more than bound volumes containing labeled specimens of dried plants. Little writing was involved in their preparation. The work came, instead, in identification of a selection of species to be included, collection of a large number of specimens of each species, preparation of labels, and the final assembly of the bound volumes.

An exsiccati's value to researchers lay in the distribution to a select group of individuals and institutions of uniform sets of identified specimens that could later be taken as standards. This value, of course, was greatly increased when the exsiccati included specimens of new species collected or approved by their original describers. Botanists throughout America and Europe could by acquiring a set of exsiccati have an instant miniature herbarium including a number of authorized co-types of new species.

Curtis and Ravenel's proposed Fungi Caroliniani Exsiccati would not be the first set issued in the United States. William S. Sullivant had issued his exsiccati of mosses, the Musci Alleghaniensis in 1846, and Edward Tuckerman was then working on publication of sets of lichens, his first volume having appeared in early 1851. It would, however, be the first fungal exsiccati to be issued and appear in America,²⁴ and in consequence, its potential scientific value was high.

Ravenel and Curtis intended to work together on the issuance of their exsiccati. They planned to share the job of collecting and identifying the specimens, and Curtis was

to have the additional task of comparing the specimens with species of America's first major mycological collector, Lewis David von Schweinitz (1780-1834). Schweinitz had collected widely in North Carolina but had published a relatively small proportion of his collections and then with descriptions often inadequate. The limitations of the microscopes available to him had led to distortion in his view, and hence his description, of species. Schweinitz's microscope was most probably a large instrument of considerable power, but its lenses lacked the spherical and chromatic corrections available in well-made microscopes of Ravenel and Curtis's day, and, therefore, its definition was poor.²⁵ The inaccuracies that crept into Schweinitz's descriptions made determination of his species difficult, and there was every reason to believe that some of his species had been published again under new names. Curtis was well prepared for this job of comparison. He had, in the fall of 1851, taken a trip to Philadelphia where Schweinitz's herbarium was preserved in the collections of the Academy of Natural Sciences. There he had spent more than two weeks studying Schweinitz's material and by the end of that time had cajoled the curators into allowing him to bear off duplicate Schweinitzian specimens whenever there were more than two examples of a single species.²⁶

It was not long, however, before Curtis was writing to Ravenel begging to be let off the hook:

What say you to taking Fung. Carol. off my hands,
& issuing it by yourself, I giving you what stock

I have myself gathered, say 25-30 species? The more I think of the business, the more averse I become to it. The amount of labor & time requisite is, more than I wish to expend in that direction. It is only lately, that I began to make some estimate of it.²⁷

Time was, indeed, a problem for Curtis. His ministerial duties kept him quite busy, and he worried that people would think he was devoting too much time to botany and neglecting his flock. In any case, the exsiccata was not the only botanical project he had on hand, for he and Berkeley were anticipating a critical study of the Schweinitz material. To make matters worse, the Schweinitz specimens, so necessary to both studies, were still lying about his house in confusion. Though it was February, about four months after he had acquired them, he had not yet had time to put them in order. Several months, he thought, would be necessary before that job was finished.²⁸

Curtis did not leave Ravenel entirely without aid. He did contribute some specimens and helped with determination of synonymy with Schweinitz. Ravenel's major help in the line of species determination, of course, was Berkeley. He had been regularly sending his specimens across the Atlantic for Berkeley's opinion, first through Curtis, then, after their correspondence had begun in 1850, directly. Curtis also offered some advice on selection of specimens, cautioning that they should be mature plants, neither too old nor too young. It would also be as well, he thought, to leave out new or uncertain specimens, though he sent along

three specimens from outside South Carolina and suggested Ravenel might at times want to include examples from outside the state. Such specimens could be useful for filling in gaps in a volume or for illustrating particularly interesting fungi that might not have been found within the state.²⁹

In the matters of selection of the species to be included in the volume and collection and identification of sufficient numbers of each species, Ravenel worked pretty much alone. He was apparently concerned, when Curtis wished to pull out, that it would undermine the authority of the exsiccati in cases of species first described by Berkeley and Curtis. Curtis, however, reassured him on this point. Ravenel himself, having personally inspected, if not collected, all the type specimens upon which the Berkeley and Curtis species were founded, would be able to authenticate his own specimens quite satisfactorily.³⁰

Work progressed rapidly on Ravenel's Fungi Caroliniani Exsiccati. The first volume, which had just barely been started in January, was nearing completion by April. Ravenel made arrangements with Russell's of Charleston to print the labels, title pages, introduction and index, and he wrote to Asa Gray to see about having a notice of the work printed in Silliman's Journal.³¹ By July Ravenel was nearly done, and on the 16th Curtis, continuing the encouragement that he had kept up during the whole course of the job, sent Ravenel relieved congratulations on his progress. "I must

confess," he wrote, "that I am heartily glad to be free from the task in which you are engaged. I could not have finished my share before next Spring. I am much gratified that you have undertaken it alone, & have got on so expeditiously." Ten days later, he was congratulating his friend on the completion of the first fascicle. "I hope however, that you do not now regret the labor, as it is one of those things that tell in perpetuum. It is not labor lost."³²

A final detail remained, for Ravenel had not yet fixed the price nor made arrangements for distribution. Exsiccates were not usually a profit-making venture. Like journal articles, they were simply a way to share information and material with others. Ravenel finally settled on a price of \$4.00 per volume, an amount that might repay his out-of-pocket expenses but would never compensate him for his time and effort. As with any scholarly publication, there were other benefits to be attained, and, as Curtis wrote, Ravenel could expect to "gain a name & authority by it, which will be better than lucre."³³

Nearly half of the copies were presented gratis to other botanists or to scientific institutions. Berkeley, Fries, and Harvey received complementary copies, as did Moses Curtis, Francis Porcher, Elias Horlbeck of Charleston and Thomas Minott Peters of Alabama, one of Curtis's more recent correspondents. In addition, free copies went to the Smithsonian, the Academy of Natural Sciences and the Boston Society of Natural History. Asa Gray turned down Ravenel's

offer of a copy, saying that the difficulties involved in preserving fungi were too great for him to feel free to accept, but that he hoped to make one of his wealthy Lowell patrons a subscriber.³⁴

To expedite its arrival, Ravenel sent Curtis's copy through a member of the Porcher clan living near Society Hill. Curtis looked it over as soon as it arrived and wrote off a short critique that, though mild and mixed with praise, sparked some bickering between the two. "The Volume is very neatly got up," Curtis wrote, "& is in all respects creditable, except in numerous typographical errors. Pray take care about that in the future. I may have some small criticisms to make hereafter; but just now I only remember to say that the Latin for Louisiana is Ludoviciana, & instead of 'misit c! Hale', it should have been legit Hale."³⁵ Ravenel evidently did not take his friend's comments in very good spirit, and Curtis complained to Asa Gray, "Ravenel is no scholar, & does not always know the right when he is told.--He justifies 'Louisiana' in Fasc. I because 'there is no such place as Ludoviciana.'--He sees no important difference between 'Hale misit', & Hale legit, although there is the difference between a truth & a falsehood, since I sent him the plant, which Hale collected."³⁶

That Curtis would so emphasize form and style over content was the probable reason why Ravenel was somewhat irked, yet it is understandable. Curtis had been in very close communication with Ravenel in the months preceding the

issuance of the first fascicle. He had a good idea what specimens were to be included, indeed had reviewed most of them and had supplied some of them. When the volume arrived at his home, its form and style were the unknowns to be explored, and so on them he focused his remarks. Some of the remarks were, of course, judicious. Typographical accuracy is a proper goal for any publication, and there is a difference between collector and supplier. On the other hand, to insist on the use of Ludoviciana for Louisiana was pompous even by nineteenth century standards. It was customary, even in the formal Latin descriptions of new species, to break into English to describe the place of collection.

Fascicle I of the Fungi Caroliniani Exsiccati was, then, launched into the botanical world on the little rippling waves of a small controversy, and Ravenel awaited the opinions of others.

Aiken, 1852-1853.

Completion and issuance of the first volume of the Fungi Caroliniani Exsiccati in the summer of 1852 was quite a test of its author's will-power. Not only was the work itself detailed and tedious, but Ravenel performed it in the face of deteriorating health.

Signs of trouble first appeared during the late summer or fall of 1851. Ravenel's usually robust constitution gave way before nagging, painful dyspepsia. Chronic stomach ache and indigestion, caused, perhaps, by ulcers or gastritis

induced by stress associated with the exsiccati robbed Ravenel of his vigor. To combat his disorder, Ravenel left South Carolina's summer heat to journey to the cool hills of North Carolina. There, in the beautiful Smokey Mountains, he hoped to rest, regain his strength, and to take advantage of the unusual North Carolina flora. A curious mix of northern and southern species, it had captivated British collector John Lyon, luring him in 1814 to his death by disease in the mountains. Asa Gray, too, had chosen the Smokies for one of his few extensive field expeditions. Ravenel's illness was too persistent, however, to allow him much opportunity to collect. Though he spent a summer in the mountains, he only regained his health during the last three or four weeks of the trip and, even then, was unable to accomplish much.³⁷

His trip was not wasted, even though he did little botany, for he was able to return to St. John's in October 1851 and begin work on the exsiccati in reasonably good health, but in approximately eight months the dyspepsia reappeared. Ravenel began complaining of the trouble in his letters in late June or early July and received sympathy and advice in equal doses from his acquaintances. "I am sorry that you are again troubled with your 'dyspeptic feelings,'" wrote fellow mycologist Moses Curtis. "I have never been a great sufferer in this way, but I have had experience enough to know what the intensity of the disease might be, & I

cannot but sympathize with one who is steadily subject to it."³⁸

Curtis suggested Ravenel might with profit give up whatever small vices or indulgences he allowed himself. Tobacco, coffee, and tea were suspect, and by experiment Ravenel might isolate other, seemingly innocuous substances which might be exacerbating the problem. Curtis also recommended "the tonic influence of Porter, good Ale, or Brandy, or good Cider."³⁹ William Gilmore Simms, South Carolina author and editor of the Southern Quarterly Review, wrote to recommend cold water as a potential cure. He himself had suffered for years with dyspepsia until he came upon his novel cure. Now each morning he bathed from head to foot in cold water and drank a glass of it as well. He, too, had found it beneficial to refrain from coffee and tea, though Simms, unlike Curtis, was inclined to include wine in the forbidden list.⁴⁰ When Ravenel's exsiccata was ready to be issued in July, his health was no better. Curtis urged that he seek another change of climate, though he hesitated to recommend any particular place, suggesting Ravenel might do better to consult a physician.⁴¹

Ravenel took up Curtis's suggestion about giving up his cigars and also tried a change of air. He had spent June with his father in Pineville but in July went with his family to Charleston. While there he decided to go with Francis S. Holmes and F. J. Miles on an expedition to

explore upper Georgia and Aiken, South Carolina. Curtis wrote approvingly of the plan:

I have frequently heard of the air of Aiken being serviceable to persons with diseased lungs. I hope you may find it as good & better for your gastritis. An old chronic complaint needs care & patience, besides change of air & habit. How do you get on without the Havannas?⁴²

Ravenel did find Aiken's climate to be an improvement over St. John's, and he began thinking about selling Northampton and moving to Aiken.

Aiken, situated at about the same latitude as Charleston, lies approximately 120 miles farther west in a region of gently rolling hills. Its higher altitude and greater distance from the ocean make it drier and, in the nineteenth century, not so prone to malaria or yellow fever as was the coast. The town's relatively dry air and the fact that it was laid out on the rail line of the Charleston and Hamburg Canal and Railroad Company, and therefore had direct rail connection with Charleston, combined to make it a popular resort for ailing Charlestonians. Local promoters were not slow to realize their lucky circumstances. By about 1845, twelve years after the town's founding in 1833, efforts were made to publicize its virtues in the North, and some northerners began coming to visit.

In 1852 and 1853, then, Aiken had a reputation as a healthful place for people suffering from pulmonary or other chronic, debilitating problems.⁴³ In fact, people close to

death were sometimes whisked away to Aiken in the hope of their recovery.⁴⁴

In considering a move to Aiken, Ravenel had to weigh the possibility of improved health against the expense and inconvenience of moving and the necessary separation from relatives and friends. Health, though, is precious, and it took him only a few months to decide to move. By the end of October, 1852, he was able to let his correspondents know of his decision.⁴⁵

Once resolved on the necessity of relocating, Ravenel quickly began putting his affairs in order. He had to reach a good place to pause in his botanical work. He sped up some tasks to finish before his departure. Others he put aside to be attended once again after the move.

An herbarium for the Charleston Museum that he had been working on since the previous spring received high priority. He devoted all his leisure time to finishing it before the move. The second volume of Fungi Caroliniani Exsiccati was put aside, however, and overhauling his duplicate specimens also had to wait. When Lewis P. Gibbs requested some plants characteristic of St. John's, Ravenel offered his hospitality and suggested Gibbs come pay a visit and go through the herbarium himself.⁴⁶ Curtis's botanical demands were not so easy to take care of. He had earlier sent Ravenel a list of some mosses and fungi he needed, and when November came and many of the specimens did not, he wrote to jog his friend's memory. "I am afraid you will forget to

send me those things ... for which I wrote & gave a list long ago. If you do, I shall have to get mad about it. So to avoid the avalanche of my wrath, let us have them."⁴⁷ Ravenel replied that he had indeed forgotten and that he had too little time to attend to the matter just then. Though he successfully put Curtis off until after he was settled in his new town, Curtis did not let him again forget the promised plants. In playful indignation he wrote, promising revenge. "Now listen to the revenge I have contrived. --On the next page is a specimen, a small specimen of what I can do for you, whenever I can get time: & I am always so busy, that I do not think I shall find time to send you another parcel, until you have found time to furnish what I want of you." As further bait for the trap Curtis included a list of 26 of his species recently identified by Miles Berkeley. "These will show you what may perhaps be of service to you, when I can get time to put them up for you. They are only from one column out of eight in a single letter from Berkeley."⁴⁸

Ravenel's time, however, was occupied by making his arrangements for his family's relocation. Selling the plantation was a major step in the preparations. Traditionally considered to have contained 800 acres, Northampton was estimated by Ravenel in 1850 to consist of 600 acres, of which 200 were improved and 400 unimproved. Northampton's fields had yielded that same year a main crop of 3,000 bushels of rice, the plantation having a history of good

rice production. Its ability to grow cotton seemed, however, not to have improved much since the days of William Moultrie's notorious failure with the crop. Accordingly, Ravenel produced only 8 bales of cotton in 1850, but also produced crops of other southern staples, including corn, peas and sweet potatoes. He grew some oats and hay and produced wool, as well as the less common crops wheat, rye and Irish potatoes. He gave the census taker an estimated value of \$6,000.00 for his diversified and, by the 1850's, relatively fertile land. Unless the estimate was deliberately low, however, he was to receive a pleasant surprise. Henry L. Stevens, a family friend, bought Northampton on November 25, 1852, for \$10,000.00.⁴⁹

Stevens seems to have paid cash for Northampton. No promissory note, mortgage or other instrument evidencing debt have survived, though Ravenel kept them on other occasions,⁵⁰ and when Ravenel eventually purchased another farm, he also evidently paid cash. There was enough left, together with an apparent gift from his father of \$10,000, to invest heavily in stocks, bonds, and private, income-producing loans.⁵¹

For the moment, the sudden incursion of cash money was a good excuse for generosity at Christmas. Christmas was a time of special merriment on plantations throughout the South, and at Pooshee during the prosperous 1850s, the holidays stretched to several days of celebration. Ravenel's father, clad always in his old-fashioned, formal

dress suit of imported French broadcloth with brass buttons and standing collar, and looking, as one grandchild later remembered, more like a statesman than a planter, presided as host over large gatherings of family and friends. Christmas dinner for 50 was not unusual. He was assisted by one or another of his unmarried daughters, his third wife, Catherine, having died in 1846, and he and the hostess alone were exempt from practical jokes and tricks.⁵² Gifts were hung from the branches of a large tree erected in the hall. "We had a Christmass Tree which was very brilliant with presents & some very handsome & valuable," recorded Ravenel's younger brother Thomas on Christmas Day, 1852. "I received from Brother Henry on the tree 1 doz. Silver forks." It was the only Christmas present Thomas ever mentioned.⁵³

After the sale of Northampton, Ravenel and his family continued to live there until the seventeenth of January when they moved to Pooshee to stay for a while before going on to Aiken. While at Pooshee, Ravenel held a sale at Northampton to dispose of some unneeded horses, furniture and provisions and a wagon. Extra slaves he kept together in families, selling one group to each of his brothers William and Thomas, while three families and one single man went to his father. Leaving Pooshee on the third of February, Ravenel and his family went on to Aiken. He returned to fetch his remaining slaves, arriving with them in Aiken on the sixteenth.⁵⁴

Settled into rented quarters in Aiken, the Ravenels were quite comfortable. Pleasant surroundings and friendly neighbors created a good first impression of Aiken.⁵⁵ They had carried with them a letter of introduction from Reverend William Dehon of St. Stephen's Church to give to Reverend John Cornish of St. Thaddeus, Aiken. "I can ill afford to lose them from my parish, and in commending them to your pastoral care, I feel assured that my loss will prove your gain, & that your hands may be strengthened & your heart cheered by this addition to your flock of two devoted Christians, with their children, the lambs of his fold ...". With their way thus smoothed, the Ravenels joined the Episcopal church of St. Thaddeus, and Ravenel began to sing in the choir. About twenty-five other families already gathered at St. Thaddeus's to worship, including the families of future friends Amory Coffin, a physician, and Octavius Dawson, like Ravenel, a former resident of St. John's.⁵⁶

By April 1853 Ravenel was sending good reports on Aiken up to Edward Tuckerman and had decided to make it a permanent residence if his health improved.⁵⁷ His health did improve, and that summer he purchased a farm from the heirs of Richard Hampton and began building a house at Hampton Hill.⁵⁸ The frequency of visits between Aiken and St. John's in the first years away indicates Aiken seemed more like a pleasant exile than a home. Yet the exile was eminently worthwhile. Whether from coincidence or from the

real value of Aiken's dry air and bracing climate, Ravenel did buy several years of good health by his move. When everything and everyone was settled at Aiken, he was ready once again to begin his botany.

Productive Years, 1853-1859

Soon after settling in Aiken, Ravenel was quite busy with botany. There was a new flora to be explored, and, from a collector's point of view, he arrived in Aiken at just the right time, the beginning of a new spring season.

He noted with interest a number of species that were uncommon in St. John's, offering to send specimens to his Charleston correspondent, Lewis R. Gibbes. He sent, too, examples of his collections, hoping to lure Gibbes to Aiken for a visit.⁵⁹

Not all of his labors were in the field. Ravenel spent part of March attending to the necessary but disagreeable task of sorting through his cryptogamic herbarium and arranging bundles of duplicates for distribution.⁶⁰ Curtis gave him some urging in this direction, reminding him of the long-promised set of mosses and fungi:

I have no notion of missing any new thing that I can possibly get hold of. Pray do not be careless with me again. Carelessness is catching. ... How would you like a couple of species of *Trichomanes* from the Mts of Alabama? I have two such things; one of them undescribed, detected last month by a correspondent of mine; the other *T. radicans*, discovered a few weeks before. I say I have got such things, but - a he-m-m!⁶¹

If a promise of two ferns, Trichomanes radicans and that soon to be named by Asa Gray T. petersii for its discoverer, Thomas Minott Peters, were not motive enough for sorting duplicates, Ravenel had also another reason. Late in 1852 Curtis had received an unsolicited box of plants from a Swiss botanist, Edmund Boissier. The Swiss was interested only in phanerogams, so while he reciprocated with one set of American plants, Curtis preferred not to become involved in a long exchange. He suggested Ravenel take his place in the correspondence. Boissier promised plants from Spain and Algeria and had already sent Curtis specimens from Syria, Arabia and Egypt and, Curtis wrote, had "the reputation of being a fine fellow." Though Curtis scorned Boissier's correspondence, saying he had "no time for foreign phaenogams," Ravenel accepted the proposal.⁶² He learned in February that Boissier, too, had accepted the substitution, and in August a letter arrived from the Swiss, promising that a package of plants would follow. The letter was written, as Curtis had predicted, "in French, & in the most unreadable hand I have ever dealt with, a little worse than Fries."⁶³

Ravenel was also preparing to recommence work on the exsiccati. In considering his previous volume he had two favorable reviews to balance against Curtis's critique. Fries received a copy and sent a note through Gray. Ravenel had to prevail upon Gibbes to help decipher the handwriting before he could make out the Latin. Once it was reduced to

legible Latin, Fries's note proved to be a flattering comment upon the value of the exsiccati for accurate determination of fungi. He hoped the exsiccati would be continued and promised to send specimens in return. That in itself was a complement and an indication that he was willing to consider Ravenel his equal in science. In addition, an anonymous, praise-filled review appeared in the Charleston Medical Journal and Review late in 1852.⁶⁴

Curtis, however, was still displeased about the typographical errors that marred the first fascicle. He evidently persuaded Gray to give the volume a less favorable notice than Ravenel might have liked. "I have your note of March 26th," he wrote Gray, "& reply instanter, hoping I may be in season for next N^o of Sill. Journ. The Fung. Carol. does not want much notice. In the material on the other leaf, you will find more than text enough for a Bibliographical touch." Then later, "I will explain to Ravenel about the notice. I have however prepared him already for the disappointment, by advising him of our late action."⁶⁵

Gray's notice of the Fungi Caroliniani Exsiccati did not appear until November 1853. It was not a long report, yet it was much more than just a bibliographical note. Gray closely followed Curtis's suggestions. He praised the neatness of the volume's binding and said the specimens were good and sound and generally supplied in sufficient quantity. They were particularly interesting for illustrating species established by Schweinitz and by Berkeley and

Curtis, but Gray took much of the credit for this merit away from Ravenel, attributing it, as Curtis had not, "to the careful revision of the specimens by our leading and best instructed mycologist, the Rev. Dr. Curtis." The typographical errors he ignored.⁶⁶

Ravenel did not hold any lingering resentment against Curtis for his remarks on the typographical errors. That would have been very much out of character for Ravenel. Never, in letters or diary, did he give expression to old grudges, and he counted the forgiving aspect of his nature as one of his greatest blessings. In April, when Curtis planned a trip to Charleston, Ravenel welcomed him to Aiken for a week's visit. Ravenel expended so much time and trouble showing Curtis about, that soon after the visit Curtis wrote to Gray, saying, "If you have need of *Elliotia*, I dare say you can put Ravenel up to getting roots. ... Try him. He has nothing in the world to do but herborize."⁶⁷

Even while Curtis visited him, Ravenel was planning a trip of his own as far north as New York and Boston. The plans were well formed by the first week of July, when at Tuckerman's request Ravenel gave him the itinerary so the two could meet in Boston.⁶⁸ Though he stopped to see Tuckerman and various scientific attractions along the route, the main purpose of the trip apparently was rest and recreation. He hoped to secure further improvement in his health, which had already strengthened considerably after

his move to Aiken. He set such a grueling pace for himself, however, that whatever benefits he may have attained were cancelled by exhaustion. Leaving home on the 11th of July, he rode the train to Charleston where he caught a steamer to Wilmington, North Carolina. There he boarded a train for Richmond, whence a steamer carried him up the Potomac to Washington, D.C., where he stayed a day. It was then on by train to Philadelphia, to New York, and by boat from New York to Boston, arriving there on the morning of July 26th. After only two or three days in Boston, he turned south again, repeating his north-bound itinerary in reverse, adding Saratoga springs between Boston and New York. Aiken was never such a welcome sight as when he finally returned home on the 9th of August.

I dont like the climate of the cities, [he had complained in a letter to his family on the 3rd] & never feel as well as when I am up in the country & at a distance from the humid, sultry air of the seaports. - I find Pha quite warm, oppressive & debilitating - Whilst travelling through the country from Boston to Saratoga & whilst at Saratoga I felt invigorated & strong, but since reaching New York & Pha, I have not felt well - I hope our dry salubrious Aiken with the comforts of home, will be a beneficial change for me.⁶⁹

On the whole, he had a miserable time. He traveled alone, missing his wife and children during the whole trip. He wrote them at least once a day, often keeping a letter a few days and adding to it during every available moment, sometimes two or three times in the course of one day. At every city he checked the post office to see if a letter had come from his wife. If one was waiting for him, his happi-

ness and relief were obvious, and if there was none, he could not hide his disappointment.⁷⁰

His letters home related all the interesting features of his journey. In Washington for a day, he visited the Capitol building, the Washington monument, then under construction, and the Patent Office. At the Patent Office he particularly enjoyed seeing the exhibits from Wilkes's exploring expedition, and Ravenel did not neglect to stroll through the hothouses to view the Expedition's live plants.⁷¹

Lack of amusement was certainly not a problem on this trip. A few days later he mused that "For a domestic stay at home person as I am, I have seen many novel & strange sights ..."⁷² The trip was then less than half finished, and he was to see still many more novel sights. Saratoga's high-fashion crowds particularly amazed him. He arrived at a peak season, the town overflowing with visitors who had come to take the waters and enjoy each other's society. Ravenel preferred the quiet privacy of a boarding house to sharing a room at one of the fashionable but crowded hotels. One afternoon, however, he walked around to one of the hotels to see if he could find anyone he knew and discovered the guests just finishing dinner.

I have never seen so many persons congregated together as boarders. There must have been between 2 & 300 ladies & gentlemen promenading the piazzas or sitting down - & all the drawing rooms seemed full. They have a band playing music for them whilst at dinner.... It was really amusing

to me to see all the grimmaces & smirks, & smiles, & bobbing & bowing - & the rich, rich flounces piled up three tier high - & the tight drawn waists & the cheeks which had got their colour from the paint box. All moving about in conscious possession of most captivating effect.⁷³

Among the crowd of parading girls and whiskered dandies there was no familiar face, no one he knew. It increased to the point of pain the loneliness he had felt ever since leaving home. "I am tired of being alone," he wrote. "I see hundreds of people every day & all strangers - & I feel lonely in the crowd - I care but little for mere sight seeing - I can pass my time altogether more agreeable [sic] to myself in the society of those I love - ..."⁷⁴

Boston and Philadelphia, where Ravenel was able to attend to botany, were the bright spots on his trip, though his stay in Boston began gloomily, with a rainstorm and a crowded hotel. Ravenel was assigned to share a room with a stranger and made plans to change his quarters before nightfall. He confided to his family his intention of going to visit Tuckerman as soon as the rain stopped to give his correspondent an opportunity to invite him to stay the night. The invitation never materialized, ("perhaps he is not prepared to have company," thought Ravenel), but Tuckerman seemed very glad to see him. He took Ravenel up to his study, showed him his herbarium, and invited him to come again the next day to look over his extra specimens and help himself to whatever he wanted. Tuckerman was conscious that he had somewhat missed the mark in hospitality. In

Edward Tuckerman
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I wish to express appreciation to Harry Shealy
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and reproducing the photographs.

reply to Ravenel's letter thanking him for his attentions and for the lichens, he explained that health and an ongoing courtship had prevented him from paying as much attention to his visitor as he would have liked. Tuckerman hoped on Ravenel's next visit to give him a tour of the northern mountains, where he collected many of his own botanical specimens.⁷⁵

Ravenel did not apparently see Asa Gray while in Cambridge, nor did make any mention of the omission. His relations with Gray, while cordial, were not so close as those with Tuckerman. He did, however, schedule an evening's visit with the Reverend Jared Curtis, Moses Ashley Curtis's father. The elder Curtis took him on a tour of the Navy yard, including the Vermont, a man of war of 110 guns, the dry dock machine shop and rope manufactory. He offered to take his visitor around to see anything he would find of interest around Boston and finally allowed Ravenel to leave with an invitation to come back for a cup of tea.⁷⁶

In Philadelphia Ravenel saw the herbarium of Lewis David von Schweinitz, preserved in the cabinets of the Philadelphia Academy of Natural Sciences. His status as a corresponding member of the Academy, elected in 1849 on the nomination of Robert Gibbes, assured him a welcome from the curators. He spent only one morning among the Schweinitz specimens but was allowed, as Curtis had been a few years earlier, to carry away nearly 150 duplicate specimens.⁷⁷

While in Philadelphia he also made the acquaintance of another botanist, Thomas Potts James (1803-1882).

Tired though Ravenel was on his return to Aiken, his travels were not over. About two weeks after his return, Ravenel's father came to Aiken for a visit. He was joined September 7th by Ravenel's brother William, and the three men trooped off together for a week or two at Chattanooga and Lookout Mountain.⁷⁸

Once more at home, Ravenel found a letter from Francis S. Holmes waiting to lure him on another trip, this time only as far as Charleston. "The heat of Summer has passed, and the weather is now cool & pleasant, and I think a trip to Charleston would do you good," he opened. If Ravenel would come spend a week he could share Holmes's garret room and have a chance to overhaul two new cartloads of Stephen Elliott's herbarium material, just presented to the College of Charleston by Elliott's daughter. In addition, two cases had been constructed to hold the herbarium recently presented by Ravenel to the Charleston Museum and Ravenel could arrange his specimens in them according to his own taste. These ideas sounded suspiciously like hard work, though they were meant to be tempting, but only after detailing them did Holmes get around to his real reason for wanting Ravenel in Charleston at that particular time. He and Dr. Miles were about to launch a natural history society, the first of the sort to grace Charleston since the decline of the Literary and Philosophical Society following Stephen Elliott's death.

"We have prepared every thing," he stated earnestly, "and wish you to be numbered among its founders - ... and we wish you to be present at a meeting which we propose having at my house as soon as you come down."⁷⁹ None of Holmes's blandishments or entreaties could serve to coax Ravenel away from home and family just then. He remained in Aiken and had to be informed by mail that the Elliott Society of Natural History had been successfully placed on its feet and that he had been unanimously elected one of its curators.⁸⁰

Ravenel's old friend John Bachman was elected president of the Elliott Society, and among the six vice-presidents were Lewis Gibbes and Edmund Ravenel. The others were James Moultrie, William Hume, E. Geddings and S. H. Dickson. The organizers, Holmes and Miles, became secretary and treasurer, respectively. Henry Ravenel was one of 13 curators, as was his younger friend Francis Peyre Porcher. With 22 offices available, it seems the founding members were eager to attract the fealty of Charleston's scientific men by bestowing honors freely. Appointment as a curator was probably calculated, in addition, to give Ravenel and the others a proprietary interest in the collections and encourage them to donate specimens. The cabinet of the Elliott Society and the Charleston Museum were at this time practically synonymous. In 1850 the defunct Literary and Philosophical Society gave the museum collections to the College of Charleston, and Francis Holmes was hired as a permanent curator. The museum reopened January 24, 1852,

and received substantial support and encouragement from the Charleston scientific community. Ravenel had already donated an extensive collection of plants, and soon after his election as a curator by the Elliott Society, he made another gesture of support, donating through the society a collection of viviparous fish from Barnwell District, South Carolina. When Boissier's plants arrived, some of them also went to the Society.⁸¹

Ravenel's small part in the formation and early activities of the Elliott Society is symbolic of his somewhat ambiguous position vis a vis the Charleston scientific community. His delivery of the first paper at the 1850 meeting of the American Association for the Advancement of Science had brought him into close communion with them, and there was evident mutual respect. Yet, two factors limited the depth of Ravenel's involvement with them. The first was his residence at a distance from Charleston and his dislike of cities. When business called, or occasionally just for amusement, he would go down to spend a few days or a week in Charleston and would drop in to visit Holmes or Gibbes or Bachman. The visits, though, were infrequent, and he could not count on attending a very high proportion of Elliott Society meetings. The second factor was the rather narrow specialization of his work. Ravenel had only the most casual of interests in sciences other than botany. With this in mind, there was now little that the Charleston scientists could offer him, for he was by far the best

botanist among them and was already in touch with the leading men of his field.

While his Charleston friends were busy with the formation of the Elliott Society, Ravenel was occupied with the second fascicle of his Fungi Caroliniani Exsiccati. Even at the time the first issue appeared, he had already accumulated some of the specimens needed for the second. Considerable progress had been made before his move to Aiken, and now he was prepared to finish up his collections and issue a second set. By early December 1853 he had the labels back from Russell's print shop and showed them to Curtis. Once again, Curtis found plenty to criticize, complaining to Gray that the labels were "sadly corrupt with typographical mistakes & bad Latinity." Curtis brought the matter up with Ravenel, trying to persuade him to have the labels reprinted but not, apparently, detailing the errors. Ravenel refused to redo the labels, saying he had already taken pains to ensure accuracy and would now hope for a charitable interpretation. This Curtis was unwilling to give him, but neither did he wish to see Ravenel's work publicly criticized, though he gave vent to his annoyance in a private letter to Asa Gray. Finally Curtis wrote up a bland, brief notice and sent it along to Gray for publication in Silliman's Journal under Curtis's own name.⁸²

Issuance of the second fascicle of the exsiccati largely depleted Ravenel's stock of suitable material, but he was soon gathering material for a third. In the case of

the first fascicle, Curtis had collected about one fourth of the specimens, as well as donating the three extra-Carolinian species collected by others. The second fascicle had, by contrast, been Ravenel's almost entirely. Curtis had collected a few things for him, but was too much occupied during late 1852 and 1853 with overhauling his own collection to desire to do much new collecting.⁸³ As Ravenel began collecting for the third volume, several recreational botanists volunteered to help collect specimens. Ezra Michener of Pennsylvania wrote in July at the suggestion of Thomas P. James. He admitted that he had little time to spare for collecting, but he was "anxious to contribute ... [his] humble mite to the advancement of science," as well as to enlarge his own herbarium. He would do whatever he could to help, on the basis of an equitable exchange of specimens.⁸⁴

Curtis had for some time been receiving help from Thomas Minott Peters (1808-1888), a lawyer in Moulton, Alabama. Peters's special interest was the cryptogams, and by the early 1850s he had made considerable progress in their study. Peters soon began corresponding with Ravenel and Tuckerman, and when he met John F. Beaumont (1825-ca. 1865), another Alabama resident with an interest in botany, he drew Beaumont into the circle. Many years later, when quite an old man, Peters described his meeting with Beaumont and the latter's introduction to his correspondents. When the two met at the home of a mutual friend, Peters invited

Beaumont to call on him at his office to see his books and herbarium.

Next Sunday, [Peters narrated,] he walked seven miles to visit me at my office and examine my books and specimens. I gave him Prof. Edw. Tuckerman's elegant description of lichens, and he was ready to fall down and worship him. I also permitted him to examine some of his preparations. After that he called Tuckerman "The Master." I had the photographs of Prof. Tuckerman, of Rev. Dr. M. A. Curtis and Mr. Ravenel. I introduced him to them. He said they were all "Masters," and he would straitway fall in love with them. I told him to them love was help, and what they needed was his assistance. I showed what I was doing and had been doing. That was what these distinguished scientists most needed.⁸⁵

Beaumont acted on Peters's suggestions. He apparently wrote first to Curtis, then at Curtis's further suggestion, to Ravenel. His first letters showed him to be a generous and knowledgeable helper. He enclosed specimens of fungi and offered to procure any number of additional specimens should Ravenel desire them. Nothing was asked in return, not even identification of specimens.⁸⁶

With three new correspondents willing to help collect for the exsiccati, Ravenel should have been in good shape to put together his third fascicle. By the fall of 1854, however, he had developed a strong dislike for microscopical work, and though he struggled against it, his perseverance only increased it. He thought he was simply getting tired and frustrated with devoting too much attention to the fungi to the exclusion of other things. To try to overcome his aversion, he decided to lay the fungi aside for a while.⁸⁷ At the end of November, just days after that decision was

reached, he took his family to Pooshee to spend the winter. A flurry of visits earlier that fall from his father, sisters and brothers had not damped his enthusiasm for family togetherness, and he was looking forward to a long, leisurely Christmas holiday.⁸⁸

Christmas Day and its festivities were marred slightly by worry for his wife Elizabeth's health. She, who had remained strong and healthy through her husband's attacks of dyspepsia, now suffered a mild attack of paralysis. There seemed no immediate cause to fear for her recovery. In early January, Henry made a few days' trip back to Aiken to check on the farm, leaving Elizabeth and the children at Pooshee, and a week or two later there seemed no reason why sixteen-year-old Lydia should not be allowed a visit to friends in Charleston.⁸⁹

A second stroke of paralysis abruptly changed Elizabeth's condition. Lydia's uncle William went to town January 28th to bring her back, and all the family gathered together to help nurse Elizabeth. Their devoted attentions could do nothing to save her, however, and on the fifth of February she died.⁹⁰

Now it was her husband and family whose wounds needed healing. They stayed in the comforting presence of the Pooshee family for several more weeks, finally returning to Aiken in the middle of March. Alone with his children, the full force of his grief descended on Ravenel, and he poured it out in a letter to his sister-in-law Liz.

We have got back to our home which we all left a few months ago, but what a change that short time can make! It is home now without the light which always made my home so sweet to me. ... My own private griefs!, ... they meet me in a thousand different ways, revived by every association of the past, & by every familiar object with which she was connected, ...

As heavy as were his own sorrows, Ravenel grieved also for his children. They were too young to realize fully what they had lost.⁹¹

Quiet, steady Christian faith helped greatly to make Ravenel's burden bearable. He was certain that his beloved wife had gone on to a more perfect existence. He would not wish to call her back from the presence of her God to live with him once more. It was, therefore, not for Elizabeth that he mourned, but for his own loneliness and his children's. Yet even that misery was ameliorated by his faith. Ravenel was sure that in the course of time he would receive the grace and strength necessary to overcome his grief and go on with life. It was comforting, too, to think that his wife's death had a purpose and was a part of God's plan. Perhaps someday he would know the purpose, and in understanding would come further comfort.⁹²

Sympathy came freely from family, friends and his botanical correspondents. Asa Gray went a bit further than a simple extension of sympathy. Told by Curtis about Elizabeth's death, he wrote in July to express his own sense of grief over Ravenel's bereavement. Mostly, however, his

purpose was to let Ravenel know that he was thinking about him and to pay a professional complement.

To show that you were not out of mind tho' it may be long since I wrote to you, ... only yesterday I was describing a remarkable new Compositae found among the debris of Berlandier's collection ... and casting in my mind what Botanist ought to be commemorated by it, I concluded that it was most proper to call it Ravenelia - under which name it accordingly went into my herb^m & my MS.93

Both the complement and the sympathy were well appreciated, though Berkeley and Curtis had already given the name Ravenelia to a genus of fungi.⁹⁴

Even more comforting than the condolences of his friends was the companionship of his plants and books. As planned, Ravenel had given little attention to botany during his stay in St. John's. Coming back to Aiken in the spring, he was physically rested and quite recovered from his temporary distaste for the microscope. He plunged back into his botanical studies, finding them a cool salve for his wounds. He worked with the enthusiasm of his early days in botany, yet also with the maturity of a seasoned naturalist. In terms of botanical accomplishments, the year or two following his wife's death were among the most productive of his entire career.

As he resumed botany, Ravenel accepted a new responsibility. A letter came to him the second week of March from a beginning botanist in Alexander, Georgia. Ravenel wrote back within days promising to identify plants for the new collector in exchange for specimens to be used in Fungi

Caroliniani Exsiccati. "I have correspondents in different states," he wrote, "who are aiding me in the collection of specimens for my work, & I will be glad to have your services enlisted in the same good cause."⁹⁵

Ravenel's new correspondent was Job Bicknell Ellis (1829-1905). A native of Potsdam, New York, Ellis had studied some botany at Union College, in Schenectady, where he graduated A.B. in 1851. After teaching at a number of northeastern academies he traveled to Charleston in February 1855. He obtained a position at an academy in Alexander, not far from Aiken. During his travels he had maintained his interest in botany, collecting and studying on weekends. Ellis had noticed the fungi but ignored them, not knowing where he could look for competent instruction, until at some point, probably during his short stay in Charleston, he happened upon a notice of Ravenel's exsiccati.⁹⁶ The letter that he directed to Ravenel from Alexander in March was the opening of a long and profitable exchange. In Ellis, Ravenel had for the first time a student, someone to whom he could pass on his expertise in collecting and who, in turn, would aid him with the exsiccati. In Ravenel, Ellis had a patient and interested teacher, a man who knew the plants, literature, and other scientists and who would willingly give him much guidance.

Ellis's enthusiasm for mycology was as great as Ravenel's own had been when he first took up the science. Ellis sent new sets of specimens every week or two, and

Henry William Ravenel
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Ravenel kept up with him, sending identifications of each new batch of plants along with advice on collecting techniques. Look for the little plants in undisturbed woods and low, swampy areas, he suggested, and when possible be sure to collect large quantities for later exchanges.⁹⁷ Ravenel early suggested Ellis get a copy of Greville's five-volume Scottish Cryptogamic Flora that had been so useful to him, and he particularly recommended Fries's Systema, the Elenchus, and a new work, the Epicrisis (Upsala, 1838). Ravenel's reliance upon and admiration for Fries was typical of mycologists of his time. "Fries," he explained to Ellis later, "is a Swede, & professor in the University of Upsal. He is quite an old man now, but as adroit a Botanist as ever - He is the highest authority living in the orders Fungi & Lichenes, & has done much in other departments of Botany."⁹⁸

Besides giving much attention to Ellis's needs, Ravenel was hard at work gathering the final specimens necessary for the third fascicle of his exsiccati and then gumming them down in the volumes. They were ready to be distributed by the end of May.⁹⁹ Ravenel's third volume was much better received by friend Curtis than its two predecessors. Though printed, as the others had also been, by Russell's, this volume was more neatly done and had very few typographical errors. Again Ravenel had provided good specimens in sufficient quantity for illustration of each species. The volume contained contributions from Peters and Beaumont in

Alabama, and one species each from the Texas collector Charles Wright (1811-1885), Michener in Pennsylvania and Sartwell in New Jersey. Over sixty percent of the species represented distinctly American forms, and about a quarter of them were undescribed, so the fascicle was sure to be of interest to Ravenel's European correspondents. Despite the care that had gone into his preparations, however, the volume had been put together swiftly, and Curtis noted in his review two mislabeled species, one of which represented a rather extreme error, for the plant was actually placed in the wrong genus.¹⁰⁰

No sooner had Ravenel issued the third fascicle than he began organizing a fourth. The manuscript for this one was ready by the beginning of August, 1855, and this time Ravenel determined to take extra precautions to see to its accuracy. He sent the manuscript to Lewis Gibbes, who was something of a Latin scholar as well as a scientist. He asked that his friend proof the manuscript and take it to Russell's and that Russell's send the proof sheets back to him for a final review before printing.¹⁰¹ As he sent off the manuscript of the fourth volume, he was already looking ahead to a fifth. "I would be glad to have *Peziza scutellata* in quantity for my work," he petitioned Ellis near the end of August, "as I have not yet collected it in sufficient numbers. Wherever you can get Fungi which can go between the leaves of the book, & suitable for my purpose, &

which are not contained in any previous issue, they will be very acceptable for the future vols of my work."¹⁰²

Ravenel's fourth fascicle was ready to be sent out by the middle of November. As he prepared to mail copies to his various correspondents, he found he had unwittingly added another European botanist to the list of those to be sent presentation copies. In 1854 he had used the services of a traveling fellow South Carolinian to send a gift of lichens, mosses and liverworts to French botanist Camille Montagne. Montagne thanked him profusely, and a few months later Ravenel wrote back offering to make him up a package of fungi and saying he would appreciate receiving copies of papers or other publications in return. He casually mentioned his work on the exsiccati, but that was what Montagne wanted. Nothing, he said, could give him greater pleasure than to take up Ravenel's generous offer to trade his beautiful collection of exsiccati for Montagne's publications.¹⁰³ Ravenel had no graceful way out of the misunderstanding, and quite possibly did not desire one anyway. Accordingly, he packed up a set of all four fascicles and shipped them off to Montagne.

Montagne's response was gratifying. Like Fries's surviving letter dealing with the first fascicle, Montagne's reply thanked Ravenel quite warmly for the gift. No other collection of exotic cryptogams could give him such pleasure, he declared. In commenting on the work, he avoided entirely Curtis's stinging remarks about bad Latin

usage or typographical errors, yet his eyes were not closed to flaws. "You asked me, sir," he wrote, "to point out to you errors that could have escaped you in the publication of the species of your 4 fascicles of fungi from Carolina. I see so few that it is scarcely worthwhile to speak of them. I have seen, rather, many beautiful things. Only to make you content and to prove to you that I have glanced through your magnificent collection will I make the following insignificant remarks."* The remarks that followed were, in fact, not at all insignificant. They dealt with substantive matters of identification and taxonomy, Montagne having found one or two species in each volume of 100 with which he had to disagree. In each case, however, Montagne indicated the difference was small or somewhat in dispute. Sphaeria verrucosa Schw. number 50, Fascicle I, for example, he declared to be a Nectria but admitted that name had not yet been generally adopted.¹⁰⁴

John A. Stevenson, a modern expert on fungi exsiccati, has agreed with Montagne's favorable opinion on Ravenel's work. The species included were "an excellent representation" of southern fungi, "including all groups which were

* "Vous me demandez, Monsieur, de vous signaler les erreurs qui auraient pu vous échapper dans la publication des espèces de vos 4 fascicules des champignons de la Caroline. J'en vois si peu que c'est à peine s'il est utile d'en parler. J'en vois que de fort belles choses. Je ferai seulement, & pour vous contenter et vous prouver que j'ai feuilleté votre magnifique collection, les insignifiantes remarques suivantes."

adaptable to use in an exsiccati." The individual specimens "were well selected" and "carefully prepared." Well-made volumes had ensured that most sets survived the approximate hundred and twenty years between their issuance and Stevenson's examination in fair condition. Stevenson overlooked the typographical mistakes but did have a similar complaint. Following custom established by Fries, Berkeley and others, Ravenel had spent a great deal of time carefully gluing each specimen in place on its sheet. Labor lost, so far as Stevenson was concerned, for specimens so mounted were quite susceptible to damage if not detached and placed in small packets.¹⁰⁵

In view of the positive comments of Fries, Montagne, and Stevenson, Curtis's constant picking at small errors may have indicated jealousy more than solidly grounded disapprobation. The exsiccati had begun as a team project and had been carried forward by Ravenel only because Curtis had too little time for it. Though Ravenel acknowledged his debt to both Curtis and Berkeley in the introduction, Curtis may have felt some resentment at having lost his position on the title page as co-author. In any case, his remark to Gray that Ravenel had "nothing in the world to do but herborize," does indicate that he was at least slightly envious of the greater amount of time at Ravenel's disposal for botany. Ravenel's motives in refusing to revise the first two volumes are probably more complex. A bit of laziness and stubbornness was part of it, of course, and, in

the case of poor Latin, ignorance. In addition, it is likely that by the time the first volume came out, he was tired of Curtis's advice, which had been coming thick and fast ever since the project began. That idea is born out by the fact that he turned not to Curtis but to Gibbes for help in correcting the fourth fascicle. He was certainly not unaware of the importance of such matters, as his earlier disappointment with the sloppy typesetting of Frank Porcher's thesis proves.

Following issuance of his fourth fascicle of exsiccati, Ravenel did not immediately begin work on the fifth, although he had some of the materials available. His usual winter trip to Pooshee interrupted the flow of his work, and he also desired to pause to catch up with the needs of some of his correspondents.

Ellis, who had abandoned Georgia in August, 1855, and moved back to Potsdam, continued to send bulky packages of plants through the mail for identification. They were coming now from an area whose flora was unfamiliar to Ravenel, so their identification was more taxing, and correspondingly more interesting, to the South Carolinian. His student's own growing expertise also ensured that he would send fewer and fewer easily identified plants while the proportion of new or ambiguous species would increase. Even so, Ravenel had been able to identify the genus easily but often had had to put off further study until the exsiccati was complete.¹⁰⁶ Ravenel anticipated sending the

species he could not identify to Berkeley for his opinion, therefore he cautioned Ellis to exercise more care in his collection and organization of specimens. Ravenel suggested that he send two or three good specimens, each gummed down on a piece of white paper on which he should record the plant's assigned number, the matrix and locality and his name as collector. By all means, too, he must poison his specimens or they would be lost.¹⁰⁷

In the decade that had passed since Ravenel's confrontation with Curtis on the issue of authorship, Ravenel had become reconciled to the necessity of sending doubtful specimens abroad for determination and to the convention that dictated that when a more advanced botanist identified a new species he would serve as author. Ravenel was, himself, no longer shut out by this rule, having issued several new species in the Fungi Caroliniani Exsiccati. In addition, an article published by Berkeley and Curtis in December 1853 in the British Annals and Magazine of Natural History recognized his contribution in a unique way.

It is proposed in this and a series of similar memoirs to characterize a number of new North American Fungi, which have rewarded the researches of Curtis, Ravenel, Bennett, Michener, Olney, Peters, Sartwell, Lindheimer, Wright, and other botanists. ... We ought to observe that a considerable portion of Mr. Ravenel's specimens were accompanied by copious notes, of which we have constantly availed ourselves. Indeed his name might almost uniformly have been associated with our own, were it not for the inconvenience of giving three authorities for each new species.

Although his name did not appear as an author of the article, he was credited, alone or in conjunction with Berkeley, as author of a number of new species published there, and three new plants were named for him.¹⁰⁸

Ellis could not yet expect this sort of special treatment. When he began to demonstrate curiosity about Ravenel's foreign contacts, Ravenel did not discourage him from writing but did explain the rules of the game.

It is customary among Botanists, that those who receive & name plants for beginners, describe also any new species that may occur -- this is only just & proper. As you have been sending a large number of things to me, should you also send the same things to Fries or any other Botanists, there will undoubtedly be confusion in the matter for the same thing may be described under different names.

Once the plants were named, Ellis could make up sets for distribution to as many scientists as he desired, without fear of causing confusion. Of course, Ellis or any other botanist capable of determining and naming new species by himself would also have the privilege of publishing them, but that was not possible on a large scale, Ravenel believed, for American mycologists. "Our means in this country," he noted, "are too limited for that full comparison which should precede the publication of a species as new. We are compelled to obtain aid from the older European Mycologists who have been making these things their study for half a century & who have large collections from all parts of the world."¹⁰⁹

"Mr. Ravenel's specimens were accompanied by copious notes..."

Following is an example of notes sent by Ravenel to Berkeley on a new species March 27, 1850, now in the Berkeley Correspondence, British Museum (Natural History).

Sphaeria No. 1276 (Cordyceps) - This species is found, June July & August, in damp swampy woods, most generally growing out of mossy tufts - The larva is buried one or two inches, generally just under the surface of the mossy roots, & is completely indurated, though the exterior form & colour is well preserved - Stem 3 to 5 inches long & as in the preceeding, arising from the first joint of the thorax, - I have observed sometimes abortive branchlets near the base, but the ramification is always arrested as far as I have seen. Suberose, filiform, fuscus carneus, subgyrose with a fibrose silky lustre, rather tough & flexuous, becoming darker at base, the sterile, paler & filiform apex extending 1/2 inch above the capitulum - Perithecia scattered, interrupted, superficial, fuscous (lighter colour than the preceeding) without ostioles - Asci elliptic, terete, containing 5? linear multiseptate, laterally united sporidia - Upon the opening of the ascus at one end the sporidia diverge thus.

"... of which we have constantly availed ourselves."

Following is Berkeley's publication of the species described in Ravenel's notes. That description was probably more acute than average, for, as we see, Berkeley ascribed the species to Ravenel alone. Publication was in M.S. Berkeley, "On Some Entomogenous Sphaeriae," Linnaean Society, Journal, I (1857), 158.

CORDYCEPS ACICULARIS, Ravenel; fusca, stipite gracili elongato, capitulo cylindrico apice sterili acuminato longiore; peritheciis superficialibus liberis. Rav. no. 1276. (Plate I. fig. 2.)

On caterpillars buried in the soil in damp shady woods. South Carolina. Summer. H. W. Ravenel, Esq.

Stem 3 inches or more high, not half a line thick, brown below and tomentose, smooth above and tawny, grooved when dry. Head $\frac{3}{4}$ inch long, cylindrical, brown, studded with the free perithecia, above barren and acuminate. Asci very long, flexuous; sporidia linear, breaking up into truncate joints $\frac{1}{5000}$ or more rarely $\frac{1}{10000}$ inch long.

Issuance of the exsiccati and the frequent appearance of Ravenel's name in the writings of Berkeley spread his reputation as a botanist widely through America and Europe. From time to time new mycological correspondents wrote to him requesting help. Julien Marc Deby (1826-1895), a French-born botanist who lived in Georgia from 1854 until 1859, became interested in fungi and wrote, desiring to compare notes and hoping for some duplicates of Ravenel's specimens.¹¹⁰ Berlin botanist Robert Caspary (1818-1887) wrote in August 1855 to see if Ravenel could provide examples of potato leaves infested with the potato rot that a decade earlier had caused famine in Ireland. There was no potato rot in South Carolina, but Ravenel was able to supply the request through Ellis with reasonable dispatch.¹¹¹

As the year 1856 began he was distracted from the exsiccati anew by collecting in other types of plants. Except for the discovery of a new species of *Baptisia*, a genus of the legume family, he had largely ignored everything but the fungi for several years. His paper on *Baptisia stipulacea* was read by Gibbes before the Elliott Society in January 1856.¹¹²

As spring came, Ravenel remained at Pooshee longer than usual to take advantage of the low country's richer botanical range. William Starling Sullivant and his new associate, Leo Lesquereux (1806-1889) were preparing to issue a new moss exsiccati, and Ravenel was helping to procure some of their desired southern species. He was also

trying to put together a set of fresh water shells for Lesquereux's son in repayment for a valuable set of European fungi sent by the father and a set of lichens that he had been promised. The lichens were sent in August and proved to be Lesquereux's entire collection of those plants, including works by Schaerer and Fries, and one of only three specimens of Parmelia virginis, collected by Agazziz at the very summit of the mountain for which it was named, the Virgin Alp of Switzerland. Lesquereux could have sold it for \$50.00 in Europe, but chose to give it to Ravenel instead. Lesquereux was not giving up botany, but had no time for any groups but the mosses. "I had some pain to part with this collection," he wrote, "but it is useless to me now and it shall perhaps be usefull for yourself and for the advancement of science when it is in your hands. If ever a better position and better circumstance should enable me to work again for lichenographia, I would ask you to return this collection, but I do not think it will ever be so."¹¹³

At the same time, Ravenel was recommencing his correspondence with Tuckerman, from whom he had heard nothing since shortly after his visit in 1853. Tuckerman, in his study of lichens, had one advantage that both Ravenel and Curtis lacked; he had been to Europe to study the type specimens of genera and species founded by European workers. He was, then, in a good position to be able to pronounce upon new species with greater authority than the two myco-

logists. Ravenel urged him to go ahead with his study of the southern lichens before some European forestalled him in publication of American species. When in July he received a copy of Tuckerman's new volume of exsiccati, he noticed a few southern species and was puzzled as to why he had not been asked to send any. Tuckerman's answer cleared up a misunderstanding of eight or ten years' duration. He had not thought it necessary to ask for exsiccati specimens. With his puzzlement relieved, Ravenel assured Tuckerman that he would be happy to collect for him if he would send a list of desiderata.¹¹⁴

Tuckerman sent not one list, but several at intervals, and Ravenel was well occupied in collecting for him during his trips to St. John's at Christmas 1856, 1857, and 1858. He took great pleasure in this collecting, and assured Tuckerman more than once that he had many opportunities to gather lichens while attending to his own fungal collecting, and that nothing pleased him more than an excuse to mount his horse and ride off into the woods for a few hours. He was also enthusiastic about the value of Tuckerman's work and suggested that he might be able to collect enough material to justify an issuance of one fascicle of lichens peculiar to the Black Oak area. In 1859, when he found himself once more at his ancestral home but with no list of desired lichens, he even wrote asking whether there was anything he could get for Tuckerman.¹¹⁵

In one of his letters written to Tuckerman in June 1858, Ravenel announced that he was engaged and hoped soon to be married again.¹¹⁶ The bride to be was twenty-five year old Mary Huger Dawson. She was the daughter of Octavius Huger Dawson, who had moved with his family to Aiken in 1846 for the sake of his health. Both he and Ravenel were active members of St. Thaddeus Church. From the spring of 1855 until Dawson's death in July 1856, the two served together as wardens of the parish, Ravenel continuing to serve long into his own old age.¹¹⁷

August 12, 1858, Henry Ravenel and Mary Dawson were married at the home of her mother, Caroline Deas Dawson. It was a simple ceremony, performed by the Reverend Cornish. Cake and wine were served with a plate of peaches. Only a few guests attended: Mary's family, Ravenel's children, a neighbor, and Ravenel's friend Amory Coffin.

Mary, at the age of twenty-five, was young enough to be a daughter to her forty-four year old husband, and was only six years older than Ravenel's eldest child, Lydia, then nineteen. Mary apparently got along well with her husband's children, being a friend and companion to the older ones and mothering the younger ones. When she and Ravenel had Caroline, the first of their own five daughters, in 1859, Lydia was one of the sponsors at her baptism, and Ravenel's other children each served in turn as sponsor to their younger half-sisters.¹¹⁸ The one person Mary could not win over was the ghost of Ravenel's first wife. Though he was

fond of his new bride, he never forgot his love for Elizabeth or entirely ceased to mourn her. When he began a diary in 1859, he left a blank page each February 5th in her memory except during the Civil War when paper became very scarce, and in 1866 when Frank Porcher's wife died, Ravenel wrote with knowing sympathy. "This is the greatest earthly calamity that can befall a man." Mary was, fortunately, wise and mature enough not to become jealous of Henry's memories. On her own initiative, she named the third of their daughters Elizabeth Gaillard in honor, as Ravenel recorded, "of my first beloved wife." Mary was on that day, at least by implication, his second beloved wife.¹¹⁹

Neither marriage nor the collecting that he was doing for others presented the full reason why Ravenel let several years go by between the issuance of fascicle 4 and the commencement of serious work on fascicle 5. Two other problems hindered him. The first was that Aiken's flora, much less profuse and varied than that of St. John's, had given him little in the way of interesting species. His first year or two of exploration had been enough to exhaust the supply.

In fungi, particularly, the new area was comparatively lacking, for Aiken's dry climate was less conducive to their growth than the moist atmosphere of the low country. Much of his collecting, therefore, was accomplished during Christmas visits to St. John's, but several years of intensive winter collecting had nearly exhausted his old botani-

cal range for that season. If he could still work with the energy he had had ten years earlier, he complained to Curtis in October 1856, one summer of collecting in St. John's would be enough to bring two new fascicles to a speedy conclusion.¹²⁰

Even Aiken's limited ecological range was only a secondary reason. The period of concentrated botanical study that had followed his wife's death brought back in full force the dislike of microscopical work that he had struggled against in 1854. "I cannot, cannot work at the microscope & this is the only eye with which we can look with any satisfaction at a fungus. Distaste is gradually growing into aversion, from the invariably depressing effect it has on my health & spirits."¹²¹

Ravenel's problems with the microscope were not unique to him. The short focal length of high-powered, simple microscopes required that the user's eye, the lens, and the object to be studied be very close together, thus resulting in eye strain. Despite the eye strain they caused, some botanists, particularly Englishmen, preferred them to compound microscopes. By about 1830 compound microscopes were available with spherical and chromatic corrections. Their resolving power was a little higher than the simple microscopes, approximately one micron compared to five or six, but the simple microscope had been superior to the older compound ones for many years, and there remained even in the 1850s a lingering distrust of the compound instru-

ments.¹²² Berkeley was among those who preferred the simple microscope. In 1854 he reported to Ravenel that, "I have just had a present of a fine compound microscope from my friend Dr. Hooker, which will be a great saving to my eyes," but, he continued, "As far as they go I think doublets far preferable to the best compound microscope."¹²³

Ravenel's inability to use the microscope did not improve as it had the last time he was bothered with the problem. He had to stop his work with the fungi, and in April 1857 reported to Ellis that he had been unable to identify satisfactorily the last bundle of plants. His health, he said, forbade him to use the microscope, and without it he would not be able to be of much help to Ellis. He advised his student not to send any more specimens to him but to open correspondence with Tuckerman and the Englishman Broome instead.¹²⁴

At the same time he made preparations to deposit his herbarium with the Elliott Society or the Charleston Museum. By October 1857 arrangements were made with the museum and he shipped it off, retaining the lichens and mosses until he should hear of the results of Tuckerman, Sullivant and Lesquereux's ongoing work in those orders. The herbarium was intended as a loan, and, though he parted with it only reluctantly, he was pleased that while he was unable to proceed with his work, the herbarium was available to other scientists. He realized that the large number of authentic

specimens among the cryptogams made it a very valuable collection.¹²⁵

Curtis had recently transferred to the Episcopal parish at Hillsboro, North Carolina. A larger and more active church than the one in Society Hill, it required much more of his time, leaving him little leisure for mycology, and he, too, was retiring from botany. It disappointed him to learn that at the same time he must withdraw, Ravenel had also become unable to work. He had hoped to pass his own correspondents and unfinished work over to Ravenel. In contemplating both men's withdrawal, he tried to look at the bright side of the situation. "There will be this satisfaction to us both -- that we have pretty effectually opened the field, & have opened up many a treasure. I do'nt [sic] know but we have done our full share, & may justly take our rest." Yet he looked back wistfully at the ambitions of his youth, "Oh, that Mycologia Americana!"¹²⁶

Peters was also disheartened to hear that Ravenel was giving up mycology. When he wrote, he spoke for all those whose dedication and skill in the science were of a lower order than Ravenel's or Curtis's but whose interest was sincere. "With yourself and Dr. Curtis out of the field, we shall be without guides, and must stop for want of leaders. I hope you will find it possible & agreeable to finish the V Fac of your excellent preparations of South Carolina Fungi." If Ravenel would continue with the exsiccati, he believed he could furnish some more specimens and would also

enlist Beaumont's aid.¹²⁷ A letter in June 1859 from Allen Poe of Montreal, one of Curtis's correspondents, also nudged Ravenel towards a fifth fascicle. "If any of the specimens I have sent Dr. Curtis have sufficient interest for your Vth Fasc. and I can obtain the requisite number my services are at your disposal," he stated simply.¹²⁸

Poe's letter combined, perhaps, with others that have not survived, sufficed to persuade Ravenel to issue another volume. When he informed Ellis of the decision in September 1859, he already had much of the material ready, including some of the species provided by Ellis himself in prior years. He intended, however, to prepare an index to the set and so was not expecting to have it ready for distribution for several months.¹²⁹

In the same letter that announced his recommencement of work on the exsiccati, Ravenel shared with Ellis one of the interests that had lately absorbed much of the time once devoted to mycology. "I have become quite an amateur Pomologist & vintner," he confided, "taking great interest in my fruit trees & vines. ... I am trying to procure all the varieties of grape I hear of, & if you could aid me in doing so, I would esteem it a great favour."¹³⁰

In 1859, when that letter was written, the interest was by no means new. Even in St. John's Ravenel had had some interest in horticulture. In 1850 or 1851, he had published in the Western Horticultural Review a paper on the history of a popular native variety of grape, the Catawba, commonly

planted in the southern states, and at the invitation of the Vine Growers' Association of Cincinnati had in December 1851 presented to them a paper on the same subject.¹³¹

Throughout South Carolina, Georgia and Alabama enthusiasm for fruit culture was growing during the 1840s and 1850s. Peaches and grapes were the most popular and profitable of the fruit crops. Robert Nelson, a Danish refugee who established a nursery in Macon, Georgia, contributed greatly to the business of southern peach raising by developing in the early 1850s an improved variety of early peach intended for the New York markets. He sent some of his improved peaches to market in 1853, where New Yorkers paid fifty cents a piece for them, while the previous year ordinary peaches had sold for as little as twenty-five cents per bushel. Grape culture had been tried in the early 1830s by Nicholas Herbemont of Columbia, South Carolina. His attempt to begin a wine industry failed, but he was able to prove that the failure was due to cultivation of foreign varieties. He and other growers then developed a number of commercially valuable varieties of hardier native grapes, and in the Aiken area especially, a number of successful vineyards were developed. A. de Caradeuc and J.C.W. McDonnald were the most successful of Aiken's vintners, while Jules Berckmans's (1830-1910) nursery in Augusta, Georgia, also produced fine grapes. Another Georgian, Jarvis Van Buren of Augusta, developed a reputation for

apples, as did Silas McDowell (1795-1879) of North Carolina.¹³²

On moving to Aiken, Ravenel, too, became enthusiastic about horticulture. Even before he had moved his family to the farm at Hampton Hill, he was planning a peach orchard.¹³³ His orchard was to be no pitiful half acre of scrawny trees! In 1862 he estimated that he had about 4,000 peach trees and 6,000 to 8,000 bearing grape vines, as well as a few each of apple, pear, fig, pomegranite, plum, jujube and cherry trees. A good harvest of peaches alone could bring him \$5,000.00 or \$6,000.00 on the New York markets.¹³⁴

In a day when a \$5,000.00 yearly income meant wealth, Ravenel's success as a fruit grower was impressive indeed. His fruit crop was not his main source of income, however, and Ravenel's interest in the plants was clearly at least as much botanical as financial. His reference to himself as "an amateur* Pomologist & vintner" in his letter to Ellis would indicate, in fact, that he regarded horticulture more as a hobby than as a business. He also made this apparent in a letter to Asa Gray in 1855. "I am somewhat of an amateur* farmer," he wrote, "& take great interest in my farm & garden, for healthy & invigorating exercise, & for instructive experimenting."¹³⁵ Though the possibility does exist, Ravenel was probably not playing down his farming activities for the benefit of Ellis and Gray. In the con-

* emphasis mine.

text of nineteenth century America's agricultural society and the still pre-professional state of scientific development, he should have had no fears that they would think him less a botanist for his interest in cultivars. Indeed, his own early interest in fungal plant pathogens of economic importance was reinforced by Caspary's interest in the potato rot, and in 1854 Berkeley had taken advantage of his interest to ask him to watch for examples of mildew on native American or British grapes.¹³⁶

As he had done in St. John's, Ravenel became active in the formation of a local agricultural society. The Aiken Vine-Growing and Horticultural Association was inaugurated in July 1858. The timing of its formation, as well as the sharp increase in Ravenel's horticultural correspondence during 1858 and 1859, indicate that the Association and horticulture functioned as an emotional and intellectual substitute for mycology. In Aiken as in St. John's Ravenel was one of the leaders of the agriculture society, serving terms as treasurer and as president. Other active members including Caradeuc, McDonnald, and D. Redmond of Augusta's Southern Cultivator, a long-lived monthly for farmers, and Reverend Cornish of St. Thaddeus.

Ravenel brought to the Aiken vine growers' association his botanist's desire to promote among farmers an appreciation of science and its application to their art.¹³⁷ Many other horticulturists, he found, shared his interest in taxonomy. He recruited help from them in collecting varie-

ties of grape vines and studying their relationship to the original, undomesticated plants. In September 1859 he read to the Aiken group a paper giving a summary of his preliminary findings on the subject. The paper was very well received and was reprinted twice, once by the United States Patent Office and once by the Southern Cultivator.¹³⁸ A similar paper was submitted to the South Carolina State Agricultural Society. It was published in the Farmer and Planter, and for his contribution the state society awarded him a premium or prize of six large silver forks.¹³⁹

Like many other horticulturists, Ravenel was not content merely to study and grow the available varieties of fruit. He experimented with grafting foreign grapes on hardy native stalks and also tried to develop new kinds of grapes.¹⁴⁰ These concerns brought him closer than ever before to the question of the permanence or impermanence of species. Cultivated fruits, he wrote in July 1859, are all varieties of wild parent stock. Most are not capable of living except under a high degree of cultivation. Remove those favorable, but artificial, conditions, and the cultivars will die away or revert in future generations to the wild type. If new varieties are desired, one has only to raise them from the seeds of an established variety. This standard horticultural wisdom Ravenel mentioned in dictum while arguing another point. He did not bring up the subject of the possibility of change among the wild plants, or species, from which the varieties arose, though he seemed to

imply that, in contrast to the constantly changing varieties, the species were constant.¹⁴¹

By the fall of 1860, when Ravenel's second essay on the classification of fruit was prepared, he had read Charles Darwin's Origin of Species (1859) and felt a need to state more explicitly his views on the subject.

By species all naturalists understand those primordial forms which have existed, unchanged in essentials, for a period beyond all historic times, and which are capable of propagating their kind, inter se. ... By varieties we understand all casual deviations from the typical form; sometimes so well marked and prominent as to be continued even in a state of nature, when the proper conditions are present. -- These variations, however, never rise to the value of specific difference, and are liable (when the conditions under which they originated are withdrawn) to lapse again into the typical form of the species. Species, therefore, are constant and permanent in their character; varieties, inconstant, and liable to revert again to their respective species.¹⁴²

Ravenel's words were not, as they might seem, a flat denial of Darwin's theory or of the possibility of evolution. Rather, Ravenel had reached that same degree of detachment that Darwin's confidant Joseph Dalton Hooker and other systematic botanists found necessary in order that their life's work should not lose all its meaning. Species were the basic unit of taxonomy. If species were impermanent, then taxonomy was itself impermanent and, perhaps, unimportant. If taxonomists did not deny altogether the reality of evolution, they at least had to deny its relevance to taxonomy. In this way, Ravenel thought his definition of species as unchanging forms to be quite unobjec-

tionable. It did not, he asserted, conflict with Darwin's theory for, by the English scientist's own admission, the time needed for important changes in species to occur must be measured in thousands and tens of thousands of years. "For all common purposes, ..." he concluded, "we may consider species as immutable."¹⁴³

Ravenel never gave a more complete description of his views on evolution. He never accepted the theory fully. On reading Darwin's Origin, he found problems that were never explained or solved to his satisfaction, but he did not leave a record of what those problems were. A scrap of undated writing on the subject declared that he found evolution to have "a great degree of plausibility" as a creation account but that "I constantly find difficulties in the way of accepting it fully." The one problem described in this surviving scrap was religious or philosophical, but he introduced it in such a way as to indicate that he considered such thoughts less worthy than an examination of the scientific merits of the theory.¹⁴⁴ A long letter written in December 1879 to Thomas Meehan treated the subject in more detail. "Evolution in some form," he began, "as an interpretation of natural phenomena, is so well substan[t]iated through all the range of the natural sciences, & reconciles & explains so much of what would otherwise remain obscure & inexplicable, that it is hard to resist so plausible an explanation, ..." Yet resist he did, for he felt that many of evolution's disciples used the theory to explain too

much. They would leave no room in nature for "a Directing, Supernatural Providence," but would instead leave all to the operation of blind forces. This he found objectionable from the standpoints of both faith and science. How, he asked, could any environmental force account for the near equality in number of men and women in populations throughout the world? Environment would affect uniformly all children conceived in a given area, and its influence would logically be to create a preponderance of one sex or the other. Despite his objections, Ravenel neither rejected evolution nor allowed it to shake his faith. He was sure that ultimately errors in interpretation of nature, God's word, or both, would be corrected and science and religion would come to perfect harmony.¹⁴⁵

There were, of course, valid and important scientific objections to the theory of evolution, particularly gaps in the fossil record and ignorance of the laws of heredity and mutation. These objections did not begin to be eased until rediscovery of Gregor Mendel's work on heredity in 1900, thirteen years after Ravenel's death. That Ravenel did not hasten either to accept or deny evolution was an indication of the fairminded conservatism of his character and of the taxonomic and agricultural foci of his scientific research. To him the question was a side issue, interesting but irrelevant.

In Aiken Ravenel had continued to build upon the scientific foundation he laid in St. John's in the 1840s.

Collecting and taxonomy remained the central points of his approach to botany, unshaken by the passage of time, personal calamities, or by Darwin. His most important work of the period, the Fungi Caroliniani Exsiccati, was a presentation to other taxonomists of standardized portions of his collection. While his outlook on botany was unchanging, his stature as a botanist increased. Both in the United States and in Europe he became well known among scientists for his enthusiasm for and contributions to mycology. While once he had struggled to increase his circle of correspondents, now men wrote unbidden to him, seeking to establish an acquaintanceship. Of these correspondents, few by the end of the 1850s fit the mold of teachers, that status probably being fairly reserved to Berkeley and Montagne. Others were his scientific equals, helpers, or, like Ellis, students. As the decade ended, however, Ravenel's dyspeptic inability to use the microscope dictated that in future he would have to make some changes in his approach to botany or give up the science altogether.

INTERNATIONAL MYCOLOGY

1850 - 1859

Footnotes

- 1 Letter quoted in Roland H. Peterson, "B. & C.": The Mycological Association of M. J. Berkeley and M. A. Curtis (Vaduz, 1980), 47.
- 2 H. W. Ravenel to M. J. Berkeley, March 27, 1850, Berkeley Correspondence (British Museum [Natural History], London, England; hereinafter cited as Berkeley Correspondence, BMNH).
- 3 R. W. Gibbes to H. W. Ravenel, January 16, 1850, Henry William Ravenel Papers (Special Collections, Robert Muldrow Cooper Library, Clemson University, Clemson, S.C.; hereinafter cited as Ravenel Papers, Clemson).
- 4 H. W. Ravenel to M. A. Curtis, March 2, 1849, January 15, 1850, Folder 29, Box 2, Moses Ashley Curtis Papers (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C.; hereinafter cited as Curtis Papers, UNC).
- 5 Thomas Porcher Ravenel Dairy, 1845-54, entries dated February 17, 18, 24, 1850, Box 2, Thomas Porcher Ravenel Collection (South Carolina Historical Society, Charleston, S.C.; hereinafter cited as Diary of TPR, 1845-54); for dates of the convention, see Albert Sidney Thomas, A Historical Account of the Protestant Episcopal Church in South Carolina, 1820-1957: Being a Continuation of Dalcho's Account, 1670-1820 (Columbia, 1957), 650; on meeting between Bachman and Curtis, see William Martin Smallwood, Natural History and the American Mind (New York, 1941), 118.
- 6 H. W. Ravenel to M. A. Curtis, December 29, 1848, Folder 26; May 22, 1849, Folder 27; September 11 and November 27, 1849, Folder 28, Box 2, Curtis Papers, UNC. For description of Chevalier microscope, see H. W. Ravenel to J. B. Ellis, June 21, July 12, 1855, November 3, 1856, Ellis Collection (New York Botanical Garden, New York, N.Y.). Two valuable works on the evolution of the microscope during this period are

Reginald S. Clay and Thomas H. Court, The History of the Microscope: Compiled from Original Instruments and Documents, up to the Introduction of the Achromatic Microscope (Boston, 1978), 32-77, and S. Bradbury, The Evolution of the Microscope (Oxford and other cities, 1967), 182-205.

- 7 For an example of the emphasis placed by Berkeley on characteristics of the spore-sacs, see M. J. Berkeley, "On the Fructification of the Pileate and Clavate Tribes of Hymenomycetous Fungi." Ann. Nat. Hist. I (April, 1838), 80-101. Petersen B&C.
- 8 H. W. Ravenel to E. Tuckerman, April 19, 1858, Tuckerman Papers (American Antiquarian Society, Worcester, Mass.; hereinafter cited as Tuckerman Papers, American Antiquarian Society); M. A. Curtis to A. Gray, March 15, 1850, Gray Herbarium (Harvard University, Cambridge, Mass.); Ravenel was credited with the rediscovery of Walter's pine in George Engelmann, "Revision of the Genus Pinus, and Description of Pinus Elliottii," St. Louis Academy of Science, Transactions, IV (1880), reprinted in William Trelease and Asa Gray (eds.), The Botanical Works of the Late George Engelmann, Collected for Henry Shaw, Esq. (Cambridge, 1887), 373.
- 9 H. W. Ravenel to A. Gray, May 4, 1849, Gray Herbarium; M. A. Curtis, "New and Rare Plants, Chiefly of the Carolinas," American Journal of Science and Arts 2nd Ser., VII (May, 1849), 408; Charles Sprague Sargent, The Silva of North America: A Description of the Trees Which Grow Naturally in North America Exclusive of Mexico (14 Vols. in 7, reprint ed., New York, 1947), VIII, 159-60.
- 10 H. W. Ravenel to M. A. Curtis, May 22, 1849, Folder 27, Box 2, Curtis Papers, UNC; H. W. Ravenel to E. Tuckerman, April 19, 1858, Tuckerman Papers, American Antiquarian Society. Characteristics such as color, size and shape of plants have long been eschewed by botanists as bases for the foundation of species. English naturalist John Ray is credited with being the first to enunciate this principle, but he, it must not be forgotten, stressed also the importance of observing the subject as it grew in nature.
- 11 H. W. Ravenel, "A Catalogue of the Natural Orders of Plants, Inhabiting the Vicinity of the Santee Canal, S.C., as Presented by Genera and Species; with Observations on the Meteorological and Topographical Conditions of that Section of Country," American Association for the Advancement of Science, Proceedings, III (Charleston, 1850), 2-17.

- 12 Ibid., 2-5.
- 13 H. W. Ravenel to M. A. Curtis, July 3, 1847, Folder 22, Box 2, Curtis Papers, UNC; 8-page manuscript fragment in Ravenel's handwriting, dated 1850 by archivists, Botany Department of the University of North Carolina Historical Collection (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C.; hereinafter referred to as Botany Department Historical Collection, UNC). See also [H. W. Ravenel], "Physical Science, in its Relation to Natural and Revealed Religion," Southern Quarterly Review N.S. III (April, 1851), 420-55. This article expresses views quite similar to those expressed in Ravenel's manuscript fragment and reveals a rather detailed knowledge of botany which would indicate Ravenel as a probable author. Furthermore, in a letter written a little over a year later, William Gilmore Simms urged Ravenel to continue his contributions to the Review. Simms to Ravenel, July 28, 1852, Folder 7, Box 1, Botany Department Historical Collection, UNC.
- 14 A. Hunter Dupree, "The Measuring Behavior of Americans," in George H. Daniels, ed., Nineteenth-Century American Science (Evanston, 1972), 31-35.
- 15 R. Lloyd Praeger, "William Henry Harvey 1811-1866," in F. W. Oliver, ed., Makers of British Botany: A Collection of Biographies by Living Botanists (Cambridge, 1913), 204-224; Harvey is listed as a new member of the AAAS in Proceedings (1850), 2; quotation from W. H. Harvey to W. J. Hooker, May 23, 1850, Page 329, Volume 29, Hooker Correspondence (Kew Gardens, England. Quotation kindly provided by Joseph Ewan, Professor Emeritus, Tulane University, New Orleans, La.).
- 16 W. H. Harvey to H. W. Ravenel, August 1, 1850, Ravenel Papers, Clemson; Praeger, "W. H. Harvey," 216.
- 17 Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), 275; M. F. Maury to H. W. Ravenel, May 4, 1850, Folder 5, Box 1, Botany Department Historical Collection, UNC.
- 18 H. W. Ravenel to M. A. Curtis, November 27, 1849, Folder 28, Box 2, Curtis Papers, UNC.
- 19 L. R. Gibbes to H. W. Ravenel, November 15, 1850, Ravenel Papers, Clemson.
- 20 M. A. Curtis (first article), M. J. Berkeley and M. A. Curtis (second, third and fourth articles), "Contribu-

- tions to the Mycology of North America," American Journal of Science and Arts, 2nd Ser., VI (November, 1848), 349-53, VIII (November, 1849), 401-402, IX (March, 1850), 171-75, X (September, 1850), 185-88.
- 21 H. W. Ravenel, "Contributions to the Cryptogamic Botany of South Carolina," Charleston Medical Journal and Review, IV (July, 1849), 428-33, V (May, 1850), 324-27, VI (March, 1851), 190-99.
 - 22 Ibid., VI (March 1851), 199.
 - 23 H. W. Ravenel to E. Tuckerman, December 31, 1850, Tuckerman Papers, American Antiquarian Society.
 - 24 E. Tuckerman, Lichenes Americae Septentrionalis Exsiccati (6 Vols. in 3, Cambridge, 1847-1854); John A. Stevenson, An Account of Fungus Exsiccati Containing Material from the Americas (Lehre, 1971), 297.
 - 25 M. A. Curtis to H. W. Ravenel, January 22, 1852, Ravenel Papers, Clemson; C. L. Shear and Neil E. Stevens, "Studies of the Schweinitz Collections of Fungi - I, Sketch of his Mycological Work," Mycologia, IX (1917), 195.
 - 26 C. L. Shear and Neil E. Stevens, "Studies of the Schweinitz Collections of Fungi - II, Distribution and Previous Studies of Authentic Specimens," Mycologia, IX (1917) 335.
 - 27 M. A. Curtis to H. W. Ravenel, February 9, 1852, Ravenel Papers, Clemson.
 - 28 M. A. Curtis to H. W. Ravenel, February 9, [ca. March 1,], March 11, 1852, Ravenel Papers, Clemson.
 - 29 Ibid.
 - 30 M. A. Curtis to H. W. Ravenel, [ca. March 1, 1852], Ravenel Papers, Clemson.
 - 31 H. W. Ravenel to A. Gray, April 2, 1852, Gray Herbarium.
 - 32 M. A. Curtis to H. W. Ravenel, July 16, July 26, 1852, Ravenel Papers, Clemson.
 - 33 M. A. Curtis to H. W. Ravenel, July 16, 1852, Ravenel Papers, Clemson.

- 34 Childs (ed.), Private Journal of HWR, 318-19. A. Gray to H. W. Ravenel, June 5, 1852, Folder 7, Box 1, Botany Department Historical Collection, UNC.
- 35 M. A. Curtis to H. W. Ravenel, August 2, 13, 1852, quote from latter, Ravenel Papers, Clemson.
- 36 M. A. Curtis to A. Gray, December 13, 1853, Gray Herbarium.
- 37 H. W. Ravenel to E. Tuckerman, October 24, 1851, Tuckerman Papers, American Antiquarian Society; H. W. Ravenel to M. J. Berkeley, November 21, 1851, Berkeley Correspondence, BMNH; Joseph Ewan and Nesta Fwan, "John Lyon, Nurseryman and Plant Hunter, and His Journal, 1799-1814," American Philosophical Society, Transactions, N.S. LIII (1963), 15; A. Hunter Dupree, Asa Gray, 1810-1888 (Cambridge, Mass., 1959), 132-35.
- 38 M. A. Curtis to H. W. Ravenel, July 6, 1852, Ravenel Papers, Clemson.
- 39 M. A. Curtis to H. W. Ravenel, July 6, 16, 1852, Ravenel Papers, Clemson.
- 40 W. G. Simms to H. W. Ravenel, July 28, 1852, Folder 7, Box 1, Botany Department Historical Collection, UNC.
- 41 M. A. Curtis to H. W. Ravenel, July 26, 1852, Ravenel Papers, Clemson.
- 42 Childs (ed.), The Private Journal of HWR, XVI; M. A. Curtis to H. W. Ravenel, August 2, 1852, Ravenel Papers, Clemson.
- 43 Aiken, S.C., as a Winter Resort. [Aiken: Highland Park Hotel, 1885?]
- 44 Samuel Gaillard Stoney (ed.), "The Memoirs of Frederick Adolphus Porcher," South Carolina Historical Magazine XLVII (April, 1946), 108.
- 45 H. W. Ravenel to E. Tuckerman, November 5, 1852, Tuckerman Papers, American Antiquarian Society; M. A. Curtis to H. W. Ravenel, [November, 1852], Ravenel Papers, Clemson.
- 46 H. W. Ravenel to L. R. Gibbes, November 25, December 8, 1852, Letters to Prof. Lewis R. Gibbes from Dr. Henry W. Ravenel, 1850-1884. From Transcriptions of the Originals in Possession of the Charleston Museum (South Caroliniana Library, University of South Carolina, Columbia, S.C.; hereinafter cited as Typescript Gibbes Letters, USC).

- 47 M. A. Curtis to H. W. Ravenel, November 18, 1852, Ravenel Papers, Clemson.
- 48 M. A. Curtis to H. W. Ravenel, December 16, 1852, Ravenel Papers, Clemson.
- 49 U. S. Census: Original Agriculture, Industry, Social Statistics, and Morality Schedules for South Carolina, 1850-1880, Agriculture, Seventh Census, 1850 (South Carolina Archives Microcopy Number 2), Roll 1, Abbeville--Lancaster; Plantation Journal, 1834-51, of Thomas Walter Peyre, 1812-51, p. 268 (microfiche 50-7, South Carolina Historical Society); Diary of TPR, 1845-54, entry dated November 25, 1852.
- 50 Various bills of sale, notes, etc. are preserved in Folder 9, Box 11-331, Henry Ravenel Papers (South Carolina Historical Society; hereinafter cited as Ravenel Papers, SCHS).
- 51 Childs (ed.) Private Journal of HWR, 65.
- 52 On traditional celebration of Christmas at Pooshee, see Samuel Wilson Ravenel, "Christmas at Pooshee," (1903; typescript), 4-14, Box 5, Thomas Porcher Ravenel Collection (South Carolina Historical Society); Robert Wilson, Half Forgotten By-Ways of the Old South (Columbia, 1928), 145-78. For an additional description of Ravenel's father see Robert Wilson, An Address Delivered Before the St. John's Hunting Club, at Indianfield Plantation, St. John's, Berkeley, July 4, 1907, 13-14.
- 53 Diary of TPR, 1845-54, December 25, 1852.
- 54 Ibid. January 17, 21, February 3, 12, 16, 1853; also note in H. W. Ravenel's hand setting out property received from his father, Folder 9, Box 11-331, Ravenel Papers, SCHS.
- 55 H. W. Ravenel to L. R. Gibbes, February 25, 1853, Typescript Gibbes Letters, USC. Childs (ed.) Private Journal of HWR, xvi.
- 56 W. Dehon to J. H. Cornish, February 12, 1853, Ravenel Papers, Clemson; Parish Register of St. Thaddeus Parish, 4 (St. Thaddeus Episcopal Church, Aiken, S.C.; hereinafter cited as St. Thaddeus Parish Register); Private Journal of Henry William Ravenel, March 10, 17 1861 (South Caroliniana Library, University of South Carolina).

- 57 H. W. Ravenel to E. Tuckerman, April 19, 1853, Tuckerman Papers, American Antiquarian Society.
- 58 Childs (ed.), Private Journal of HWR, xvi.
- 59 H. W. Ravenel to L. R. Gibbes, March 21, May 25, 1853, Typescript Gibbes Letters, USC.
- 60 H. W. Ravenel to L. R. Gibbes, March 21, 1853, Typescript Gibbes Letters, USC.
- 61 M. A. Curtis to H. W. Ravenel, February 19, 1853, Ravenel Papers, Clemson.
- 62 M. A. Curtis to H. W. Ravenel, September 13, October 4, 1852, Ravenel Papers, Clemson.
- 63 E. Boissier to H. W. Ravenel, August 6, 1853, Folder 8, Box 1, Botany Department Historical Collection, UNC; M. A. Curtis to H. W. Ravenel, October 4, 1852, Ravenel Papers, Clemson.
- 64 Anon., "Fungi Caroliniani Exsiccati. Fungi of Carolina, Illustrated by Natural Specimens of the Species," Charleston Medical Journal and Review VII (1852), 690-91. E. M. Fries to H. W. Ravenel, December 28, 1852, Ravenel Papers, Clemson; H. W. Ravenel to L. R. Gibbes, February 25, 1853, Typescript Gibbes Letters, USC. I must express my thanks to my friend Mary Winkler for help in translation.
- 65 M. A. Curtis to A. Gray, April 1, 1853, (Gray Herbarium, Harvard University, Cambridge, Mass.).
- 66 A.[sa] G.[ray], "[Notice of] Fungi Caroliniani Exsiccati. Fungi of Carolina, Illustrated by Natural Specimens of the Species," The American Journal of Science and Arts XVI, 2nd Ser. (November, 1853), 129-30.
- 67 M. A. Curtis to A. Gray, May 31, 1853, Gray Herbarium.
- 68 H. W. Ravenel to E. Tuckerman, April 19, July 7, 1853, Tuckerman Papers, American Antiquarian Society.
- 69 H. W. Ravenel to E. G. Ravenel and their children, 9 A.M., August 3, 1853, Folder 11, Box 11-133, Ravenel Papers, SCHS.
- 70 Most of the letters home have survived. Folder 11, Box 11-133, Ravenel Papers, SCHS.

- 71 H. W. Ravenel to E. G. Ravenel and their children, July 15, 1853, Folder 11, Box 11-133, Henry Ravenel Papers, SCHS.
- 72 Ibid., July 16, 1853.
- 73 Ibid., July 30, 1853.
- 74 Ibid., July 31, 1853.
- 75 Ibid., July 26, 1853, (first quote); H. W. Ravenel to E. Tuckerman, August 22, 1853, Tuckerman Papers, American Antiquarian Society; E. Tuckerman to H. W. Ravenel, September 20, 1853, Folder 8, Box 1, Botany Department Historical Collection, UNC. Tuckerman alluded somewhat daintily, therefore hardly definitively, to his courtship, but he did marry in May 1854. William L. Culberson (ed.), Collected Lichenological Papers of Edward Tuckerman (2 vols., Weinheim, 1964), I.
- 76 H. W. Ravenel to E. G. Ravenel and their children, July 26, 1853, Folder 11, Box 11-133, Henry Ravenel Papers, SCHS.
- 77 Ibid., August 2, 1853, H. W. Ravenel to M. J. Berkeley, August 31, 1853, Berkeley Correspondence, BMNH.
- 78 Dairy of TPR, 1845-54, entries dated August 24, September 7, 28, 1853.
- 79 F. S. Holmes to H. W. Ravenel, September 26, 1853, Ravenel Papers, Clemson.
- 80 F. S. Holmes, L. A. Frampton and F. J. Miles to H. W. Ravenel, October 5, 1853, Folder 8, Box 1, Botany Department Historical Collection, UNC. The October 5 date is nearly a month before the November 1st official beginning date as recorded in the Elliott Society of Natural History of Charleston, South-Carolina, Proceedings, I (November, 1853 -- December, 1858) (Charleston, 1859), 1.
- 81 Elliott Society of Natural History of Charleston, South-Carolina, Proceedings, I (November, 1853 - December, 1858) (Charleston, 1859), 1-3, 14; E. Boissier to H. W. Ravenel, February [?] 15, 1854, Ravenel Papers, Clemson; Albert E. Sanders, "The Charleston Museum and the Promotion of Science in Antebellum South Carolina" (presented at the third Citadel Conference on the South, April 25, 1981), 10-11, cited by kind permission of the author.

- 82 M. A. Curtis to A. Gray, December 13, 1853 (quote), January 30, 1854, Gray Herbarium. M. A. Curtis, "[Notice of] *Fungi Caroliniani Exsiccati*. Fungi of Carolina, Illustrated by Natural Specimens of the Species," American Journal of Science and Arts 2d Ser., XVII (March, 1854), 285.
- 83 M. A. Curtis to H. W. Ravenel, August 13, October 4, [November], 1852, February 19, 1853, Ravenel Papers, Clemson.
- 84 E. Michener to H.W. Ravenel, July 1, 1854, Ravenel Papers, Clemson.
- 85 Thomas Minott Peters, "Sketch of John F. Beaumont," Journal of Mycology II (1886), 82.
- 86 J. F. Beaumont to H. W. Ravenel, August 5, September 8, 1854.
- 87 H. W. Ravenel to M. A. Curtis, November 12, 1854, Folder 38, Box 2, Curtis Papers, UNC.
- 88 H. W. Ravenel to L. R. Gibbes, December 9, 1854, Type-script Gibbes Letters, USC; Diary of TPR, 1845-54, August 28, September 13, October 5, 6, 14, 18, November 29, 1854.
- 89 Diary of Thomas Porcher Ravenel, 1855-1865, entries dated January 4, 9, 28, February 5, 1855, Box 4, Thomas Porcher Ravenel Collection (South Carolina Historical Collection; hereinafter cited as Diary of TPR, 1855-1865).
- 90 Ibid., January 28, February 5, 1855.
- 91 H. W. Ravenel to E. W. "Liz" Ravenel, March 17, 1855, Folder 3, Box 6, Thomas Porcher Ravenel Collection (South Carolina Historical Society).
- 92 Ibid.
- 93 A. Gray to H. W. Ravenel, July 5, 1855, Ravenel Papers, Clemson.
- 94 H. W. Ravenel to A. Gray, July 17, 1855, Gray Herbarium.
- 95 H. W. Ravenel to J. B. Ellis, March 12, 1855, Ellis Collection (New York Botanical Garden, New York, N.Y.; hereinafter cited as Ellis Collection, NYBG).

- 96 F. W. Anderson, "A Biographical Sketch of J. B. Ellis," Botanical Gazette XV (November, 1890), 299-304, or John William Harshberger, The Botanists of Philadelphia and Their Work (Philadelphia, 1899), 256-69. Harshberger's sketch of Ellis is a reprint of Anderson with some added material.
- 97 H. W. Ravenel to J. B. Ellis, March 22, 1855, Ellis Collection, NYBG.
- 98 H. W. Ravenel to J. B. Ellis, March 30, May 2, 1855, Ellis Collection, NYBG.
- 99 H. W. Ravenel to J. B. Ellis, March 30, April 12, May 27, 1855, Ellis Collection, NYBG;
- 100 M. A. Curtis, "Ravenel; Fungi Caroliniani Exsiccati. Fasciculus III. John Russell, Charleston, S.C. 1855," American Journal of Science and Arts 2nd Ser., XX (September, 1855), 284-85; John A. Stevenson, An Account of Fungus Exsiccati Containing Material from the Americas (Lehre, 1971), 301.
- 101 H. W. Ravenel to L. R. Gibbes, August 4, 1855, Type-script Gibbes Letters, USC.
- 102 H. W. Ravenel to J. B. Ellis, August 21, 1855, Ellis Collection, NYBG.
- 103 C. Montagne to H. W. Ravenel, October 22, 1854, Botany Department Historical Collection, UNC; H. W. Ravenel to C. Montagne, May 15, 1855, Folder 1, Ravenel, Henry William (1814-1887). Papers. Apr. 1844-25 July 1887 and n.d. (South Caroliniana Library, University of South Carolina; hereinafter cited as Ravenel Papers, 1844-1887, USC); C. Montagne to H. W. Ravenel, September 3, 1855, Ravenel Papers, Clemson.
- 104 C. Montagne to H. W. Ravenel, May 1, 1856, Ravenel Papers, Clemson.
- 105 Stevenson, Account of Fungus Exsiccati, 298-99.
- 106 H. W. Ravenel to J. B. Ellis, August 21, September 19, 24, October 26, November 14, 1855, Ellis Collection, NYBG.
- 107 Ibid., September 13, October 10, 26, 1855.
- 108 M. J. Berkeley and M. A. Curtis, "Centuries of North American Fungi," Annals and Magazine of Natural History Ser 2, XII (December, 1853), 417-35, quote on p. 417.

- 109 H. W. Ravenel to J. B. Ellis, November 14, 1855, Ellis Collection, NYBG.
- 110 J. M. Deby to H.W. Ravenel, July 16, 1855, Ravenel Papers, Clemson.
- 111 J. X. R. Caspary to H. W. Ravenel, August 10, 1855, Folder 9, Box 1, Botany Department Historical Collection, UNC; H. W. Ravenel to J. B. Ellis, September 6, 24, 1855, Ellis Collection, NYBG.
- 112 H. W. Ravenel, "Description of a New Baptisia Found Near Aiken, S.C.," Elliott Society of Natural History of Charleston, South-Carolina, Proceedings, I (November 1853 - December, 1858) (Charleston, 1859), 38-39; see also p. 28. B. stipulacea was later identified by William Canby as a synonym of B. microphylla Nuttall. "Notes on Baptisia," Botanical Gazette IV (March, 1879), 129.
- 113 H. W. Ravenel to L. R. Gibbes, April 10, 1856, Type-script Gibbes Letters, USC. Quote from L. Lesquereux to H. W. Ravenel, August 30, 1856, Folder 10, Box 1, Botany Department Historical Collection, UNC.
- 114 H. W. Ravenel to E. Tuckerman, March 28, July 22, August 5, 1856, Tuckerman Papers, American Antiquarian Society.
- 115 H. W. Ravenel to E. Tuckerman, August 5, 1856, February 28, March 23, 1857, October 29, 1859 (all letters dating from this period are interesting illustrations), Tuckerman Papers, American Antiquarian Society.
- 116 H. W. Ravenel to E. Tuckerman, June 20, 1858, Tuckerman Papers, American Antiquarian Society.
- 117 Charles C. Dawson, A Collection of Family Records, with Biographical Sketches and Other Memoranda of Various Families and Individuals Bearing the Name Dawson, or Allied to Families of that Name (Charleston, 1969), 351, 58-59; R. Conover Bartram, Biography of a Church, Prelude to the Future: The History of the Church of St. Thaddeus, Aiken, South Carolina (1966, typescript), 14, 16, 19.
- 118 Lydia was sponsor to Caroline, 1859, St. Thaddeus Parish Register, 129-30; Charlotte was sponsor to Susan Stevens, 1861, Ibid., 133-34; Henrietta and Henry St. Julien were sponsors to Mary, 1867, Ibid., 139-40. Emily was sponsor to Tiphaine, 1870, MS Private Journal of HWR, May 8, 1870.

- 119 MS Private Journal of HWR. See entry for July 4, 1864 or Childs (ed.), Private Journal of HWR, 197 for child named Elizabeth; H. W. Ravenel to F. P. Porcher, December 4, 1866, Ravenel Papers, 1844-1887, USC.
- 120 H. W. Ravenel to M. A. Curtis, October 24, 1856, Folder 42, Box 3, Curtis Papers, UNC.
- 121 Ibid.
- 122 Bradbury, Evolution of the Microscope 100-102, 200-201; Clay and Court, History of the Microscope, 75.
- 123 M. J. Berkeley to H. W. Ravenel, May 26, 1854, Ravenel Papers, Clemson.
- 124 H. W. Ravenel to J. B. Ellis, April 18, August 19, 1857, Ellis Collection, NYBG.
- 125 H. W. Ravenel to L. R. Gibbes, March 31, June 3, October 15, 1857, Typescript Gibbes Letters, USC.
- 126 M. A. Curtis to H. W. Ravenel, June 11, 1857, Ravenel Papers, Clemson.
- 127 T. M. Peters to H. W. Ravenel, June 25, 1857, Ravenel Papers, Clemson.
- 128 A. Poe to H. W. Ravenel, June 22, 1859, Ravenel Papers, Clemson.
- 129 H. W. Ravenel to J. B. Ellis, September 16, 1859, Ellis Collection, NYBG.
- 130 Ibid.
- 131 Western Horticultural Review paper has not yet been found; H. W. Ravenel, "History of the Catawba Grape," (1851, manuscript in Ravenel's handwriting) Folder 9, Box 11-331, Ravenel Papers, SCHS.
- 132 Lewis Cecil Gray, History of Agriculture in the Southern United States to 1860 (2 Vols. New York; 1941), II, 825; James C. Bonner, "Advancing Trends in Southern Agriculture, 1840-1860," Agricultural History XXII (October, 1948), 252-53; U. P. Hedrick, A History of Horticulture in American to 1860 (New York, 1950), 283-86; Gary S. Dunbar, "Silas McDowell and the Early Botanical Exploration of Western North Carolina," North Carolina Historical Review XLI (Autumn 1964), 425-35.
- 133 H. W. Ravenel to E. G. Ravenel and their children, 9 P.M., August 2, 1853, Folder 11, Box 11-133, Henry Ravenel Papers, SCHS.

- 134 Childs (ed.), Private Journal of HWR, 142, 154.
- 135 H. W. Ravenel to A. Gray, July 17, 1855, Gray Herbarium.
- 136 M. J. Berkeley to H. W. Ravenel, May 26, 1854, Ravenel Papers, Clemson.
- 137 H. W. Ravenel, "Address Delivered Before the Aiken Fruit-Growing and Horticultural Association, July 21st, 1859," (Columbia, 1859).
- 138 H. W. Ravenel, "Paper on Grapes Read Before the 'Aiken Vine-growing and Horticultural Association,' September 15, 1859," U.S. Patent Office, Report, Agriculture 1859 (Washington, 1860), 537-40, and also printed under the heading "Native Grapes Classified," Southern Cultivator XVIII (January 1860), 32-33.
- 139 H. W. Ravenel, "Premium Essay on the C[l]assification and Nomenclature of Fruits. Published by Order of the South Carolina State Agricultural Society." The Farmer and Planter III (January, 1861), 27-31. Childs (ed.), Private Journal of HWR, 39.
- 140 H. W. Ravenel to [M. J. Berkeley?], January 19, 1860, author's copy in Folder 12, Box 1, Botany Department Historical Collection, UNC.
- 141 Ravenel, "Address Delivered Before the Aiken Fruit-Growing and Horticultural Association," 16-22.
- 142 Ravenel, "Premium Essay," 27-28.
- 143 Ibid.
- 144 M. A. Curtis to A. Gray, May 24, 1860, Gray Herbarium, Ravenel's scrap on evolution is in Folder 4, Ravenel Papers, 1844-1887, USC.
- 145 H. W. Ravenel to T. Meehan, December, 1879, Folder 2, Ravenel Papers, 1844-1887, USC.

WINTERING OVER

1860 - 1865

War. Many images spring from that word. Dark, steaming jungles, rice paddies and swamps, snipers dealing quick death from the windows of medieval houses. Lonely pain and dying in foreign lands. These are distinctly the thoughts of an American. They derive from Vietnam, Korea, and World War II, but if Paul Fussell is correct, the dominant theme of darkness and fear came first from World War I. Years of bloody and tiring trench warfare killed the best of a generation of young men and gave the survivors new ways to think and talk of war. Bright uniforms, streaming flags, gallant bravery, and honorable death for a cherished cause were suddenly inadequate and terribly inappropriate vehicles for the description of war.¹

Half a century before the First World War, colorful uniforms and flags were very much a central part of battle imagery. Throughout the American South and, to a lesser degree, the North, militia units parading in gay costume on the lawns of county courthouses reflected as well as reinforced this idea. Each July fourth the old veterans of antebellum America's archetypical war trooped together down dusty main streets to be honored once again for the part each had played in freeing the country from British rule. As old age and death thinned their ranks, memory of British

military occupation and the horrors of battle faded, while the glorious side of the Revolution lived on in yearly celebrations. The widespread cult of the Revolution contributed a bit to the circumstances that allowed young men to march off to war in 1861 convinced, as were many of their older, and presumably wiser, political leaders, that the conflict would be only a short but grandly exciting interruption to their ordinary lives.

Ravenel was not fooled. In January 1861, as he watched state after state join South Carolina in secession, he worried about the future. "We may be on the very threshold of a bloody & desolating civil war, ..." a war which one month later he predicted would "be one of the bloodiest the world has ever seen."² Concerned though he was, Ravenel saw reason to be optimistic. Until only days before his old acquaintance Edmund Ruffin fired the first shot against Fort Sumter, Ravenel hoped that war might be averted and that North and South might coexist peacefully. Even as war came to seem inevitable, faith in the southern Confederacy's eventual triumph was strong within him, and he looked ahead with confidence.³ Though alive to the gravity of the situation, Ravenel was not immune to the charm of uniform and flag, and he became caught up in some of the excitement of the days just before Sumter. When Captain Mangum of Aiken's volunteer company, the Allen Guards, came calling in February, Ravenel gave him \$20.00 to help equip his men, some of whom could not afford uniforms. The ladies of Aiken donated

a flag, and early on April 12, 1861, Ravenel joined other citizens of the town to see the troops off to Charleston. "I could not but think," he reflected, "what an answer it [the company] furnished to the poor deluded fanatics at the North who have been trying to sew ... dissension among our people. Three fourths of the men, I am very sure have never owned a slave. Many of them are foreigners, They have buckled on their armor & are now perilling their lives in defence of their adopted country--" At three in the afternoon of that same day, word reached Ravenel that the war had begun.⁴

Few people could really have been surprised at the commencement of hostilities. Trouble had been brewing, as any school child knows, for decades. The issue of high tariffs, which had greater negative impact upon the South than upon the North, caused tension throughout the 1820s. Attempts, led by southern spokesman John C. Calhoun, to persuade Congress to lower the tariff fell short of fulfillment, and in 1832 South Carolina seized the initiative. Hoping to be followed by other southern states, a state convention assembled in November and declared the offending law null and void with respect to the Palmetto State. The movement fizzled quickly. Other southern states criticized South Carolina's action, and President Andrew Jackson met it with firm condemnation, calling it treason. A compromise tariff took much wind out of the sails, and in March 1833, the convention reassembled and rescinded its Ordinance of Nulli-

fication. The Nullification controversy began a noticeable shift in the patriotic loyalties of a number of South Carolina leaders from the United States to an idealized southern nation, and secession was much talked of.⁵

Ravenel was a Union man in 1832 and for many years afterwards. Ten years later, when he addressed the State Agricultural Society, he touched on crop diversification, a favorite theme of secessionists, but he made then no specific allusion to sectional tension.⁶ The simple economic benefits of cushioning against a fall in the price of rice or cotton and of increased crop yield due to improved systems of crop rotation were obvious arguments for the diversification of crops. While the idea had certain appeal to those favoring southern independence, Ravenel evidently espoused it for the improvement it could effect in southern agricultural production, without concern for its value in the event of secession at some future time.

Political worries of the early 1850s, growing out of the agitated feelings surrounding the Compromise of 1850, caused great concern in St. John's. Citizens from St. John's joined together with those of St. James's and St. Stephen's parishes to hold a political meeting November 2, 1850. They heard addresses from the well-known southern nationalist Robert Barnwell Rhett and from two less famous men, William Blanding and Louis F. Robertson. Their speeches fired their listeners with zeal, and on that day the men of St. John's Berkeley and St. Stephen's formed a

Southern Rights Association and raised a volunteer company for the protection of the region. Ravenel joined the Southern Rights Association and served as its treasurer. In April 1852 he handed the position on to his younger brother Thomas along with a respectable treasury of \$137.00.⁷ He also joined the Middle St. John's Company, which Thomas served as captain, but his enthusiasm for the venture was not great. He was not an officer, but only a lowly private. In addition, the Roll Book for 1852 shows him absent three times from drills. Though three absences in a year seem very little, he was gone more often than anyone else.⁸

If Ravenel, perhaps, thought himself at the age of 38 a bit too mature to be parading about with a rifle, he did see another way to serve the South. In April 1852 he appeared before the Black Oak Agricultural Society to deliver the annual oration in honor of the anniversary of the society.⁹ Three years earlier he had also delivered an address and had chosen as his topic an entirely apolitical subject, the relationship between agriculture and meteorology. The intervening years had brought such political turmoil to the South, however, that in addressing the problem of sectional rivalry he was sure that he would be speaking to an issue already on everyone's mind and that no apology would be needed for bringing it up at the anniversary meeting.

In addressing the current political situation, Ravenel hoped to calm prevailing fears and worries, and at the same time to strengthen his neighbors' resolve to meet unwaver-

ingly the daily insults to their way of life coming from abolitionists. He pursued this goal in as strongly positive and optimistic a way as possible, by describing the South's elements of strength while treating charges brought against her by outsiders very lightly. The first of these elements of strength, he argued, was the essential conservatism of the southern people. This conservatism guarded the South from political excesses born of disrespect for government and also from encroachment by government upon the rights of the people. It was not a product of paranoid fear of outside influences, but was a natural outcome of a rural economy based on slavery. Control of the laboring class excluded from the South the free laborers who, Ravenel contended, were generally unruly. Foreign laborers were an especial threat to law and order. Coming from a Europe wracked since 1848 with internal upheaval, foreign workers were unable to understand the delicate balance of personal freedom and social responsibility necessary to the smooth working of a democracy. The South could be glad that such people turned away from her shores to make their homes in the urban North where they could best make a living. An agricultural economy and slavery, then, gave the South the essential conservatism that was, to Henry Ravenel, one of her greatest strengths.¹⁰

Considering that Ravenel was addressing an agricultural society, it is not surprising that he cited as the second of the South's advantages the importance of her agricultural

products to the world economy. Cotton, of course, was necessary to northern and English mills, but the South also produced significant crops of rice, sugar and tobacco. The North and England also depended on her as a market for their manufactured goods, and this dependence would constrain them not to destroy slavery, for in doing so they would destroy their own economy.¹¹

Third but greatest of the South's strengths was the justice of her cause. Slavery was a necessity, for it was impossible that the two races should either become amalgamated into one or co-exist on terms of equality. Whites, therefore, would always dominate the blacks, and it was infinitely to the benefit of the latter that the relationship between the two races should be well-defined, with mutual obligations established in law and in social custom. Whites were thereby prevented from exploiting their slaves for labor then leaving them unprotected in sickness and old age. Such, of course, could easily be the lot of northern laborers. Ravenel did not rest his argument with the assertion that slavery was expedient. Much good, he asserted, had fallen to blacks from enslavement. They had increased in number since coming to the United States, a sure sign of health and happiness, and were enabled here to be useful while daily making progress in attaining a higher level of civilization. Ravenel's firm belief in progress served, on the one hand, to justify the collection of all kinds of scientific data, even though not immediately useful, and, on

the other hand, as the cornerstone of Ravenel's acceptance of slavery. Progress, Ravenel wrote, applied to the physical world and also to the human community, both black and white, and he saw in slavery "an educational school for the improvement of the African race." As Anglo-American civilization had emerged from barbarian tribes of northern Europe, so would the blacks continue to progress until they had reached the limits of their capacity to improve, and Ravenel did not speculate where those limits might be. Biblical sanctions with regard to slavery were also significant, but Ravenel refrained from elaborating on them.¹²

Dramatic, ringing, just slightly flowery, Ravenel's 1852 address probably had a stirring affect on his audience and made them feel, if only for a moment, "a firm and abiding conviction that all is not lost--that our position is strong--our defence unfailing, impregnable--and that, with united and manly efforts, we can yet roll back the furious tempest which threatens to sweep across our devoted land." When read and re-read, however, the speech reveals disappointing gaps in thought and inconsistencies in logic. At one point, for example, Ravenel mentioned the pride which the South had taken in fulfilling her duty to the Union "without any appeal to another law, exterior and foreign to, the written constitution which she has sworn to observe." This was an obvious swipe at New York's William Seward for his much-criticized 1850 invocation of "a higher law than the Constitution which regulates our authority over the

domain," Unfortunately for the effectiveness of Ravenel's argument, however, Seward's higher law was God's law, so the South Carolinian's denial that the South depended on any law other than the Constitution took on a hollow sound when he made reference to the Bible's approval of slavery.¹³

Most striking of Ravenel's lapses, however, is that while the reader can easily grasp and follow Ravenel's arguments, it is not entirely clear what he was arguing about. What was "the furious tempest?" Was he worried about the criticism of northern and European abolitionists, about abolition itself, or perhaps about an unnecessary or premature movement towards secession, always a possibility in South Carolina? More significantly, what was "our devoted land?" What did he mean by his occasional references to "Our ship of State," or "the country?" Sometimes he seemed to have in mind the South; at other times it seemed to be the Union. Moreover, when obviously writing of the South, he alternated greatly in his use of pronouns. The South and her people were in turn she, we, or they. These uncertainties of prose were not mere symptoms of a general inability to write clear English. Though he made no pretense of being a talented writer, Ravenel was quite capable of writing clearly. It would seem likely, rather, that they indicated an actual uncertainty in his own mind as to where his loyalties lay. The one-time unionist was then still on the road to becoming a southern nationalist.

Answers to the questions raised by the 1852 Anniversary Address can be found in Ravenel's botanical correspondence. Like most scientists of the period, Ravenel kept politics largely out of his scientific letters, yet he occasionally opened his mind to his Massachusetts correspondent Edward Tuckerman. To him he wrote December 31, 1850, not quite two months after the St. John's southern rights meeting, of his fear that northern demagoguery had overtaken the political power of the North and was leading the nation into disaster:

I have never entertained a doubt that a large portion of the intelligent & patriotic citizens of the North, whatever they may think of our domestic institutions, are disposed to be faithful to the compromises of the constitution & the rights of the states--could the settlement of this distracting subject be left to them, I would have confidence in the issue--But I fear the decision of the question has passed beyond their power-- ...

The South has loved the Union for the common glories of the past, & for what might have been the common glories of the future-- ... The future is dark and portentous--& I almost despair of the integrity of the Union, but it may be that He who has hitherto so signally blessed & prospered our country, may overrule the wicked machinations of its foes-- ...¹⁴

Northern extremism, then, was the enemy threatening both the South and the Union. The North and the northern people were old friends with whom reconciliation might still be possible. Day by day, however, it became more apparent that the compromises had truly satisfied no one. Old tensions were getting worse, and the deaths of America's great older statesmen left no strong leaders to fight for conciliation. Daniel Webster's death in 1852 particularly

deepened Ravenel's concern, for he was the last of the trio who had fashioned compromise between free soil and slavery. Ravenel shared with his friend Tuckerman his sense of the South's loss in Webster's passing, speaking of him not by name but by allusion as "the great Northern light ... the last of that brilliant triad, ... the shining constellation in our political houses" With Webster, Clay, and Calhoun gone, Ravenel knew not where the country could turn for leadership.¹⁵

Over the next eight years Ravenel completed his transition from unionist to southern nationalist. It was not an easy change, for it involved setting aside deep feelings of attachment taught to him from childhood. Boyhood fascination with stories of the American Revolution had led to an adult realization of the depth of the South's stake in the Union. Southern blood had helped to win independence, and had been shed in defense of the flag on many other battlefields. Of course he felt great reluctance at the thought of cutting these ties. Like most Americans of his generation, however, his primary attachment was always to neighborhood, parish and state, and only then to the United States. His first loyalties could, therefore, remain intact while national loyalty slowly swung from the United States to an unformed combination of the southern states. This was important to him, for his affection for the place of his birth was fierce. In a moment of reflection he wrote to Tuckerman of his feelings for St. John's:

"I have a peculiar love for this section of country--my native place, ... & the home of my friends--here, five six or eight generations, ... have the ties of home attachment been growing & strengthening-- ..."

Even the war stories so inspiring to national patriotism produced an even stronger loyalty to St. John's. Their heroes were local men, and their sacred battlefields were the plantations of his neighbors.¹⁶

However strong his sectional loyalties, however, Ravenel's view of national politics remained remarkably thoughtful and fair-minded. His disdain of northern extremism did not blind him to dangers posed by extremists in his own section. Robert Barnwell Rhett he characterized as untrustworthy, devoted to South Carolina and the South, but lacking in judgment and statesmanship. On controversial issues, as well, he favored calm consideration and preferred to see the South continue to compromise on non-crucial points in order to work with the moderate elements of the North. As presidential politics heated tempers in the spring of 1860, for example, the question of slavery in the territories was brought sharply to his attention. He thought Stephen Douglas's views rather peculiar in that Douglas admitted the theoretical right of slaveowners to bring their human property into the territories yet also would allow territorial legislatures to throw up barriers that would make the importation of slavery effectively possible. Ravenel did not by any means approve this view. He saw its unbecoming logical inconsistency and found it

offensive that a territory not yet become a state should be able to refuse the admission of any kind of property. Yet an alternative proposed by some southerners, that the South must insist on congressional legislation to open the territories to slavery, he thought unwise. By insisting on congressional intervention the South would alienate the opinion of moderate northerners, and would gain little. The more southerly territories, where slavery would, Ravenel thought, be profitable, would have slavery with or without congressional protection. In the northerly territories, however, slavery would languish no matter how well protected. "Our people do not reflect enough upon these things for themselves," he complained, "but are led on by politicians, & made to think that safety, honour, self respect & our very existence depend upon these issues."¹⁷

Perhaps as a curb to the ambitions of extremist politicians, of whom South Carolina had at least her fair share, Ravenel greatly hoped that the southern states would act together to secure protection of their rights. Public opinion in South Carolina Ravenel judged to be unanimous about the necessity of secession in case of Lincoln's election. Excitement intensified as election day drew near, and Ravenel worried that his state would leave the Union hastily, without due deliberation, and without the support of the other southern states. Premature secession, he thought, could be a great mistake. It could deprive South Carolina and the South of needed unity in the face of northern

opposition and deny them forever any chance of effective resistance to northern encroachments. Election of the despised Republicans changed his view of the situation radically. Opinion in other southern states appeared to crystallize in favor of secession, and by the end of November Ravenel was ready to see South Carolina take the lead. No longer did he fear her leadership would be spurned. Severance of the Palmetto State from the Union seemed to be a way to unite southern opinion and achieve a common deliverance.¹⁸

If Ravenel the citizen welcomed secession, Ravenel the scientist had reason to regret its necessity. The possibility of a rift opening between himself and his northern correspondents was unpleasant. When Gray and Tuckerman both wrote within days of each other to inquire about the political situation, he hastened to assure them of his continued personal esteem, respect and, in Tuckerman's case, actual friendship. He did not, however, hesitate to set forth plainly his own opinion that the South was justified in feeling that there was no longer any safety in remaining in the Union. To accept rule by a political party whose very principles were founded upon opposition to the South and her institutions was, furthermore, an unacceptable degradation. Whatever happened, he wrote Tuckerman, he hoped that politics would not interfere with the botanical friendship that they had shared for many years.¹⁹ Tuckerman was apparently willing to accept Ravenel's assurances and await the outcome

of secession. Gray's unionism, however, was too strong to let him forego a last, though much too late, chance to reclaim Ravenel for the unionist cause. He sent down a pamphlet On the State of the Country by Professor Hodges of Princeton, and, out of respect for Gray, Ravenel did try to read it with an open mind. Alas, the disagreement was total. Hodges's argument was based on the theory that the states had given up all sovereignty when they ratified the constitution. A position denied by many northerners, it was certainly not one to be admitted by a secessionist. Ravenel sent off another long letter on politics, hoping to help Gray understand the South's attitude.²⁰

War, John Nef has taught us, is never truly friendly to science. Branches of science judged useful to the military effort may get a boost, but all other areas suffer. Manpower and money are drained away to help fight the war, and there is no solution to it but peace.²¹ So it happened in America during the Civil War. The blockade cut southern scientists off from contemporary European and northern contributions, and no one could concentrate properly on research when the fate of the entire country was being played out on the fields of Virginia.

Ravenel was certainly not the only scientist who accomplished less between 1860 and 1865 than during any other five-year period of his career. The blockade and intense, distracting interest in military events were, of course, of major significance in restricting his work. Poor health

also conspired to keep him from botany, however, and it is hard to resist the conclusion that even without the war the early 1860s would have been a slow period for his scientific productivity. Dyspepsia, which was aggravated by eyestrain, continued to make it difficult or impossible to use the microscope. In addition, beginning in early 1860 it so sapped his strength that he began to refer to himself as an invalid. A ride of a few miles on horseback could make him feel unwell for hours, and at times even short walks fatigued him. On some days he had to confine himself to his house and garden, not going more than a few hundred yards from the door. Collecting, of course, became impossible. Anything that could not be gotten quickly and easily, simply could not be gotten, and in December 1860 he had to disappoint Tuckerman's request for several plants. Trips to Charleston by train were still possible, but walking around in town became difficult. A walk across the city to visit Lewis Gibbes was a luxury he could not afford.²²

In addition to the problems it caused directly, the dyspepsia lowered Ravenel's resistance to other diseases. A cold caught in Charleston during the last days of March 1860 kept hold of him for a surprisingly long time. It was more than three weeks before he began feeling better. Fortunately Ravenel eventually learned to regulate his diet to keep the dyspepsia under control. By October 1864 he judged himself to enjoy fair health as long as he was careful with what he ate.²³

Loss of hearing was also a problem during the early 1860s and possibly for some time before. An ear infection contracted during Ravenel's 1848 collecting trip through Georgia had produced acute deafness which after four weeks went away leaving his hearing unimpaired. By late 1860, however, he had developed a slight hardness of hearing that apparently varied in its severity from time to time. In December he was having a bad enough time that his friend Francis Peyre Porcher sent a pair of "auricles," but they produced no relief, and he returned them. In March, however, he sang with the St. Thaddeus church choir to give his daughter Penny confidence as she played the organ for the first time. "We have too many young singers in the choir;" he complained the next Sunday, "unpracticed in sacred music - ignorant of the necessity of keeping time, & with voices too loud & untrained." Three months later, the condition again deteriorated. He became unable to hear any but very loud voices, very close to the ear, and in a few days began to suffer from pain and discharge in one ear. The infection lasted for two weeks, and it was a further two weeks before he could hear a normal conversation.²⁴ Even then, he continued for the rest of his life to suffer from a slight, fluctuating deafness.

In May 1860 Ravenel's ill health prevented his acceptance of an opportunity to deliver a series of lectures on botany in a school of natural history being formed by Professor John McCrady of the College of Charleston. The

situation would have provided some income, \$5.00 being asked of each person attending, the proceeds to go to the lecturers, and Ravenel probably would usually have welcomed an opportunity to share his interest in botany with others. His chronic weakness, however, made him incapable of the physical and mental effort needed to prepare the lectures in the rather short period of time remaining before they were to begin.²⁵

Despite the ill health, Ravenel labored doggedly on the fifth fascicle of the Fungi Caroliniani Exsiccati throughout the spring of 1860. With books and plants spread out in his study, he would work until tired, leave everything just as it was, and return to the task again later. In this manner he was able to glue down about four species a day, which included three or four specimens of each species in each of the thirty volumes to be issued. The tedious job was finished by the middle of June, and he began distributing copies of what he was determined would be the last volume. As though to give further evidence to any doubters who might look for a sixth, he included a general index to all five fascicles.²⁶ Poor Ravenel, the index wasn't good enough for his critical friend Curtis who confided to Gray that he thought it poorly arranged. Gray, however, looked beyond the index and published a favorable review treating the five fascicles as a set, and Gibbes took the opportunity to praise Ravenel's work and expound on his own ideas about fungi.²⁷

Ravenel also lent a little help to Alvan Wentworth Chapman during early 1860. Chapman's botany of the southern states was nearly out of the printer's hands, but the family Eriocaulinaceae was causing some problems, and on Gray's advice Chapman wrote for specimens of a plant sent by Ravenel to Gray as Eriocaulon flavidulum but suspected by Gray of being a distinct species. Ravenel quickly sent off specimens and received for them a flattering thank-you from Chapman. The plant, he wrote, "proves to be a new species of Eriocaulon, which I have taken the liberty to dedicate to you. May it stand as long as the Pyramids!" A complementary copy of the flora was only to be expected, and after looking it over Ravenel sent off to the Charleston Courier a short but favorable notice of its publication.²⁸

With the issuance of the last fascicle of his exsiccati and the publication of Chapman's flora, Ravenel was ready to complete his withdrawal from active botany. His correspondence had already begun dropping off, and when in May 1861 he received from Montagne several French publications on cryptogamic botany, he filed them away without reading them. Political events seemed much more exciting at the time.²⁹

Dropping active botany did not mean dropping all interest in science. Ravenel sought to use his knowledge to help his new country. Drawing on his own interest in meteorology, he suggested in July 1861 that the Confederate corps of meteorological observers retain duplicate copies of their

monthly returns of observations and file them away for the use of the government in peace. Ravenel's knowledge of plants was useful also as the effects of the blockade began to be felt. Imported luxury articles like coffee became scarce rather quickly. Ravenel wrote to the Charleston Courier in April, 1862, to share a way to make "coffee" out of cotton seeds. Both little ideas came to naught, however, for the Courier never published either suggestion.³⁰ Another of his articles, entitled "A Plea for Justice to the Manufacturers," however, was published May 29, 1862. In it he urged fair treatment of merchants who, in a time of scarcity, found the prices they must pay for the goods they sold elevated and who, therefore, had to raise their prices in turn. The resulting inflation was due solely to scarcity imposed by the war and not unethical conduct on the part of most merchants. His argument was a strong appeal to reason and patience in an issue more apt to trigger emotion than intellect.

As the war progressed, Ravenel found another way to turn his scientific knowledge to good use. Mushrooms, whether sauteed, baked, fried or raw, presented themselves as a delicious and readily available food, free for the picking nearly year round. Ravenel and Curtis had both tried them before the war, Ravenel joking that it was truly a good way for a mycologist to enjoy the fruits of his knowledge. Wartime food shortages made mushrooms less of a joke. Ravenel found he had access to a valuable food

supplement and wished to share the information with his neighbors. The meetings of the Aiken Vine Growers' and Horticultural Association provided Ravenel a modest forum. The Association continued to have monthly meetings during the growing season at least thru 1863, and members customarily brought in selections of their fresh fruit and vegetables for display. At the first meeting of June 1862, Ravenel and his wife carried in a large basket of mushrooms, while three other members brought vegetables. Evidently the mushrooms were well received, for at the adjournment of the meeting they brought 90 cents in an impromptu auction that netted \$3.50 for the Ladies' Relief Association. Thus encouraged, Ravenel brought more to the next meeting, and in August he presented an essay on edible mushrooms.³¹

Ravenel's use of fungi as food reawakened a little bit of the old interest in mycology. He wrote in September to William Hume to have his cyptogamic herbarium packed up and sent back to him from the Charleston Museum, where it had been since 1858. Not that he intended to become active in mycology again, at least not just then, but the herbarium needed sorting and rearranging and he thought he would keep it till the war was over.³² He may have intended the move partly as a precaution lest the Yankees take Charleston. With Port Royal and the sea islands in federal hands, the possibility of Charleston falling was not unthinkable.

Curtis, too, was experimenting with mushrooms for the table and was actually more adventurous in this way than his

South Carolina friend. He wrote to Ravenel in October 1863 to tell about three or four species that he had found palatable. Far from encouraging Ravenel, though, the letter seemingly brought to mind a danger that had occurred to him before. Accidental mushroom poisoning could happen, Ravenel had written in an 1850 article for the Southern Quarterly Review, when an unknown poisonous species was mistaken for a well known edible one. Not even mycologists were immune from this problem, of course, and Ravenel was probably a bit concerned when he found his friend was eating Agaricus pubescens. The species had been described by Berkeley, but he was certain that what he and Curtis had been calling A. pubescens was not the same plant. When he learned the following year that Curtis had now tried 24 species and was still alive and well, he decided to expand his horizons beyond the mere 2 types which he had tried so far. He soon wrote back to Curtis to describe the pleasures of eating the giant puffball, Lycoperdon giganteum, and to confess that the perils involved in his cooking experiments actually made them exciting.³³

Ravenel's major opportunity to serve the Confederacy as a scientist came in the summer of 1862. His fellow Elliott Society member Francis Holmes approached him about the possibility of supervising nitre production at three plants to be established at Aiken, Hamburg and Edgefield. Enough improvement had been made in his health that he felt able to consider the position seriously. He visited Holmes at his

house in Columbia to talk the matter over and also went to inspect the state nitre works, directed by Dr. William H. Ford. Soon, however, he decided to turn the responsibility down and recommended John Sims to take his place. He had not enough time to give proper attention to the nitre works without abandoning his family and farm. Such a sacrifice, he believed, was unnecessary when Sims could willingly do the same job as well or better.³⁴

Having turned down the job producing nitre, Ravenel's direct involvement with the war effort was fairly minimal. Brothers, brothers-in-law and friends went off to join the military, but Ravenel's health left him on the sidelines. Twice, as the Confederacy raised the draft age to include older men, he was ordered to report for active duty. Both times, however, he was excused as being too frail for the military. On the first occasion, having been ordered to report before the first of January, 1863, he merely sent in a certificate from his physician, Amory Coffin, stating that he was too unwell to travel. This strategy did not impress the military authorities who in February ordered him to appear before a court martial to explain his absence. He was acquitted of wrongdoing, and a military examining board granted him official dispensation from service, but the experience was, nonetheless, a very humiliating one.³⁵ Lessons learned in 1863 helped him in April 1864 when he was again called out. That time he took Coffin's certificate in

hand and rode over to see the examining board in Edgefield, where he was dismissed with no hesitation.³⁶

Though active military service was beyond his ability, Ravenel did try to help in other ways. Three times, in the first flush of war excitement, in 1863, and again in 1864 amid rumors of a possible invasion of Aiken, he joined home guard troops. Unable to stand the exertion of drilling, he intended only to present himself in the event the troop was called into the field.³⁷

In April 1862 he saw another chance to help. On the third of that month the Confederate Bureau of Ordinance published in the Courier a plea for church and plantation bells to be cast into cannon. As chairman of the vestry of St. Thaddeus Church, Ravenel responded to the Confederacy's need, proposing that the congregation offer their church bell to the government to be made into cannon. The congregation accepted Ravenel's proposal, and he wrote to F. L. Childs of the Charleston Arsenal to offer the bell. The classic gesture was graciously accepted by the government, which, however, informed Ravenel that enough material was currently available. It would let the congregation know if the bell were ever needed, but the summons never came, and the bell still hangs in the belfry.³⁸

Ravenel made still another gesture in support of the Richmond government, a gesture that eventually ruined him financially. As the war opened, Ravenel derived most of his income from interest-producing investments. He had almost

\$25,000.00, a very large amount indeed, out at interest, including \$14,000.00 owed to him by private individuals. As these debts came due and were paid, or as inflation ate away at the value of the Confederate dollar, and debtors stepped forward to pay with inflated currency, again and again he reinvested in Confederate bonds. In March 1864 he even contacted his broker, instructing the man to sell 16 shares of the Farmers' and Exchange Bank and \$350.00 in City of Charleston 6% stock in order to invest in Confederate 4% bonds.³⁹

Finally, Ravenel's only son Harry was called into the military. Though only sixteen, he had joined the militia of Abbeville District while away at school. The Confederacy's manpower shortage was so acute by late 1864 that South Carolina was forced to call even such young militiamen into active service. Ravenel fitted Harry up with a blanket and simple eating and cooking utensils and drove him to the depot in Aiken to board the train for Hamburg and join his company. Though it was apparent to him that the Confederacy was fast sliding into the abyss, he could send his son off to the war and be glad Harry could do something in defense of his country.⁴⁰

Christmas 1864 was so gloomy as to be an absolute mockery of the crowded, laughing, joking holidays of the prewar years. Ravenel and his family went, as always, to Pooshee, but few others joined the somber celebration at his father's house. Thomas's family had to stay away, his wife

was recovering from typhoid. Maria, too, stayed away. Her husband Percival had been killed in action not long before, and she had no heart for celebrating.⁴¹ Just days after Christmas Ravenel began trying, though to no avail, to persuade his father to begin making preparation to move. The fall of Charleston was immanent, but the old man would do nothing. Thoughts of leaving his home were much too painful.⁴²

War closed in on the Ravenels swiftly in 1865.⁴³ Ravenel heard on the 22nd of January while still at Pooshee that Harry had been stricken with typhoid fever. Riding to Charleston, he searched for his son in the various hospitals, finally finding him at the Citadel. Ravenel applied for a furlough to take him home and accepted a medical discharge for Harry only when it was pressed upon him by the surgeon in command and the colonel of Harry's regiment. Their report that Harry had been offered a discharge because of his age and small size but had refused it was highly gratifying to Ravenel, and he took his boy proudly home where he hoped that careful and tender nursing would help him. As he did whenever one of his children was ill, Ravenel paid close attention to the progress of the illness. Within just a few days Harry seemed better, but on the afternoon of February 2 Harry took a sudden turn for the worse. His pulse was very feeble, he could not speak, and he gave no sign of recognizing anyone in the family. How painful it was for Ravenel to sit by Harry's side and watch

his only son weaken. Yet as always Ravenel found comfort in his, and Harry's, trust in God, and he reflected that Harry was all he could want in a son in righteousness, integrity, obedience and affection. The acute anxiety was over quickly. By the morning of the fourth Harry was decidedly better, and he continued to improve steadily.

As one crisis passed another came to take its place. The military situation deteriorated with frightening rapidity. Sherman's forces were quickly nearing Charleston, and on the 18th the Ravenels were informed that Confederate troops were abandoning the St. John's area. Left without military defence in the face of immanent invasion, Ravenel felt his responsibilities very heavily. His own family, his father, his sister Maria, his sister-in-law Liz and their families all looked to him for guidance. He thought of taking them, and many of their neighbors, to Aiken, but Harry's illness, the problem of finding provisions on the road, and the awful possibility that the house in Aiken might not even be standing, made him decide to stay at Pooshee and await the Yankees. The silver and valuable papers had already been buried, and the family made such additional preparations as they could. Four months' rations were distributed to the slaves, and food supplies were taken into the plantation house. Two of Ravenel's daughters, Penny and Atty, stayed up till 2:00 a.m. one night stuffing personal valuables into a mattress. The next morning they

were back at the job, squirreling things away in a hiding place they had found in their room.

Raiding parties began troubling nearby plantations within days of the Confederates' withdrawal, but it was not until the first of March that they descended on Pooshee. Horses, wagons, buggies, harness, the contents of smoke house and root cellar, wine, guns and poultry were all taken, but no one was hurt, no buildings were burned, and Ravenel was able to find comfort in the loyalty exhibited by the Pooshee slaves during the incursion. One small pony and her colt were left behind by the raiders, and the northern troops did not touch the family's indoor food supply nor attempt to sack the house.

Following the harrowing night of March first, life calmed down again and even became monotonous. By the fourteenth of March things seemed secure enough to leave Pooshee for a morning's visit with Henrietta Stevens and the Jervey family at Northampton. "To our delight," recorded Susan Jervey, "a part of the Pooshee colony ventured over this morning; a party of women and children headed by Cousin Henry's patriarchal figure mounted on old Uncle's little white pony."⁴⁴ It was a good test of Ravenel's dignity to be able to look patriarchal with his lanky, five-foot, ten-inch body mounted on a little pony.⁴⁵ Ten days later he started back to Aiken with his family in a hired wagon, pulled by mules. Arriving safely, they found friends already in residence, refugees from other parts of South

Carolina. House and outbuildings were safe, though many small momentos, including some of Ravenel's scientific correspondence, had been taken by a marauding party of Confederate troops. The two eldest daughters, Lydia and Charlotte, were left behind in St. John's, but in mid-April Ravenel went back to retrieve them. United once again, the family gloomily followed the news as best they could as one Confederate army after another surrendered. Four years of war were over, it was spring and time for a new beginning.

WINTERING OVER

1860 - 1865

Footnotes

- 1 Paul Fussell, The Great War and Modern Memory (New York, 1975).
- 2 Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), 49, 54. Childs's edition of Ravenel's Journal provides a detailed and relatively complete insight into Ravenel's thoughts on the political events of the Civil War era. I have tried here to supplement rather than duplicate her work by adding analysis and by including information from additional sources. Whenever the Journal is my source, I shall in this chapter make an effort to cite Childs's edition rather than the manuscript in order to make it easier for my readers to check my material. Naturally, however, I frequently include information from portions of the journal not included in Childs's edition. When such a portion is involved in a footnote, I will use the manuscript for the entire footnote rather than mix sources.
- 3 Ibid. 49, 60 and passim.
- 4 Ibid., 54, quote on 61.
- 5 John McCardell, The Idea of a Southern Nation: Southern Nationalists and Southern Nationalism, 1830-1860 (New York and London, 1979), 41-48.
- 6 H. W. Ravenel, A Memoir from the Black Oak Agricultural Society, Read Before the State Agricultural Society, at its Meeting in December, 1842, at Columbia (Charleston, 1843), 19-23.
- 7 Dairy of Thomas Porcher Ravenel, 1845-54, Box 2, Thomas Porcher Ravenel Collection (South Carolina Historical Society, Charleston, S. C.; hereinafter cited as Diary of TPR, 1845-54). Thomas actually says they were addressed by James B. Rhett. I have taken this as a mistake. See also Folder 6, also labeled "Receipts for Contributions to the Southern Rights Association of St. John's Berkeley and St. Stephens," Box 3, Thomas Porcher Ravenel Collection.

- 8 Company Book of Middle St. John's Company, Folder 12, Box 4, Thomas Porcher Ravenel Collection.
- 9 H. W. Ravenel, Anniversary Address, Delivered Before the Black Oak Agricultural Society, April, 1852. (Charleston, S. C., 1852), 22 pp.
- 10 Ibid., 2-9.
- 11 Ibid., 11-14.
- 12 Ibid., 14-20, quote on p. 14. On Ravenel's use of progress as a justification for the collection of scientific data, see H. W. Ravenel, "A Paper on the Subject of Meteorology in its Connection with Agriculture & c.," The Constitution and Proceedings of the Black Oak Agricultural Society, for 1848 & 1849 (Charleston, 1849), 19-20. The argument that blacks and whites could never be amalgamated or live together as equals was often advanced by proponents of African re-colonization, but Ravenel does not seem to have been a part of this movement. David M. Streifford, "The American Colonization Society: An Application of Republican Ideology to Early Antebellum Reform," Journal of Southern History XLV (May, 1979), 201-20.
- 13 H. W. Ravenel, Anniversary Address, first quote p. 4, second p. 10. Quote from Seward comes from Samuel Eliot Morison, Henry Steele Commager and William E. Leuchtenburg, The Growth of the American Republic (2 vols., New York, London and Toronto, 1969), I, 566.
- 14 H. W. Ravenel to E. Tuckerman, December 31, 1850, Edward Tuckerman Papers (American Antiquarian Society, Worcester, Mass.; hereinafter cited as Tuckerman Papers, American Antiquarian Society).
- 15 H. W. Ravenel to E. Tuckerman, February 24, 1852, Tuckerman Papers, American Antiquarian Society.
- 16 H. W. Ravenel to E. Tuckerman, quote from March 23, 1857, and see also December 7, 1860, Tuckerman Papers, American Antiquarian Society. On general primacy of local loyalties see McCardell, Idea of a Southern Nation, 5-6.
- 17 Childs (ed.), Private Journal of HWR, 20, 10, quote on 17.
- 18 Ibid., 10-11, 20, 32-33, 40, 42. Stephen Channing's reading of Ravenel's manuscript diary lead him to date his arrival as a secessionist to John Brown's raid, December 1859 and January 1860. The same passages,

- however, lead me to believe Ravenel was not stating then his own beliefs but merely reporting on popular opinion. Childs's rendition of these passages is reasonably complete, so see either Childs (ed.), Private Journal of HWR, 4-5 or entries dated December 31, 1859 and January 3, 1860, Private Journal of Henry William Ravenel (South Caroliniana Library, University of South Carolina, Columbia, S. C.; hereinafter cited as MS Private Journal of HWR). Channing, Crisis of Fear: Secession in South Carolina (New York, 1970), 29.
- 19 A. Gray to H. W. Ravenel, November 30, 1860, Folder 12, Box 1, Botany Department of the University of North Carolina Historical Collection (Southern Historical Collection, University of North Carolina, Chapel Hill, N. C.; hereinafter cited as Botany Department Historical Collection, UNC); H. W. Ravenel to A. Gray, December 11, 1860, Gray Herbarium (Harvard University, Cambridge, Mass.); H. W. Ravenel to E. Tuckerman, December 7, 1860, Tuckerman Papers, American Antiquarian Society.
 - 20 H. W. Ravenel to A. Gray, March 21, 1861; MS Private Journal of HWR, March 21, 1861.
 - 21 John Ulric Nef, War and Human Progress: An Essay on the Rise of Industrial Civilization (Cambridge, 1950).
 - 22 MS Private Journal of HWR, January 24, March 2, June 16, 1860; and passim. Both manuscript and edited versions of Ravenel's Journal contain frequent references to ill health. H. W. Ravenel to E. Tuckerman, December 7, 1860, Tuckerman Papers, American Antiquarian Society; H. W. Ravenel to L. R. Gibbes, April 16, 1860, in Letters to Prof. Lewis R. Gibbes from Dr. Henry W. Ravenel, 1850-1884. From Transcriptions of the Originals in Possession of the Charleston Museum. 2 Vols. (South Caroliniana Library, University of South Carolina, Columbia, S. C.; hereinafter referred to as Typescript Gibbes Letters, USC).
 - 23 MS Private Journal of HWR, April 3, April 14, April 21, 1860, October 16, 1864.
 - 24 Ibid., December 9, 1860; March 10, March 17 (quote), June 25, June 27, June 28, June 30, July 3, July 7, July 11, July 25, 1861.
 - 25 Childs (ed.), Private Journal of HWR, 20; L. R. Gibbes to H. W. Ravenel, May 28, 1860, Papers of Henry William Ravenel (Special Collections, Robert Muldrow Cooper Library, Clemson University, Clemson, S. C.; hereinafter cited as Ravenel Papers, Clemson); H. W. Ravenel

- to L. R. Gibbes, June 4, 1860, Typescript Gibbes Letters, USC.
- 26 Childs (ed.), Private Journal of HWR, 19-21.
 - 27 M. A. Curtis to A. Gray, July 11, 1860, Gray Herbarium; A. Gray "[Notice of] Fungi Caroliniani Exsiccati: Fungi of Carolina Illustrated by Natural Specimens of the Species ... Fasc. I-V," American Journal of Science and Arts 2nd Ser. XXXI (January, 1861), 130-31; L. R. Gibbes, "Ravenel's Fungi of Carolina," Charleston Daily Courier, October 12, 1860.
 - 28 A. W. Chapman to H. W. Ravenel, January 21, June 6, 1860, Ravenel Papers, Clemson; Charleston Daily Courier, June 11, 1860.
 - 29 MS Private Journal of HWR, March 25, 1861 (Childs, p. 57), May 20, 1861.
 - 30 Childs (ed.), Private Journal of HWR, 82, 144, 414. Searches of the Daily Courier for the meteorological article (July 2-9, 1861) and for the article on cotton seed coffee (April 1-8, 1862) failed to turn up either one.
 - 31 MS Private Journal of HWR, June 5, June 19, August 7, 1862; H. W. Ravenel to M. A. Curtis, September 13, 1847, Folder 22, Box 2, Moses Ashley Curtis Papers (Southern Historical Collection, University of North Carolina; hereinafter cited as Curtis Papers, UNC).
 - 32 MS Private Journal of HWR, September 1, September 4, 1862.
 - 33 Ibid., October 22, 1863; October 3, 1864; Article signed "R." but obviously attributable to Henry W. Ravenel, "Cryptogamous Origin of Fevers," Southern Quarterly Review N.S. I (April, 1850), 154; H. W. Ravenel to M. A. Curtis, October 14, 1864, Folder 50, Box 3, Curtis Papers, UNC.
 - 34 Childs, (ed.), Private Journal of HWR, 150-51.
 - 35 Ibid., 169-71.
 - 36 Ibid., 196.
 - 37 MS Private Journal of HWR, June 22, June 27, 1861; September 3, 1863; June 14, 1864.
 - 38 Childs, (ed.), Private Journal of HWR, 135; F. L. Childs to H. W. Ravenel, April 23, 1862, Ravenel

- Papers, Clemson; R. Conover Bartram, "Biography of a Church, Prelude to the Future: The History of the Church of St. Thaddeus, Aiken, South Carolina," (1966, typescript), 23.
- 39 MS Private Journal of HWR, April 18, 1861; January 28, February 15, May 8, July 2, 1862; February 16, March 3, July 4, 1863; March 14, March 15, March 22, 1864.
- 40 Childs (ed.), Private Journal of HWR, 200-204.
- 41 MS Private Journal of HWR, December 25, 1864.
- 42 Childs (ed.), Private Journal of HWR, 205-206.
- 43 So swiftly did events move, and so much did Ravenel and others record of them, that I am at a loss in my footnoting from here to the end of the chapter. Information is a very condensed recounting of the happenings described in: Childs (ed.), Private Journal of HWR, 211-28; and Susan B. Jervey and Charlotte St. J. Ravenel, Two Diaries From Middle St. John's, Berkeley, South Carolina, February-May, 1865: Journals Kept by Miss Susan R. Jervey and Miss Charlotte St. J. Ravenel, at Northampton and Pooshee Plantations ... (n.p., 1921).
- 44 Quote from Jervey and Ravenel, Two Diaries, 14.
- 45 Physical description of Ravenel from a pass issued to Ravenel for travel between Charleston and Aiken and pasted into MS Private Journal of HWR under date of January 8, 1863.

GETTING BY

1865 - 1869

As southerners prepared to recoup following the Confederacy's defeat, they faced widespread physical destruction. The scanty railroad system lay in ruins, navigable streams and ports were obstructed, bridges destroyed. Sherman's army left desolate a wide swath through Georgia and South Carolina. In South Carolina alone, 13 towns were burned as well as much of the state capitol, Columbia. There, eighty city blocks were reduced to rubble. War's desolation was not easily or quickly mended. Resources for physical rebuilding were often not readily available, for the South's war effort had consumed much of the food and other goods, and cash was nearly non-existent. Greenbacks, that is, were scarce; Confederate currency was plentiful but useless. Furthermore, there were more urgent needs. To work out labor arrangements with the freedmen and get a crop in the ground was the primary concern of all in the spring of 1865.¹

Henry Ravenel's situation was more fortunate than most. He came home to Hampton Hill from Pooshee to find the town of Aiken still standing. His own house, its furnishings and his outbuildings were in good shape, and in his fields thousands of peach trees and grape vines were standing unmolested. Amid fresh green leaves were the small globular

swellings of forming fruit, promising a bumper crop come July.²

War had not left Ravenel untouched, however. It wrecked his personal finances and forced him and his family into an unfamiliar, genteel poverty. They never recovered their pre-war prosperity. Everything that Ravenel did after May 1865 may be understood more clearly if seen through the prism of his sudden and unaccustomed financial need. Yet the need must not be exaggerated. Though he was sometimes anxious about providing even the most basic necessities for his large family, something always came along to keep them from actual want. Small Christmas and birthday gifts for at least the younger children remained customary, and occasional trips to Augusta or Charleston were not beyond the family's means. The situation was never desperate, and Ravenel was never forced to step outside the behavioral bounds of Victorian gentlemen in coping with it. The family piano and the silver were never sold, for example, despite the occasional necessity of paying personal property taxes on them. Ravenel willingly worked to bring in money, and he allowed his older daughters to help by teaching school, while his wife took in boarders for a short time. It never seemed to occur to any of them, however, that the daughters could help care for the garden or orchard; indeed, not until 1871 did they do the family's cooking.

Poverty forced its way to Ravenel's attention very soon after the war. He took stock of his financial position May

22, 1865, and found his investments, from which he had derived the greater part of his income, nearly obliterated.³ He had lost \$24,000.00 in Confederate bonds and cash, but he had remaining 146 bank shares that he rightly thought of doubtful value, \$1,060.00 in City of Charleston 6 per cent bonds, \$1,050.00 in State of South Carolina 6 per cent bonds and \$1,500.00 in 6 per cent bonds of the Charleston and Savannah Railroad Company. This, he wrote, "with my farm (& 32 negro slaves?) is the total amount of my property."⁴

One week later, May 29, 1865, Ravenel knew without doubt that his slaves were slaves no longer. The loss of their labor was a serious blow, and emancipation also entailed loss of bonds from his former brothers-in-law, Charles and Peter Snowden, amounting to \$7,770.00 for slaves purchased. Ravenel knew they could no longer repay him and cancelled the debt. On the slim chance that the federal government might someday allow compensation to slave owners, Ravenel listed the slaves he had owned in April and May 1865 to substantiate a claim to reimbursement.⁵ Ravenel's list is poignantly symbolic of his complex feelings toward his slaves. As he wrote each one down by name, grouping them in families or couples, he looked back with regret upon the pre-war days. The slavery that he had believed, with apparent sincerity, to have been in the best interests of both whites and blacks was gone. He worried both about how he would get along without his slaves and how they would get along without him. Though his former slaves all expressed a

desire to remain with him, he knew he could no longer afford to employ them all and that they would eventually have to leave. This did not end his sense of responsibility for them, however. As long as possible he planned to support one old woman and her two grandchildren, and he wished them all well, praying to God that emancipation might be successful, "a blessing & not a curse" to the freedmen.⁶

Ravenel had little trouble arranging terms with his former bondsmen for such work as he needed and could afford to have done. His first impulse was to place the system on a footing as similar as possible to the old one. Those freedmen whose full-time labor was needed would receive in return housing, food, clothing, and medical care, while the others would have to find work elsewhere but could still lodge at Hampton Hill, paying rent with a portion of their work time.⁷

His proposal was accepted, none of the freedmen expressing any dissatisfaction with the work arrangement. In fact, Ravenel found them quite reticent about the situation. Whenever the subject of their new freedom or work arrangements came up, he was the one to broach it, and both sides seemed to find the subject awkward. By the end of June, however, Ravenel had reconsidered the arrangement and concluded that in fairness to his employees, he should begin paying them wages and leaving to them the responsibility of providing for their own clothing, blankets, shoes, medical care, and whatever luxuries they might desire. He was well

aware of the injustice of continuing to treat former slaves economically as though they were slaves still. The same arrangements, he thought, should be made with them as might fairly be made with a white man.⁸

Ravenel's desire to pay his laborers cash wages was hindered by his own lack of cash. His income from investments was halted, and during the first year after the war he was just able to meet his family's few needs for cash by selling garden vegetables and cutting timber for the railroad.⁹ Not even the once lucrative peach crops could be counted on for income. With South Carolina's railways in a shambles, Ravenel could not get the fruit to northern markets, and other southerners had little cash to spend on such luxuries, so 1865's rich peach harvest was wasted. What the Ravenels could not eat, dry for future use, or give to friends fell from the trees to rot on the ground.¹⁰ Spring frosts destroyed the crop in 1866 and 1867¹¹ and the next year's good harvest brought little value. Ravenel's inadequate work force, consisting that year chiefly of himself and his son Harry, could not keep up with the swiftly ripening peaches. Though they boxed up as many as possible for marketing in New York, there was much wastage and again the orchard ground was strewn with rotting fruit. The produce that reached New York arrived in poor condition, bruised from traveling, and brought low prices.¹² In response to such bad luck, in December 1867 Ravenel began digging up and selling the trees themselves.¹³

Failure of cash income from the usual sources, investments and the fruit crops, induced Ravenel to find other ways to compensate his workers. Like many other southern planters, he eventually turned to a combination of cash payments for housework and share cropping for work about the farm. If the examples of such arrangements that he noted in his journal may be taken as typical, he was inclined to be fairly generous. In February 1866 he struck a bargain with two of the men to clear the brush out of the peach orchard and plough it twice in return for a sixth of the profits of the peach crop.¹⁴ Spring's hard freeze, of course, negated both his profits and theirs. On other occasions, in the springs of 1871 and 1873, he contracted with former slave Jimmy for planting corn the first year and corn and cotton the second. Ravenel would supply the land and use of a mule and cart; Jimmy would supply the labor. The corn crops were to be split 50-50, while Ravenel asked for a fourth of the cotton wool and all the seed.¹⁵ The success that Ravenel and his former slaves had in working together after the war was in marked contrast to the experiences of many other southerners. Ravenel's relations in St. John's were not so fortunate. They had a wretched time trying to arrange terms with former slaves. The first summer it was difficult even to get them to plant enough food crops to see everyone through the winter, and Rene complained that he, William, and their neighbors had lost much property through theft.¹⁶ In 1866 things went a little more smoothly. A written

contract defined labor terms at Pooshee, but disputes still arose. Richard Dwight, Ravenel's brother-in-law and manager of the plantation, found he had to consult the military authorities before dismissing some workers accused of shooting livestock and again over the issue of whether building fences around unplanted land was included in the hands' contract duties or must be compensated separately. In both cases northern officers appeared to attempt to be fair to both sides, with the result that Dwight was frustrated by the outcome both times.¹⁷

For Ravenel a more important worry was finding something he could do to ensure a steady, even if small, income for his large family. Two daughters had been added to the household during the war. Susan Stevens, born July 20, 1861, and Elizabeth Gaillard, born July 4, 1864,¹⁸ brought the number of children to eight. The responsibility of providing for them all was a depressing burden to one unaccustomed to monetary problems. In the first weeks after the end of the war he often tortured himself by thinking of various times when he might have foreseen the Confederacy's collapse and saved his property. He might, he thought, have sold his slaves and invested the proceeds in specie or land, or he might have placed his capital in safer securities than Confederate bonds, but he let the chances slip past. "I even aggravated the evil," he confessed to his journal, "by avariciously selling articles because they brought me a large profit (as I supposed) & which I might now have owned,

had I not disposed of them." A little over a year later, in July 1866, he was looking back to his young manhood for the source of current troubles, recalling how he had chosen planting over medicine. "I have ever since regretted that I had not persevered in the study of medicine," he wrote. It was "my error in the beginning ... [to take] to planting, a life of ease & non-exertion, instead of studying a profession by which I could have gained a livelihood [sic] through my own exertions. I would now have had that profession as a means of support."¹⁹ If Ravenel really had always regretted his choice of career no other mention of it survives.

Spurred by need, Ravenel impatiently cast about for employment. Even as he watched his fine crop of peaches ripen in 1865, he knew well that spring frosts would make peach growing a precarious living and that wood cutting could last only as long as the timber supply. That fall he thrust aside his dislike of cities to consider selling Hampton Hill and moving to Charleston or Columbia. Letters to James Wilson in the capitol and Frank Porcher and Peter Gaillard in Charleston brought back discouraging news about business in the cities²⁰ and he looked for other opportunities.

At this point Ravenel was oriented toward finding wage labor for long-term income and selling assets, such as the garden vegetables, timber and his farm, to meet short-term needs. Accordingly he wrote in August 1865 to Edward Tuckerman to renew their botanical friendship and to begin

spreading the word that his valuable herbarium and botanical library were on the market. He had also 30 to 40 unsold volumes of the Fungi Caroliniana Exsiccati available.²¹ In November he wrote in similar vein to Paul Ansel Chadbourne (1823-1883) of Bowdoin College, to whom he had owed a letter since just before the war, and also sent a letter to Thomas P. James in Philadelphia. By November, though, Ravenel had half relented with regard to the herbarium's sale, and when William Canby wrote to enquire what terms he would be willing to accept, he replied that he would rather not sell it unless necessary. Christmastime brought from Chadbourne an order for a set of the exsiccati with another enquiry about the herbarium. Ravenel countered with an offer of the first twelve fascicles of Mougeot and Nestler's Stirpes Cryptogamae Vagesorum (1810-1843) at \$100.00 in specie or \$124.00 in currency, Greville's Cryptogamic Flora for \$40 and twelve volumes of De Candolle's Prodromus and five volumes of Kunth's Enumeratio Plantarum Omnium Cogitarum (Stuttgart, 1833-1850) for \$50.00.²²

Though he kept the herbarium, Ravenel's microscope was soon sacrificed. In November he gave it to Amory Coffin, the family physician, in payment of the past year's medical bill of \$65.00. He had been little able to use it for the past seven or eight years but parted with it reluctantly even so. Coffin was also rather reluctant to take it. Ravenel attributed this to regret at depriving his friend of the microscope, but Coffin may have preferred to wait longer

and receive payment in cash. American medical men were slower than the naturalists to realize the usefulness of the microscope, and though by 1860 it had become popular in teaching and in the larger cities, Coffin probably saw little use for it in his day-to-day practice. He kept it, however, and in future years it was always available to Ravenel when he needed it.²³

Reestablishing his botanical correspondence made Ravenel think of a new possibility for earning money through botany. In the spring of 1866 George Engelmann of St. Louis recruited Ravenel's help in collecting specimens of the phanerogamic genus Juncus for an exsiccati. When Ravenel protested that he was willing to help but could not afford a collecting trip to the coast and could not devote much time to the venture, Engelmann offered to pay Ravenel for his efforts. Ravenel accepted the offer and spent spring and early summer collecting more than 100 specimens of each species he could find. His enjoyment of phanerogamic botany returned and he learned a great deal through his correspondence with Engelmann. The experience gave Ravenel an idea. In July he began writing to other botanists asking all the same question. Would there be enough demand for collections of plants to furnish Ravenel a living? As he reminded Gray, his collecting grounds in South Carolina contained a rich and interesting flora, and his previous experience would enable him to collect in all the orders of cryptogams except the algae. Collections of native American seeds to be sold

to European seed dealers were another possibility, as was the issuance of fascicles of plants with an index. This last idea, though, would involve expense and would probably be impractical unless subscriptions could be pledged ahead of time.²⁴

Responses to the idea came within a month or two. Gray wrote back especially quickly, less than two weeks after Ravenel had written him. The letter had been Ravenel's first after the war, and Gray was very glad to hear from him again. Good specimens of phanerogams, he reported, would bring about \$8.00 per hundred, though seeds would pay better. Tree seeds were wanted for Victoria Colony, Australia, and Dr. Ferdinand Muller (1825-1896) of the Melbourne botanical garden needed seeds of southern pines and oaks. He also suggested that the Royal Botanical Gardens at Kew might buy some seeds. Gray assured Ravenel he might "Rely on my sympathy and zeal, in all these things - especially when I am to serve my best foreign correspondents as well as yourself." Despite his encouraging tone, Gray did not think Ravenel could make enough to live on by his collecting, though the proceeds might be a good supplement to other income.²⁵

Curtis was even less hopeful than Gray of the success of Ravenel's idea. He pointed out a problem of which Ravenel had been aware in the beginning, that most botanists acquired their exotic plants by exchange and would have little need to buy specimens. Engelmann was also less than

encouraging. Ferdinand Jakob Lindheimer (1801-1879), Engelmann's friend and a fellow German immigrant, had traveled extensively in Texas between 1843 and 1852 collecting sets of plants for distribution at \$8.00 per hundred. Though fourteen years had gone by since Lindheimer quit collecting to become a newspaper editor in New Braunfels, Engelmann still had great quantities of Lindheimer's plants on hand with no purchaser in sight. Tuckerman and Berkeley both had more positive comments to make. Tuckerman suggested B. Westermann & Co., German booksellers in New York, for help in setting up European sales, and Berkeley wrote that he had placed an advertisement in the Gardener's Chronicle.²⁶

Berkeley's ad caught the attention of several botanists, including Mordecai Cubitt Cooke (1825-1914), a talented Englishman whose efforts in mycology were fast placing him on Berkeley's own level. His prominence had increased sharply during the Civil War years with the publication of three books, the Manual of Botanic Terms (1862), Plain and Easy Account of British Fungi (1862) and Index Fungorum Britannicorum (1865). In August, 1866, Cooke wrote to Ravenel that he had "often & unsuccessfully" tried to obtain copies of the Fungi Caroliniani Exsiccati and now was encouraged by Berkeley's notice to see whether he could obtain South Carolina fungi and on what terms.²⁷

Business relations between Engelmann and Ravenel and between Cooke and Ravenel reveal the depths of Ravenel's

inexpertise in matters of commerce. In his cotton, rice and peach operations he had always left the business matters to a factor, and brokers had similarly handled the details of investments. Now Ravenel had to devise a marketing system himself and found the task more complicated than he had expected.

As his first mistake, Ravenel failed to understand the subtle change that had to occur in his relationship with Engelmann upon his acceptance of Engelmann's offer to pay. He declined to name a price for his collections, saying he would be willing to accept whatever Engelmann thought they were worth. This, of course, placed some pressure on Engelmann to be generous. Next, rather than insisting that Engelmann tell him what he wanted, he collected large quantities of everything he thought might be of interest. Since payment for specimens was customarily made on the basis of the number supplied, this put still more pressure on Engelmann's generosity. Finally, Ravenel seemingly did not realize that Engelmann might expect him to take greater care than usual with the collections. He did try to obtain good specimens of Juncus for Engelmann, collecting them in flower that summer, and going back to the same sources in September to collect them in fruit. He does not seem, however, to have used more than his usual care in assembling the material. When a check for \$140.00 came in November, accompanied by criticism of the collections, Ravenel was stung. The \$140.00 was more than he expected, but the words

hurt. He accused Engelmann of not fully appreciating the difficulties under which he worked and told him how he had nearly prostrated himself by walking two or three miles in the blazing sun to collect Juncus canadensis.²⁸

Arrangements for the very first set of plants that Cooke ordered were made awkwardly as well and left the Englishman rather disgruntled. Finding it difficult to transmit cash to Ravenel, Cooke placed his order through a New York bookseller, Trubner & Co., just as he had suggested he would do in his August letter. When that order failed to yield results he placed it again through a second firm, Williams and Norgale, again with no results. Finally, in August 1867 he asked the Rev. Edwin Cortlandt Bolles (1836-1920) of Portland, Maine, to contact Ravenel and have him send on as many numbers of the exsiccati as Ravenel had available with loose specimens of the species contained in the other fascicles.²⁹

Not until early October did Ravenel get around to sending through Bolles the material that Cooke had ordered. On the same day Ravenel sent Cooke two separate proposals for the sale of his duplicate collection of fungi. One proposal was that Ravenel should do the work of arranging his duplicates, counting the specimens and making sure they were good representations of the species, then send them to Cooke, asking about \$3.00 per hundred for them. Under the other proposal Ravenel was to box up all his duplicates and send them "as is", Cooke to pay whatever he thought they

were worth upon their arrival. Ravenel's letter reached Cooke first, and he was still thinking about the proposals when the package arrived. Unfortunately, the contents were disappointing. Ravenel evidently had not packed the specimens with his usual care, or the collection had deteriorated in storage, or both, for the fleshy fungi arrived in very bad condition, moldy and broken. Cooke reported that some were so poor that he could only throw the fragments on the fire.³⁰

Unimpressed though he was with the first package, Cooke was cautiously willing to consider taking the rest of Ravenel's duplicates. There were obvious business objections, however, to both of Ravenel's proposals, which he proceeded to point out to Ravenel. First, Cooke could in no way consider the arranged fungi at \$3.00 per hundred without having more information about the collection.

Now - I could not accede to this at once - [he wrote] because I can have no idea how many hundreds you may have, or how many specimens there may be of the same species. Of course 50 of the same thing would not be worth 3\$ a 100 to me, ... Neither do I know whether they are simply duplicates of what you have sent me, nor whether they contain other than American fungi[.]

In addition, Cooke thought the price was rather high. Ordinarily fungi in good condition could be had for about \$2.00 per hundred, while transportation costs would bring the price of Ravenel's specimens to nearly twice that. For that much money Cooke would expect a rather extraordinary collection. He had, for example, recently purchased at \$4

per hundred a fine set of 2,000 German species "in beautiful condition arranged and mounted in cases with classified indices & c."³¹

Ravenel's second proposal Cooke thought unfair to the South Carolinian himself. Disappointment would be certain if Cooke should happen to remit less than Ravenel had hoped for the collection. As an alternative Cooke would promise £10 (about \$50.00) and, if on examination he thought it worth more, would pay up to an additional £10. This Ravenel accepted, and by March 1868 arrangements were made to send his plants and Cooke's remittance through Bolles.³² Before the exchange could occur, however, a new plan was formed, at Ravenel's suggestion. Ravenel divided his duplicates into ten sets of varying sizes. The largest, 810 species, was for Cooke, who would pay \$4.00 gold for it and who would also take care of selling two more sets to other European botanists.³³

Seven other sets Ravenel sent to Horace Mann (1844-1868) in Cambridge, Massachusetts. Mann had written to him in February 1868 to enquire of some books and plants and had since then bought Mougeot and Nestler's Stirpes for \$100.00 and had disposed of Ravenel's two volumes of Agassiz's Contributions to the Natural History of the United States (4 vols., Boston, 1857-1862) to someone else. At Ravenel's request Mann also agreed to take one set of fungi for himself and try to dispose of the remaining six to other American botanists. In a similar fashion Ravenel had made

the acquaintance of William Wallace Denslow (1826-1868) of New York, who now promised to sell for him some of his books and phanerogamic plants.³⁴ Once more Ravenel was able to do business through factors.

Before May 1868 when he made his arrangements with Denslow, Mann and Cooke, Ravenel had been making a very low percentage of his income from botany. Gray's prediction had come true. He was not selling enough collections to live on, but only a few that served to supplement other income. Given the low yield possible from botany, Ravenel did not feel justified in devoting much time to it. In January and again in February 1868 he complained to Edward Tuckerman that though his interest in botany had been considerably revived since the war, he was having to neglect it in order to make a living.³⁵

If botany did not pay, Ravenel hoped that horticulture would. In July 1866 when he was writing to other botanists for their opinion on his collecting idea, Ravenel received a letter from Thomas Meehan (1826-1901), an established nurseryman in Philadelphia and editor of the Gardener's Monthly and Horticultural Advertiser. Meehan's letter inquiring about seeds of native southern forest trees was a perfect opening for Ravenel to include him in the opinion poll, so he asked Meehan what he thought of the prospects of selling seeds to European nurseries and seedhouses. The Philadelphian replied that he had been in touch for many years with the large dealers of England, France and Germany

and had found the demand for seeds to be rather limited. European nurseries and seedhouses were already quite well stocked with American plants. Meehan would, however, take three barrels of cypress seeds and twenty pounds of the seeds of each pine species, if Ravenel could supply them.³⁶

Within two weeks of writing his discouraging letter on seed collecting, Meehan had decided upon a new and better cure for Ravenel's money problems. The nursery business, he wrote, could be quite profitable, particularly if Ravenel grew young roses and grapes, which should do better in the South than the North and so give him an edge over northern competitors.

Furthermore, Meehan was sure Ravenel would find the work enjoyable. If he were interested, Meehan promised to supply Ravenel with starting stock for which he could pay whenever convenient, or never, if the business failed. Ravenel hesitated. Reverend Cornish urged him to try the nursery, but Jules Berckmans wrote from the standpoint of several years experience in the field and advised caution. Uncertain which piece of contradictory advice he should follow, Ravenel sought the wisdom of a higher authority. "In my perplexity I seek by prayer to God to be guided so that I may seek only that condition in life as may accord with His will," he wrote August 12.³⁷

To Meehan he protested that he knew nothing of the nursery business. The nurseryman replied with a long letter reassuring Ravenel that he should be able to pick up the

requisite experience along the way. Two weeks later still more encouragement came from Philadelphia, but even before the first of these two letters arrived Ravenel had decided to go ahead with the nursery scheme. The only uncertainty remaining was whether to stay at Hampton Hill or to begin the nursery elsewhere. By the middle of September that decision, too, had been made, and Ravenel set about turning Hampton Hill into a nursery. Beginning capital was hard to find, but Cornish loaned \$500.00 that he had in trust for investment purposes. Meehan sent a large box of evergreens, roses and other plants along with instructions and advice, all of which he said Ravenel should take as a gift and not attempt to pay for. Mrs. William Gregg, a friend and neighbor of the Ravenels', donated a large quantity of rose clippings, and before November's end, Ravenel was in the nursery business. "I am glad that I have at last begun to do something that looks like work for a living," he noted on the 25th.³⁸ Like his other money-making ideas, Ravenel's nursery was only moderately successful, though he continued to operate it as long as he remained on the farm.

Just as he was launching the nursery, Ravenel found another way to turn horticulture to profit. On the 26th of November, 1866, a letter came from former Confederate general Daniel Harvey Hill (1821-1889), now editor of a magazine in Charlotte, North Carolina, the Land We Love. The magazine was to include a department of agriculture, and Hill hoped to get Ravenel to write the botanical articles.

"We pay from \$2 to \$3 per printed page for all accepted articles," Hill wrote, but "To gentlemen of science, the latter sum always." "It would be a source of pride to enroll your name on our list of contributors," he concluded.³⁹

Hill's request fell on fertile ground. It had occurred to Ravenel some weeks prior to receiving Hill's proposal that horticultural writing might be profitable. He had, in fact, been working on a short, practical guide to gardening that he intended for publication. A chart entitled "Vegetables all the Year Round" that he devised for inclusion in the article brought him \$50.00 the following spring from Francis Holmes, who used it in a third edition of his little book The Southern Farmer and Market Gardener (Charleston, 1866). Even had this idea not yet occurred to Ravenel, he could not have been displeased at the prospect of being paid to expound on one of his favorite subjects, the interrelation of agriculture and science. Ravenel did not hesitate to accept. When he saw a copy of the first number, issued in May, its neat preparation and good material impressed him. He especially admired Hill's editorials. "He wields his pen as gracefully as the sword," Ravenel commented, and in December he sent a notice of the magazine to the Courier by way of Frank Porcher.⁴⁰

Like many other southern periodicals the Land We Love had a short life, its last issue appearing in March 1869, after which Hill sold out to the New Eclectic Magazine of

Baltimore. It carried a variety of articles including essays, poetry, and a large amount of material dealing with the Civil War. Ravenel provided an agricultural article for five issues between May 1867 and March 1868. A sixth article entitled "Orange Culture" and appearing in June 1868 might also be his. Hill had asked him for such an article in April, but though he mentioned the request in his journal, he never mentioned whether he complied. Unlike his other articles, this one did not carry his name, and its bubbly style, effusively praising oranges as a crop, was rather unlike Ravenel. He, too, could become stylistically effervescent but usually remained sober enough to comment in greater detail on some of the pitfalls of his subject than did the author of "Orange Culture."⁴¹

Ravenel's articles written for the Land We Love dealt with diverse topics of practical interest to farmers, including the raising of peaches and grapes, and the more esoteric subject of the function of leaf stomata in regulating water loss in plants. All conformed with a major desideratum of such pay-per-page magazine articles in dealing with topics he knew intimately and could write up quickly. With the work of only a few hours bringing in \$20.00 or more, Ravenel was not badly paid for his time, and Harvey Hill did have a reputation for paying his writers promptly.⁴²

In addition to what he was paid directly for the articles, Ravenel received a welcome bonus in connection with

his last number. In this article he turned his attention to "Lespedeza Straita, or Japan Clover, the New Forage Plant of the South." This legume was clearly a foreign plant introduced to the United States two or three decades earlier. Ravenel had first noticed it in South Carolina in 1849 or 1850, and could find no mention of it by earlier American botanists, though it had been known from Japanese specimens as early as 1784. In the eighteen years since he first found it, he had heard of its spread to a number of new localities where it was gaining a favorable reputation for hardiness and for good cattle food. Though he cautioned against hasty judgment, he hoped Japan clover would prove a God-send to worn-out land and would prove hardy through hot, dry summers that killed other vegetation.⁴³

Such magnificent qualities combined in one plant were sure to arouse the interest of southern farmers. During the fall following publication of the Lespedeza article, Ravenel received a steady flow of inquiries; many enclosing fifty cents or a dollar or two to purchase some seeds. Ravenel was quite prepared for this influx of orders. He had considered Lespedeza seed a possible item of commerce for months before he published the article, having received at least one request for it as early as the previous November, and as the seeds of the little plant ripened the following October, he and Harry collected large quantities to fill orders.⁴⁴

Publication of the Lespedeza article, to the extent that it was a deliberate attempt to attract orders, must be considered one of the few truly clever things Ravenel ever did in connection with his post-war commercial activities. It was an imaginative use of advertising by one who otherwise neglected that aspect of business almost entirely. On two occasions others had placed advertisements for him. Denslow and Mann, with his approbation, had advertised in the American Naturalist some books that he intended to sell,⁴⁵ while Berkeley's first thought had been to place a notice in the Gardeners Chronicle. The latter ad, of course, was quite successful in attracting attention. Despite the lessons presented by Berkeley's ad and the Lespedeza article, however, Ravenel never formulated an advertising program.⁴⁶ He was embarrassed to be charging money for things that he would once have given as gifts and preferred to let others know of his services discretely, by word of mouth only.

Chronologically, Ravenel's successful exploitation of Lespedeza striata coincided closely with the progress of his arrangements with Denslow, Mann and Cooke for the sale of his collections. During the late summer and fall of 1868, as requests for seed came through the mail, he was also receiving from time to time reports on the sale of collections. Denslow died June 30, 1868, of tuberculosis but had by then already sold two sets of plants for Ravenel and had settled for them. A third set Ravenel had asked

him to present to the Buffalo Lyceum of Natural History, through Judge G. W. Clinton, but he never heard whether this was done.⁴⁷ Horace Mann also met an early death from tuberculosis, November 11, 1868, but not before he had sold two sets of fungi and one set of volumes 4 and 5 of the Fungi Caroliniani Exsiccati. Soon after his death his brother settled accounts with Ravenel, sending him a check for \$75.63.⁴⁸ Cooke did not share the fate of Ravenel's other factors but did share their success. By late August, he had sold one set of fungi and had gotten a commission for Ravenel from Joseph Hooker to collect up to £5 worth of seeds of American trees and shrubs. The last of Cooke's fungi collections was sold by early November.⁴⁹

To Ravenel, the happy outcome of both ventures at once confirmed his hope that he could make a significant contribution to his family's welfare through botany. His feeling in January and February 1868 that he could not afford to devote time to botany melted with the last spring frosts. In May he wrote hopefully, but with some lingering reservations, to Curtis of his agreement with Cooke. "I have some hope of turning these things to profit. If I could meet with a ready sale, or could have several sets engaged it would pay me very well to devote some time to collecting, but of course one or two sets only at five or six dollars per 100 would scarcely be worth the while."⁵⁰

For the first time since the outbreak of war Ravenel began to go out collecting on a regular basis. Seven years

of inactivity in botany had taken their toll on his knowledge. He was rusty. With renewed practice, though, he improved quickly. "The old interest is reviving -," he wrote Curtis in June, "long forgotten impressions are restored, & memories of things long since faded away are gradually coming out again like the features of an old picture on which the dust of time had been settling."⁵¹

As he dusted off both his knowledge and his enjoyment of botany and put them to good use, Ravenel confided to Curtis a deep happiness. "In a word, I feel contented, satisfied & trusting," he wrote that June.⁵² There were, though, an assortment of personal clouds on the horizon. His elderly father had sickened and died in October, 1867, and in the August following his happy letter to Curtis, Ravenel's wife Mary was extremely ill for several days as a result of "one of those casualties which sometimes happen in the best regulated families," as he delicately expressed the apparent miscarriage. Yet Mary recovered, and though he was saddened by loss of his father, Ravenel took comfort from the old man's firm faith in his final days.⁵³

Worries such as these were fleeting things. They could not long distract him. Politics were a different matter. The deep interest with which Ravenel had followed political and military events during the war did not evaporate on the coming of peace. Rather, he remained as passionately interested as ever. With a pragmatism born of a deep belief in the wisdom and goodness of God, Ravenel was able intel-

lectually to accept defeat as a chastisement administered to the southern people by a loving father. Soon after the war he declared himself ready to become again a loyal citizen of the United States, showing his readiness in little symbolic ways, taking the oath of loyalty, attending a church service to mourn Lincoln's death. During the brief days of Andrew Johnson's administration he sometimes hoped that the South would be welcomed back with healing kindness; at other times he was enraged by the conduct or misconduct of local federal troops, particularly the uniformed blacks, whose very presence he considered a deliberate insult. Anger operates at a lower level than the intellect. His rational acceptance of the South's defeat contrasted sharply with emotional fury and humiliation, and in the first years after the war Ravenel's journal and letters presented an unharmonious mixture of feelings. Pious reflections on the will of God were interspersed with outpourings of indignation, as though, having given vent to his anger, he felt the need to reassert the dominance of his mind.

In his scientific correspondence, particularly when writing to northern botanists, Ravenel presented the piously Christian aspect of his feelings:

I cannot know, nor do I ask [he wrote Tuckerman] what your opinions & predilections have been during the continuance of this bloody struggle. It is over -- & its records are made. It has pleased the great Umpire of Nations in the order of His Providence, that the Southern Confederacy should not accomplish the object for which they sought. So be it. I accept the issue as from His hands, -- & am content. ... I submit without dis-

content, because I know that infinite wisdom cannot err.

This passage was part of Ravenel's first postwar letter to Massachusetts botanist Tuckerman. It was written August 25, 1865.⁵⁴ That same day he cut loose in his diary with a long, bitter diatribe on the inhumanity and poor judgment of federal officers. Its tone was a mixture of outrage and perverse pleasure at the confirmation of his poor antebellum opinion of northern abolitionists, and its words were not those of a content man.⁵⁵

Realizing that he was not in a position to do much to alter the political situation, Ravenel tried to bring the reactions of mind and heart more closely in line by developing an accepting emotional attitude. It was not an easy task, though botany helped by providing another outlet for emotional energy. By 1868 he had made considerable progress. "I never let politics worry me," he wrote to Curtis in June of that year. "Sometimes when I allow myself to brood over some flagrant act of despotism, my blood begins to boil up, but I soon dismiss the matter."⁵⁶

Annoyance at governmental policies did not prevent Ravenel from developing in 1868 and 1869 a happy working relationship with Dr. John Shaw Billings (1839-1913) of the library of the Surgeon General. Their correspondence apparently began at the end of December 1868 when one of Ravenel's acquaintances in Augusta forwarded a letter he had received from Billings on the subject of cryptogamic botany.

It was also fostered by officials at the Department of Agriculture. In November 1868 the federal Commissioner of Agriculture had ordered from Ravenel six pounds of Lespedeza seed at \$5.00 per pound. The South Carolinian quickly filled the order and wrote back to tempt the department with fungi, offering the Fungi Caroliniani Exsiccati at \$8.00 per volume. That letter was forwarded to Billings, and by early January of 1869, he and Ravenel were in direct touch.⁵⁷

Billings was, he informed Ravenel, only a beginner at the cryptogams, having taken up their study in September. He was especially interested in the microscopic fungi but was also in correspondence with Horatio Charles Wood (1841-1920). Wood sent him algae and he made a return of fungi. Billings proved from the first to be openly friendly towards Ravenel. The two men found they shared much the same opinion on the overreaching theory of evolution. Writing of contemporary German and French ideas about the causation of disease by fungi, Billings exclaimed, "They are very amusing certainly -- and if one were to believe Hallier* -- a Penicillium Spore and the Darwinian theory will account for pretty nearly every natural Phenomenon hitherto observed."⁵⁸

Billings was also generous in providing Ravenel with business. He accepted Ravenel's offer to collect algae for him, saying they would make fine returns for some of Wood's specimens, and in February he obtained Department of

* Ernst Hallier (1831-1904).

Agriculture funding to purchase a set of Ravenel's exsiccati at \$40.00.⁵⁹ These two acts were of small consequence compared with another of his proposals, also made in February. The federal government, he wrote early that month, was preparing to launch a small expedition to go to Texas and investigate the causes of a prevalent cattle disease. Though Congress had not yet appropriated the necessary funds, plans were already being made with the intention of beginning the investigation as soon as money came available. British veterinarian John Gamgee had been hired as the principal inquirer, and he had decided that he would like to have a botanist examine the local Texas fungi to determine whether they might be causing the disease. Despite his own amusedly skeptical opinion of the fungal theory of disease origin, Billings was willing to go along with the idea and to throw the benefit of the job in Ravenel's direction.⁶⁰

Ravenel's opinion on the subject was also cautiously skeptical. He had been aware for a long time of this early cousin of the germ theory of disease, having reviewed an American book on the subject in 1850 in the Southern Quarterly Review. He had then believed that insufficient data existed to decide the issue one way or the other, and though he countered the author's anecdotal accounts of occasions on which he had become ill while studying fungi with his own contrary experience, he was also intrigued by a suggested association between fungi and epidemics and urged further research on the topic.⁶¹ He quickly decided to join the

expedition if it could be formed and wrote to Billings to suggest \$300.00 per month plus all expenses as a suitable compensation.⁶²

Ravenel's excursion to Texas began with a trip to Washington where he arrived on the 19th of March. He spent a few days with Billings, being given tours of the Surgeon General's Offices, the Army Medical Museum, where he was shown the machinery and techniques for making microphotographs, and the offices and museum of the Bureau of Agriculture. He arrived in Houston on the 29th, via New Orleans and Galveston, and there he met Gamgee, whom he liked immediately. During the following weeks the two worked together closely, Gamgee doing internal examinations of slaughtered cattle while Ravenel went out frequently to examine the local flora and make large collections. He took his responsibility seriously and concentrated his efforts on the fungi and grasses, bypassing many new and interesting phanerogams, taking only those he could manage while traveling about.⁶³

Except for an occasional touch of homesickness, Ravenel enjoyed the trip. Gamgee and his companion David Gaillard were interesting company, and a short visit with Ashbel Smith, the one-time representative of the Republic of Texas in London, at his farm near Houston was a pleasant interlude. As was often the case when Ravenel had engrossing and worthwhile work to do, his health remained good throughout his entire time in Texas. The single exception to this

robust health is intriguing evidence that a good deal of Ravenel's aches, pains and vague physical weaknesses were psychosomatic in origin. During the third week in April Ravenel began feeling slightly ill. The sensation lingered for a day or two, and he began morbidly contemplating the thought of a serious illness. "To one of my domestic habits, & surrounded always with a large family any of whom are ready & anxious to add to my comforts, the thoughts of being sick at a hotel among strangers, a thousand miles from home, are not pleasant," he wrote self-pityingly.⁶⁴ After dwelling on these thoughts for a short time, he quickly got well.

Ravenel's time in Texas was relatively short. He left less than six weeks after arriving and was back in Aiken on the 11th of May. Billings met him in New Orleans and came along to spend a day with him in Aiken, where they were joined on the 12th by William Canby.⁶⁵ When his visitors left he was able to assess the results of his trip. It was a productive one, botanically, medically and financially.

Ravenel spent the remainder of May sorting through and arranging the large collections he brought back with him. Though he kept many specimens himself, there were many more to send away to friends. John Torrey took the grasses and sedges, passing some of the former on to George Thurber (1821-1890) and the latter to Olney who, he said, had developed "unmitigated Carex-on-the-brain." Lichens went to Tuckerman, mosses and hepatics to Sullivant, phanerogams to

Engelmann and fungi to Billings.⁶⁶ In June he wrote a report for the Commissioner of Agriculture, concluding that despite as careful a search as time would permit he had found the Texas grasses remarkably free of parasitic fungi, and had, in fact, found nothing to excite suspicion. In short, he found nothing to support the theory of Hallier that the disease was caused by a fungus that he named Coniothecium Stilesianum and hypothesized was taken in by the cattle with their food.⁶⁷

To Ravenel and his family the financial rewards of the trip were at least as exciting as its scientific rewards. Soon after his return he went with Mary and Lydia to Augusta where they spent a day shopping to make some long-neglected purchases for the house and where Ravenel had his photograph taken to repay "old debts to friends who have sent me theirs." About two weeks later his family surprised him with a present of a beautiful photo album to accommodate the 21 photographs of friends and botanical correspondents that made up an expanding collection.⁶⁸

Though it provided a welcome influx of money for some extras, the one-time cash payment of \$284.25 that he received for his work in Texas did not go very far towards providing any permanent security. That fall the family had to rearrange their living quarters with the intention of renting out the three eastern rooms.⁶⁹ As a by-product of the Texas expedition, however, and of his resulting resumption of correspondence with Torrey, an opportunity for

financial security was laid before him, and he rejected it. There is a myth that crops up persistently in some of the older sketches of Ravenel's life that the only thing that prevented him from taking a teaching position at a university during this period was his deafness.⁷⁰ Some authors say that he was offered positions by two unnamed colleges, one in Baltimore and one in California.⁷¹ What actually happened was that in the spring of 1869 Torrey heard about two possible openings and, having Ravenel in his thoughts at the time, wrote to him about them:

I have been informed that they mean to have a professor of Botany in the new University of California & one of the Professors of Washington College, Lexington Va. informs me that they will do the same in that institution. He asks me to nominate a candidate for the Chair. How would you like a place in either of these Colleges?⁷²

Ravenel thought the matter over for a fortnight before making his reply, and even then had some difficulty in expressing himself to Torrey, writing the letter twice before getting the wording just as he wanted it. He was grateful for Torrey's friendly interest and realized the value of his proposal. A teaching position would give him an opportunity to be useful to the measure of his ability while securing a permanent income for his family. At the same time, he felt "a becoming distrust" of his own ability, for he had never taught botany in school or college, but his main reason for turning down the preferment, he said, was his hardness of hearing. "Perhaps you are not aware that I suffer from partial deafness, -- to such an extent, that I am in a

measure cut off from ordinary social intercourse. In my family & among my friends; this is well known, -- & provided for, -- but I fear it would be an obstacle in a lecture room & before a class of students."⁷³

Was deafness a reason for turning down Torrey's proposal, or an excuse? Ravenel's argument certainly had merit, yet it is difficult to avoid concluding that he exaggerated the problem, presenting it in the place of other, less acceptable reasons why he did not wish to be a candidate for the two positions, perhaps including shyness, a desire to remain in South Carolina, a fear of not being awarded a position or even a poor opinion of the colleges that he did not want to share with Torrey.

Though Ravenel's hardness of hearing was certainly noticeable to others, as evidenced by a gift of seven or eight patterns for ear trumpets from Billings a few months after their visits,⁷⁴ he had just returned from Texas where it had not prevented his successful interaction with a large number of strangers. He seldom complained of difficulty listening to another person. A notable exception was when in March 1868 Catharine Beecher, of the famous northern abolitionist family, came out with Ravenel's realtor to look over the farm, then on the market. Ravenel evidently found her unpleasant and noted "She is not 'comely to the eye' as far as face is concerned, & of her conversation I could not judge, as I heard not a word she said. She seemed quite intent on the business of looking about & seeing things."⁷⁵

It seems likely that Ravenel, taught by his father at an early age to consider his own health delicate and since then nursed through his sicknesses by a loving wife and doting children constantly "ready & anxious" to comfort him, had come to consider poor health, including his deafness, normal and an acceptable excuse for avoiding unpleasantness. This is not to suggest that he was feigning. Though perhaps partly of psychosomatic origin, the illnesses and deafness were evidently real enough, but it does suggest that alongside the attractive modesty of character displayed in his letter to Torrey, there existed a less attractive tendency to give in to his physical weaknesses or even to exploit them rather than to try to rise above them.

Speaking more favorably, the situation also suggests that at the moment Torrey's offer arrived Ravenel was feeling optimistic about his life and was not greatly desiring a change. His financial situation probably seemed better to him then than it had since the war. He was anticipating payment for his botanical explorations in Texas, and on the 6th of July he received notice that Cooke had disposed of two additional sets of fungi for him.⁷⁶ He and Harry, following several unsuccessful attempts by the latter to find gainful employment, were working hard at the nursery and hoping to make something of it. His family were well, Emily anticipating marriage to Edward G. Cain of St. John's, and Lydia teaching school in Aiken, while all the children were healthy, including the newest daughter, Mary Huger, born

January 4, 1867.⁷⁷ In civil life, too, he was becoming ever more accepting of the political situation, and he had cause to believe that in his capacity as a warden of St. Thaddeus parish he was making strides towards solving an acrimonious dispute between Reverend Cornish and his discontented parishioners.⁷⁸ Having passed successfully beyond the panicked financial uncertainty and preoccupation with politics that had weighed heavily on his spirit at the close of the Civil War and had kept him from his scientific pursuits, Henry Ravenel was a botanist once more.

GETTING BY

1865 - 1869

Footnotes

- 1 John Samuel Ezell, The South Since 1865 (New York, 1963), 25-31; Thomas D. Clark and Albert D. Kirwan, The South Since Appomattox: A Century of Regional Change (New York, 1967), 20-24.
- 2 Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), 224.
- 3 Ibid., 237-38.
- 4 Ibid., 238.
- 5 The list, in Ravenel's handwriting, is undated. Folder 10, Box 11-331, Henry Ravenel Papers (South Carolina Historical Society, Charleston, S.C.). With regard to the Snowdens' debt, Ravenel first proposed he halve the amount. Charles and Peter accepted thankfully, but when he found they were as reduced in property as he, he wrote off the debt entirely. Childs (ed.), Private Journal of HWR, 259, 265.
- 6 Childs (ed.), Private Journal of HWR, 240.
- 7 Ibid., 239-40.
- 8 Ibid., 247, 269.
- 9 Ibid., 242, 246, 249, 276.
- 10 Ibid., 247, 248.
- 11 Child's edition of Ravenel's journal provides only indirect evidence of the killing frosts of 1866 and 1867, in the lack of any mention of a peach harvest in July of those years. See pp. 287-89, 309-310. The manuscript journal, however, discusses the frosts. See entries dated April 17, 1866; March 30, 1867, Private Journal of Henry William Ravenel (South Caroliniana Library, University of South Carolina, Columbia, S.C.; hereinafter cited as MS Private Journal of HWR).
- 12 Childs (ed.), Private Journal of HWR, 325.

- 13 MS Private Journal of HWR, entry dated December 3, 1867, records digging up about 2000 young trees for sale to J. Berckmans's nursery in Augusta.
- 14 Childs (ed.), Private Journal of HWR, 274.
- 15 For 1871 see MS Private Journal of HWR, February 9, 1871. For 1873 see Childs (ed.), Private Journal of HWR, 363.
- 16 Childs (ed.), Private Journal of HWR, 245, 250.
- 17 Series of nine letters between Bvt. Major General R. K. Scott, Captain F. W. Leidtke, and Richard Y. Dwight, June 15, 1866 -- October 14, 1866, Richard Y. Dwight Papers (South Caroliniana Library, University of South Carolina).
- 18 Childs (ed.), Private Journal of HWR, 85, 197.
- 19 Ibid., first quote on 242, second quote on 290.
- 20 Ibid., 258, 259, 260.
- 21 H. W. Ravenel to E. Tuckerman, August 25, 1865, Edward Tuckerman Papers (American Antiquarian Society, Worcester, Mass.; hereinafter cited as Tuckerman Papers, American Antiquarian Society).
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- 23 H. W. Ravenel to G. Engelmann, July 26, 1866, Papers of George Engelmann (Missouri Botanical Garden, St. Louis, Mo.; hereinafter cited as Engelmann Papers, MBG); Childs (ed.), Private Journal of HWR, 257-58; James H. Cassedy, "The Microscope in American Medical Science, 1840-1860," Isis LXVII (March, 1976), 76-97; Re later availability of microscope, see H. W. Ravenel to J. B. Ellis, April 29, 1873, Ellis Collection (New York Botanical Garden, New York, N.Y.).
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- 26 H. W. Ravenel to F. P. Porcher, August 16, 1866, Porcher Papers, USC; Childs (ed.), Private Journal of HWR, 293-94; J. W. Blankinship, "Lindheimer, the Botanist-Editor," Missouri Botanical Garden Eighteenth Annual Report (St. Louis, 1907), 131-32; Samuel Wood Geiser, Naturalists of the Frontier (2nd ed., Dallas, 1948), 137-47.
- 27 Ray Desmond, Dictionary of British and Irish Botanists and Horticulturists Including Plant Collectors and Botanical Artists (London, 1977), 146; M. C. Cooke to H. W. Ravenel, August 25, 1866, Folder 13, Box 1, Botany Department Historical Collection, UNC.
- 28 H. W. Ravenel to G. Engelmann, June 6, July 2, September 21, November 19, 1866, Engelmann Papers, MBG.
- 29 M. C. Cooke to H. W. Ravenel, December 6, 1867, Papers of Henry William Ravenel (Special Collections, Robert Muldrow Cooper Library, Clemson University, Clemson, S.C.; hereinafter cited as Ravenel Papers, Clemson); Childs (ed.), Private Journal of HWR, 311.
- 30 Childs (ed.), Private Journal of HWR, 312; M. C. Cooke to H. W. Ravenel, December 6, 1867, Ravenel Papers, Clemson.
- 31 M. C. Cooke to H. W. Ravenel, December 6, 1867, Ravenel Papers, Clemson.
- 32 M. C. Cooke to H. W. Ravenel, December 6, 1867, E. C. Bolles to H. W. Ravenel, March 23, 1868, Ravenel Papers, Clemson; Childs (ed.), Private Journal of HWR, 319.
- 33 H. W. Ravenel to M. A. Curtis, May 28, 1868, Item R253, Farlow Reference Library (Harvard University, Cambridge, Mass.); Childs (ed.), Private Journal of HWR, 321-23; MS Private Journal of HWR, March 30, May 8, 1868.
- 34 Childs (ed.), Private Journal of HWR, 306, 316-23. See also MS Private Journal of HWR, March 14, 1868, H. Mann

- to H. W. Ravenel, February 22, 1868, Ravenel Papers, Clemson.
- 35 H. W. Ravenel to E. Tuckerman, January 12, February 21, 1868, Tuckerman Papers, American Antiquarian Society.
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 - 39 D. H. Hill to H. W. Ravenel, November 19, 1866, Ravenel Papers, Clemson.
 - 40 Childs (ed.), Private Journal of HWR, 298-99, 321; H. W. Ravenel to F. P. Porcher, December 4, 1866, Folder 1, Ravenel, Henry William (1814-1887), Papers, Apr. 1844 - 25 July 1887 and n.d. (South Caroliniana Library, University of South Carolina; hereinafter cited as H. W. Ravenel Papers, USC). The notice of Hill's magazine appeared Charleston Daily Courier, December 8, 1866, p. 2.
 - 41 Hal Bridges, Lee's Maverick General: Daniel Harvey Hill (New York, Toronto and London, 1961), 273-85. Ravenel's articles in The Land We Love were: "The Leaves of Plants - Their Structure and Functions. - Nature's Provisions Against the Effects of Droughts." III (May, 1867), 30-35; "On Pruning and Training of the Grape," III (June, 1867), 167-73; "Peach Culture," III (July 1867), 257-64; "Grape Culture," IV (January, 1868), 208-216; and "Lespedeza Striata, or Japan Clover, the New Forage Plant of the South," IV (March, 1868), 405-409. The questionable article was "Orange Culture," V (June, 1868), 166-70. Ravenel mentioned Hill's request for such an article April 14, 1868. In neither Childs (ed.), Private Journal of HWR, p. 320 and ff. nor MS Private Journal of HWR, April 14, 1868 and ff. could I find any indication what became of Hill's request.
 - 42 Bridges, Daniel Harvey Hill, 274.
 - 43 H. W. Ravenel, "Lespedeza Striata," 405-509.

- 44 Childs (ed.), Private Journal of HWR, 314; H. W. Ravenel to M. A. Curtis, July 17, 1868, Item R253, Farlow Reference Library.
- 45 The American Naturalist ad yielded some results. Childs (ed.), Private Journal of HWR, 318, 320, 331; F. W. Putnam to H. W. Ravenel, December 13, 1868, Ravenel Papers, Clemson. I was, however, unable to locate the ad itself.
- 46 I have found only one other mention of advertising in journal or letters. W. R. Gerard to H. W. Ravenel, June 9, 10, 1880, letters to Dr. Henry W. Ravenel (typescripts) (Letters of Henry W. Ravenel, Letters and Diaries, South Carolina Collection, Charleston Museum, Charleston, S.C.). I do not claim to have investigated the back pages of every horticultural journal published during the period.
- 47 H. W. Ravenel to M. A. Curtis, August 26, 1868, Item R253, Farlow Reference Library; H. W. Ravenel to John Torrey, July 14, 1869, Torrey Correspondence (New York Botanical Garden, New York, N.Y.; hereinafter cited as Torrey Correspondence, NYBG.) On Denslow's death see item under his name in John Hendley Barnhart, The New York Botanical Garden Biographical Notes Upon Botanists (Boston, 1965).
- 48 Obituary of Horace Mann, American Naturalist II (January, 1869), 609. Childs (ed.), Private Journal of HWR, 327, 330-31.
- 49 Ibid., 327, 329.
- 50 H. W. Ravenel to M. A. Curtis, May 28, 1868, Item R253, Farlow Reference Library.
- 51 H. W. Ravenel to M. A. Curtis, June 11, 1868, Item 253, Farlow Reference Library.
- 52 Ibid.
- 53 Childs (ed.), Private Journal of HWR, 312-13; H. W. Ravenel to M. A. Curtis, August 26, 1868, Item R253, Farlow Reference Library.
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- 55 Childs (ed.), Private Journal of HWR, 251-52.
- 56 H. W. Ravenel to G. Engelmann, September 21, 1866, Engelmann Papers, MBG; H. W. Ravenel to M. A. Curtis, June 11, 1868, Item R253, Farlow Reference Library.

- 57 Childs (ed.), Private Journal of HWR, 329, 330; see also MS Private Journal of HWR, December 30, 1868; J. S. Billings to H. W. Ravenel, January 6, 1869, Ravenel Papers, Clemson.
- 58 J. S. Billings to H. W. Ravenel, January 6, 1869, Ravenel Papers, Clemson.
- 59 Ibid., MS Private Journal of HWR, February 20, 1869.
- 60 Childs (ed.), Private Journal of HWR, 332.
- 61 R. [H. W. Ravenel], "Cryptogamous Origin of Fevers," Southern Quarterly Review N. S. I (April, 1850), 146-59; J. K. Mitchell On The Cryptogamous Origin of Malarious and Epidemic Fevers (Philadelphia, 1849).
- 62 Childs (ed.), Private Journal of HWR, 332.
- 63 Ibid., 333-37. Childs has edited out a great deal of good material on the Texas expedition, so a much better source is the MS Private Journal of HWR for the time period March 29, 1869 - May 11, 1869; H. W. Ravenel to J. Torrey, June 16, 1869, Torrey Correspondence, NYBG.
- 64 MS Private Journal of HWR, April 21, 1869.
- 65 Ibid., May 8-12, 1869.
- 66 Ibid., May 12-30, June 9, 10; J. Torrey to H. W. Ravenel, June 29, 1869, Ravenel Papers, Clemson; H. W. Ravenel to G. Engelmann, November 21, 1870, Engelmann Papers, MBG.
- 67 H. W. Ravenel, "Letter of Mr. H. W. Ravenel, South Carolina, on the Fungi of Texas," Department of Agriculture. Reports on the Diseases of Cattle in the United States, Made to the Commissioner of Agriculture, with Accompanying Documents, (Washington, 1869), 169-73.
- 68 MS Private Journal of HWR, quote from May 21, June 6, 1869.
- 69 Childs (ed.), Private Journal of HWR, 340, 341.
- 70 "Obituary - H. W. Ravenel," Journal of Mycology III (September, 1887), 106-107; William G. Farlow, "H. W. Ravenel," Botanical Gazette (August, 1887), 195; Laura M. Bragg, "Contributions Toward a History of Science in South Carolina, I - Henry W. Ravenel, LL.D.," Charleston Museum, Bulletin, XVI (February, 1920), 17.

Herriette Kershaw Leiding, Historic Houses of South Carolina (Philadelphia and London, 1921), 145.

- 71 Wilson Gee, "South Carolina Botanists: Biography and Bibliography," University of South Carolina, Bulletin, No. 72 (September, 1918), 38; Elizabeth Teague, "Henry W. Ravenel," (typescript memoir kindly donated by Prof. Harry Shealy, University of South Carolina at Aiken), 7.
- 72 J. Torrey to H. W. Ravenel, June 29, 1869, Ravenel Papers, Clemson.
- 73 Quote from H. W. Ravenel to J. Torrey, July 14, 1869, Torrey Correspondence, NYBG. Author's copy of first draft of same letter is preserved in Folder 2, H. W. Ravenel Papers, USC.
- 74 MS Private Journal of HWR, November 10, 1869.
- 75 Childs (ed.), Private Journal of HWR, 319.
- 76 MS Private Journal of HWR, July 7, 1869.
- 77 Childs (ed.), Private Journal of HWR, 303, 310, 331-32, also see MS Private Journal of HWR with regard to Lydia, July 14, 1869, and passim.
- 78 MS Private Journal of HWR, March 2, 1869 and passim. Childs cuts out references to the long quarrel.

A BOTANIST ONCE MORE

1869 - 1887

Our botanical work in a new country is somewhat like the more material progress of our pioneer population who are exploring new lands & preparing the way for others. The first necessity is to find our plants - & then afterwards to learn & study them more critically. In my early efforts I attempted to do both, but broke down under the strain. Of late I do only the field work ... & leave the more advanced work to you & others who are better trained for the purpose. H. W. Ravenel to W. G. Farlow, January 1882.¹

Both because his hobby had become a business and because of the necessity of conforming to an austere budget, Ravenel the professional plant collector found he had to approach botany through a new set of rules that had been unknown to the mycologist of the 1850s. Foreign books that had once been purchased almost carelessly were now an insupportable expense. Time was no longer an over-abundant commodity to be filled up with botany as recreation, rather it had to bring a return. Finally, Ravenel had to change his relationships with other botanists, and, as his dealings with Engelmann and Cooke showed, this was a hard adjustment to make. While others freely traded specimens and publications, Ravenel alone had to turn down the trades and request cash payment for his help, usually with an awkward and apologetic explanation of his circumstances.

Success in transforming former correspondents into paying customers was almost nil; indeed, in most cases he

did not even try. To ask Curtis who helped with doubtful fungi and was supporting his family on a slim salary, to pay for the collections he sent was unthinkable. Tuckerman, too, continued to receive his lichens free. Ravenel included lichens among the collections he made for sale, and Tuckerman's generosity in continuing help with nomenclature was repayment enough for specimens. In the last months of 1869 and January 1870 Tuckerman reexamined specimens sent by Ravenel from South Carolina and studied his new Texas lichens, sending him notes on the specimens in light of his mature thoughts on the taxonomy of the order. In 1872 he sent a copy of his important new treatise Genera Lichenum to his "valued friend, the accomplished explorer and illustrator of the Lichens and Fungi of South Carolina."² Long friendship also forbade that Lewis Gibbes be asked money for scientific favors. When the Charleston polymath developed an interest in butterflies, Ravenel's nine-year-old daughter Sue helped provide collections. No payment was mentioned, though Ravenel did accept an offer of a return of named duplicates.³

Asa Gray was the major exception among Ravenel's earlier correspondents. He considerably offered to pay for collections. In June 1870, for example, he sent \$15.00 in payment for a set of lichens, at the same time requesting some seeds for which he offered payment. A few weeks later and again the following summer, he passed on to Ravenel the needs of some of his foreign correspondents for additional

seeds.⁴ The roots of this relationship were twofold. Gray's specialty, the phanerogamic plants of the north and west, was so far from Ravenel's own that he could do very little to help him in trade, while at the same time his role as a clearinghouse for Europeans interested in American botany gave him many opportunities to be of financial assistance with no outlay of his own funds.

With Job B. Ellis, also, Ravenel had more luck in superimposing a commercial relationship over an older scientific friendship. A great difference separating Ellis from Curtis or Tuckerman was that Ravenel was under no debt of gratitude to Ellis for assistance in the early part of his career. The debt, in fact, lay in the other direction. Even so, it took some kind but firm persistence on Ravenel's part to make Ellis understand, when they resumed their correspondence in 1872, how his new circumstances must affect their relations.⁵

New correspondents were a special problem. The number of American botanists, including those interested in cryptogams, had expanded dramatically in the years since Ravenel had begun his work. In his first cryptogamic publication in 1849 it had taken less than two pages to describe the work of all contemporary American cryptogamists. By the 1870s the number had doubled at least twice, and within Ravenel's lifetime mycologists grew so numerous as to be able to support a separate specialists' journal, the Journal of Mycology, now Mycologia, founded in

1885. A few years later, in 1903, at the St. Louis meeting of the American Association for the Advancement of Science, mycologists began a short-lived experiment in the organization of an American Mycological Society.⁶ As one of the veteran American cryptogamists, Ravenel was inevitably destined to receive pleas for help from many of these newcomers.

Circumstances conspired to send a larger share of these cries for help his way than he might otherwise have expected. His old correspondent Moses Curtis began by 1869 to suffer from failing health. Vertigo and dizziness bothered him for months at a time, and even when he felt well he was unable to do much reading or writing without a return of his symptoms. He was inclined to blame his problems on long use of the microscope and began to require all his correspondents to send him sketches of the fructification whenever that was necessary in determination of species. He became slow in his responses and inaccurate in his determinations with the welcome result that by December 1870 all but two of his correspondents had ceased sending material for identification. As these scientists stopped corresponding with Curtis, they sought to establish a relationship with Ravenel instead.⁷

Curtis died April 10, 1872. Though sudden, his death was not unexpected, and Ravenel, who heard of it from Curtis's wife, wrote that his friend's letters of the last two years had made him anticipate a sudden death. His own

health was not good enough to allow him to go up to Hillsboro to help arrange Curtis's herbarium and library for sale, but he wrote letters to Curtis's wife to give her advice on the disposal of the herbarium, and in return she sent him some pamphlets and a list of Curtis's species with the internal identification numbers assigned to specimens sent to Berkeley.⁸

Until Curtis's death Ravenel had worked somewhat in his friend's shadow. Though he enjoyed at least as good a reputation as Curtis among the older cryptogamic specialists, Gray apparently had held Curtis in higher esteem. Not that Gray was ill-inclined towards Ravenel, but he shared with Curtis a New England heritage and memories of a very pleasant collecting trip in the North Carolina mountains greatly facilitated by information from Curtis. Also, the North Carolinian's outspoken letters conveyed freely his habitual criticisms of other botanists, Ravenel included, in such a way as to belittle others' reputations as compared with his own. His readers could only wonder how much to take at face value, as may be illustrated by the bemused reaction of Elliot Calvin Howe (1828-1899) to one of Curtis's letters:

Yesterday, quite unexpectedly, I rec'd a long letter from Dr. Curtis. Besides a brief report & a lengthy criticism on Prof. Tuckerman, he gives the following unique & conclusive reply to my query about Ravenel's skill in Mycology.

"As he comes to me for aid, I suppose I may place myself somewhat in advance of him. With this admission, you may put him as among the best

Mycologists, such as they are, in the U.S., though I believe there are no others who make any pretensions in this line."

Curtis also told Howe about the help he and Berkeley had given Ravenel in preparing the Fungi Caroliniani Exsiccati. "So we have it ex Cathedra that Dr. C., in this country at least, is autocrat in the realm of Fungi," Howe concluded.⁹ On another recent occasion Curtis had, immodestly but not necessarily untruthfully, asserted to Stephen T. Olney the superiority of his own cryptogamic herbarium over Ravenel's, ranking the latter's, in fact, behind Schweinitz's collection at the Philadelphia Academy of Natural Sciences.¹⁰

On Curtis's death Ravenel rightly mourned a good friend and a generous correspondent, for in his frequent help, his well meant advice and sympathy, Curtis had more than once proved himself to be such. Yet he had also lost his harshest critic and detractor and the only man to vie with him for the position of dean of American mycologists.

Soon after Curtis's death, Berkeley recommenced a long-delayed task, the publication of a great quantity of the combined collections of Curtis and Ravenel that he had examined in the 1850s. Some of the species discussed in his new series of articles were previously established taxa, but a large number of new species were attributed to Berkeley and Curtis or to Berkeley and Ravenel. The new articles served to bring Ravenel's name into a renewed and favorable prominence before the world's mycologists.¹¹

Perhaps of more importance in attracting the notice of beginning American botanists was the fact that Ravenel was a southern botanist. Soon after the war death claimed several of the older generation of naturalists, including Robert Gibbes in 1865, and John Holbrook and Edmund Ravenel in 1871. At the same time younger men fled the South for other places not afflicted with defeat and reconstruction. Matthew Fontaine Maury spent several years in self-imposed exile in Mexico and Europe,¹² John and Joseph LeConte left South Carolina College for positions in the University of California,¹³ and Eugene Hilgard, a promising young agricultural scientist at the University of Mississippi, went in 1872 to the University of Michigan for two years before joining the LeConte brothers in California.¹⁴

Of the three southerners who had been nationally known before the war specifically as botanists, Curtis was now dead, and Alvan Chapman had temporarily abandoned botany and dropped out of sight, while Ravenel, alone, remained active.¹⁵ To the many young botanists not privy to Chapman's whereabouts, Ravenel was the best possibility not only for fungi, but for all southern plants. To make matters worse, a greatly disproportionate number of promising botanists of this generation were northerners, so their opportunities for establishing correspondence with southerners of their own age was very limited. "Really I know of no one to whom I could recommend you to apply for Southern plants," Ravenel wrote one hopeful botanist. "Our people have had to

struggle so hard for the necessities of life of late years, that scientific recreation is not much thought of."¹⁶

Ravenel had a sincere desire to help these younger men, but their needs often conflicted with his own need to make a living from his collecting. If they were willing to buy a ready-made collection, or if they wanted enough of just a few types of plant to make it worth his while to collect expressly for them, fine. If, however, they wanted to establish an exchange or desired only a sprig or two of some particular species not already in the herbarium, so small an amount that Ravenel could not graciously ask payment but must still expend considerable time in gathering it, then he was caught in a bind and sometimes refused to help, particularly if the request came from someone unknown to him or an apparent dilettante.

Ravenel's new approach to botany both reflected and was facilitated by a change in his perception of himself. Though he partly made his living through botany, he no longer considered himself a student of the science. "... I have in a great measure given up botanical studies. I have neither the time or [sic] means now to prosecute these studies as formerly, - & only look into them occasionally," he wrote to Job B. Ellis in January 1872.¹⁷ Turning down George Davenport's (1813-1907) request for an exchange of specimens nearly two years later, he made reference to the same feeling. "I am not now actively at work in Botany," he

wrote, "having been obliged from force of circumstance of late years to give it but slight attention."¹⁸

These remarks are perplexing in light of the unquestionable fact that Ravenel was working quite hard at botany. Except when periods of ill health keep him confined closely to the house, he went out frequently to collect, and he wrote in March 1870 to Tuckerman that he believed his field work was more scrutinizing than it had been 20 years before. Many smaller forms that had escaped his attention then, now caught his eye. Ravenel's son Harry had also become interested in botany, and before Harry's departure in March 1871 to try farming in Georgia, the two went botanizing together. Again on his long yearly visits to Harry, Ravenel spent much time in the field.¹⁹

Even when ill, Ravenel would turn his attention to plants. During a period of relatively poor health in the spring of 1871, for example, some sedentary observation of growing plants yielded new and interesting analyses of the patterns of growth of Baptisia perfoliata and of certain common cucurbitaceous garden plants including squash, gourds, watermelon and mango. At question was the number of leaves necessary to complete a rotation of the stem, the direction in which the leaf spiral ascended the stem, and the relative spacing of leaf and tendril. Gray read the papers for him at the 1871 meeting of the American Association for the Advancement of Science in Indianapolis but reported that no one in attendance was competent to discuss

the topics. At his repeated suggestion the Baptistia paper was reprinted where it would be more generally available.²⁰

Articles written during this period for the popular agricultural press also betrayed Ravenel's botanical outlook. A series of "Notes on our Native Flora" appearing in 1873 and 1874 in the Rural Carolinian, an organ of the South Carolina chapter of the national Grange, gave short descriptions of a number of South Carolina's wild flowers. They stressed the aspects of gross morphology most interesting to Sunday afternoon flower-pickers, including the color and size of flowers, shape of leaves, and the general habit of growth.²¹

Given the apparent fallacy of Ravenel's proclamations that he was not actively engaged in botany, there are two possible explanations. He may have made the statements merely as a gentle way of refusing help when he was unable to comply with a request for plants, or, more likely, the statements were made sincerely and reveal something about what it meant to him to be actively studying botany. As an active student in the 1850s he had gone to considerable trouble and expense to obtain up-to-date botanical literature and a good microscope and had spent much time in their use among his specimens. In this way he was able to expand his knowledge daily and to bring his ability in taxonomy to a level very near that of his English mentor, Berkeley. No longer was any of this possible, however, and

this lack understandably constituted a critical difference in Ravenel's eyes.

I have never resumed active work since the interruption caused by the war; - [he wrote to Tuckerman in 1877] & the condition of affairs in which we were left afterwards, was not favorable. I have been so much pressed however on all sides for Southern plants, that I still do what I can in the way of collecting for my friends - nothing more than collecting. I have neither the time or [sic] inclination to go any further.²²

Collecting, then, was not enough to count as "active work" so far as Ravenel was concerned. Ironically, because the truth of the situation was so far from Ravenel's own perception of it, he stood in the early 1870s on the threshold of a long period of very productive labor, based solidly on the scorned collecting. From 1869 through the rest of his life, Ravenel worked at his collecting with a greater steadiness than had characterized his work in the 1850s. Lacking now were the times of intense activity like the year following his first wife's death in 1855, but lacking, too, were the frequent, total interruptions of several months' duration that had slowed his pace in that earlier period. Of course, there were slumps even now. Besides occasional ill health or slow downs in orders for plants, personal worries sometimes distracted him, and he found it difficult, as he had in the past, to pay attention to botany when such problems were upon him.

Mid and late 1873, for example, brought distractions aplenty. In June Sue, then eleven, contracted the measles and developed complications resembling typhoid fever. She

was bedridden for more than a month, and at one point Ravenel was afraid they would lose her. At the same time Ravenel's involvement with the Rural Carolinian, whose editor, Daniel Harrison Jacques (1825-1877) was first Deputy of the National Grange for South Carolina, led to his appointment as the Master of a newly formed Aiken chapter. He installed the other officers and new members and presided over the once monthly meetings. There were additional financial worries, too, increased slightly by the birth February 17, 1870, of Ravenel's last child, another daughter, Tiphaine. In the fall of 1873 money became so tight that he again considered selling the herbarium, but sold the farm instead and purchased a house in Aiken "rather smaller than the other, but large enough, with garden room enough for my purposes," where he moved his family in November.²³

June through December of 1875 was also a very stressful period. In June the financial failure of the convalescent home that had located at Hampton Hill forced Ravenel to take the farm back and cancel the remainder of the debt. Inspection of the premises revealed that in the year and a half since it had passed out of his hands some welcome improvements had been made to the house, but the orchard, vegetable garden and asparagus field had been neglected and were choked with weeds. No crop of any kind had been planted. It would take a great deal of work to place the farm in a condition to bring in any income at all. Accord-

Ravenel's House in Aiken
Included by kind permission of
Dorothy McDowell Wood, Aiken, S. C.

I wish to express appreciation to Harry Shealy
and David Mellenberg for help in selecting
and reproducing the photographs.

ingly, he made an agreement with former slave Jimmy to move out with his family as caretaker and to resume planting. Not only was the deterioration of garden and orchard a financial loss, but the farm came back at a time when he still owed \$600.00 on his house in town and when more than \$6,000.00 had been owing on Hampton Hill. He had counted on that money to pay his house note and to provide future income from investment. Within days of receiving back the farm he learned that the Rural Carolinian could no longer afford regular paid contributors and must sever their business connection with him. As a result, his annual income was cut by \$175.00 to \$200.00.²⁴

October brought further trouble. Eleven-year-old Lizzie became seriously ill. Amory Coffin, Ravenel's friend and physician, called it autumnal fever, a form of typhoid. Extreme weakness and fever were followed by a skin eruption, mental confusion, lung congestion and a troublesome cough that sapped her strength. After less than two weeks of illness she had declined so far that she seemed to hold on to life by only a thread. She lay quietly, too weak even to swallow. Her father, who had watched her closely during her illness, recording her pulse and temperature and the details of her symptoms, could do nothing but "wait patiently on the Lord's will." Just as she seemed sunk as low as possible, she began slowly coming up. She gained consciousness, was able to swallow again and seemed to be gaining strength.²⁵

Lizzie's recovery was short-lived. Two weeks later she began losing ground and by the first of December was once more too weak to get out of bed. On the twelfth Atty suddenly became ill also. A violent headache was followed by convulsions and unconsciousness. Atty's illness, like Lizzie's, was pronounced typhoid fever, but it ran a different course from the beginning, coming on suddenly and progressing rapidly to a crisis. On the 22nd of December Lizzie seemed back on the road to recovery, but Atty died. She was buried the next day in the cemetery of St. Thaddeus Church, and Ravenel turned, as always in times of sorrow, to the Lord for comfort. "Christmas Day!" read his journal entry two days later. "For a period of twenty years, I have been privileged to record annually with a thankful heart, that our loving family are all spared to be together. Now one has been taken. Shall we not still believe that all is done in mercy & kindness?"²⁶

Despite the troubles and sadness that 1875 brought to Ravenel, the year also brought some expansion to his botanical correspondence. He began collecting fungi for the German mycologist, Baron Felix von Thuemen (1839-1892). Thuemen had written him as early as 1872 at the suggestion of Mordecai Cooke to advertise an exsiccata series that he had just begun to issue, the Fungi Austriaci and to propose that Ravenel trade American plants for Thuemen's centuries of fungi.²⁷ Not surprisingly, Ravenel apparently turned down the proposal, and Thuemen, who expressed himself very

eager to form a partnership with an American botanist, began to correspond with Ellis instead. Ellis prevailed upon Ravenel also to send fungi and in March 1875 he packed up some fungi to be shipped through Ellis. This transaction was on a purely cash basis, \$6.00 per 100 species. As troubles mounted that year, he felt he could not continue collecting and wrote to Thuemen that he must stop.²⁸

At the same time, however, Thuemen started to edit another, more ambitious exsiccati, this one not limited to Austrian fungi. The Mycotheca Universalis was to contain fungi from every continent. Thuemen promptly recruited Ellis and two other young American mycologists, Charles Horton Peck (1833-1917) and William Ruggles Gerard (1841-1914) to provide American specimens. In March 1876 he also wrote to Ravenel imploring him, despite his desire to stop sending fungi, to make collections for the exsiccati. Any species at all would be welcome, he assured Ravenel, and if the South Carolinian would send 125-130 good specimens of each species, Thuemen promised two shillings sterling per species. He was principally interested in parasitic leaf fungi, so, considering the ease with which specimens of such fungi may be gathered, the offer was a generous one. Ravenel accepted and began sending fungi, including undescribed species, quite regularly to Thuemen. Beginning with the sixth century, published in 1876, through the last, issued in 1884, every century of the Mycotheca Universalis contained at least a few Ravenel specimens. Those that

Theumen did not use in this exsiccati he placed in another, smaller one issued contemporaneously, the Herbarium Mycologicum Oeconomicum.²⁹

Also in 1875 Ravenel received the first letter of many from William G. Farlow (1844-1919). Farlow had studied botany under Asa Gray, then, after taking a medical degree as a sort of employment insurance policy and working for a short time as Gray's assistant, had spent the years 1872-1874 in Strasbourg studying with Anton deBary. Now he was back at Harvard equipped mentally to introduce cryptogamic botany to the curriculum. He was also reasonably well supplied with the necessary books and herbarium material, for Gray, hoping to keep him at Harvard, had been active in his absence. In 1873 he had purchased Curtis's herbarium, with some help from Ravenel, who had assured his friend's widow of the suitability of Harvard as a repository. Now, however, Farlow found that Gray's collection was missing the first two fascicles of the Fungi Caroliniani Exsiccati and wrote to see if Ravenel could supply them and whether he knew where Farlow could obtain Schweinitz's Synopsis Fungorum.³⁰

Farlow's letter came during the troubled December of 1875, but Ravenel made time to answer it. He only had a few copies of the first fascicle besides his own full set but provided names of two people who might be willing to sell theirs to Farlow.³¹ With this exchange began a correspondence ending only at Ravenel's death. The nature of

their relationship scarcely changed from that established by these first letters. Farlow, though well trained in German laboratory technique and knowledgeable in botany generally, lacked the depth of experience in the taxonomy of American fungi that Ravenel possessed. When specific questions or needs arose in this area a letter to Ravenel often produced the desired information. In 1878, for example, when Farlow had questions about Berkeley's Ravenelia glanduloformis and Phallus ravenelii, a note to Ravenel brought back specimens of Ravenelia and a loan of the original notes that he had taken in the 1850s when he first discovered Phallus ravenelii.³² In return for this sort of help, Farlow wrote news-filled letters sharing with Ravenel the use he had made of specimens or other materials sent, and telling him about his other research. He was prompt with his thank-yous, frequently sent and more frequently offered specimens in return for Ravenel's, and was courteous, even deferential, in his approach to the older man. As a result, Ravenel was more than willing to go the extra mile to help him, even in matters not strictly botanical.

I wish very much to have a gallery of the portraits of the most distinguished cryptogamic botanists, especially American cryptogamists, in my laboratory. [Farlow wrote in July 1878]. I should like very much to have your photograph framed and hung up on our walls. I presume, however, that you have none but card photographs but, if you should feel inclined at any time to have a photograph of a large enough size to be framed, I hope you will not fail to allow me to become the possessor of a copy.³³

Farlow was correct in his presumption that Ravenel had no large photos on hand. He had not had a large photograph taken since about 1858, and that one had been given to a friend. The friend had since died, however, and Ravenel got the photo back from the family and sent it up to Cambridge where it arrived in time for Christmas.³⁴ Farlow's request had been a compliment not easily ignored.

There was nothing very unusual in the small favors Ravenel did for Farlow. He did the same from time to time for many others, for when the favor requested did not involve a long exchange and came from someone who seemed truly dedicated to botany, Ravenel was usually happy to oblige. Peck, for example, in 1878 successfully prevailed upon Ravenel to send a sketch and even more detailed notes on Phallus ravenelii than Farlow had received, and, also in 1878, Canby had requested and received specimens of several species of Baptisia that he needed for a study of the genus.³⁵ The distinguishing feature of their relationship, rather, was its length and intensity.

Only once did their long correspondence hit a sour note. Ravenel had for some years been sending Farlow algae, more for the sake of helping Farlow with his interest than out of any interest Ravenel himself had in the little plants. He also sent to Francis Wille (1817-1893), a minister and teacher in Pennsylvania whose acquaintance he had made at about the same time as Farlow's, and both men were courteous in sending him reports on the species he

gathered for them. This caused no problem until December 1881 when he sent duplicates of the same collection to both Farlow and Wolle. Both sent back their determinations, and on comparing lists he found some differences of opinion. He mentioned the discrepancies to Farlow, particularly pointing out one specimen that Wolle had thought to be a new species of Draparnaldia and proposed to call D. ravenelii but that Farlow had identified as Batrachospermum vagum. "Of course I have no opinion in the matter," he remarked, "not having given any microscopical examination, nor being sufficiently familiar with the species of Algae to offer any opinion." He was sure, though, that Farlow would see the need to eliminate such discrepancies and generously offered to send Farlow his other Wolle specimens to increase his collection.³⁶

Such a ticklish situation for Farlow! No doubt Ravenel's letter, with its mild but plain assumption that Farlow and not Wolle was wrong in his identification, was somewhat embarrassing. Of course, Farlow knew the algae quite well. He had just recently completed a study entitled "Marine Algae of New England and Adjacent Coast" for the United States Fish Commission Report of 1879. Furthermore, Farlow's opinion of Wolle was low enough that he was not going to concede easily, yet to attack Draparnaldia ravenelii would be churlish. Instead Farlow resorted to personal criticism of Wolle, passing along his remarks in the conspiratorial tone of a gossip. Wolle, he wrote, was

not a scientific man. If he did any good at all for botany it was by sending some things to Veit Brecher Wittrock (1839-1914) and Carl Otto Nordstedt (1838-1924) who made the appropriate corrections in otherwise worthless descriptions and published them in their *exsiccati* series of Scandinavian algae (Stockholm 1877-1889). At one time, he continued, Wolle had had a plant that both Farlow and Tuckerman said was a lichen, yet Wolle published it as a new alga. On another occasion Wolle made a new genus of algae out of the prothallus of a moss. Worst of all, he once sent Farlow a mounted preparation of a plant that he said was a marine alga from Florida along with colored drawings to show the development of sporangia, which are not found in algae. The prepared slide turned out to be a hair of Drosera, a genus of flowering plant, with the central vascular bundle quite plain. Farlow kept both drawings and slide to amuse visiting botanists. He would be glad, he concluded, to see any of Ravenel's Wolle specimens; their determinations were often entirely wrong.³⁷

If Farlow hoped Ravenel would enjoy his stories at Wolle's expense, he was disappointed. Ravenel evidently did not have much of a sense of humor nor was he inclined to criticize others, and in this situation he reacted true to character. He sent off by return mail "in justice to Mr. Wolle" a short note letting Farlow know that Wolle had just written to change his opinion. Draparnaldia ravenelli was indeed a Batrachospermum. Yet even as Ravenel

wrote this, Farlow was writing again to admit he had re-examined the doubtful sample and found a Draparnaldia mixed in with the Batrachospermum. With this admission made, Ravenel was inclined to be forgiving of Farlow's slip. The difference of opinion he attributed to the natural result of working among a little known class of plants in a country still but poorly explored. With regard to the report on Wollé's incompetence? "Of course it will be strictly confidential."³⁸

As Ravenel entered into correspondence with talented young men like Farlow, he found the informal rules he had set for himself with regard to selling his collections slipping farther into the background. These young botanists so often and so earnestly implored only small favors. He helped them and though he very often received their collections in return,³⁹ seldom did he make money.

In 1877 the South Carolinian decided he must redouble his efforts to make some profit from botany. Ravenel wrote to Cooke who in former years had so successfully disposed of a number of sets of fungi. He proposed a trip to Florida for the special purpose of collecting fungi and other plants for distribution in sets. Cooke reacted with alacrity and enthusiasm. Ravenel, he wrote, could count on him "to enter fully and heartily into" the project and to give it his "best attention."⁴⁰ With this assurance received, Ravenel contacted others to arrange for distribution of other cryptogamic plants that he might collect. Coe Finch Austin

(1831-1880) agreed to take the mosses and hepatics, while Tuckerman would take the lichens and Wolle the algae. The trip, through Georgia and as far into Florida as Gainesville, required only about three weeks, from the middle of November until the 11th of December, but he worked hard to make good use of his time. He stayed with a friend who had moved to Florida from South Carolina, and by thus reducing the expenses of his trip found that he was able to collect enough fungi to repay his expenses. The \$25.00 Tuckerman sent for lichens and any money received from Austin and Wolle was profit, so the new venture was launched with reasonable success.⁴¹

Distribution of sets was left entirely to their recipients. Tuckerman, Austin and Wolle were sent relatively small parcels and either used the materials themselves or distributed them informally. Cooke, on the other hand, received massive quantities of fungi from Florida, from a trip the following spring to Darien, Georgia, and of course, from South Carolina. He intended from the beginning that they should be issued in formal sets as an exsiccati and to ensure a profit from them advertised in advance in Grevillea, a British journal of cryptogamic botany that he edited. As the advertisement made clear, Cooke took care of the format and preparation of the exsiccati, and he also was in charge of collecting payment for sets and distributing them. Specimens in the Fungi Americani Exsiccati, as the new set was called, were issued on loose sheets, rather than bound

into books as in Ravenel's earlier exsiccati, but they, like the first, were carefully glued down individually on their pages. Cooke had a very poor, though by modern thinking unjustified, opinion of those botanists who had lately fallen into "the idle habit" of issuing exsiccati specimens enclosed in envelopes, "a most vicious practice and one likely to produce very serious consequences."⁴²

In exchange for relief from the microscopic examination of the fungi he sent Cooke and from the tedious work of assembling the exsiccati sheets, Ravenel had to take in good grace both the form of the new work, which he didn't quite like, and Cooke's occasional errors. They were not many and usually involved not major problems such as the incorrect identification of a fungus but small, careless mistakes like crediting a species to the wrong author. Ravenel pointed out to Farlow a number of cases where species published by him and Berkeley were referred to Berkeley and Curtis as well as some other errors. "Personally, I lay no great stress," he wrote, not entirely convincingly, "on having my name appended to a species, but priority in description, & exactness of authorship are necessary to avoid endless confusion." He was for the most part willing to excuse Cooke's occasional slips on the basis of the great amount of other work the Englishman had before him.⁴³

In addition to preparing the exsiccati, Cooke published several articles in Grevillea or other cryptogamic journals commenting on Ravenel's fungi and describing a large number

of new species from them. Moved, so it seemed to Ravenel, by simple generosity, Cooke occasionally credited his American collaborator with co-authorship of the new species, though Ravenel admitted to Farlow that he sent at least the microscopic species entirely without notes or description. Both the commencement of the exsiccati itself and South Carolina's release from Republican domination in the same year, 1877, had added fuel to the fire of Ravenel's interest in mycology, already burning ever more brightly since the close of the war. Even so, he had not the slightest inclination to recommence his studies with the microscope.⁴⁴

Cooke's original advertisement for the exsiccati anticipated the issuance of about four centuries of fungi. So much material was gathered, however, that the work eventually expanded to eight, the first issued in 1878 and the last in 1882. With the exception of just a few specimens, Ravenel collected all of the contents himself. At the same time he was helping his old correspondent Ellis with his exsiccati, North American Fungi. The seventh century, issued in 1881, contained 33 Ravenel specimens, and many other centuries also included a few.⁴⁵

As Ravenel looked back over his life's work he could feel satisfaction at his own accomplishments and those of the men he had aided and was aiding still.⁴⁶ There was more work left in him, but as he reached his late 60s, he began to feel the need to slow down a little. The desire to take off into the woods on hours' long expeditions was as strong

as ever, but tramping about became progressively more difficult. Deafness also became more serious. In August 1883 at Tuckerman's urging and offer to pay his expenses Ravenel undertook a trip to Salem, North Carolina, to try to find a particular plant previously collected by Schweinitz, and found that his deafness made travel among strangers very difficult. When in Aiken he rarely went anywhere except to visit his most intimate friends.⁴⁷

As Ravenel grew older, money problems became a little less worrisome. In February 1882 he accepted an offer from the Charleston News and Courier to take over the agricultural column in their Tuesday evening weekly, and at the same time accepted a commission to prepare a list of South Carolina plants to be appended to a handbook of the state's resources then in preparation by Harry Hammond, the eldest son of former governor James Henry Hammond. For this he was paid \$100.00, and further commissions from the State agricultural department followed. Finally in November Hampton Hill was sold. The purchase price, \$2,500.00 clear of commissions, was pitifully small compared with the \$15,000.00 he had hoped to get for it soon after the war, but it provided a welcome cushion for his old age.⁴⁸

Ravenel knew he still had one financial ace up his sleeve: the herbarium. He had played with the idea of selling it for years, but now with old age coming upon him, he gave renewed attention to the idea. He wished to ensure it a place where it would be available to other scholars after

he was gone. He may also have had in mind the problems Curtis's wife had faced in disposing of his herbarium a decade earlier and wished to spare his own family. Hoping to locate it at a school or scientific institution in the United States, preferably in South Carolina, he approached in turn Johns Hopkins University, the College of Charleston, and South Carolina College but was turned down by all of them. Johns Hopkins had no botany teacher and needed no collection, and neither of the South Carolina schools could afford the \$1,000.00 or \$1,500.00 that Ravenel was asking.⁴⁹ The collection was a large and valuable one. In October 1881 Ravenel inventoried it and found he had plants representing over 11,000 separate species, about half of which were fungi, including approximately 1,000 type specimens of species of Berkeley and Ravenel, Berkeley and Curtis, or Cooke.⁵⁰ In fairness to his family he knew he could not dispose of the collection for less than it was worth, but he became discouraged by the refusals of these colleges and never got around to offering it elsewhere.

His family had always been a pleasure to Ravenel, and now he watched his children grow up strong and healthy. Lizzie, who had nearly died in 1875 from typhoid, turned 19 in 1883 and began teaching school with her older half-sister Lydia. Emily and Edward in Florence had a full house. Ravenel lived to greet the arrival of the ninth of their children. Carrie had become Mrs. Edward H. Lucas in 1877. They, too, had several children and, like Emily, had named a

son Henry Ravenel. Harry, after much struggling and ill fortune, was doing well in Darien, Georgia, and he, too was married and had a family.⁵¹ Other cares gradually faded from Ravenel's mind in the mid 1880s. Diary entries were largely given over to brief notes on the weather, letters sent or received, the state of the garden. The old bugbear of his younger days, politics, was accorded scarcely a mention.

Botany, however, still held his interest. Letters came in at an undiminished rate from young botanists wanting advice or specimens, and he continued to comply to the best of his ability. In September 1886 he had to turn down Ellis's request for some plants:

I would gladly comply with your request, but I fear my active working days are over. In the latter part of June I had a warning attack -- some head trouble, which was quite serious for the time, & left me so weak that I have scarcely been out of the house since. ... If the opportunity comes I will remember your wants.⁵²

In the following weeks he found specimens or fragments in his herbarium and sent them on, and he procured some other fungi on peach leaves but could not be entirely sure what they were. "My head is not strong enough to do anything that requires close attention," he confessed.⁵³

Among the letters were occasional compliments and honors of the type that scholars bestow on one another. The day before he turned 69 a diploma arrived most unexpectedly from Austria certifying Ravenel's election to the Imperial Zoologic-Botanic Society of Vienna, and on his 72nd birthday

came word that he had been elected a member of the Elisha Mitchell Scientific Society at the University of North Carolina. Less than two months later, in July, 1886, the university at Chapel Hill bestowed honorary LL.D. degrees on both Ravenel and Alvan W. Chapman, Ravenel's nomination having come from a botanist named Thomas Wood (1841-1892).⁵⁴

A year passed, and another birthday came, bringing honors of a more personal kind. Harry came to spend the day, and all Ravenel's children were with him except for Emily and Carrie. Others, too, remembered him. "I have received from friends several tokens of affectionate remembrance which have moved me deeply," he wrote. "I am very weak today & cannot write much, but I wish to record this acknowledgment of my great thankfulness to a merciful Providence for all these blessings & also for the blessings that have fallen to my lot during the whole course of my life ..."⁵⁵ In this peaceful faith Ravenel lived the remaining days of his life, enjoying the love of his family, the memories of his career, and the honors due, in the words of Thomas Wood, "a devoted student of the fungi," and a "very high authority on the subject."⁵⁶

A BOTANIST ONCE MORE

1869 - 1887

Footnotes

- 1 January 5, 1882, Ravenel Letters (Volume III, Farlow Letter Books, Farlow Reference Library, Harvard University, Cambridge, Mass.; hereinafter cited as Ravenel Letters, Farlow).
- 2 Edward Tuckerman, Genera Licherum: An Arrangement of the North American Lichens (Amherst, 1872), 277.
- 3 H. W. Ravenel to L. R. Gibbes, September 14, 1870, Letters to Prof. Lewis R. Gibbes from Dr. Henry W. Ravenel, 1850-1884. From Transcriptions of the Originals in Possession of the Charleston Museum. 2 Vols. (South Caroliniana Library, University of South Carolina, Columbia, S.C.; hereinafter cited as Typescript Gibbes Letters, USC).
- 4 A. Gray to H. W. Ravenel, June 5, 28, 1870, Folder 16, June 27, September 20, 1871, Folder 17, Box 1, Historical Collection of the Botany Department of the University of North Carolina (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C.).
- 5 H. W. Ravenel to J. B. Ellis, February 12, 20, 1872, April 29, 1873, Ellis Collection (New York Botanical Garden, New York, N.Y.; hereinafter cited as Ellis Collection, NYBG).
- 6 Henry William Ravenel, "Contributions to the Cryptogamic Botany of South Carolina," Charleston Medical Journal and Review, IV (July, 1849), pp. 428-30; Harry Morton Fitzpatrick, "Historical Background of the Mycological Society of America," Mycologia XXIX (January - February, 1937), 14-18; Growth of American mycology during this period is made plain in Donald P. Rogers, A Brief History of Mycology in North America (Amherst and Cambridge, 1981), 12-18. Of course, mycology was not the only science entering at this time onto a logrhythmic growth curve. Derek J. de Solla Price, Little Science, Big Science (New York, 1963).
- 7 Ronald H. Petersen, "B.&C.": The Mycological Association of M. J. Berkeley and M. A. Curtis (Vaduz,

- 1980), 41, 67-68; A. Featherman to H. W. Ravenel, August 28, 1871, Folder 2, Ravenel, Henry William (1814-1887), Papers, Apr. 1844 - 25 July 1887 and n.d. (South Caroliniana Library, University of South Carolina).
- 8 "Botanical Necrology, 1872-3," American Journal of Science and Arts 3rd Ser., V (May, 1873), 391-93; Private Journal of Henry William Ravenel, entry dated April 25, 1872 (South Caroliniana Library, University of South Carolina; hereinafter cited as MS Private Journal of HWR); H. W. Ravenel to Mrs. M. A. Curtis, n.d., September 25, December 19, 1872, Folder 57, Box 3, Moses Ashley Curtis Collection (Southern Historical Collection, University of North Carolina).
 - 9 Asa Gray, "Notes on a Botanical Excursion to the Mountains of North Carolina, & c.; with some Remarks on the Botany of the Higher Alleghany Mountains," London Journal of Botany I (1842), 14; E. C. Howe to C. H. Peck, December 14, 1868, Peck Letters (University of the State of New York, Albany, N.Y.); quoted in Petersen, B&C, 68.
 - 10 S. T. Olney to H. W. Ravenel, July 27, 1872, Letters to Dr. Henry W. Ravenel (typescripts) (Letters of Henry W. Ravenel, Letters and Diaries, South Carolina Collection, Charleston Museum, Charleston, S.C.; hereinafter cited as Typescript Letters to Ravenel, CM).
 - 11 M. J. Berkeley, "Notices of North American Fungi," Grevillea, I (1872-73), 33-39, 49-55, 65-71, 97-102, 145-50, 161-66, 177-80, II (1873-74), 3-7, 17-20, 33-35, 49-53, 65-69, 81-84, 97-101, 153-57, 177-81, III (1874-75), 1-17, 49-64, 97-112, 145-60, IV (1875-76), 1-16, 45-52, 93-108, 141-61.
 - 12 Francis Leigh Williams, Matthew Fontaine Maury: Scientist of the Sea (New Brunswick, N.J.: Rutgers University Press, 1963).
 - 13 Lester D. Stephens, Joseph LeConte: Gentle Prophet of Evolution (Baton Rouge and London, 1982), 105-112.
 - 14 E. J. Wickson, "Addresses at Memorial Services in Honor of Dr. E. W. Hilgard, University of California, January 30, 1916," University of California Chronicle XVIII (April, 1916), 161.
 - 15 Ravenel had last heard from Chapman in May 1869 when Chapman was packed up just on the point of leaving Apalachicola, Florida, and had been unable since then to learn his new location from anyone else. The mystery was cleared up for Ravenel in June 1872 when he

- took a recuperative trip to Rome, Georgia to stay some weeks with his son on a farm he had recently bought near that town. There he found Chapman keeping shop as a druggist, and the two spent several days together visiting and botanizing. H. W. Ravenel to L. R. Gibbes, March 13, September 17, 1872, Typescript Gibbes Letters, USC; H. W. Ravenel to G. Engelmann, March 16, 1871, July 22, 1872, Papers of George Engelmann (Missouri Botanical Garden, St. Louis, Mo.); A. W. Chapman To S. T. Olney, July 20, 1872 (typescript), Folder 18, Box 1, Botany Department Historical Collection, UNC; MS Private Journal of HWR, June 30, July 4, 6, 17, 1872.
- 16 H. W. Ravenel to G. E. Davenport, November 24, 1873, Gray Herbarium (Harvard University, Cambridge, Mass.). See also A. W. Chapman to S. T. Olney, July 20, 1872 (typescript), Folder 18, Box 1, Botany Department Historical Collection, UNC.
 - 17 H. W. Ravenel to J. B. Ellis, January 19, 1872, Ellis Collection, NYBG.
 - 18 H. W. Ravenel to G. E. Davenport, November 24, 1873, Gray Herbarium.
 - 19 H. W. Ravenel to E. Tuckerman, October 9, December 16, 1869, March 22, 1870, Edward Tuckerman Papers (American Antiquarian Society, Worcester, Mass.); MS Private Journal of HWR, August 25 - September 18, 1871, June 20 - July 19, 1872.
 - 20 H. W. Ravenel to A. Gray, June 19, 1871, Gray Herbarium; A. Gray to H. W. Ravenel, September 1, 1871, Folder 17, Box 1, Botany Department Historical Collection, UNC. The papers were "On the Seemingly One-Ranked Leaves of Baptisia Perfoliata," American Association for the Advancement of Science, Proceedings, XX (1871), 391-93 and "On the Relation of the Tendril to the Phyllotaxis in Certain Cucurbitaceous Plants," Ibid., 393-97. The former was reprinted in the Journal of Botany n.s. I, 84-85, the American Journal of Science and Arts (December, 1871), and an abstract of it appeared in the Annals and Magazine of Natural History IX (February, 1872), 174-75.
 - 21 H. W. Ravenel, "Notes on Our Native Flora - I," Rural Carolinian (September 1873), 652-54; " ... II," Ibid. (October, 1873), 27-29; " ... III," Ibid. (December, 1873), 144-45; "Our Native Flora - IV," Ibid. (January, 1874), 195-96; " ... V," Ibid. (February, 1874), 249-50; " ... VI," Ibid. (May, 1874), 419-21.

- 22 H. W. Ravenel to E. Tuckerman, July 23, 1877, Folder 40, Edward Tuckerman Botanical Papers (Amherst College, Amherst, Mass.; hereinafter cited as Tuckerman Papers, Amherst).
- 23 Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), 345, 365-67. Quote from H. W. Ravenel to J. B. Ellis, December 21, 1873, Ellis Collection, NYBG.
- 24 Childs (ed.), Private Journal of HWR, 374-75.
- 25 Ibid., 376-77. MS Private Journal of HWR for this period contains greatly detailed notes on Lizzie's progress, only a sampling of which are contained in Childs' version.
- 26 Childs (ed.), Private Journal of HWR, 377, quote on 378. Also see MS version for this period.
- 27 F. von Thuemen to H. W. Ravenel, February 10, 1872, Papers of Henry William Ravenel (Special Collections, Robert Muldrow Cooper Library, Clemson University, Clemson, S.C.; hereinafter cited as Ravenel Papers, Clemson).
- 28 Childs (ed.), Private Journal of HWR, 373; F. von Thuemen to H. W. Ravenel, March 15, 1876, Ravenel Papers, Clemson.
- 29 F. von Thuemen to H. W. Ravenel, March 15, 1876, Ravenel Papers, Clemson; John A. Stevenson, An Account of Fungus Exsiccati Containing Material from the Americas (Lehre, 1971), 448-56, 461-62.
- 30 W. G. Farlow to H. W. Ravenel, December 7, [1875], Ravenel Papers, Clemson; Hilda F. Harris, "The Correspondence of William G. Farlow During his Student Days at Strasbourg," Farlowia II (January, 1945), 11-12; A. Gray to H. W. Ravenel, June 26, 1873, Folder 18, Box 1, Botany Department Historical Collection, UNC; H. W. Ravenel to Mrs. M. A. Curtis, n.d., Folder 57, Box 3, Curtis Papers, UNC.
- 31 H. W. Ravenel to W. G. Farlow, December 14, 1875, Ravenel Letters, Farlow.
- 32 W. G. Farlow to H. W. Ravenel, September 5, 1878, October 28, [1878], Typescript Letters to Ravenel, CM; H. W. Ravenel to W. G. Farlow, September 10, 1878, Ravenel Letters, Farlow.

- 33 W. G. Farlow to H. W. Ravenel, July 18, [1878], Ravenel Papers, Clemson.
- 34 W. G. Farlow to H. W. Ravenel, December 25, [1878], Typescript Letters to Ravenel, CM.
- 35 C. H. Peck to H. W. Ravenel, December 12, 19, 1878; W. M. Canby to H. W. Ravenel, May 25, 30, July 26, 1878, Typescript Letters to Ravenel, CM.
- 36 F. Wollé's first letter to Ravenel was dated April 24, 1876, Ravenel Papers, Clemson. H. W. Ravenel to W. G. Farlow, December 23, 1881, Ravenel Letters, Farlow.
- 37 W. G. Farlow to H. W. Ravenel, January 1, [1882], Typescript Letters to Ravenel, CM.
- 38 H. W. Ravenel to W. G. Farlow, first quote from January 3, 1882, second quote from January 5, 1882, Ravenel Letters, Farlow.
- 39 An afternoon's inspection of only 1/5 to 1/4th of Ravenel's phanogamous herbarium from this period preserved at the biology department of Converse College in Spartanburg, South Carolina, revealed plants collected by 12 other botanists and sent to Ravenel.
- 40 M. C. Cooke to H. W. Ravenel, July 27, 1877, Ravenel Papers, Clemson.
- 41 MS Private Journal of HWR, H. W. Ravenel to E. Tuckerman, January 8, 30, 1878, Tuckerman Papers, Amherst.
- 42 [M. C. Cooke], "Fungi of Florida," Grevillea VI (1878), 78; quote from M. C. Cooke, "Note on Fungi Exsiccati," Grevillea X (1882), 154-55; see also Stevenson, Account of Fungus Exsiccati, 6-7, 307-309.
- 43 H. W. Ravenel to J. B. Ellis, June 3, 1880, Ellis Collection, NYBG; H. W. Ravenel to W. G. Farlow, August 10, 1878, March 15, 24, 1884, Ravenel Letters, Farlow. Quote from March 24, 1884.
- 44 M. C. Cooke, "New American Fungi," Grevillea XII (1883), 22-33; "North American Fungi," Grevillea V (1877), 150-55, and XI (1883), 106-111; "North American Fungi," Hedwigia XVII (1878), 37-40; "Ravenel's American Fungi," Grevillea VI (1878), 129-46; H. W. Ravenel to W. G. Farlow, August 10, 1878, March 24, 1884, Ravenel Letters, Farlow; H. W. Ravenel to L. R. Gibbes, July 21, 1879, Typescript Gibbes Letters, USC.

- 45 Stevenson, Account of Fungus Exsiccati, 106 and passim, 310-13.
- 46 H. W. Ravenel to E. Tuckerman, February 26, 1882, December 26, 1884, Tuckerman Papers, Amherst.
- 47 H. W. Ravenel to W. G. Farlow, July 19, 1882 [? or 83?], Ravenel Letters, Farlow; H. W. Ravenel to J. B. Ellis, April 24, 1884, Ellis Collection, NYBG. H. W. Ravenel to E. Tuckerman, July 8, August 2, 7, 1883, Folder 40, Tuckerman Papers, Amherst.
- 48 Childs (ed.), Private Journal of HWR, 260, 399-400, 405-407, 410.
- 49 W. G. Farlow to H. W. Ravenel, May 28, [1879], Type-script Letters to Ravenel, CM; H. W. Ravenel to L. R. Gibbes, July 28, 1880, Typescript Gibbes Letters, USC; L. R. Gibbes to H. W. Ravenel, August 30, 1880, Type-script Letters to Ravenel, CM; J. M. McBryd to H. W. Ravenel, April 20, 1882, Typescript Letters to Ravenel, CM.
- 50 Inventory is in Nathaniel Henry Rhodes Dawson Papers (Southern Historical Collection, University of North Carolina).
- 51 Childs (ed.), Private Journal of HWR, 368-69, 380, 390, 402; Henry Edmund Ravenel, Ravenel Records: A History and Geneology of the Huguenot Family of Ravenel, of South Carolina; With Some Incidental Account of the Parish of St. Johns Berkeley, Which Was Their Principal Location (Atlanta, 1898), 167-68.
- 52 H. W. Ravenel to J. B. Ellis, September 6, 1886, Ellis Collection, NYBG.
- 53 H. W. Ravenel to J. B. Ellis, September 12, 25, 1886, Ellis Collection, NYBG.
- 54 Childs (ed.), Private Journal of HWR, 401, 409-410; F. P. Venable to H. W. Ravenel, May 15, 1886; Faculty Minutes, May 7, June 2, 3, 1886, (University Archives, University of North Carolina); Trustee Minutes, June 2, 1886 (University Archives, University of North Carolina); K. P. Battle to H. W. Ravenel, July 1, 1886, J. A. Holmes to H. W. Ravenel, July 2, 1886, Ravenel Papers, Clemson.
- 55 Childs (ed.), Private Journal of HWR, 411.

- 56 Thomas F. Wood, "A Sketch of the Botanical Work of the Rev. Moses Ashley Curtis, D.D.," Journal of the Elisha Mitchell Scientific Society II (1884-1885), 19.

EPILOGUE

Henry Ravenel died July 17, 1887. He had experienced two mild strokes, one in January, and one in June of the previous year, but death was finally brought about by a general failure of internal organs and resulting edema. He was buried in the churchyard of St. Thaddeus Parish, where he had served so long as a warden, near his daughter Charlotte.¹

Ravenel's will, made out two years earlier, was simple and concise.

Being desirous of leaving a home at least to my wife & unmarried daughters, & as I have but little worldly property besides the house & lot in Aiken, I therefore direct that my property remain as an undivided estate for their use & benefit, until my youngest daughter become of lawful age. That then it be sold or disposed of, & the proceeds thereof be divided equally, share & share alike, between my wife & my children that may then be living.²

A separate note written several years previously expressed privately his wishes regarding the disposition of several family heirlooms, carefully kept through the lean years, and gave advice on the disposal of his real treasure, the herbarium. The cryptogamic portion alone was worth fully \$1,000.00 and should be kept together, he wrote. The phanerogams should be kept with the rest, unless any member of the family developed enough interest in them to desire to keep them.³

Soon after her husband's death Mary Ravenel began to receive inquiries about the herbarium, and she found she had little idea how to go about selling it, not even knowing what price to place on it. Ravenel's note had suggested \$1,000.00 for the cryptogams alone, so on the advice of her friends she doubled the amount for the entire collection. When it had not yet been sold a year later, she began to suspect the price might be too high and wrote to Farlow who helped her place a more reasonable value on it. Still she had no luck; the southern schools where she would prefer to place it could not afford it. Finally she began to sell some sets separately, and in 1891 sold a large part of the cryptogamic portion to the British Museum for \$600.00.⁴ The phanerogams were purchased for an unknown sum by Henry Edmund Ravenel, a distant relation, for Converse College, a school for women that he had been instrumental in founding in Spartanburg, South Carolina. The collection at Spartanburg has had a checkered history. It was cared for lovingly by biology teacher Elizabeth Williams, but at one point the school, needing money, sold a portion to George Vanderbilt for the Biltmore Estate in Asheville, North Carolina. Along with much of the rest of Biltmore's botanical collections, it was destroyed by a flood. Anxious to save the remainder of Ravenel's collection, Williams spirited it away to her attic, whence it was rescued soon after her death by Robert Powell, present head of the biology department at Converse.⁵

EPILOGUE

Footnotes

- 1 Arney Robinson Childs (ed.), The Private Journal of Henry William Ravenel, 1859-1887 (Columbia, 1947), 412; Parish Register of St. Thaddeus Parish, 299 (St. Thaddeus Episcopal Church, Aiken, S.C.).
- 2 Will of H. W. Ravenel, Package 11, Box 10, Estate Papers (Aiken County Probate Records, South Carolina Archives, Columbia, South Carolina).
- 3 Memorandum dated February 4, 1885, Folder 12, Box 11-133, Henry Ravenel Papers (South Carolina Historical Society, Charleston, S.C.).
- 4 M. H. Ravenel to W. G. Farlow, September 9, 10, 25, October 27, 1888, October 2, 1893, Ravenel Letters, Farlow Letterbooks, Vol. III (Farlow Reference Library, Harvard University, Cambridge, Mass.). M. H. Ravenel to N. H. R. Dawson, June 4, October 27, and n.d. Letter of June 4 does not include year, letter of October 27 bears the year 1887 but was almost surely written in 1888. Nathaniel Henry Rhodes Dawson Papers (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C.).
- 5 Elizabeth A. Williams, "Henry W. Ravenel, Distinguished Carolina Botanist," Garden Club of South Carolina, Bulletin, No. 21, 2; Lillian Adele Kibler, The History of Converse College, 1889-1971 (Spartanburg, 1973), 29-30; Interview with Robert Powell at Converse College, January, 1982.

CONCLUSION

Let us return to the historical questions posed in the Introduction. What effect did Henry Ravenel, southerner, have upon Henry Ravenel, botanist, and what conclusions can we draw from his experiences upon the state of science in the South as a whole?

Ravenel's career may be considered to have encompassed three distinct periods, 1839-1860, 1861-1865, and 1865-1887. These periods differ from each other in the level and type of scientific activity carried on by Ravenel and conform, as well, with different eras of southern political life.

Of these three periods the first was the most important for Ravenel as a scientist. To describe him as a "professional" botanist during this period would be, of course, to try to apply a twentieth century concept to a nineteenth century man, and the result would be awkward at best. Though Ravenel referred to himself as a botanist, he never tacked on the adjective "professional," and it is doubtful that he thought of himself in such terms. At the same time, however, his activities during this early period corresponded to a level of commitment but little short of what could be considered professional. He approached botany in a decidedly scholarly manner, not only collecting plants but also studying them in the light of current literature. He was in touch through correspondence with a number of the

most important cryptogamic botanists of his time, and though he was not of the inner circle, yet the masters, particularly Berkeley, recognized the high level of his ability and devotion to botany and awarded him a greater status than many of their other correspondents. By the end of the 1850s he had built up his own small network of collectors who helped with specimens for the Fungi Caroliniani Exsiccati and sent material for identification. Most importantly, in planning his scientific collecting and research, he kept the standards and needs of botany foremost in his mind, rather than following the mere dictates of his own desires. The tension that he felt between specialization in one area of botany and taking a broad overview evidences this concern, for it illustrates his awareness of the dilemma of two mutually exclusive and apparently equally salutary needs in botany.

To some extent, Ravenel skirted the choice between the specialized and broad approaches; at least, he never stated his choice, nor did he make a clear and consistent move in one direction or the other. Looking at the 1850s alone, however, we can see him moving in the direction of a commitment to mycology over other types of botany. Also, at all times his work was restricted to botany; never did he display the fragmented efforts of the seventeenth or eighteenth century naturalists. In this way he was like other leading botanists of his time.

The 1840s and 1850s also correspond with a period of intensifying conservatism and political closed mindedness throughout the South, a trend which was reflected in Ravenel's own political thought. His approval of slavery cannot be doubted, and if his views on that subject, on North-South relations and on eventual secession were somewhat milder and opener than many others', they were still well within the range of normality for the majority of South Carolinians. He did not accept the views of the majority blindly, but, as much thoughtful analysis in his journal reveals, acceded to them with eyes open. Ravenel's religious views were also quite ordinary. His Episcopal inclinations were not common in the South as a whole, but they were normal enough among other wealthy South Carolinians.

It is clear that Ravenel suffered no social pressure because of his interest in botany or his views on slavery or religion. Other, less direct effects of these opinions were also minimal. Slave labor provided him with the leisure he needed to botanize and did not interfere with his relations with northern botanists, with whom he remained on cordial terms until the very eve of war. Similarly, religious faith presented no barrier to his scientific interests. In his attitude toward the connection between religion and science Ravenel followed the old Protestant tradition that as there was one God, so there was one truth, which both theologian and scientist strove to reveal. He saw God's hand in the beauty of each plant, and his belief that scripture and

science must be in accord allowed him to shrug his shoulders philosophically at apparent contradictions. These would be worked out by correction of the errors of human theologians or scientists, all in God's good time.

Limits on Ravenel's growth as a scientist during this period were intrinsic to his own personality or, at least, sprang from that intimate connection between an individual's nature and circumstances that might be called fate or karma. Ill health was one of the chief limitations. In 1852, 1853, 1855, and again from 1858 through 1860, he suffered attacks of dyspepsia that were actually disabling in their severity. The attacks bore an uncertain cause/effect relationship with his use of the microscope, for while they seemed related to general psychological and physical stress, they were exacerbated by microscopic work. They were probably at least partly of psychosomatic origin, leaving open the possibility that they were related to social attitudes toward health and illness. Though the nineteenth century is well known for a certain preoccupation with health, the possibility that Southern feelings on the subject were measurably different from those of other areas has not been explored adequately for further speculation. It presents an inviting avenue for future research.

Another limitation, or perhaps the result of an unseen limitation, was that Ravenel never made a trip to Europe. The opportunity to study a wider range of European literature and to see herbarium specimens from the four corners of

the earth might have done for him what it did for Gray and Tuckerman, raising their work to the same level with European botanists. Ravenel, though he apparently had aspirations to be more, remained a second rank mycologist when compared with Fries, Berkeley or Montagne. His failure to travel to Europe does not indicate a lack of understanding of the possible benefits of such a trip, as may be witnessed by his vicarious pleasure and excitement when Tuckerman planned a voyage. Instead it apparently demarcates the extent of his commitment to botany. Faced with the expense and bother of a long trip in foreign countries, he simply chose not to go, nor did he seemingly ever seriously contemplate the possibility. Financial considerations may have played a role, but it is quite doubtful, especially following his move to Hampton Hill where he had a fairly large cash income from investments, with large though irregular additions from his fruit crops.

During the second part of his career, spanning the Civil War and the months immediately following, Ravenel did very little in botany. His withdrawal was occasioned both by poor health and by preoccupation with political and military events. The poor health, I suspect, was itself aggravated by worry over politics. Even had he desired to continue scientific activities, it would have been impossible to keep abreast of new developments, cut off, as he and other southerners were, from scientific news.

For the remainder of his life Ravenel was again active in botany. No longer, however, did he have scholarly ambitions, but he confined himself to collecting. The influence of his environment during this time is subtle and difficult to analyze. Continued delicate health was partly responsible for limiting him to collecting. He found that by avoiding use of the microscope he could eliminate a significant source of stress and so keep his dyspepsia under control. Collecting, on the other hand, provided gentle outdoor exercise and was generally beneficial to his physical condition. At the same time, however, the poverty resulting from the war was also a major limitation on his botanical activities. He was no longer able to buy books but instead had to sell portions of his earlier library, while the leisure hours that he had once devoted to study now were directed, as much as possible, to income-producing activities.

Before we label reconstruction as a purely pernicious influence upon Ravenel's work, however, it must be remembered that he returned to botany following the war largely as a means of making money. Without that spur it is possible that he might never have returned to the science. The question is unanswerable. We can only recognize the dual nature of the influence of postwar need upon his work.

Despite the new, non-scholarly focus of Ravenel's own work following the war, he maintained his earlier concern with the progress of botany and tried to do what he could by

helping others. Especially significant was his aid to younger men like Peck and Farlow. German post-graduate education in the sciences, as well as increased introduction of botany into American college curricula, by the 1870s and 1880s prophesied the decline of the importance of correspondence networks as a means of botanical education. Informal instruction of this type, however, has never entirely lost its usefulness, and during the final period of Ravenel's life it retained comparatively greater importance than it was to have in the following century. Within this context, Ravenel served these younger scientists as a teacher and guide.

Except for the interruption in correspondence caused by the war itself, the postwar period presents the only known time when North-South political animosity marred Ravenel's relations with another botanist. Most northern botanists allowed correspondence to pick up where it left off with very little change. Tuckerman even sympathized with Ravenel over Republican rule in South Carolina and rejoiced with him at its end in 1877.¹ Yet at least one man allowed the Civil War to color his impression of Ravenel. It would be strange if others did not also. "I will send [specimens for identification] to Ravenel this week," Howe wrote to Peck in 1868, "though I confess to a feeling akin to horror at the thought of addressing a South Carolinian! But our science must not suffer though we be compelled to invoke the aid of Le Diable himself."²

Ambivalent though reconstruction was in its effect on Ravenel's career, his life attests to the generally depressing effect it had on science in the South. Gains made by southern education during reconstruction were offset by the frequent impoverishment of the former leisured class. Neither those who, like Ravenel, clung to their earlier life by whatever threads remained nor the forward-looking businessmen of the New South had time for the serious pursuit of non-practical arts or sciences. It is, perhaps, symbolic that Ravenel's son, though interested in botany, became a businessman.

There is a limit to how far conclusions drawn from Ravenel's life may be expanded to serve as general principles for dealing with science in the South. Different circumstances were at work in the lives of each of the South's citizens, and Ravenel certainly was unusually lucky in the early circumstances of his life and unlucky in his later years. We must remember the teachings of the whole vast group of southern historians, from Carl Bridenbaugh to Carl Degler, who have stressed the diversity of the South over its uniformity.

This much, however, Henry Ravenel does have to teach us in answer to Clement Eaton and others who would argue the intrinsic unsuitability of the South for scientific pursuits:

First, intelligence and energy applied to science do not in any way guarantee that an individual will formulate

political or social principles different from, or better than, those of other members of his society. Southern scientists had as much likelihood as anyone else of subscribing to social outlooks now condemned but then very broadly accepted. Nor did slavery or the holding of pro-slavery opinions have an intrinsically negative impact on the work of Southern scientists.

Furthermore, the South's increasing political conservatism during the later antebellum period was not necessarily mirrored by increasing scientific conservatism or resistance to theoretical innovation. Ravenel, we remember, reacted in 1860 to Darwin's theory of evolution with considerable open mindedness.

Second, many scholars have shown with regard to other societies or other times that religious piety, either in the individual scientist or in the society as a whole, may be more likely to spur scientific research than to hinder it. This is particularly true of that brand of religious piety so common in the Anglican and Episcopal churches that would assert the oneness of God's creation and the duty of scientists to glorify God by studying his works. This, it seems, was precisely the opinion of Henry Ravenel, and, to the extent that it was shared by other southerners, the theme of the supposed enmity between southern piety and southern science would seem to have been overplayed.

Third, of those other, supposedly negative factors, including romanticism, a rural environment, and a hot

climate, it must be concluded that all three had some slight, interesting effects on Ravenel, and presumably on other southern naturalists, none of which could be considered entirely negative. Ravenel shared in full measure a classic trait of romanticism, that is, an appreciation of the wild outdoors and an ability to see beauty in unfettered nature. While he admitted that these feelings caused him to prefer field work over close, microscopic examination of his collections, they did not prevent him from carrying on his closet botany with patience and perseverance for fifteen years, until forced by nervous dyspepsia to desist.

As for the agricultural environment, which he vastly preferred to that of the cities, Ravenel seemed able to rise above a barrier of isolation that did annoy many others. In addition, his rural surroundings colored his work with a concern for the promotion of scientific agriculture that might have been lacking had he lived in a city or a less agriculturally oriented society. Nearby Charleston, and Curtis's frequent letters and occasional visits were, of course, of immense help. The stimulation of others seems to have been a necessary factor at the beginning of his career, but once it was fairly launched, he complained not of isolation from other scientists in general, but from other mycologists, a deficiency he could not hope to cure anywhere in America. He desired, in other words, closer contact with other members of his own tightly specialized subcommunity of

botanists. In this sense Tuckerman in Massachusetts suffered more from isolation than did Ravenel.

Ravenel complained upon rare occasions of summer heat, but, as we would expect, he was accustomed to it and seldom let it prevent him from working. In the winter he reaped the benefit of the region's mild climate when he found there were plants to be gathered all year round, and never did he pen the complaints of William Farlow who wrote at Christmas one year that it was too cold to stay in the herbarium long enough to do anything.³

To say that certain factors in Southern society often cited as inimicable to the advance of science were not always so, is not to deny their negative impact upon some scientists. Nor does it support T. Carey Johnson's implicit message that science in the South was on a parity with science in the North. Rather, the lessons taught by an examination of Henry Ravenel's life lend weight to the assumption that both views on southern science suffered a lack of depth and perspective due to the infant state of development of the history of American science in 1936, when Johnson wrote, and even twenty years ago when The Mind of the Old South was published. It is time to shake off the patterns of thought left to us by Johnson and Eaton and to proceed with the investigation of the nature of southern science. I hope that this biography may serve as a step in that direction.

CONCLUSION

Footnotes

- 1 E. Tuckerman to H. W. Ravenel, July 12, 1877, Papers of Henry William Ravenel (Special Collections, Robert Muldrow Cooper Library, Clemson University, S.C.).
- 2 Quoted in Ronald H. Petersen, "B. & C.": The Mycological Association of M. J. Berkeley and M. A. Curtis (Vaduz, 1980).
- 3 W. G. Farlow to H. W. Ravenel, December 25 [1878], Letters to Dr. Henry W. Ravenel (typescripts) (Letters of Henry W. Ravenel, Letters and Diaries, South Carolina Collection, Charleston Museum, Charleston, S.C.).

APPENDIX

Plants Named for H. W. Ravenel

How common it is at the end of short obituaries or sketches of individual naturalists to see a pronouncement of this type: "The subject of this sketch is commemorated by the genus _____ and the species _____ and _____." It seems to be a piece of information given as routinely, and often with as little thought, as a summary of the person's genealogy. Such nomenclatural information can, however, be of more than antiquarian interest. The number of plants involved, their authors and date of description are indications of the general regard in which the person was held by other botanists at a particular time, for it is generally considered to be an honor to have a plant bear your name. If the type of plant and the comparative numbers of those plants named for someone and those named by someone are also considered, the data can indicate what sorts of plants the subject typically collected and roughly what percentage of his efforts were devoted to collecting for others as opposed to carrying on closet research in taxonomy, for plants are often named by the describer for the collector, and if there is one invariable rule governing this type of naming, it is that no one shall name a plant for himself.

In Ravenel's case, there are, indeed, a large number of plants involved. They include all types of cryptogams

except for ferns as well as a few phanerogams. By far the majority, of course, are fungi. Their dates of publication span the active period of his career, 1849 through the 1880s, with the largest number appearing after the Civil War, thus confirming that time as a very active part of his career in terms of collection. Of course, there is some distortion in taking date of publication as an indication of Ravenel's then level of activity, for a lag of some years may exist between Ravenel's collection of material and its publication by someone else. Berkeley, for example, published soon after the war a large amount of Ravenel's material collected during the 1850s.

For organizational purposes the following list is divided first into generic then into specific epithets, with the latter being broken down by type of plant, then alphabetically. Both generic names are of fungi.

Genera

1. Ravenelia, founded by M. J. Berkeley on Ravenelia glandulosa Gard. Chron. 132 (1853).
2. Ravenelula, founded by Carlos Spegazzini on Ravenelula gainesvillensis An. Soc. Cient. Argent. 12(3/6): 225, 1881. (Marie Farr, 1280-81).

Species or Varieties

A. Algae

1. Batrachospermum vagum, var. ravenelii Wolle Torr. Bull., 9:29, 1882.

2. Hydrocoleum ravenelii Wolle Torr. Bull., 6:183, 1877.
3. Scytonema ravenelii Wood original reference not located. See Wolle Torr. Bull., 6:281-88, 1879.
4. Tolypothrix ravenelii Wolle Torr. Bull., 6:285, 1879.

B. Fungi

1. Acrospermum ravenelii B&C. Grev., 4:161, 1876.
2. Agaricus (Aminita) ravenelii B&C. Ann. Mag. Nat. Hist. 3rd Ser., 4:284, 1859.
3. Boletus ravenelii B&C. Ann. Mag. Nat. Hist. 2nd Ser., 12:429, 1853.
4. Calocladia ravenelii Berk. Issued under this name in Rav. Fungi Carol. Exs., Fasc. IV, No. 67, 1855. (Stevenson, p. 302). Later published as Microsphaeria ravenelii Berk.
5. Cantharellus ravenelii B&C. Ann. Mag. Nat. Hist. 2nd Ser., 12:425, 1853. Type in Rav. Fungi Carol. Exs., Fasc. III, No. 4, 1855. (Stevenson, p. 301).
6. Cordyceps ravenelii B&C. Berk., Jour. Linn. Soc., 1:159, 1829. Type in Rav. Fungi Carol. Exs., Fasc. IV, No. 28, 1855. (Stevenson, p. 302).
7. Corynites ravenelii B&C. Grev., 2:34, 1873.
8. Cucurbitaria ravenelii Cke. Grev., 16:25, 1887.
9. Cyphella ravenelii Berk. Grev., 2:55, 1873.
10. Daedalea ravenelii Berk. Grev., 1:68, 1872.
11. Didymium ravenelii B&C. Grev., 2:53, 1873.
12. Diplodia ravenelii Cke. nomen nudum (diagnosis in Sacc. Syll. Fung. 3:363, 1884). Type in Rav. Fungi Amer. Exs., Cent. IV, No. 396, 1879. (Stevenson, p. 311).
13. Fusidium ravenelianum Thuem. Type in Thuem. Myco. Univ. Cent. XX, No. 1970, 1881, diagnosis on label. (Stevenson, p. 455). Diagnosis also appears in Thuem. Flora 61:193 (or 183?), 1878. Type in Ellis, North Amer. Fungi, Cent. VII,

- No. 656, 1881. (Stevenson p. 107. On 107 & 455 Stevenson gives two different page citations to Flora.)
14. Helminthosporium ravenelii Curt. Silliman's 2nd Ser., 6:352, 1848.
 15. Hydnangium stephensii B&C. var ravenelii B&C. in Sacc. Syll. Fungi 7:159, 1888. Type in Rav. Fungi Carol. Exs. Fasc. II, No. 71, 1853. (Stevenson p. 300).
 16. Hygrophorus ravenelii B&C. Ann. Mag. Nat. Hist. 2nd Ser., 12:424, 1853.
 17. Hypocrea ravenelii Berk. Grev. 4:14, 1875. Type in Rav. Fungi Carol. Exs., Fasc. V., No. 51, 1860 (Stevenson, p. 303).
 18. Lentinus ravenelii B&C. Hook. Journ. Bot. 1:100, 1849. Silliman's 2nd Ser., 9:173, 1850. Type in Rav. Fungi Carol. Exs., Fasc. II, No. 11, 1853. (Stevenson p. 300).
 19. Macrosporium ravenelii Thuem. Type in Thuem. Myco. Univ., Cent. XXI, No. 2071, 1881, diagnosis on label. (Stevenson, p. 455). Type also in Roumeguere, Fungi Selecti Gallici Exs., Cent. XLVII, No. 4680, 1888. (Stevenson, p. 356).
 20. Merulius ravenelii Berk. Grev., 1:69, 1872. Type in Rav. Fungi Carol. Exs., Fasc. IV, No. 9, 1855. (Stevenson, p. 302).
 21. Microsphaeria ravenelii Berk. Grev., 4:160, 1876.
 22. Mitremyces ravenelii Berk. Grev., 2:51, 1873.
 23. Octaviana stephensii var. ravenelii Berk.
 24. Peziza ravenelii B&C? Berk? Grev. 3:152, 1875. Type in Rav. Fungi Carol. Exs. Fasc. II, No. 46, 1853. (Stevenson, p. 300).
 25. Phallus ravenelii B&C. Grev., 2:33, 1873.
 26. Polyporus (Pleuropus) ravenelii B&C. Grev., 1:38, 1872.
 27. Septoria ravenelii Thuem. Flora 61:180, 1878. Type in Theum. Myco. Univ., Cent. XI, No. 1089, 1878, diagnosis on label. (Stephenson, p. 452).

Type also in Rav. Fungi Amer. Exs., Cent. VI, No. 508, 1881. (Stevenson, p. 312).

28. Sphaeria ravenelii Thuem. nomen nudum = Fracchiacea callista B&C. Type in Ellis, North Amer. Fungi., Cent. VIII, No. 747, 1822. (Stevenson, p. 108).
29. Stereum ravenelii B&C. Grev., 1:162, 1873.
30. Thelephora ravenelii Berk. Grev., 1:148, 1873.
31. Triposporium ravenelii (Farlow) Cke. Grev., 12:30, 1883. Type in Rav., Fungi Amer. Exs. as Asterosporium ravenelii Farl. Type in Ellis, North Amer. Fungi as T. ravenelii, Cent. XIII, No. 1226, 1884. (Stevenson, p. 112).
32. Tympanis ravenelii Berk. Grev., 4:8, 1875.

C. Hepatics

1. Anthoceros ravenelii Aust. Torr. Bull., 6:28, 1875.
2. Lejeunia ravenelii Aust. Bot. Gaz., 1:35, 1876.

D. Lichens

1. Biatora ravenelii Tuck. Synopsis, 2:34, 1888.
2. Calicium ravenelii Tuck. Proc. Am. Acad. Arts & Sc., 6:389, 1862.
3. Cladonia ravenelii Tuck. Synopsis, 1:254, 1882.
4. Physcia ravenelii Tuck. Synopsis, 1:68, 1882.
5. Platygrapha ravenelii Tuck. Genera Lichenum, 196, 1872.
6. Pyrenastrum ravenelii Tuck. Am. J. Sc. & Arts, S.II, 25:426, 1858.
7. Sticta ravenelii Tuck. Am. J. Sc. & Arts, S.II, 28:203, Tuckerman in Synopsis 1:93, 1882, reduced it to a synonym for S. erosa Eschw.
8. Thelotrema ravenelii Tuck. Am. J. Sc. & Arts, S.II, 25:426, 1858.

E. Mosses

1. Archidium ravenelii Aust. Torr. Bull., 1:145, 1877.
2. Barbula ravenelii Aust. Bot. Gaz., 2:89, 1877.
3. Bruchia ravenelii Wils. in Sull., Mosses of U.S., 17.
4. Cryphea ravenelii Aust. Bot. Gaz., 2:89, 1877.
5. Fabronia ravenelii Sulliv. Mosses of U.S., 61.
6. Fissidens ravenelii Sulliv. Mem. Am. Acad., N.S. 4:171.
7. Funaria ravenelii Aust. Bot. Gaz., 1:29, 1876.
8. Pleuridium ravenelii Aust. Torr. Bull., 6:142, 1877.

F. Phanerogams

1. Eriocaulon ravenelii Chapm. Flora Sn. U.S., 1860.
2. Eryngium ravenellii Gray Bost. J. Nat. Hist., 6:209, 1850.

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