Alfred Russel Wallace's 1886–1887 Travel Diary

The North American Lecture Tour

Edited by Charles H. Smith & Megan Derr

with a Preface by Michael Shermer

Sri Scientific Press

Alfred Russel Wallace's 1886–1887 Travel Diary

The North American Lecture Tour

Edited by Charles H. Smith & Megan Derr

with a Preface by Michael Shermer

SSP
SIRI SCIENTIFIC PRESS

Authors, if you would like to publish with us please email your proposed titles (at any stage of preparation) to:
books@siriscientificpress.co.uk
or contact us via our website

(we specialize in rapid production of short print run titles that would tend to be overlooked by larger publishers)

ISBN 978-0-9567795-8-8

Published by Siri Scientific Press, Manchester, UK
This and related titles are available directly from the publisher at:

http://www.siriscientificpress.co.uk

Alfred Russel Wallace, as photographed by Isaiah West Taber on 6 June 1887.

Table of Contents and Wallace's Itinerary of Travel

Wallace's Itinerary, October 1886 to August 1887

Appendices

PREFACE

The First Darwinian Brings Evolution to America: A Reflection on Alfred Russel Wallace's Other Great Expedition

Michael Shermer

In the late 1980s, as an American Ph.D. candidate in the history of science, my Anglophile propensities and passion for all things evolution drove me toward the theory's supernova Charles Darwin. Finding those archives already picked over with only scraps remaining for us latecomer scavengers, I turned my attention to those in Darwin's shadow, and there I discovered Alfred Russel Wallace, one of the most interesting minds I have ever encountered anywhere anytime. Wallace was not only the co-discoverer (along with Charles Darwin) of natural selection (the driving force of evolution), there seemed to be nothing that the great naturalist's mind did not touch. When I discovered that he not only voyaged to America but also visited my native California, I found the subject irresistible and he became the topic of my doctoral dissertation and, subsequently, a full-length biography published by Oxford University Press.[1] On this occasion of the 100th anniversary of the death of Wallace in 1913, we have the opportunity to revisit one of the great naturalist's most intriguing exploratory expeditions. This trip was not to the thick rain forests of South America or the bio-rich tropical jungles of the Malay Archipelago, but to the rapidly expanding frontiers of North America, in which one of history's most wide-ranging intellects aimed his powers of observation and deduction to the natural history, politics, and cultural trends of this burgeoning land.

The genesis of the trip was Charles Darwin's funeral in 1882, in which Wallace shared pallbearer duties with James Russell Lowell, of the Lowell Institute of Boston, who invited him to come to America to be a speaker in their prestigious lecture series. Several years later, at a youthful (for Wallace, who lived to the age of 90) age 63, Wallace sailed west for the Americas. His opening lecture was on November 2, 1886, and the Boston *Transcript* reported a favorable response: "The first Darwinian, Wallace, did not leave a leg for anti-Darwinism to stand on when he got through his first Lowell lecture last even-

[1] *In Darwin's Shadow: The Life and Science of Alfred Russel Wallace* (Oxford University Press, 2002).

ing. Mr. Wallace, though not an orator, is likely to become a favourite as a lecturer, his manner is so genuinely modest and straight-forward."[1]

Upon completion of his obligatory lectures Wallace fanned out across the American landscape, both cultural and geographic. He was well known enough on that side of the Atlantic to have garnered meetings with such luminaries as Oliver Wendell Holmes, Henry George, William James, and even President Grover Cleveland at the White House. After several months and many thousands of miles he reached California, where he visited his older brother John in San Francisco. It must have been quite a reunion as the two had not seen each other for forty years. While in northern California he hiked around the dramatic glacier-cut walls of Yosemite Valley, toured the famous redwood forests with the renowned naturalist John Muir, and even got a tour of the planned site of Stanford University from Leland Stanford himself. He also delivered what was apparently a wildly successful lecture on "If a Man Die, Shall He Live Again?," bringing his full focus on the question of reincarnation as it relates to spiritualism, although here his answer to the title question was negative.[2]

Like Alexis de Tocqueville's descriptions of the American democratic experience, Wallace's correspondences are riddled with the observations of a stranger in a strange land. In a letter to his friend Raphael Meldola written on June 19, 1887, from Stockton, California, he offered this histrionic description of the American landscape:

> I have crossed this mighty continent from Plymouth Rock to the Golden Gate. I have crossed the Alleghenies & the Rockies & the Sierra Nevadas. I have wandered on the mighty prairie where the bones of the now almost extinct buffalo lie in heaps upon the prairie. I have gazed upon mighty Niagara, and on the liquid torrent of [water] that "mighty Missouri rolls down to the sea." I have looked up with aching eyes and breaking back at the Washington Monument and at the huge precipices of the Yosemite, and lastly & most recently – I have wandered for days in the glorious pines forests which grow the majestic Sequoias, – the one thing that has more impressed and satisfied me than any thing else I have seen in America. Amid all the exaggerations of guidebooks & popular writers, they remain one of the living wonders of the world, perhaps more than anything else to a lover of nature, worth a journey across America to see.[3]

---

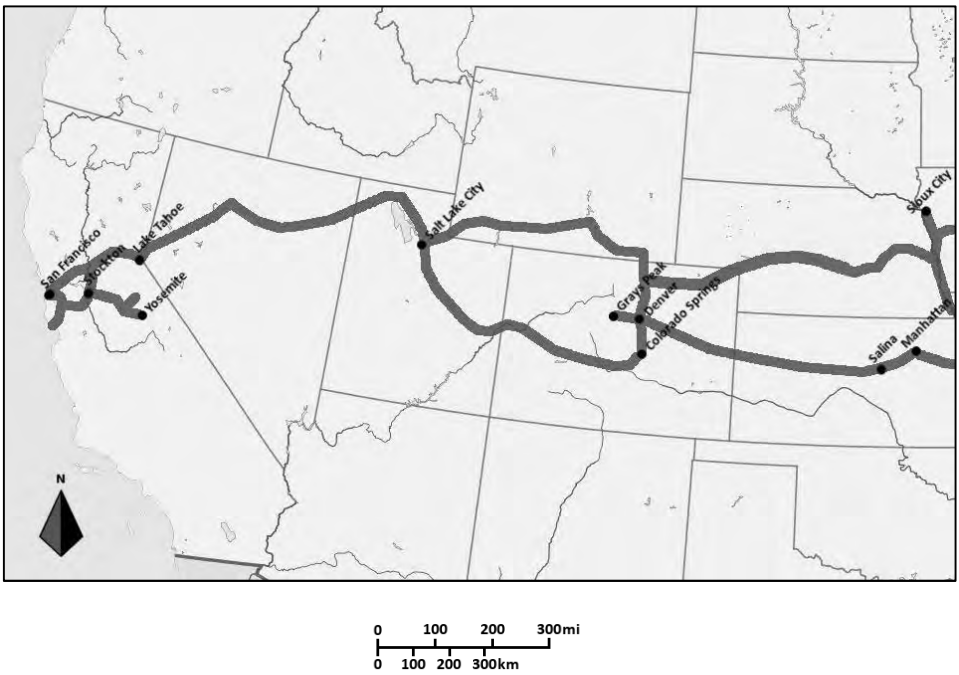
[1] Wallace, A. R., *My Life, A Record of Events and Opinions*, vol. 2 (Chapman & Hall, 1905): 295.
[2] Wallace, A. R., "If a Man Die, Shall He Live Again?" [lecture given at Metropolitan Temple, San Francisco]. *Golden Gate* 11 June 1887: 1.
[3] Letter archived in the Hope Entomological Collection of Oxford University Museum.

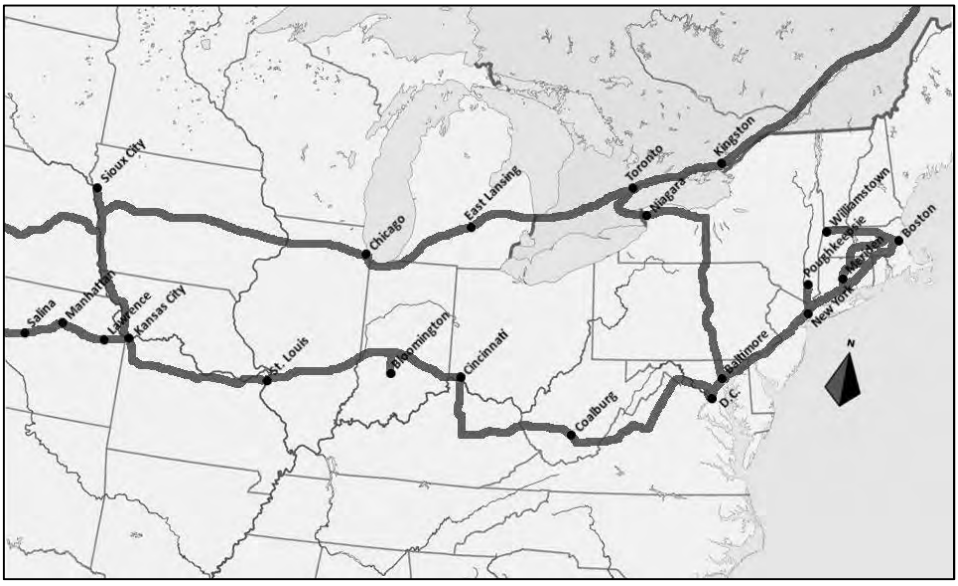
Wallace's American journals, as you shall experience within, are filled with observations of American nature and culture. Many entries are entertaining, such as this one he penned on the train headed west from Kansas City in May, 1887: "In train a lady chewing gum – saw her at intervals for an hour her jaws going all the time like those of a cow ruminating." Other entries are not so amusing, such as this disturbing entry of Wednesday, May 4, 1887, from Sioux City, Iowa, the morning after his previous evening's lecture: "Morning with Mr. Talbot to see pork curing establishment – kill 1000 hogs a day – hogs walk up to top of building, hung up by one leg slide along to man who cuts throat, drop into tank of boiling water, into machine which takes off most of hair, the[n] along counter where other men finish scraping, then cut up, entrails pour into tanks where lot of men clean them – fat out to make lard, sausages, hams, salted pork, blood & refuse all passed through steam heater dryers & form a dry fertilizer – whole place dark, confined passages, steep ladders, all wet with water brine, blood etc. very sickening…."

Sightseeing and social commentary aside, the primary focus of this trip was the popularization of Darwinism, as clearly denoted in the title of his most popular lecture – "The Darwinian Theory" – for which he typically earned a tidy sum of fifty dollars per evening for an hour and a half talk. His audiences ranged from a hundred to three hundred people and he used the new visual aid technology of lantern slides. The lectures helped him organize his thoughts and notes for what would become his definitive statement on evolutionary theory, entitled simply *Darwinism,* which was published in May of 1889. Wallace was, indeed, the first Darwinian, and his travels about the American continent cemented for him this ultimate legacy.

* * * * *

Michael Shermer is the Publisher of *Skeptic* magazine, a monthly columnist for *Scientific American*, an Adjunct Professor at Claremont Graduate University and Chapman University, and the author of *In Darwin's Shadow: The Life and Science of Alfred Russel Wallace.* His other books include: *The Believing Brain*, *Why People Believe Weird Things, Why Darwin Matters, The Mind of the Market, How We Believe,* and *The Science of Good and Evil.*





Wallace's Route

Figures

Image Credits

Frontispiece: *Mining and Scientific Press* (San Francisco), 18 June 1887, page 397

Figure 1: courtesy of George Beccaloni

Figure 2: courtesy of Williams College Archives & Special Collections

Figure 3: *The Silver City: Meriden, Conn.* (E. A. Horton & Co., Meriden, 1893)

Figures 4, 5, 6: *The Baltimore City, the Liverpool of America* (A. Hoen & Co., Baltimore, 1898)

Figure 7: courtesy of The British Library

Figures 8, 23, 24, 26: John F. Jarvis, *Washington Album* (J. F. Davis, Washington D.C., 1891)

Figure 9: *Pictorial Diagrams of New York Theatres* (Lansing & Co., New York, 1880)

Figures 10, 12, 13, 14: *Washington: With the Compliments of the Travelers Insurance Co.* (Travelers Insurance Co., Hartford, 1887)

Figures 11, 15, 20, 21, 22, 25: Joseph West Moore, *Picturesque Washington: Pen and Pencil Sketches of Its Scenery, History, Traditions, Public and Social Life* (J. A. & R. A. Reid, Providence, 1888)

Figures 16, 53, 54: *Pen and Sunlight Sketches* (Grand Trunk Railway Co., Montreal, 1891)

Figures 17, 18, 19: *Views of Toronto* (L. H. Nelson, Portland, ME, 1907)

Figures 27, 28, 29, 40: C. R. Savage, *Views of Utah and Tourists' Guide* (Salt Lake City, 1887)

Figures 30, 34, 37, 38, 39: E. S. Denison, *Pacific Coast Album* (E. S. Denison, Oakland, 1890)

Figures 31, 36: C. P. Heininger, *Historical Souvenir of San Francisco, Cal.* (C. P. Heininger, San Francisco, 1887)

Figures 32, 33: E. S. Denison, *Yosemite and the Big Trees of California* (Crocker & Co., San Francisco, 1881)

Figure 35: Norman W. Griswold, *Beauties of California* (H. S. Crocker & Co., San Francisco, 1883)

Figures 41, 44, 46: John O. Stivers, *Colorado Springs, Manitou Springs, and Vicinity* (J. D. Stivers, Colorado Springs, 1889)

Figures 42, 43, 45, 47, 50: *Gems of Colorado Scenery* (H. H. Tammen Co., Denver, 1899)

Figure 48: Ernest Whitney, *Pictures and Poems of the Pike's Peak Region* (E. Whitney, Colorado Springs, 1890)

Figure 49: courtesy of the California Academy of Sciences

Figures 51, 52: *Chicago Album* (Chisholm Brothers, Portland, ME, 1890)

Introduction

At one time among the most famous people in the world, Alfred Russel Wallace (born 8 January 1823, died 7 November 1913) had become, by the middle of the twentieth century, not much more than a footnote in history. The reasons for this decline are several. First, he never sought to draw attention to his accomplishments – to self-promote. Second, though he became well known to the general populace for his liberal politics and impassioned social criticism, once most of the issues at hand had retreated into history, so too did awareness of his involvement with them. Further, he was not afraid to associate his name with unpopular causes, whether these annoyed either the elite of society, or of science – both of whom sometimes sought to marginalize him. Then too, most of the scientific discoveries he made were not of a definite or final kind, as is more likely in fields such as mathematics, physics, or engineering. And beyond and above even these, Wallace had the misfortune of having to share recognition for his most famous and important discovery – the theory of evolution by natural selection – with another man who was in a better position to collect most of the glory for it.

But Wallace seems to be on his way "back." Attention was initially rekindled by colloquia and writings celebrating the one hundredth anniversary of the public's introduction to the natural selection concept in 1858; in the 1960s and 1970s historians and naturalists began to look more carefully into the range and greater meaning of his contributions. Interest was also accelerated by the birth of the biodiversity movement in the late 1980s, and the subsequent realization of Wallace's role as a "patron saint" of these studies. The author, meanwhile, has since the 1980s made a systematic effort to flesh out our knowledge of Wallace's full published bibliography, including identifying and making available at his website *The Alfred Russel Wallace Page*[1] over six hundred "lost" items. Much of this new attention was summarized in four excellent biographies that appeared directly after the turn of the millennium.[2] A second major website on Wallace opened under the auspices of the Natural History Museum (London) in 2009, and by the turn of the hundredth anniversary of his death in late 2013 two more will be operating. Through all these efforts[3] a more complete picture of Wallace is emerging.

---

[1] http://people.wku.edu/charles.smith/index1.htm

[2] Peter Raby, *Alfred Russel Wallace, A Life* (Princeton University Press, 2001); Michael Shermer, *In Darwin's Shadow: The Life and Science of Alfred Russel Wallace: A Biographical Study on the Psychology of History* (Oxford University Press, 2002); Martin Fichman, *An Elusive Victorian: The Evolution of Alfred Russel Wallace* (University of Chicago Press, 2004); Ross A. Slotten, *The Heretic in Darwin's Court: The Life of Alfred Russel Wallace* (Columbia University Press, 2004).

[3] And there are many others: note the secondary sources list at *The Alfred Russel Wallace Page*.

There is yet much to be done, however. The Darwin Industry continues to grind out volume after volume of analysis on this central figure, but with all due respect to the old boy, Wallace is a much more interesting figure for study. It was Wallace, not Darwin, who was commonly referred to as the "Grand Old Man of Science" in his later years, and for good reasons. Wallace's understanding of evolution extended to just about all possible dimensions of the subject: to biology, environment, cosmology, human civilization, and the spiritual. It is not impossible (and perhaps even *likely*) that his prescience in all these directions foreshadows yet further important discoveries for humankind.

Wallace's Life

The story of Wallace's life – and it is an interesting story – has been told many times, in the more or less detail. Still, a quick review is needed to give the reader a foundation for the particular chapter of it focused on here. Wallace's parents were middle-class but not very well off; this, despite the fact that his father, of Scottish/English heritage, had originally been trained for the bar, and was actually sworn in. But he never practiced, preferring to live off a modest inheritance that allowed him a life of comparative leisure for many years. Wallace's mother had derived from solid middle-class English stock; near relatives of hers had held important civic positions. This heritage did not prevent the family from sinking into near poverty, however. Wallace's father, though an intelligent man, had unfulfilled literary aspirations, and proved a poor provider. Meanwhile, several of Wallace's sisters died in childhood, though one lived a long life and all three of his brothers reached twenty-one. In 1820 the family moved from St. George's, Southwark, to Usk, Monmouthshire (historically, Gwent, Wales), where Wallace was born in 1823, the eighth of nine children overall. When he was five, the family moved back to England, in Hertford.

Family finances reached a crisis point in 1836, when the elder Wallace lost hold of his remaining inheritance. Young Alfred was forced to leave school and was sent to London to live with his older brother John, who was working as a carpenter. Wallace's stay was rather brief but consequential for his education, as he became involved with disciples of the British utopian socialist Robert Owens, an association which became a lasting influence. He was only fourteen at the time.

A few months later Wallace joined another older brother, William, a successful engineer and surveyor working in the west of England, and then Wales. He remained with William for most of the next several years, but then work opportunities dwindled and his brother was forced to let him go. It didn't take Wallace long to find a new job, as an instructor at a private school in Leicester. He was now all of twenty, but had picked up a good practical education along

the way and was able to teach junior-level classes in reading, writing, arithmetic, drawing, and surveying.

Wallace's stay in Leicester produced two results that were a good deal more important than his teaching, however. First, he saw a demonstration of the then newly recognized phenomenon of mesmeric trance. He soon found that he could himself produce such effects. Curious, he began to carry out experiments on some of his students (resulting in his first publication, in 1845).

Second, he met another young man, Henry Walter Bates. Bates was working as a clerk in a local factory, but his passion was insect collecting. Wallace, who had been taking a growing interest in plant collecting, was fascinated. When his brother William died unexpectedly in early 1845, Wallace moved back to Wales to tie up his affairs, but he kept in touch with Bates. Meanwhile, a new influence had surfaced. Sometime in late 1844 or early 1845 Wallace had read a new work, *Vestiges of the Natural History of Creation*, which promoted the theory of organic evolution. He soon saw that the way to investigate this theory was to do field work in some location where he could simultaneously make a living as a specimen collector. He invited Bates to take part, and the younger man was quickly enlisted. They chose the Amazon region as a good locale for setting the plan into action, and left for Para (now Belem), at the mouth of the river, in the spring of 1848.

Wallace stayed in the Amazon four years (Bates, a much longer period), and though his success as a collector was substantial, he did not crack the puzzle of what mechanism was driving organic evolution. Nevertheless, the four years were filled with inspiring experiences (such as his first exposure to truly uncivilized peoples), tragic events (*e.g.*, the death of his younger brother Herbert, who had joined the expedition in 1849 but succumbed to yellow fever in 1851; and a shipwreck on the way back to Britain that destroyed more than two years of collected specimens), and new discoveries that he wrote up in two books and several papers he completed after his return. And, importantly, he had become a fully accomplished, self-reliant, field biologist and observer. After spending less than eighteen months back in England he was off again, this time to what was then known as the Malay Archipelago (today, roughly, Indonesia).

With the possible exceptions of von Humboldt's expedition to South America fifty years earlier and Darwin's *Beagle* voyage of 1831–36, Wallace's eight years in the East represent the most important and successful natural history expedition in history. This is not the place to attempt a survey of its many-dimensioned significance, but it should be reminded, at least, that it was during this adventure he had the famous fever-induced revelation of the concept of natural selection, and set into motion a chain of events that resulted in Darwin's publication of *On the Origin of Species* in 1859. Had he done nothing else, this

discovery alone would have placed him among the front rank of scientific workers.

But his career was in fact far from over. After four more years in the East he returned to England in 1862. No longer an obscure figure, he was immediately welcomed into the London scientific community, and began contributing both "basic science" studies (especially, systematic reviews of insect and bird groups he had collected in the East), and treatments of theoretical subjects. In 1869 he released the much anticipated *The Malay Archipelago*, which became one of the most successful scientific travel books ever written. In the following decade he concentrated on biogeographical subjects, in rapid succession putting out *The Geographical Distribution of Animals* (1876), *Tropical Nature and Other Essays* (1878), and *Island Life* (1880). These effectively became the foundation for modern biogeographical studies, and Wallace has since been recognized as that subject's "father."

As the 1870s passed to the 1880s Wallace continued to write on scientific subjects, but his attention diversified to include matters of social concern. He wrote on international trade issues, church disestablishment, insobriety, inheritance and trusts, and ultimately, centrally, land reform. Inventing a plan for the divestiture of large land holdings, he co-founded the Land Nationalisation Society in 1881, serving as its president from that date onward to the end of his life. Major position statements appeared as long essays in 1880 and 1883[1], and the book *Land Nationalisation* in 1882.

Away from his literary productivity and social activism, Wallace's life was being complicated by other events. In 1866 he married, and over the next several years fathered three children (one of whom died in early childhood). Although he made some considerable profits from his travels, he invested them poorly, and soon was living precariously. He sought employment, but celebrated or not he was not suited for most kinds of employment – and some that he might have qualified for were unavailable to him as the result of his lack of long-standing social position and meagre formal education. He scraped out a decent, but certainly not entirely comfortable, living through his literary projects (he was in fact a very good writer), public lecturing, proofing and editing others' writings, and correcting annual school exams.

1866 was an important year for Wallace in another respect: late that year he publicly committed to spiritualism. He had been studying the spiritualist movement closely for about eighteen months when he came upon a friend of the family who had mediumistic qualities; her sessions in his own house produced manifestations of "spirit intelligence" that pushed him to the level of full be-

[1] "How to Nationalize the Land: A Radical Solution of the Irish Land Problem," *Contemporary Review* November 1880: 716–736; "The 'Why' and the 'How' of Land Nationalisation," *Macmillan's Magazine* September & October 1883: 357–368, 485–493.

liever. Wallace's relationship with spiritualism is still not fully understood. Certainly, he did not make the belief his "religion"; Wallace had earlier been a rather strong agnostic, and spiritualism did not change his rather cool appreciation of organized religion. It has also frequently been claimed that his adoption of spiritualism spelled a reversal of his position on natural selection – that he no longer considered the latter the sole cause of evolution. In this view, Wallace is thought to have changed his mind regarding natural selection's relation to the evolution of human consciousness, and turned to supernatural causalities. This assumes, however, that in the several years following the 1858 Ternate paper he actually *did* believe that natural selection could account for the evolution of humankind's higher qualities. There is no evidence of this in his writings from this period – and, he directly denies undergoing such a "change of mind" in the Preface to his *On Miracles and Modern Spiritualism* in 1875. It is more reasonable to conclude that as of 1858 he thought that natural selection, while capable of explaining the emergence of biological characters, could not account for the higher abilities, and that he was putting off trying to explain the latter for the time being.

Wallace was a courageous thinker. He was not afraid to say what he thought, and he trusted to the evidence of his senses. Perhaps this led him astray when it came to spiritualist manifestations, but it must be said that in some instances he witnessed phenomena in his own quarters that would have been rather difficult to fake. Further, not all spiritualist mediums were exposed as frauds, even after repeated tests.

More importantly, Wallace *believed* that what he had read of, and witnessed while attending séances, provided evidence of the existence of a non-physical yet "natural" reality, and incorporated the idea of a largely invisible "spirit realm" into his overall causal model of evolution. This was quite ingenious, though to say the least adventuresome. The refinement of humankind's intellectual and moral/ethical bearings was viewed as driven by the subtle input of messages and feelings from the "spirit realm" to living humans, mostly through the medium of dreams and feelings that we might interpret as "conscience speaking."

This is a logical, though difficult to demonstrate, model. Still, it has yet to be proved incorrect outright. The real question, however, is whether it – or perhaps some less anthropomorphic version – can be demonstrated to be correct. Most observers believe it can't, but that too is just a belief at this point.

Regardless of whether the whole of spiritualism (or its more complex cousin, theosophy) is just a fiction, Wallace's embrace of the belief would form an influence on many of his philosophical musings from that point. He never gave up on natural selection however, and continued to defend its workings right up through his very last publications. Neither did he change his agnostic ways; I am aware of no evidence that he ever, after his early years, became a

habitual church service attender. After his initial sittings in the mid- and late 1860s, moreover, his participation in séances apparently became less frequent. He seems to have maintained a general interest in the subject, only becoming more directly involved as situations merited. His spiritualism-related writings continued to emerge at an irregular but sustained rate, and by the time of his death there were well over one hundred of them.

The 1886–1887 Tour

According to Wallace,[1] the idea of a North American lecture tour was born during conversations with the great American paleontologist O. C. Marsh, who Wallace met in England during a Marsh visit there in the late 1870s or early 1880s.[2] Marsh, who unlike many of his American colleagues was a firm supporter of Darwinism, was very encouraging about such an effort. Wallace put the idea on the back burner for the time being, but in the autumn of 1885 he was invited to give a series of lectures in Boston as part of an ongoing Lowell Institute series. The circumstances of this invitation are interesting. Marsh, though based in New Haven at Yale University, knew most of the important figures at the Lowell Institute, whose affiliates included the botanist Asa Gray and the rapidly ascending psychologist William James. Gray was a devout Roman Catholic, but also another of Darwinism's leading advocates in the United States. James was not a highly religious man, but through his father had ties to the spiritualism community. James, moreover, had earlier in 1885 been instrumental in bringing out one of history's most remarkable spiritualist mediums, a woman named Leonora Piper. Piper was a trance speaker who had an astounding ability to divine personal details from the past connected with those attending her séances. She was studied closely for many years by members of the Society for Psychical Research, who went to great lengths (including round-the-clock surveillance and removal to remote locations where she entertained randomly-chosen, anonymous sitters) to investigate her abilities. In some cases private detectives were hired to investigate her readings, and were able, with difficulty, to verify events she described. This kind of evidence eventually turned some initially highly skeptical SPR investigators (in particular the reluctant Richard Hodgson) into believers. It is interesting to speculate whether one of these three men – Marsh, Gray, or James – might have been the primary force behind Wallace's invitation to speak, and he in fact spent a considerable amount of time with all three during his visit.

---

[1] A copy of a letter stating such, dated 23 January 1886, is item MS 1, Box 1.50, of the Daniel C. Gilman Papers collection, Special Collections, Milton S. Eisenhower Library, Johns Hopkins University.

[2] The British Library holds a letter from Marsh to Wallace dated 9 July 1878, asking whether he could pay a visit (Add. 46435 ff393–394).

The invitation by the Lowell Institute got Wallace thinking: perhaps this was the opportunity to organize a large-scale, even worldwide, speaking tour. He was at this point, after the death of Darwin in 1882, the most famous naturalist in the world. This would be a chance to spread the gospel of Darwinism in distant lands, in person. The initial idea was to start on the east coast of the United States, travel across country to California, and then continue on to Australia (where he had both correspondents and relatives). If he made out well, he might be able to bring home some profits for his family. Wallace still had financial woes, and though the pension Darwin had helped arrange for him several years earlier was making life a bit easier, he was still concerned about his long-term security.

All of this depended, of course, on the number and size of the engagements that could be arranged. It was going to be a play-it-by-ear adventure. On the advice of the Revd. John G. Wood, a well-known writer and lecturer on natural history subjects, he engaged an American tour promoter to help him set up speaking dates.

Once he arrived in America, however, things didn't go quite as planned. During and after the Lowell Institute lectures he was able to arrange a small flurry of additional dates around the Northeast, but then invitations dried up. In late December 1886 he moved his base of operations from Boston to Washington, D.C., but again no lecturing opportunities could be found. In March 1887 he gave a few talks in Ontario, Canada, but after a few more weeks in D.C. he decided to set out across the United States toward California, as some lectures had been set up for him in Ohio, Indiana, Iowa, and Kansas. Even as he reached Kansas it was apparently not certain he would have the resources to continue on to California, but then he received news that some talks had been arranged there and he decided to go. At some point along the way Wallace abandoned the thought of a Pacific crossing to Australia, and after six weeks in California he headed back East, taking a different route. His final lectures were given in late July in Michigan, and after sailing out from Montreal and Quebec he reached home in August 1887.

Wallace's ten month tour is not a well-known chapter in his life, but it is an interesting one. He kept a journal of his observations along the way which forms the central content of this work. Although he says nothing specific on the subject in his journal (or for that matter later in his autobiography), it is apparent from it that the trip had three main attractions for him (apart, of course, from the central objects of speaking on evolutionary theory, and making a buck).

First, this was an opportunity to make contact with a whole new group of spiritualists. By 1886 there were millions of spiritualists (and scores, if not more, of spiritualist magazines and newspapers), and Wallace would have known, or known of, many of the key figures. Although it appears he had been attending but few séances since the late 1870s, he continued to write on the sub-

ject[1] and it is clear that his interest in the subject had not diminished. And, in fact, a large percentage of the social time he spent in North America was in the company of spiritualists.

It is also obvious that he felt that this represented a chance for him to get back into the field to do some collecting – perhaps, for one last time. Now, however, plants would be the targets. Wallace was a very enthusiastic gardener, and it must have been a goal of his to send back seeds and specimens to contacts such as Gertrude Jekyll, William Mitten[2], and James Backhouse. Over the years he had occasionally spent short periods of vacation time engaged in such activities, but here was an opportunity for a more concerted effort, and some new inspiration from the beauties of nature.

Lastly, here were landscape types that Wallace had never before experienced, with related causalities to ponder. Wallace is famous for his twelve years in the tropics, but apart from very brief exposures, he had never spent any time in arid or near-arid environments. Further, he had maintained an interest in glaciology for many years – both on its own terms, and how it had affected the distribution of past faunas and early humankind. North America was an ideal location for such inclinations.

Wallace's North American tour had a number of not insignificant effects, both on himself and on others. For him, it was one last chance to get into the field, and make some first-hand observations on various subjects of interest to him. Later, these experiences would re-emerge in papers on subjects ranging from glacial geology and museum design, to human evolution and land reform. The lectures he gave for the Lowell Institute and at other locations across the U. S. would form the central chapters of his great work *Darwinism*, published two years after his return to England. He made many new friends, some of whom, such as Lester Ward, Francis J. Lippitt, and Alice Eastwood, he would keep in touch with for years. His new spiritualism adventures would help sustain his interest in that subject for the rest of his life.

In turn, his words and contacts would influence others. He made many friends during the trip, and while most of the people he refers to in the journal were people from his own age group and well set in their ways, he was also entertained by a fair number of the younger generation as hosts, or guides into local environments. He gave a total of forty-one lectures around the country

---

[1] See, for example, "Materialisation and Exposures," *Light* (London) 7 October 1882: 447–448; "Modern Spiritualism. Are Its Phenomena in Harmony With Science?," *The Sunday Herald* (Boston) 26 April 1885: 9; "The 'Journal of Science' on Spiritualism," *Light* (London) 11 July 1885: 327–328; "Harmony of Spiritualism With Science," *Light* (London) 25 July 1885: 352.

[2] A letter in the Natural History Museum (London) collection dated 21 May 1887 (NHM WP1/5/43), written while Wallace was in Salt Lake City on his way west, includes an invitation to Mitten to join him for a botanizing excursion in the Rocky Mountains on Wallace's way home from California.

(see Appendix 2), mostly to positive reviews, and in several smaller venues his visits were remembered for many years.[1] As he worked his way across the country, he sent back to England a sizable number of plant specimens and seeds, mostly with gardening and landscaping in mind (Wallace was a friend and neighbor of Gertrude Jekyll, a prominent horticulturist), and it is possible that some of these materials represented firsts in Great Britain.

By all appearances Wallace was pleased with the results of the trip, but it cannot be said it was a financial success for him. In fact, he cleared only the rather small sum of £350 once all expenses were taken into account. Although Wallace was never quite so poor as some have made him out, financial security remained an elusive goal for the rest of his life.

The Journal, and Conventions Applied Here

The original copy of the journal, which survives in quite good condition, is held by the Linnean Society of London, who graciously gave us permission to make an archival quality scan and to publish the transcription. The job of transcribing it was a team effort by the editors, and was greatly aided by an earlier "in-house" transcription made by Michael Pearson in 2000. Though a good effort, this yet contains numerous errors and omissions.[2] With the additional input, we feel we have produced a transcription which now is just about as complete as is possible. Wallace's handwriting is not nearly so frightful as Darwin's, but in this instance many of his comments were probably jotted down while riding trains, or in other less than ideal writing circumstances. Still, we have left only fourteen "illegible" notations, and believe we have conquered the vast majority of other contentious scribblings of minor words.

The basic plan of approach has been to transcribe as faithfully as possible, then secondarily annotate in several ways facilitating appreciation. Wallace's is not a "literary journal"; it more closely resembles a naturalist's field notebook (which should little surprise). Thus, although he employs something approaching paragraph structure, within these are scatterings of sentences, phrases, and one-word remarks – for example, he often just writes "Fine.", and the reader must decide whether he means the weather that day, or something else. Sentences/phrases sometimes begin with capital letters, sometimes not. They end with periods, runs of periods, dashes, or even nothing. Often the "dash-period"

[1] It is probably not coincidence, for example, that there is an "Alfred Russel Wallace Award" given annually at Kansas Wesleyan University in Salina, Kansas, where Wallace delivered one of his lectures in May 1887.

[2] Since 2000 a huge number of valuable electronic reference tools have come into being, making the job of identifying places and names of people and species a good deal easier than it would have been for Pearson. Additionally, the tracing of people and place names is much less difficult in the country of interest itself, than from a location abroad.

is employed, leaving the editor to come down on one side or the other. Abbreviations are commonly used, often including superscripts.

In what follows, Wallace's original words and symbols are represented in print in regular size and form font. There are no italics in the original ms., of course, though Wallace does make common use of underlining, and where he does, we so indicate.

Regarding pagination and entry dates, we have deviated from Wallace's exact practice in two respects. We decided to indicate the page numbers of the ms. itself by inserting a "[pg. __]" at the exact point in the text that the first word on that page appears. As to indicating dates of entries for materials in the journal, Wallace was inconsistent, sometimes giving date of month, or just day of week. To make the whole thing a bit more consistent and readable, we have begun each day's entry the same way, in the form "[day of week, date and month]".

Apart from referrals to figures or appendices, there are two kinds of notes. Text-notes are organized as footnotes, and numbered sequentially within individual pages. In addition, asterisks (*) are placed after the names of persons for whom we have produced mini-biographies in Appendix 4.

Not surprisingly, Wallace spells a number of words incorrectly in his journal. Where he "deviates" from correct usage, or where a place or human name is incorrectly rendered, the most accepted form is placed immediately thereafter within brackets [ ]. The same treatment is given to places or things that have a different more common (or newer) name, to spellings-out of abbreviations that are not obvious, and to short explanatory notes. The many Latin names Wallace notes were a special problem, as not only can some misspellings be expected, but the proper spelling is not always apparent (especially to the non-botanist!).[1] Further, though almost every name could be identified, not *every letter* of every name could (so, additional misspellings are likely). On these, we have simply given Wallace the benefit of the doubt and made the transcription correspond to a correct spelling. We hasten to add that we have not attempted to provide synonymies where these are (frequently) necessary: not only are we not trained botanists, but it is not always clear which authorities Wallace was using to make his identifications (and thus whether his identifications make geographical sense). Any botanist examining these materials may consider it hi/r job to provide further enlightenment!

There are, alas, a few words we just could not decipher. These are identified throughout the text as: <illeg.>.

[1] It may help to know that Wallace's main botanical guides were John Merle Coulter's *Manual of the Botany of the Rocky Mountain Region* (1885), and doubtlessly one or another of Asa Gray's works.

In addition to these various annotations, there is one more significant enhancement to the original text. Wallace's autobiography *My Life*, published in 1905, contains more than three chapters devoted to his North American trip, and though much of this narrative is quite obviously taken directly from the journal, much information *not* found in the journal is present as well. We have therefore integrated numerous excerpts from *My Life* into the text of the journal, trying to avoid duplications as much as possible. These excerpts are presented *in italics*, and set off from the main journal text by brackets [ ].

To summarize: In what follows, Wallace's original words (in the journal) are transcribed in regular font, and *exclude*: (1) anything placed within brackets (though it should be noted that Wallace does frequently use parentheses), (2) anything in italics, (3) footnote flags, and (4) asterisk marks.

Figures

Two series of figures appear in this work. Wallace included about twenty-one small sketches in with his journal entries, and these are all reproduced here, unnumbered, as close as possible to where they originally appeared in the journal. Additionally, we have selected a sample of photographs and illustrations, drawn from travel books of the time, that illustrate places he visited and mentions in the journal. These are sequentially numbered throughout; image credits are given on page xiii. With but few exceptions, these images originally appeared in works published within a few years only of the 1886–7 period of Wallace's visit.

The Appendices

Several appendices further contextualize the journal. Some are lists drawn from the text, while others involve additional related writings:

Appendix 1. In *My Life*, Wallace spends several pages summarizing his thoughts on his trip, and on the United States in general. That passage is reproduced here.

Appendix 2. A simple list of the lectures Wallace gave, including, as possible, the venues involved, and who sponsored them.

Appendix 3. Transcripts of some published writings he produced that were related to his various interests along the way.

Appendix 4. Some considerable effort was made to identify as many people Wallace mentions in his journal as possible, and then to provide mini-biographies for them.

Appendix 5. A list of the places Wallace saw/visited during his trip.

Appendix 6. A list of the plants Wallace identified/collected.

Acknowledgements

A large number of individuals and organizations were kind enough to research and/or supply materials appearing in this work, and it is only fitting to acknowledge their valuable assistance. Pride of place among these goes to the Linnean Society of London, who agreed to make Wallace's journal available to the process, and to the interlibrary loan office at Western Kentucky University, who were able to locate and retrieve many dozens of obscure items. Without the assistance of both, it would have been impossible to proceed.

Many others helped as well, however. To trace out Wallace's route it was necessary to contact railroading history groups and archives across the country; among those who helped most were representatives of the National Railway History Society, Sedalia's Katy Depot Museum, the Union Pacific Railroad Museum, the Berkshire Scenic Railway Museum, the Hays T. Watkins Research Library, the Clark County (Kentucky) Public Library, DRGW.org, the Historical Society of Pottawattamie County (Iowa), and the University of Louisville Archives and Records Center. Help on a variety of other matters was obtained from: the California Academy of Sciences, Williams College Archives, The British Library, Harvard College Library, the Milton S. Eisenhower Library, Yale University Manuscripts and Archives, National Park Service, Kansas State Historical Society, Colorado Historical Society, Denver Public Library, Genealogical Society of Santa Cruz County (California), Natural History Museum (London) Library, Queen's University Archives, University of Toronto Archives, Indiana University Archives, University of California Santa Cruz Special Collections, Meriden (Connecticut) Public Library, American Geographical Society, Library of Congress, University of New Hampshire Special Collections, Boston Public Library, New Britain Public Library, Dutchess County (New York) Historical Society, Vassar College Libraries, Arthur Friedheim Library, Watkinson Library, Historical Society of Washington D.C., University of Massachusetts Special Collections, University of Guelph Archival and Special Collections, Nebraska State Historical Society, State Historical Society of Iowa, Kansas University Archives, Michigan State University Libraries Special Collections, and, of course, Western Kentucky University. Some individuals who were particularly helpful: Steve Ruskin, Salvatore Manna, Norma Mandel, Rod Bigelow, Henry W. Art, Ann Beattie, David James, and Ronald Millard.

I apologize if I left anyone out!

Charles H. Smith, Bowling Green, Kentucky, September 2012

Main Journal

[*Towards the close of the year [1885] I received an invitation from the Lowell Institute of Boston, U.S.A., to deliver a course of lectures in the autumn and winter of 1886. After some consideration I accepted this, and began their preparation, taking for my subject those portions of the theory of evolution with which I was most familiar.*[1] *At this time I had made the acquaintance of the Rev. J. G. Wood, the well-known writer of many popular works on natural history. He had been twice on lecturing tours to America, and gave me some useful information, besides recommending an agent he had employed, and who had arranged lectures for him at various schools and colleges. I had already lectured in many English towns on the permanence of the great oceans, on oceanic and continental islands, and on various problems of geographical distribution. To these subjects I now added one on "The Darwinian Theory," illustrated by a set of original diagrams of variation. I also wrote three lectures on the "Colours of Animals (and Plants)," dwelling especially on protective colours, warning colours, and mimicry, and for these I had to obtain a series of lantern slides coloured from nature, so as to exhibit the most striking examples of these curious and beautiful phenomena. All this took a great deal of time, and the maps and diagrams forming a large package, about six feet long in a waterproof canvas case, caused me much trouble, as some of the railways refused to take it by passenger trains, and I had to send it as goods; and in one case it got delayed nearly a week, and I had to give my lectures with hastily made rough copies from recollection.*

The lectures I finally arranged for the Lowell course were eight in number, to be given twice a week in November and December. As these lectures formed the groundwork for my book on Darwinism, I will here give their titles –

1. The Darwinian Theory: what it is, and how it has been demonstrated.

---

[1] The earlier mentioned Marsh letter dated 23 January 1886 suggests Wallace might not have decided as of then whether to attempt a lecture tour, invitation from the Lowell Institute notwithstanding. Wallace writes: " ... I think it probable that you are as well able as anyone to give me advice as to the prospects of my making it a financial success. I think when I had the pleasure of seeing you in London some years back you suggested something of the kind ... Serious losses of late years have rendered it necessary for me to do anything in my power to secure a provision for my family, and it is this consideration alone that would make me encounter the risks and fatigue of such a journey at my age and with my somewhat precarious health ... Perhaps you will kindly inform me whether you think lectures from me would be successful, or if you can refer me to any good authority on this question, and also as to the choice of a good and trustworthy Agent ... " The Daniel Coit Gilman* collection at JHU also contains letters from C. W. Ernst* (2 February 1886) and Marsh (12 February 1886) to Gilman, recommending the latter invite Wallace to give a series of lectures at that institution. In the same group is a 4 March 1886 letter from T. H. Huxley to his protégé H. N. Martin* (then a biologist at JHU) which rather evades outright endorsement.

2. The Origin and Uses of the Colours of Animals.

3. Mimicry, and other exceptional modes of Animal Coloration.

4. The Origin and Uses of the Colours of Plants.

5. The Permanence of Oceans, and the relations of Islands and Continents.

6. Oceanic Islands and their Biological History.

7. Continental Islands: their Past History and Biological Relations.

8. The Physical and Biological Relations of New Zealand and Australia.

Shortly before I left England I gave the lecture on "Darwinism" to the Essex Field Club in order to see how my diagrams of variation struck an intelligent audience, and was fairly satisfied with the result ... When I left home I had some idea of extending my journey across the Pacific, lecturing in New Zealand and Australia, perhaps also in South Africa, on my way home. But my voyage out was so disagreeable, making me sick and unwell almost the whole time, that I concluded it would not be wise to extend my sea voyages except under very favourable conditions, which did not occur. One of these was the success of my American tour, but owing to my agent not being a good one, or, perhaps, to my not being sufficiently known in America, I was kept throughout the winter in Washington waiting for lecture engagements, which did not come till March and April.]

[Beginnings: New York Arrival, and the Boston Area]

[[pg. 1 (of journal)]]

[Saturday, 9 October 1886.] Sailed from London [*in a rather slow steamer in order to have a cabin to myself at a moderate price*] – "Tower Hill".

[Saturday, 16 October 1886.] First calm day

[Saturday, 23 October 1886.] Anchored at 3 pm [*after a cold and disagreeable passage*[1]]. New York Hotel. 6 pm.[2] Cab. 2$. Luggage to Mr B's 2½$.

[Sunday, 24 October 1886.] To Mr. A. G. Browne's*. 142 E. 19th. Street. after going to Central Park ... Saw [Henry] George*. [*I went to stay for a few days with Mr. A. G. Browne, a gentleman on one of the New York daily papers who had called on me at Godalming in the summer. On the way to his house we drove to the picturesque Central Park, in the company of Henry George, the well-known author of "Progress and Poverty," who was then a candidate for the important post of Mayor of New York, and who had been invited by Mr. Browne to meet me.*]

[Monday, 25 October 1886.] To George's* Meeting [*and was called upon to say a few words to an American audience. I tried my best to be forcible, praised George, and said a few words about what we were doing in England, but I could see that I did not impress them much.*][3] ... Brooklyn Bridge.

---

[1] In a 10/23 letter to Annie (NHM WP1/5/1), Wallace wrote: " ... for a whole week we had bad weather – very strong wind dead against us and a rough sea, and on Wednesday Thursday and Friday a regular storm and hurricane which howled and roared and hissed about us, sent great waves right on to the upper deck, and rolled and tumbled us about continually. During all this time I took all my meals in my cabin, as whenever I attempted to sit up at the table I got sick."

[2] "As I was pretty hungry I enjoyed my first dinner in America. I had Cod & oyster sauce – most delicious – then chicken, sweet potatoes and tomatoes, then venison & currant jelly with mashed potatoes to conclude with apple pie and Italian cream – Spiff!! The apple pie being the most delicate & delicious possible. Then Catawba grapes and bananas for desert. In the evening I went to Mr. Browne's* house for an hour ... In the morning after packing my things I had breakfast about 10 o'clock, where I luxuriated in stewed oysters, two poached eggs and ham, delicious cakes & rolls splendid cocoa and cream, with grapes to begin & end with." (NHM WP1/5/1)

[3] The 26 October 1886 issue of the *New York Tribune* reported on the meeting, which was held at Chickering Hall, on Fifth Avenue. It had been organized by the Columbia College Alumni Henry George Campaign Club, presided over by the vocal socialist Daniel De Leon. Along with others, Wallace was invited to speak, and according to the paper began his remarks by saying that "the workmen were making a false start and were falling into a carefully prepared Republican trap," whereupon George cut him off with a lengthy reply.

[Wednesday, 27 October 1886.] Up Hudson to West Point. [*One day [Mr. Browne] got free in order to take me up the Hudson river as far as West Point, passing the celebrated "Palisades" – a continuous row of cliffs about two hundred feet high, and extending for nearly twenty miles on the south bank of the river. They look exactly like a huge fence of enormous split trees, placed vertically, side by side, but are really basaltic columns like those at the Giant's Causeway, crowning a slope of fallen rock. In places the well-wooded country was very beautiful, with the autumnal tints of bright red, purple, and yellow, though we were a little late to see them in perfection. Where we landed, I was delighted to see wild vines clambering over the trees, as well as the Virginia creeper, and there were also sumachs and other characteristic American plants. The situation of the great American Military College is splendid, on an elevated promontory in a bend of the Hudson, surrounded by rugged wooded hills, and with magnificent views up and down the river.*]

[Thursday, 28 October 1886.] To Boston – dined in Car. 1$. Quincy House.[1] [*I had been recommended by Mr. J. G. Wood to go to the Quincy House, as being moderate in charges, and celebrated for its excellent table. I stayed there nearly two months, and was, on the whole, very comfortable; but it was essentially a business man's hotel, and I made no interesting acquaintances there. My scientific friends told me I ought to have gone to a better hotel, but as these were all four or five dollars a day, with no better accommodation than I had at three dollars, I did not care to change. As I never had better meals at any hotel I stayed at in America (except, perhaps, in San Francisco), I may quote my description of them in a letter to my daughter while they were new to me. "You ought to see the meals at this hotel! The bill of fare at dinner (1 to 3 o'clock) has generally two kinds of soup, two of fish, about twenty to thirty different dishes of meat, poultry, and game, a dozen sorts of pastry, a dozen of vegetables, besides ices, and whatever fruits are in season. You can order anything you like in any combination, and they are brought in little dishes, which are arranged around your plate. Everything is good and admirably cooked. The pies and puddings are equally good. At breakfast and supper there is about half the number of dishes."*]

[Friday, 29 October 1886.] B. W. Williams*. 258 Washington St. Clement* Ed. of Transcript.[2] To Huntington Hall ...

---

[1] By 1886 the Quincy House, established in 1819, was one of Boston's largest and most comfortable hotels. It was renowned for its fine furnishings, inviting public sitting rooms, and richly decorated cafe. See Figure 1.

[2] *The Transcript* (1830–1941) was, over much of its existence, one of Boston's leading newspapers. Early on it established a high reputation for its literary content and arts and letters reviews

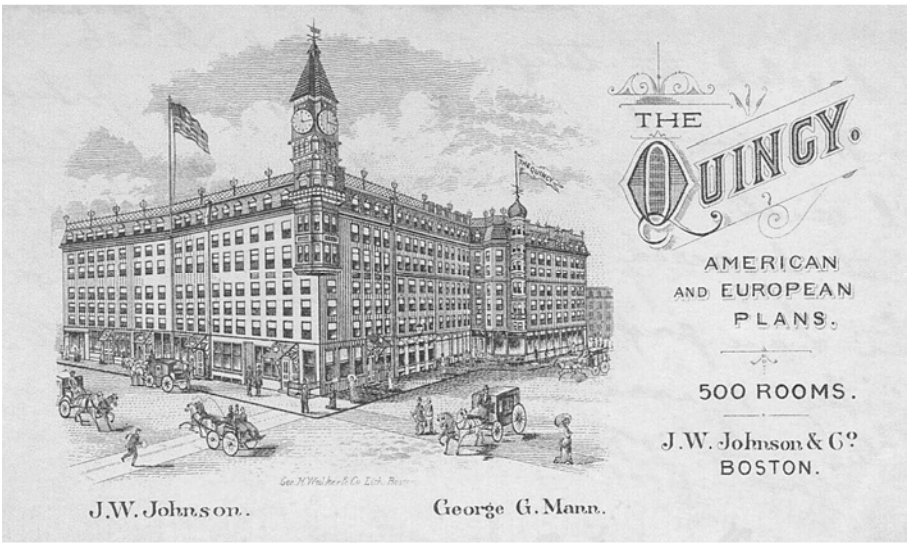


Figure 1: Quincy House, Boston.

[Saturday, 30 October 1886.] To Huntington Hall[1] ... Put up diagrams ("Interviewed!") – Lamp &c. Inst. of Technology [MIT]. Gen. Walker*. Pres. (Pol Ec.)

[Sunday, 31 October 1886.] Aft[n]. C. W. Ernst*, (Ed. of Beacon.[2]) 298 Commonwealth Av.

[Monday, 1 November 1886.] First Lecture – full audience[3] [*At my first*

---

and criticism; in the late nineteenth century it initiated an influential genealogy column.

[1] Huntington Hall was the main auditorium in the Rogers Building at the Institute, at that point located in Boston. The space was amphitheatrical in form, and could seat as many as eight or nine hundred persons.

[2] *The Beacon*, established in 1884, was advertised in *N. W. Ayer & Son's Newspaper Annual* as "an illustrated literary society weekly, published every Saturday."

[3] From an 11/2 letter to Violet (NHM WP1/5/3): "I gave my first lecture last night to a crowded audience every seat full & many standing. I was not a bit nervous and got on first rate, as the paper I have sent you this morning & enclosed cuttings from another paper will show. My rehearsals at Loughton and Farncombe were of great use to me as they gave me confidence ... you ought to see the meals at this hotel! The bill of fare at dinner (1 to 3) has generally 2 kinds of soup, 2 of fish about 30 different dishes of meat poultry and game, a dozen sorts of pastry, a dozen of vegetables, besides ices and fruit. You can have just as many dishes as you like brought you in little dishes each holding about enough for two persons. I am trying most of the dishes, and find them mostly good and some splendid. The apple pies and puddings are grand, and there is a lovely "Shaker Apple Sauce" I tried today with turkey and tongue. At breakfast and supper there is about half as much variety. If I had but any friend to take meals with me it would be delicious but sitting alone at a little table with about 50 strangers around at other tables is not lively. There

lecture on "The Darwinian Theory," I had a crowded and very attentive audience, and the newspaper notices the next morning showed that it was a success.[1]]

[Tuesday, 2 November 1886.] Pub. Lib. Met D[r]. J. R. Nichols* M.D.

[Wednesday, 3 November 1886.] Chess pm. card from S. H. Scudder* Cambridge. Dr. Asa Gray* morning. Mr. Noa* 33. Studio Build[g].[2] Boston.

[Thursday, 4 November 1886.] Second Lecture ... Ober*, Denton*.

[Friday, 5 November 1886.] To Mus. Denton – Prof. Hyatt* – Palaeontology. Prof. _____ Geology. [*During the time my lectures were going on I occupied myself at the museums, libraries, and institutions of Boston, and paid a few visits in the country. I soon made the acquaintance of Dr. Asa Gray, the first American botanist. General Walker, the political economist, Messrs. Hyatt, Scudder, Morse*, and other biologists*]

[[pg. 2]]

[Saturday, 6 November 1886.] Letter from Fanny – from Smythe [?] (Melbourne)

cards – D[r]. Jos. R. Buchanan*, 6 James St. Franklin Sq., Mr. Henry Houghton* – 4 Park St. [*Mr. Houghton, the publisher, who was very polite, asked me to call at his office to read whenever I liked, and invited me to dinner to meet Oliver Wendell Holmes*. I met the Autocrat of the Breakfast Table several times afterwards, and once called at his house and had a two hours' private conversation. He was very interesting from his constant flow of easy conversation; but when we were alone he turned our talk on Spiritualism, in which he was much interested and which he was evidently inclined to accept, though he had little personal knowledge of the phenomena.*]

---

is unlimited milk cream and fruit. I generally begin breakfast with a few grapes and finish with grapes & a pear – most splendid juicy pears they are. I have splendid cocoa for breakfast & excellent tea at 5, and some supper from 9 to 10."

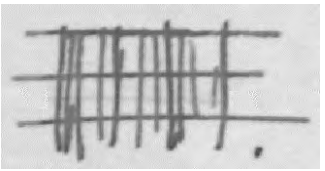
[1] We have found coverage of Wallace's Lowell Institute lectures in the following newspaper issues: *Banner of Light* (6, 13, 20 & 27 November 1886; 11 December 1886), *The Beacon*, Boston (20 November 1886), *Boston Daily Advertiser* (2, 5, 12 & 25 November 1886), *Boston Evening Transcript* (2, 5, 16, 19 & 23 November 1886), *Boston Herald* (5 November 1886), *Boston Post* (25 November 1886). Reviews were generally very positive.

[2] *Boston Illustrated* (Houghton, Mifflin & Co., 1886) describes the Studio Building as standing on Tremont Street "on the opposite corner of Bromfield Street. This building was at one time a headquarters of the artists of Boston, but now many of them are located elsewhere. Besides the devotees of art, there are many private teachers of music and the languages in the Studio Building, and a few of the rooms are occupied as bachelors' apartments."

Saw distribution of Lowell tickets ... wet

Boston ... fine town very busy – 20 Great Hotels. Houses often 6 or 7 stories high. Land in Commonwealth Av. 10$ a sq. foot; land in centre of Boston ... 20$. a sq. foot. Even in country places with wide open spaces of land still dear. £300 or £400 an acre!

[Sunday, 7 November 1886.] to Wellesley 18 mi. from Boston to Dentons* collections of N. Guinea birds &c. & fine Geol. collection ... Wooden houses ... double outer skin



upright boards covered with weather boarding & lined with tarred paper to exclude air. Inside – lath & plaster ...

[[pg. 3]] Country poor, rough scrubby pastures & bog – almost wholly uncultivated! Hardly any gardens – People all engaged in Manufactures – much land gone out of cultivation.

Stove in every room – 2 o'clock dinner chickens fried-potatoes, & preserved fruit. Jam. took no other meal! gave me some tea!

[Monday, 8 November 1886.] Back up to Boston at 8am. Put up diagrams – Called on Mr. Houghton* – publisher – (Wood's Nat. Hist.) Lecture Evening. Oceanic Islands ... not quite full owing to Presidents' Reception.[1]

[[pg. 4]]

[Tuesday, 9 November 1886.] To meeting of "National Academy of Sciences" with Prof. Morse*. Met – Hyatt*, Marsh*, Mrs. Rogers[2], Miss Newcomb*. Paper by Prof. Langley* on extension of heat-spectrum – fine! (called on Mrs. Noa*[3].)

[Wednesday, 10 November 1886.] To meeting morning. Met Mr. F. J. Garrison* – son of W. Lloyd Garrison the abolitionist ... Spiritualism ... (Mrs. Thaxter*) – Invitation from Mr. Houghton* for Sat. to meet Holmes [Sr.]*.

---

[1] President Grover Cleveland was visiting Boston that day.

[2] This "Mrs. Rogers" was very probably Emma Savage Rogers (1824–1911), the widow of William Barton Rogers (1804–1882), geologist and founder of MIT. W. B. Rogers had been president of the National Academy, and the meeting was being held in Rogers Hall.

[3] Mrs. Noa's reputation as an outstanding watercolors portraitist leads one to wonder whether Wallace may have sat for her that day.

Morning to Mus. of Boston Soc. of Nat. Hist. fine typical coll^{n}. well arranged ... in several instructive series –

Minerals – in series showing characters [[pg. 5]] Elements, – compounds – sp. grv. [specific gravity] – texture, – lustre – crystalline form – colour, – structure, – &c. &c. ... also classified in series chemically. Botanical specimens in typical series from low to high, showing structure & external characters.

Zoology – do. ... showing development of types – structure, function, habits &c. … Also a local N. England collection ... Also an imperfect general systematic collection! Useless! ... Evening to meeting of American Academy of Arts & Sciences with D^{r}. Asa Gray* – after to Gen. Walker's* – met D^{r}. Holmes.*

[[pg. 6]]

[Thursday, 11 November 1886.] Meeting of "National Academy of Sciences" spoke on seed dispersal by wind. [*At another meeting the question of geographical distribution came up, and Professor Asa Gray called on me to say something. I was rather taken aback, and could think of nothing else but the phenomena of seed dispersal by the wind, as shown by the varying proportion of endemic species in oceanic islands, and by the total absence in the Azores of all those genera whose seeds could not be air-borne (either by winds or birds), thus throwing light upon some of the most curious facts in plant-distribution. I think the subject, as I put it, was new to most of the naturalists present.*] – Mr. Mirlees [Mirrlees*] – lunched with Mr. Mrs. & 2 Miss Mirlees. Lecture ... full – after to Mrs. Thaxter* – met Mr. & Mrs. Dickinson, Mr. Savage*. Mr. Garrison*. Mrs. D. wonderful medium. Trance saw Mr. D. in Spain, ill in bed, ether, toothache, – told Mrs. D. at time. Letter arrived showing exact accuracy of vision. Spirit seen by her only, moved & which was seen to move by all present. Flowers brought her by spirit from her grave 100 miles off – roses &c., letter arrived next morning from mother of spirit – saying she had just been to put flowers on her grave. Mr. D. in Rome in Feb. dried some flowers, daisies & violets, to send to his wife & enclosed them in letter. A day before letter arrived the flowers were found on her table, & the letter arrived [[pg. 7]] later, without them! Mr. D. on return home identified the flowers! Envelope unbroken. Spirit of Mrs. Thaxter's mother appeared, greyhair, gave Mrs. T. a long tress of this hair which remains ...

Mr. D. described a spirit as, new, recognised by several present – gave characteristic message. Some time after Mrs. D. recognised the photo of this person among many others in a book ... Mrs. D. saw a spirit moving about and apparently trying to make himself seen or felt by others, then she saw him stoop down and touch the dog which was on the rug. She said – "he is touching the dog" – and at the same moment the dog raised itself and growled – a most

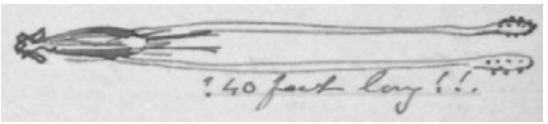
startling coincidence to all present ...

Many other equally extraordinary things recorded by Mrs. Thaxter* from personal observation ...

[[pg. 8]]

[Friday, 12 November 1886.] To Salem – Prof. Ed. Morse* ... wonderful coll. of Japanese Pottery 4000 specimens all distinct – some wonderful & valuable ... Museum. Old Salem Chapel. Nice boy – Willies age – Nat. Hist. Soc. in little hut put up for them 7 – 8 boys kept it up 3 years – sup together once a month, meet weekly & read papers &c. Mrs. Morse & daughter & Miss Newcomb* pleasant Home at 8 – train delayed – Boston 9.10.

[Saturday, 13 November 1886.] Wet. To Cambridge by car, to museum. A. Agassiz*. – Immense collections[1] – splendid arrangement – (1) Gen. Typical collection of Animal K. in one moderate room. (2) Gen. illustrative series of each class or sub kingdom – Mammalia &c. Birds &c. each in one room – (3) Geog. arrangement illustrating faunas of N. America, S. America, [[pg. 9]] Europe – Asia, Africa, Australia – each in one room – Excellent!!! Their collections for study occupy 20 or more rooms, arranged wholly & box drawers, in glass cases arranged in tiers in centre of room & back walls, all walls under windows tables for study – Library arranged same way. Numerous laboratories & work rooms for students & specialists – models, maps &c. in abundance ... Giant squid ... Gt. Cuttlefish, Whales &c...



40 feet long!!

Peabody Mus. of American Archæology. Marvellous collections of Pottery from mounds in various parts of N. America, Mexico, & Peru, & Brazil – Copper, silver, gold, & mica ornaments – strange implements – wonderful flint knives, tools & weapons – great numbers of skulls & skeletons ... [[pg. 10]] Each locality kept separate showing distinct individuality & often distinct civilization ... Models of the Zuni rock houses – & fortified towns, Mexican temples & sculptures ... Peruvian pottery & carvings ...

Some of the clay & stone figures from the N. Am. mounds surprisingly like Egyptian, others like European types.

[1] The Museum of Comparative Zoology opened in 1859, with Louis Agassiz (1807–1873) at the helm. Agassiz's vision for the museum was largely carried on by his son, who took over in 1873 and remained its director until his own death in 1910.

Evening to Mr. Houghton's* to dinner with Dr. Holmes [Sr.]* – tolerably pleasant ... first snow at night.

[Sunday, 14 November 1886.] Bright sunshine – snow gone. Mr. Garrison* called ... letters to Annie & Meldola.

PM. to Roxbury, walked an hour & to Mr. Garrison's* to tea – Mr. Savage* ... After to Mrs. Thaxter's* met [[pg. 11]] Mr. & Mrs. Dickinson &c. ...

[Monday, 15 November 1886.] Mr. Putnam* (Sp.) called ... To Huntingdon [Huntington] Hall & called on Mr. Lowell* – out. 4 pm to Meeting of New England Women's Club – Mr. J. G. Brooks* on – "What Socialists Want" [*I thought his views to be very vague and unpractical.*] ... Spoke half hour on "Social Economy" as opposed to Socialism – need of L. N. [land nationalization] &c. &c. [*I was not at that time a thorough socialist, but considered that a true "social economy" founded on land nationalization and equality of opportunity was what was immediately required. When called upon, I spoke in this sense for about half an hour. I afterwards wrote it out, treating it more systematically, and read it to a private meeting of my friends at Washington. Its substance is embodied in the chapter on "Economic and Social Justice" in my "Studies."*] Evening. Lecture on N. Z. & Australia.

[Tuesday, 16 November 1886.] Morning to Cambridgeport to put up Diagrams ... Lecture evening – Darwinism – (1) good.

[Wednesday, 17 November 1886.] Wet. To Asa Gray's* Evening. What led to my Essay – Slept there. [*I also dined with Professor Asa Gray to meet most of the biological professors of Harvard University. After dinner he asked me to give them some account of how I was led to the theory of natural selection, and this was followed by some interesting conversation.*] Called on D^{r}. Buchanan*.

[[pg. 12]]

[Thursday, 18 November 1886.] Damp warm. To lecture room. Mr. [F. W.?] Putnam* called. Eve. "Colours of Animals" good.

[Commitments: Massachusetts, Connecticut, New York, and Baltimore]

[Friday, 19 November 1886.] 8.30 am to Williamstown [Figure 2] arrive 3.20 pm. Prof. Carter*. pleasant. Lecture [*on "Colours of Animals"*] good[1] – Lantern failure! ... Prof. [Samuel Fessenden] Clarke* – huge frogs!

Figure 2: Williamstown, Massachusetts, from Stone Hill.

[Saturday, 20 November 1886.] fine – With Prof. Clarke to Cascade[2] – very pretty – white birches, yellow willows &c. on way – fine ferns. Pol. [Polystichum] acrostichoides. [*one of the professors drove me in a buggy over*

[1] Wallace's lecture at Williams College was well publicized, with an invitation to attend appearing the day before as far away as Springfield, Massachusetts, in that city's stalwart paper *The Republican*. Afterwards the event was noted in the *North Adams Transcript* (25 November 1886), the *Williams Literary Monthly* (January 1887), and *The Republican* (21 November 1886), which wrote: "The first of the lectures given before the students by the kindness of Frederick F. Thompson [one of the trustees of the college] was delivered in Goodrich hall Friday evening by Dr. Alfred R. Wallace of England. In introducing the speaker to the audience, President Carter said that Dr. Wallace could lay claim to having discovered the theory of evolution contemporaneously with Darwin. Not only is he a distinguished scholar in natural history, but is also a reverent believer in unseen things. His subject was 'Color,' and the adaptability of the color of animals to their locality and habits was shown in a very interesting way."

[2] Henry W. Art at Williams College informed me (pers. comm.) that the location Wallace refers to is known as "The Cascades," and is located off Marion Avenue in nearby North Adams.

very rough roads, and sometimes over snow, to a pretty waterfall, where I collected a few of the characteristic American ferns, which I sent home, and which lived for many years in my garden. I here first noticed the very striking effect of the white-barked birches and yellow-barked willows in the winter landscape. The fine Cypripedium spectabile*, I was told, grew abundantly in the bogs of this district. I was hospitably entertained by President Carter*, who invited me to visit him in the summer, when there are abundance of pretty flowers – an invitation, I much regret, I was unable to profit by.*] Aft. to Observatory.

[Sunday, 21 November 1886.] Return to Boston in Sleeping Car as good as Drawing room Car or better.

[[pg. 13]]

[Monday, 22 November 1886.] Letter from Annie – Sent ferns, & seeds of Gentian to Mitten. Cold in head – Lecture on Mimicry ... slides good ...

[Tuesday, 23 November 1886.] To Meriden (Connecticut) ... 11am. 3.15 pm. Dined in Car. Wet & mist. Lecture Darwinism[1] ... good audience ... Stayed with Mr. Rob[t]. Bowman* – Manufacturer of Plated goods[2] – Englishman ... 30 years

---

[1] Notices of Wallace's upcoming lecture appeared in the *Meriden Journal* issues of 20 and 23 November 1886, and the *New Britain Herald* issue of 22 November. The amount of planning that was involved is suggested by the second notice in the *Journal*: "... it is by special arrangement that the Meriden association has secured his eminent services for a single lecture – the only one he will give in the state. The Meriden association [the Meriden Scientific Association] have kindly given the members of the New Britain association an opportunity to hear the lecture, says the *New Britain Herald*, offering complimentary tickets to all who will attend. A party will go to Meriden on the 6:33 p.m. train, arriving here in ample time for the lecture, and return on the train leaving Meriden at 10:27 o'clock, having an omnibus meet them in Berlin on the arrival of that train. A special train will also come from Middletown bringing the Wesleyan college students to hear Prof. Wallace. Large parties from Hartford and New Haven are also expected."

Reviews of the talk were mixed, however. The next day the *Journal* reported: "... a large audience was in attendance. The lecture however was a very disappointing one in more than one particular and especially from a popular standpoint ... The professor spoke fluently, but with a decided elision of his g's which was particularly noticeable ... " Coverage in the same day's *Meriden Daily Republican* was a bit more complimentary: "The lecture Tuesday evening by Dr. Alfred Russell Wallace in the scientific course was quite unlike the usual platform lecture, in that it dealt almost purely with principles and scarcely at all with illustrations. It was not, therefore, of the most popular type, but of absorbing interest to the student of science, especially as coming from one of the leading apostles of science in this scientific age ... No brief report could do the lecture justice for it was matched together from the beginning to the end like the work of the skillful workman."

[2] Bowman partnered with Edward B. Manning to create Manning, Bowman and Company in 1864. This was a leading manufacturer of household appliances for nearly a hundred years (see Figure 3).

in America. Pleasant farm. Pretty rugged mountains around town – country scraggy as usual. [*Much of the country I passed through, as well as that round Meriden itself, was picturesque with rock and mountain and rapid streams ... [though] an American writer declares that the whole country "has been reduced to a state of unkempt and sordid ugliness." But I am pretty sure that the more naturally picturesque parts of this New England country must be very beautiful in spring and early summer, when the abundant vegetation would conceal and beautify that which is bare and ugly in winter. The climate, too, is unfavourable to that amount of verdure which we can show throughout the year; while the universality of old irregular hedgerows in our lowland districts gives a finish and a charm to our scenery which is wholly wanting where straight lines of split-wood fences are almost equally universal.*]

[Wednesday, 24 November 1886.] To Boston – lunch in Car. Lecture – Plants – went well – very hoarse ... sore throat – got up in night to put on wet compress – in 4 hours took away pain ... ($.1000 cheque)

[[pg. 14]]

Figure 3: Manning, Bowman & Co., Meriden, Connecticut.

[Thursday, 25 November 1886.] All day in room nursing cold, writing letters – Packing. Thanksgiving day – (Dinner) boiled Turkey Oyster sauce, Baked ham, Greasy Peas, Tomatoes, Apple pie, Custard pie, grapes, Tea

[Friday, 26 November 1886.] Drew Letter of Credit for £.30 = $.148.80 ... Paid $.1300 into New England Trust Company, on deposit 2¼ p.c. after 30 days ... In hand $66.50. 4 pm. to Newhaven – 8 pm. to Prof. Marsh* ... fine & excentric house ... oct. [octagonal] Hall ... fine trophies &c. Pretty suite of visitor's rooms ... [*I had agreed to pay a visit to Professor Marsh, at Newhaven, where I arrived on the evening of November 26. My host, who was a bachelor and very wealthy, had built himself an eccentric kind of house ... near the Peabody Museum of Yale College.*]

[Saturday, 27 November 1886.] To [Peabody] Museum [of Natural History] – wonderful fossils ... small mammals from Jurassic & Trias. ... Huge Reptilian Dinosaurs ... Toothless Pterodactyles. Carnivorous Dinosaurs with crested horns &c. &c. &c.[1] ... Many horned ~~Pachyderms~~ Ungulata, Dana* &c. to dinner ... [*In the evening I had the pleasure of meeting Professor Dana, the first of American geologists, and one or two other professors of Yale.*]

[[pg. 15]]

[Sunday, 28 November 1886.] Morning Garden &c. [*The next morning was spent in a stroll over the parks and gardens, and in admiring the grand elm trees which line many of the streets of this picturesque city and render it one of the most pleasing I visited in America.*] pm. to N. York & Poughkeepsie – 8.30 pm. Carriage to Vassar Coll. $.2 ... D^{r}. J. M. Taylor*. Pres.

[Monday, 29 November 1886.] Breakfast in Hall with Lady Principal & Professors ... Lady Doctor ... &c ... saw grounds Observatory &c. Miss Mitchell* – Astronomer ... Founded 1861 – about 300 lady students ... Grounds 200 acres ... wooded picturesque ... undulating, – lake with boats – Gymnasium &c. ...

Each student sep. bed-room and each 3 bedrooms a common sitting room ... Half the Professors are ladies ... Fees $400 a year – 16 years old & upwards.

Entrance exam (3 days) includes Algebra to quad-equations. Plane Geom. Latin – several books of Caesar, Virgil, and Cicero, [[pg. 16]] and either Greek, German or French ... also History, English Comp. &c. &c.

The regular course of Study includes also – Natural History, Physiology, Chemistry, Physics, and Astronomy – all taught experimentally as well as theoretically, – and Moral Philosophy, and Anglo-Saxon in last term. Music &

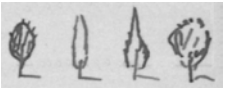
[1] "A curious thing happened at the museum a week or two ago. Prof. Marsh* had sent for a lot of ostriches eggs from Africa to dissect the little ostriches inside, and as one of his assistants was filing round the cud of the shell of one to take out the chick suddenly there was a great explosion, the shell flew into small pieces, knocked the gentleman down off his chair, cut his face and nearly poisoned him and other persons in the room with the horrible stinking gas from the rotten chick." (from a December letter to Will, NHM WP1/5/10)

Drawing are extras. Laboratories for Biology, Chemistry, & Physics, & Observatory with 12 inch Eql. [Equatorial] & a good Meridian Circle. Also a good Museum of Nat. Hist. & Art Gallery. Degrees of AB. & AM. are conferred.

Evening lecture on Oceanic Islands to good & attentive audience.[1]

[[pg. 17]]

[Tuesday, 30 November 1886.] Up at 5 am. to Station 3 miles. To N York, across to Ferry – Train to Baltimore. Lunch on train ... Juniperus virginiana com[mon] between N. Y. & Philadelphia ...



N. Suburbs of Phil. a few miles out a mass of detached houses mixed with the rudest huts built of old material, torn up ground, rubbish heaps, pits, all in the wildest confusion –

3 pm. at Baltimore to Eutah [Eutaw] House.[2] Shabby rather ... Lecture Evening ... good audience.

[Wednesday, 1 December 1886.] called on Presid. Gilman*[3] [*who showed me round the buildings, library, reading-room, etc., and introduced me to the professors, among whom was Dr. W. K. Brooks*, the zoologist,*]. Saw J. H. [Johns Hopkins] University – Prof. Brooks, & Martin* – Library – Reading Room ... &c. ... lunch with Prof. Brooks. to Druid Hill Park[4] 680 acres, fine trees, undulating [Figure 5] – woody [*one of the most picturesque recreation grounds I have seen*].

---

[1] Notice of Wallace's visit to Vassar was apparently rather scant. It is mentioned twice in the December 1886 issue of *The Vassar Miscellany*, however – first, in an editorial castigating some unruly students who attended, and second, leading to a rather straightforward one-page summary of the talk.

[2] The Eutaw House, designed by Samuel Harris, opened in 1835 at the corner of Baltimore and Eutaw Streets. For many years it was a major attraction, but starting in 1912 it was torn down and replaced by another landmark structure, the Hippodrome Theatre.

[3] The 1 December 1886 issue of the *Baltimore Herald* reported: "The speaker is a man of short and stout build [!], with white hair and beard, and displays but little animation of voice, though his wide reputation for learning and his known leaning to the tenets of the Darwinian school gave him a large and attentive audience. A smile that did not seem to be evolved from any inner consciousness of superior merit lit his face as he commenced to tell in a pleasant way the history of the theory of development. The origin of species was alluded to, but special attention was directed to the great variation in size of different portions of existing species..."

[4] Druid Hill Park in northwest Baltimore was one of the first specially designed urban recreation areas. It opened to the public in 1860.

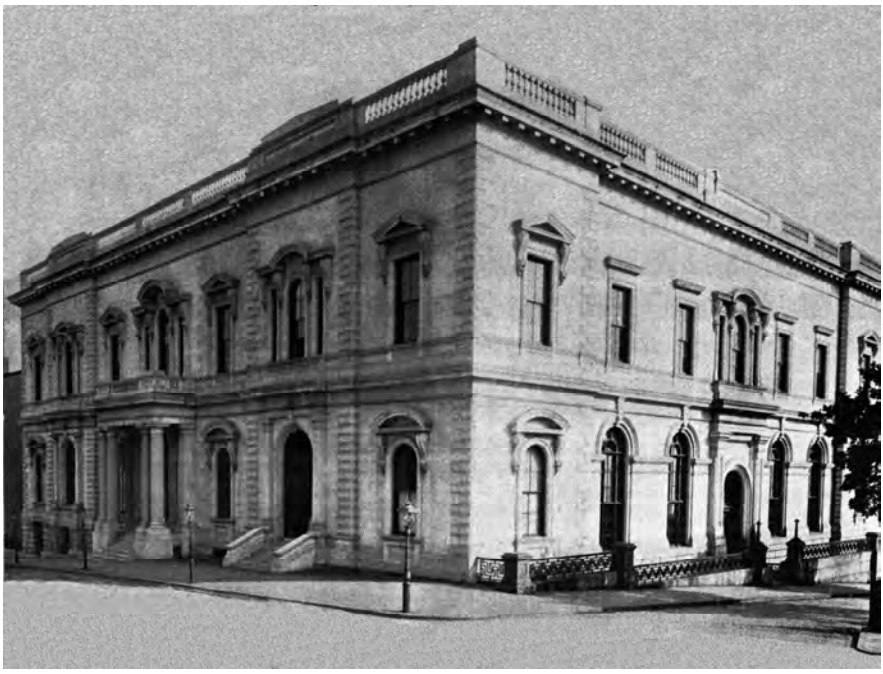


Figure 4: The Peabody Institute, site of the first two and last two of Wallace's five Baltimore lectures.

Figure 5: View in Druid Hill Park, Baltimore.

[[pg. 18]]

[Thursday, 2 December 1886.] Very cold morning ... To J. H. U. & [Enoch] Pratt Free Library[1] [Figure 6] ... Evening Lecture "Colour" ... Letter to Fanny.

[Friday, 3 December 1886.] – To Lib. J. H. University ... To P.O. Stamp &c. bought paper & envelopes ... dear. D[r]. Gilman* and Mr. Morrison [Morison*] called. Cough bad, wet compress on chest & night ...

[Saturday, 4 December 1886.] At home – letters to Violet, & Willie & Annie ...

[Sunday, 5 December 1886.] At home – pm. to Mr. Brookes [Brooks*] to tea ...

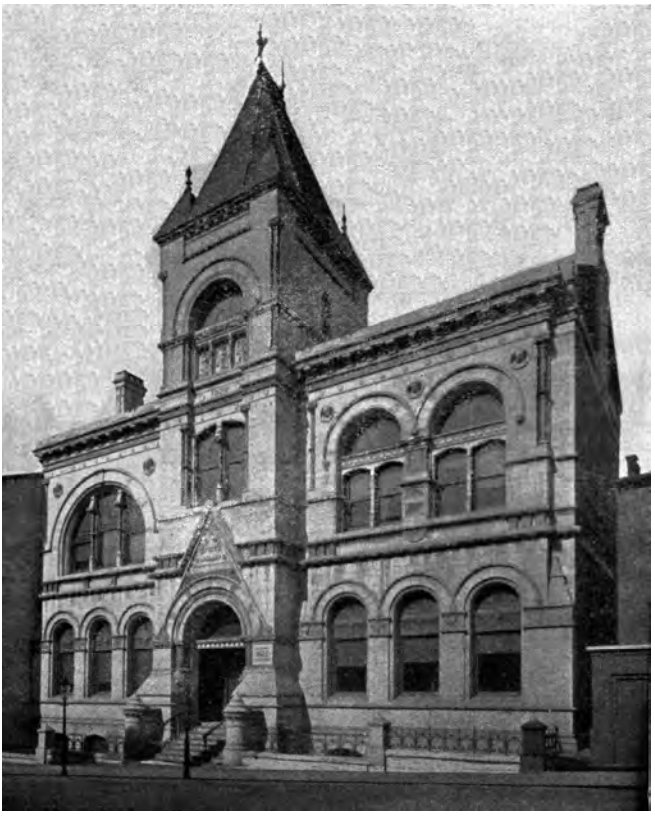


Figure 6: The Enoch Pratt Free Library, Baltimore.

[1] The Enoch Pratt Free Library is the "public library of Baltimore City." The Central Library on Mulberry Street had been open for less than a year at the time of Wallace's visit.

[Monday, 6 December 1886.] At home – Mr. Bowman* of Meriden called ... 5 pm to give lecture on "Island Life" at J. H. University ... after to dinner at Pres. Gilman's* – met Judge Browne [Brown*] & lots of Professors & Students & ladies – pleasant evening. met Prof. Ely*. Snow at night.

[[pg. 19]]

[Tuesday, 7 December 1886.] Snowing morning ... Library eve. Lecture – Mimicry.

[Wednesday, 8 December 1886.] Fine. At home – To J. H. Lib. called on Prof. Eley [Ely*] – Papers &c. ... Evening Meeting of Psychologists ... Talk. [*Another day I called on Professor Ely and had a long talk on the political and social outlook. In the evening he took me to a meeting of psychologists – professors and students – whose talk was so technical as to be almost unintelligible to me, and when they asked my opinion on some of their unsettled problems, I was obliged to say that I had paid no attention to them, and that I was only interested in the question of how far the intellectual and moral nature of man could have been developed from those of the lower animals through the agency of natural selection, or whether they indicated some distinct origin and some higher law; and I gave them a sketch of my views.*]

[Thursday, 9 December 1886.] Called on Eley [Ely*] & Pres. Gilman*, D[r]. Taylor – of Cambridge (Eng).

Evening. Colours of Plants. 1½ hour. To Pres. Gilman's after – Prof. Langley* & others ... talk about Sylvester* chiefly. [*The talk was chiefly about Professor Sylvester, who had excited immense interest, not only by his wonderfully original mathematical genius, but also by his eccentricities and self-absorption.*]

[Friday, 10 December 1886.] Packing – To J. H. University. Prof. Brooks* ... Train 3 pm. to Boston. Sleeping cars – pretty comfortable ...[1]

[1] "The travelling here is very nice & far preferable to ours, and I don't feel much afraid even of the long journeys as the drawing room cars are very pleasant and hardly more fatiguing than sitting at home. Then there is the advantage of their being all so well warmed with steam pipes that you sit without overcoat or hat just as you would in a well-warmed drawing room, while there is a lavatory and every convenience on every carriage. Where there is no regular dining car to a train there is what they call a buffet. The car-boy will get you any thing for lunch or tea, and nice little moveable tables are fitted into the side of the car between two chairs so that you can eat comfortably. The large plate glass windows, mirrors, soft carpets, and beautiful fittings of the cars, which are all of different patterns make it very pleasant to travel in them." (from an undated, unaddressed letter from Baltimore, NHM WP1/5/11)

[Final Days in Boston]

[Saturday, 11 December 1886.] Boston at 8 am. Quincy House curious room (208) up & down stairs & [[pg. 20]] along winding passages – very comfortable & handsome when inside ...

Called on Williams* – No engagements! [*so I determined to go to Washington at the end of the month.*] To Pub. Lib^{y}. got two books ... Country between Balt^{e}. & Boston all snow-clad rivers all ice-bound, even small rapidly running rivers![1]

[Sunday, 12 December 1886.] Letters to Silk, Morrison [Morison?*]. afternoon to Prof. W. James* – met Scudder* & several Professors – Psychic Research & Spiritualism.

[Monday, 13 December 1886.] Wet all day – called at Cupples & Co. enquire for D^{r}. Nichols*.

Reading, & sorting clothes &c. for Washington

[[pg. 21]]

[Tuesday, 14 December 1886.] To Cambridge – Museum notes. P.M. called on D^{rs}. Bigalow [Bigelow*] and Minot* – both out ... Letter from Annie & Willie.

[Wednesday, 15 December 1886.] To Cambridge – Prof. Agassiz*. Notes of Museum. Eve. Bost. Soc. Nat. Hist. Letter from Mitten ...

[Thursday, 16 December 1886.] To Dr. Nicholls [Nichols*]. Haverhill. Talk of Spiritualism. Chemist. Railroad Director – nice House – fine Library Staid night.

[Friday, 17 December 1886.] To Boston – saw Mr. Nichol [Nichols*] ab^{t}. advertisement in Journal of Chemistry. Dine at Revere House[2] with Naturalists' Club [of Boston]. Minot*, James*, Scudder*, Gardner [Gardiner*], Gould*, Haagen [Hagen*] &c. &c. Hyatt*.

Wore fur coat to walk there – never wear it again! Oh look! There's a bear! &c. &c. &c. &c. &c. &c.

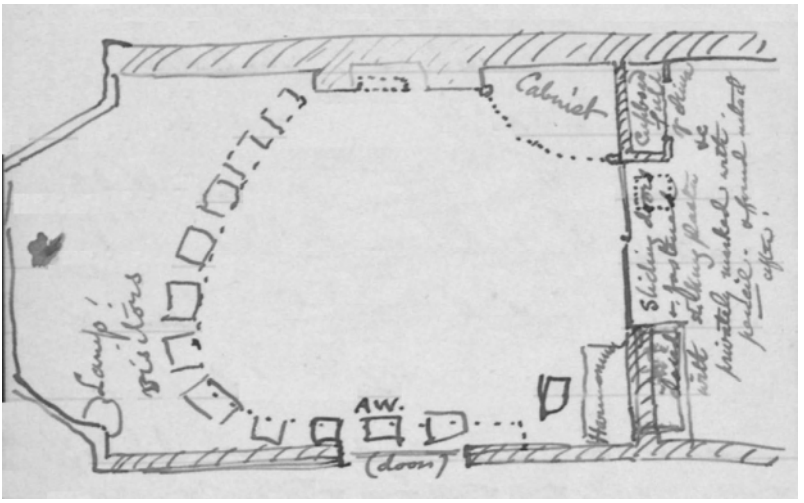
---

[1] "When I got back to Boston just before Xmas the streets were full of sleighs cutting about silently, even the great waggons and carts were all sleighs, and on fine days gentlemen and ladies were driving about as hard as they could go on beautiful light sleigh carriages." (from a 1/16 letter to Will, NHM WP1/5/15)

[2] The Revere House, located on Bowdoin Square in the West End of Boston, was a prestigious hotel designed by William Washburn. It opened in 1847, and was destroyed by a fire in 1912.

[[pg. 22]]

[Saturday, 18 December 1886.] To Library & Museum – called on Williams* & McIntyre – Evening to Séance at Mrs. Ross*. Remarkable Ex[d]. room carefully & <u>rooms below</u> ...



Below the cabinet is the heating furnace & on the ceiling air pipes hot & cold clothed with cobwebs. Room carpeted up to walls, <u>entire</u>, ... walls solid. Cabinet a cloth curtain with cloth top 2 ft. below ceiling. Door to next room <u>secured</u> but gas-lights burning in it affording perfect security. Ten visitors – Mr. & Mrs. Ross* ... [[pg. 23]] Most striking phenomena.

1. A female figure in white came out with Mrs. Ross* in black, and at the same time a male figure – to mid. of room.

2. Three female figures appeared together all in white of different heights – came 2 or 3 feet in front of cabinet.

3. A male figure came out recognised by a gentleman as his son.

4. A tall indian in white mocassins came out danced and spoke, shook hands with me & others – a large strong rough hand.

5. A female figure with a baby – to entrance of cabinet. Went up and felt baby's <u>face</u>, nose, and hair, & kissed it – a genuine soft skinned living baby as ever I felt. Other gentlemen & ladies agreed.

As soon as the Séance was over gas [[pg. 24]] was lighted & I examined the bare walls of the cabinet, the curtains, & the door, all as before, & affording no room or place for disposing of the baby alone, far less of all the other figures.

During all the time a red-shaded lamp gave light sufficient to see time by my watch & to see outlines of every one present. But even had there been less

light there was no possibility of any confederate entering or leaving the room without instant detection. Mrs. H. V. Ross*, 96, West Concord St., Boston.

[Sunday, 19 December 1886.] Letters to John, Annie, Violet & Mitten – afternoon called on D[r]. Holmes*.

[[pg. 25]]

[Monday, 20 December 1886.] Writing – art. on Museums &c.[1] called on Mr. Forbes*. Lamp wire mended –

[Tuesday, 21 December 1886.] B. [Banner] of Light[2] Office – called on Mr. Allen Putnam*. wife ill.

[Wednesday, 22 December 1886.] called on Mr. Houghton* & Mr._____, D[r]. Cotting* evening, tea ... writing

[Thursday, 23 December 1886.] Called on Mr. Ross – séance on Monday. at 3. called on Rev. Savage* – out. Prof. James* called evening ...

[Friday, 24 December 1886.] Called on Mr. Forbes* – D[r]. Nichols* called. Mr. Ernst* invitation to dinner tomorrow ... very mild – oppressive to walk – at night obliged to sit with my window open to keep the room cool! Tremendous rain up to 2 or 3 am. & warm. 55º.

[Saturday, 25 December 1886.] Xmas Day. Hard frost! walk on Common. [*I had one good example of the sudden changes of temperature to which Boston is liable. On December 24 it was a very mild day, so much so that walking was quite oppressive, and in the evening I sat in my room with the window open to keep cool. At night it rained tremendously till 2 or 3 a.m., but Christmas Day was a hard frost, and the next day the greatest cold I felt in America. I was told that during the winter and spring the thermometer often falls 60° in two hours, and a Bostonian never goes out for a few hours, however mild it may be, without being provided with warm clothing against such sudden changes, which often produce serious effects.*] To dinner to Mr. Ernst's* at 2.30. Home at 7. Read evening.

---

[1] Wallace's two articles on American museums appeared in the September and November 1887 issues of the *Fortnightly Review* under the titles of, respectively: "American Museums. The Museum of Comparative Zoology, Harvard University," and "American Museums. Museums of American Pre-historic Archæology."

[2] *Banner of Light* (1857–1907), founded, published, and edited by Luther Colby, was the leading American spiritualist newspaper of its time. Wallace's words frequently appeared in its pages.

[[pg. 26]]

[Sunday, 26 December 1886.] Walk morning, very cold. Letter to Mr. Riley* – afternoon to Cambridge to Mr. Houghton's* – tea ... little snow night.

[Monday, 27 December 1886.] Afternoon to séance Mrs. Ross* – 16 people – form to me gave name "Florence" seen me at séance in London. Two good solid forms out at once. Also girl & boy – not so good as my first séance there. I sat in doorway.

Letter from Annie & Violet. received ferns in good order – (dated Dec. 13th) to be at Aunt a week ...

[Tuesday, 28 December 1886.] Took ticket for Washington, Thursday Cheque for $100 at Bank. Letter from Mitten. 2 pm. to séance with D^r^. Nichols*, Mr. E. A. Brackett* (Winchester, Mass.), Prof. James*, Miss _____ Mrs. _____ Mrs. Brackett & daughter Rev^d^. Mr. Savage*, & Self.

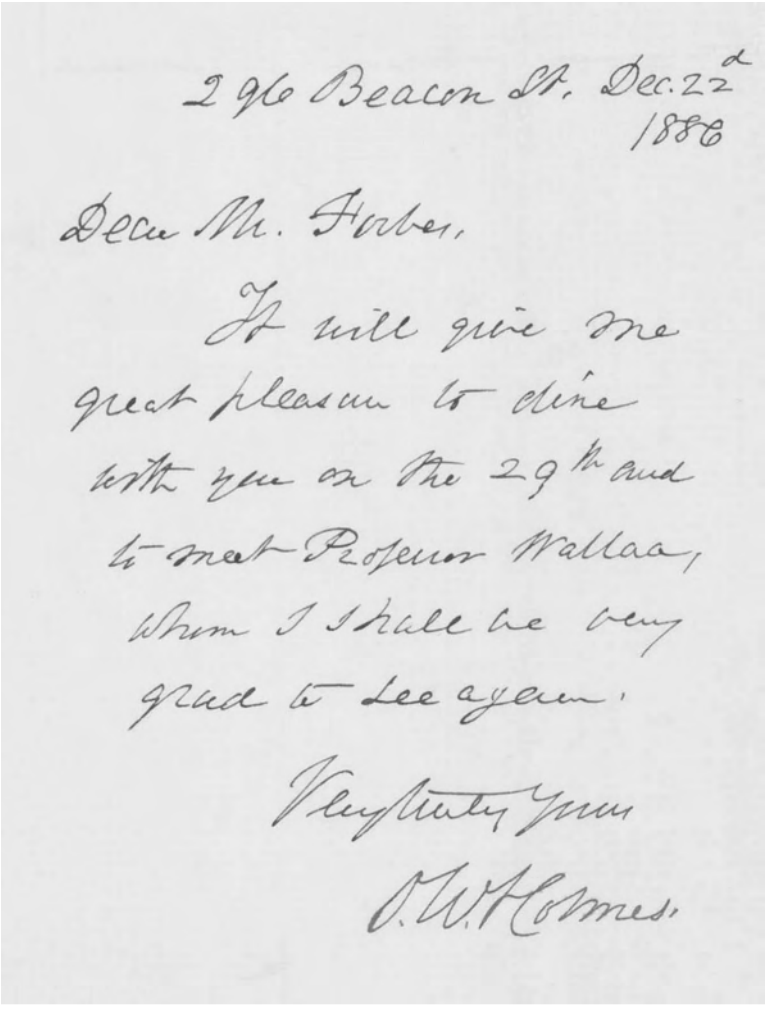
[[pg. 27]] Many forms came – Tall, young Indian ~~a boy~~ chief in war paint & feathers ... a boy – a little girl who talked & played with Mrs. Brackett, a woman with a baby – "Bertha" (Mr. Brackett's niece) beautifully materialised, a short, stout, nice looking girl of 14 or 15, a woman &c. also two who came to me. One a beautiful draped female took my hand, looked at me, identified herself as having met me ~~at~~ with Florence Cook[1] in London! – She resembled the form wh. appeared most often with F. Cook, & who had often talked & joked with me! She let me feel her ear (no earrings) as she had done in London.

The other an old gentleman asked for me. On going up I found a rather short old gentleman with very white hair & beard, rather thick, who took my hand & bowed to me repeatedly. At first I did not recognise him. But he bowed & looked pleased not being able to speak. Then it flashed upon me [[pg. 28]] that he was like the last Photos. of my cousin Alg. Wilson only older. Then the likeness both in face figure & dress became more clear & I said "Is it Algernon" to which he nodded earnestly, seemed much pleased, shook my hand strongly patted my face & head with his other hand. This was very remarkable. The likeness was unmistakeable, but I had been thinking of my father, or some other friends, Darwin, &c. & so did not see it at first ...

clear cold.

Evening – to hear Sir W. Dawson's* first lecture. Ticket to Washing $12.60

[1] Florence Cook (1856–1904) became a celebrity when as a teen spiritualist medium in the early 1870s she reputedly materialized a spirit entity known as "Katie King." The physicist William Crookes investigated the matter and produced a highly criticized public report announcing his belief in the legitimacy of the phenomenon.



296 Beacon St. Dec. 22d
1886

Dear Mr. Forbes,

It will give me great pleasure to dine with you on the 29th and to meet Professor Wallace, whom I shall be very glad to see again.

Very truly yours
O. W. Holmes.

Figure 7: Note from Oliver Wendell Holmes to John Murray Forbes.

+ $3.00 Sleeping Berth = $15.60.

[Wednesday, 29 December 1886.] Packing &c. morning. Evening to dinner at Parker's Hotel [Parker House[1]] with Mr. John M. Forbes*, to meet

[1] The Parker House at Tremont and School Streets was founded by restaurateur Harvey D. Parker (1805–1884) in 1855. The original structure was demolished in 1920 and replaced with a new building, the Omni Parker House. The old Parker House was one of the most historic of U. S.

D[r]. Oliver Wendell Holmes [Sr.]*– (Autocrat)
Hon. James Russell Lowell*. – "Biglow Papers" Min[s]. [Minister] to Eng.
[[pg. 29]] Edw[d]. Waldo Emerson*. Painter, Son of Poet & Phil.
Rev[d]. James Freeman Clarke*
D[r]. W[m]. James* Prof. Phil. Harvard
D[r]. Asa Gray*
Gen. Francis Walker* Pres[t]. Tech. Institute [MIT]
Prof. Charles Norton* (Fine Arts, Harvard)
John C. Ropes*. Writer on Military Hist.
Sir W[m]. Dawson*. Pres[d]. McGill University, Montreal.

First rate dinner.[1] Roses, Violets, Daffodils &c. in profusion, table cov[d]. with Maiden hair fern. No speeches – Plenty of conversation. Politics, travel, Sir James Brooke, Spiritualism &c. &c. ... [*The dinner was luxurious in the extreme, the table covered over with delicate ferns, and roses with bouquets of violets and daffodils before each guest. I sat next to Lowell, and was rather awed, as I did not know much of his writings, and I think he had never heard of me. The condition of things was not improved by his quoting some Latin author to illustrate some remark addressed to me, evidently to see if I was a scholar. I was so taken aback that instead of saying I had forgotten the little Latin I ever knew, and that my special interests were in nature, I merely replied vaguely to his observation. However, the conversation soon became more general, and such subjects as politics, travel, Sir James Brooke, and even spiritualism, afforded some pleasant interchange of ideas. Fortunately there were no speeches, but I was not so much impressed by the Boston celebrities as I ought to have been.*]

Cold.

[Thursday, 30 December 1886.] Snow storm all day. Packing ... Returned books ... 6.30 pm. by Sleeper to Washington Tea & Breakfast in Car.

---

hotels.

[1] "Just before I left Boston a rich merchant, Mr. John M. Forbes, invited me to dinner at a hotel and asked D[r]. O. W. Holmes*, D[r]. Asa Gray*, Hon. James Russell Lowell*, & other celebrated men to meet me. The dinner was first rate. Before every plate was a glass vase full of flowers. I had about 20 lovely rose buds, others had violets, others jonquils, each a different sort of flower, while the whole table was strewn over with maiden-hair fern." (from a 1/15 letter to Violet, NHM WP1/5/14)

[First Days in Washington D.C.; New York Lecture]

[[pg. 30]]

[Friday, 31 December 1886.] Mr. Riley* met me. To his house wife & ½ sister (Miss Lafargue) and 4 children. To Cosmos Club[1] ... Snow half-thawed, cold. Pm. looked at lodgings & hotel. D[r]. Elliot Coues* Evening [*a man of brilliant talents, wide culture, and delightful personality, with whose ideas I had much in common, and with whom I soon became intimate. He was not only a practical but highly philosophical biologist, and was equally interested with myself in psychical research. I met many pleasant people at his house, where I often spent my Sunday evenings.*]

[Saturday, 1 January 1887.] Round to hotels ... mostly shabby – best very dear. Mr. Riley* paying New Year's visits ... Cold

[Sunday, 2 January 1887.] Wrote letters – reading ... To Hamilton Hotel[2], saw room & engaged. very cold – near zero. Chess evening

[Monday, 3 January 1887.] Morning to Hotel (Hamilton) Letter to Annie, P. cards to Swinton*, Fanny, Silk, Mitten. Called on British Ambassador Mr. [Lionel Sackville] West* ... to get signature to certificate for Pension ...

Subscribed to Circ. Lib. $2 for 3 months. M. Crawford's "Zoroaster". Evening to Cosmos Club. [[pg. 31]] Met Major Powell* of Geol. Survey (one arm) & a dozen other men of note [*I also soon became very intimate with Major Powell, the head of the Geological Survey, and also with Captain Dutton, Mr. McGee, and other members of the survey. I spent a good deal of time in their library, reading up the history of the glacial phenomena and antiquity of man in America. At twelve o'clock we all lunched together, in a very informal way, on bread and cheese, fruit, cakes, and tea; and at this time we had many interesting conversations, as Major Powell was a great anthropologist and psychologist, as well as a geologist, and we thus got upon all kinds of subjects.*] ... Mr. Dalton, Mr. Lester F. Ward* [*I found another equally close friend in Professor F. Lester Ward, who divided his enthusiasms and his work between botany and sociology, both subjects which (as an amateur) interested myself. His writings on the latter subject are very numerous – his "Dynamic Sociology," in two large volumes, being a masterpiece of elaborate systematic study of almost every phase of*

[1] The Cosmos Club is a social club founded in 1878 by John Wesley Powell. It has counted among its members some of most famous figures in American history. At the time Wallace visited it occupied an address at Lafayette Square.

[2] The original Hamilton Hotel was a four-story structure built in 1877 at 14th and K Streets NW. It was a comfortable facility known for its prominent clientele, including many members of Congress. The hotel was rebuilt in 1922, and still stands.

social science.] – (Lunch at Hotel poor. Dinner good ...)

[Tuesday, 4 January 1887.] At Hamilton charge 5c. for 2c. papers! got writing table in room, & easy chair ... Very bright & cold ... P.M. to Smithsonian Institution [Figure 8] & "Agriculture" Riley* – Reading Evening. Stove in my room kept in 24 hours without touching!

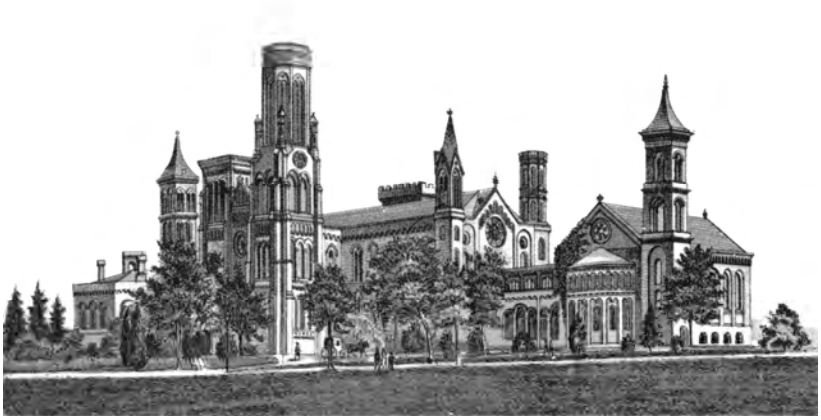


Figure 8: The Smithsonian Institution, Washington, D.C.

[Wednesday, 5 January 1887.] Milder, Snow all day – Evening Reception at Cosmos Club – met lots of Scientific gentlemen & ladies – members had read my books – many said my Malay Arch. first led them to take interest in Nat. Hist. & its general problems ...

[[pg. 32]]

[Thursday, 6 January 1887.] Stroll morning – prepared N.Y. lect. pm. to Washington Monument 555 ft high obelisk bad low situation, half effect lost. To Museum fine geol. specimens, models &c. great collection of Indian pottery – recent & from Mounds &c.

Evening called on Mr. [Joseph A.] Allen* – lively conversation. very intelligent. [*Among the visitors to Washington was the Rev. J. A. Allen, of Kingston, Canada (the father of our Grant Allen), who, with his wife and two daughters, was living in apartments nearly opposite my hotel. I soon became intimate with this amiable and very intellectual family, and spent many pleasant evenings with them; while Mr. Allen sometimes went for walks with me and took me over the Patent Museum, where there is a most wonderful exhibition of models of all the successful and unsuccessful inventions that have been patented*

in the States.]

[Friday, 7 January 1887.] To Geol. Survey Office. Major Powell* & Professors – discussion of languages &c. &c. Maps – fine Photos. of scenery of rocky Mt[ns]. &c. &c. ...

[Saturday, 8 January 1887.] To Smithsonian Museum – wonderful collections of Stone implements &c. Prof. Lester Ward* – fossil plants – Prof. Mason* – Ethnological Collections ... development of utensils &c. weapons ... fine series.

[[pg. 33]] Evening with D[r]. Coues* to Séance at Mr. Keeler* ... materialisation – many figures, John King – too dark ... too many people – but genuine ...

[Sunday, 9 January 1887.] Gen Lippitt* called morning. Photo. of picture of his daughter &c. &c. ... Dinner with Riley*. Evening to Prof. Coues* – met Riley*, Dutton* &c. &c.

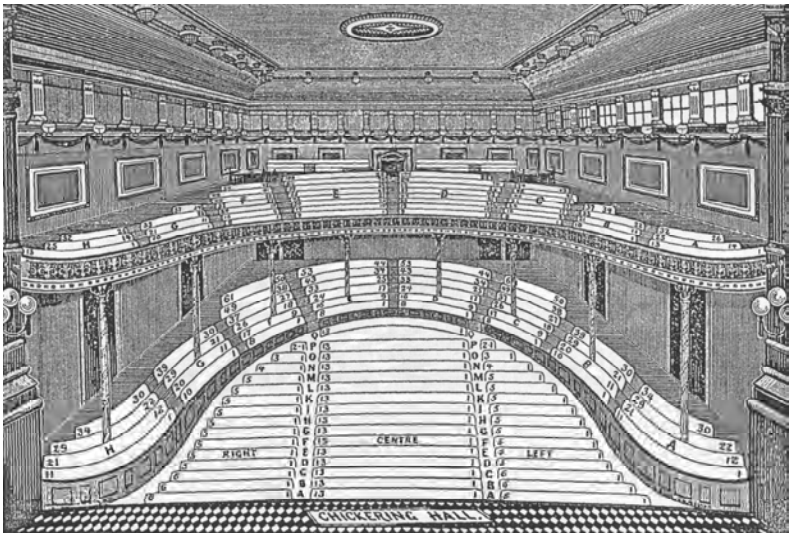


Figure 9: Floor plan of Chickering Hall, New York.

[Monday, 10 January 1887.] To New York, Mr. Browne* met me at Ferry – Evening called on Judge Daly*.

[Tuesday, 11 January 1887.] Met Judge Daly* at Geog. Soc.[1] To Hall[1] see

[1] The American Geographical Society was founded in 1851 in New York City. At the time of Wallace's visit its offices were at 11 West 29th Street.

about Diagrams ... called on Mr. _____ [Metcalf*] Ed. of "Forum". Lecture Evening, fair audience. After to "Century" Club[2] – Met Clarence King*, &c. &c. ...

[[pg. 34]]

[Wednesday, 12 January 1887.] To New York Museum ("American Museum of Natural History") met D[r]. J. B. Holder*, Mr. J. A. Allen* – &c. &c. very interesting collections of archæology ...

[1] Wallace's lecture was to take place in Chickering Hall, a large theatrical venue where the AGS held meetings (see Figure 9).

[2] The Century Association is (it still exists) an arts and literature club that was started by William Cullen Bryant and his friends in 1847. Wallace was entertained at the club's first permanent headquarters, one of noted architect Henry Hobson Richardson's first designs, at 111 East 15th Street.

[Middle Days in Washington D.C.]

[Thursday, 13 January 1887.] Express to Washington[1] ... Gen Lippitt* called moment I was in! Letters from Williams* – nothing settled – "The Nation" about Review &c.[2] ... Evening to Miss Fletcher* – Alaska curiosities & moss!

[Friday, 14 January 1887.] Writing letters morning. Afternoon called on Mr. [Joseph A.] Allen* – to Cosmos Club. Evening reading Peabody Mus. Reports ... Haircut & shampooed at Hotel 80c. = ¾^{d}.!

[Saturday, 15 January 1887.] Morning to Capitol [Figure 10] with Mr. [Joseph A.] Allen*. PM at home reading. Evening dinner at Gen. Lippitts* – met D^{r}. Matthews*.

Figure 10: West front view of the Capitol.

[1] "Again, the Railway travelling is simply perfect. All the arrangements for tickets & luggage so greatly superior to ours while the fine lofty airy carriages are as warm and comfortable as the houses, being warmed by steam pipes along the sides & under every seat. What I shall long for more than any thing also when I come back will be a proper heating apparatus to heat the whole house with steampipes & hot air, in the best American style, which combines warming & ventilation in a way that is absolutely perfect." (from a 1/29 letter to Annie, NHM WP1/5/16)

[2] Wallace is referring to his review of Edward Drinker Cope's *The Origin of the Fittest*, which would appear in *The Nation's* issue of 10 February 1887.

[[pg. 35]]

[Sunday, 16 January 1887.] Letters to Violet, Willie[1], Prof James*, W. H. Edwards*, Williams*. Photo to Marsh* ... Walk pm. with Mr. [Joseph A.] Allen* & daughters ... Evening to Cosmos Club.

[Monday, 17 January 1887.] Reading Cope*[2] – foggy – bought rubbers. Evening to L. Stanford Esq.* Senator for California? met Rev^{d}. D^{r}. Newman* ... all Spiritualists – talk 2 hours ...

[Tuesday, 18 January 1887.] At home morning reading Cope*. Afternoon called on Sir Lionel West* (Brit. Minister) and General Lippitt*. Letters from Annie, Violet, & Willie. Evening reading ... Cold – down to 8º or 10º F.

[Wednesday, 19 January 1887.] Morning to Nat. Museum [Figure 11] – sketches of flint weapons &c. ... Called on Prof. Ward*. Evening to Séance (Keeler*) Remarkable phenomena like Davenports – writing on paper (not by medium) marked paper. Two to me ? Will^{m}. Wallace & A. W. ... Gen. Lippitt* & Prof. Riley*. Cold.

Figure 11: The National Museum.

[1] "I don't know whether you have begun work in the Carpenter's shop yet, but I wrote to the D$^{r.}$ for you to do so this term. I hope you will try and learn all you can. You should work at it just as much as your lessons for it will be quite as much use to you, and you will always be glad that you have learnt it. Above all learn to sharpen tools, and whatever you do stick to it till you can do it as well as it can be done." (from a 1/16 letter to Will, NHM WP1/5/15)

[2] Wallace probably means Cope's *The Origin of the Fittest*, but Cope was a voluminous writer and any number of other works by him might have been involved.

[Thursday, 20 January 1887.] Reading. To P. Office for order & to Prof. Riley* & Club evening. ~~Cold.~~

[[pg. 36]]

[Friday, 21 January 1887.] Major Powell* called – invitation for tomorrow. To Smithsonian. Pre. [Prehistoric] Archæol. collections – notes – Saw D^r^. Rau* ... Afternoon reading. much milder.

[Saturday, 22 January 1887.] Stroll writing &c. to Library ... Evening to Literary Society[1] with Major & Mrs. Powell* at Mr. Nordhoff's* – met hosts of people – awfully polite and enthusiastic – "proud to meet me!" – "honour & pleasure never expected" – "read my books all their life" &c. &c. left me dumb!!! [*I often dined at Mr. Nordhoff's, and met many interesting people there, and spent several pleasant evenings with his highly intellectual family. Among the celebrities I met there were Mrs. Hodgson Burnett, none of whose works I had then read; Captain Greely, the Arctic explorer; and Senator and Mrs. Stanford, whom I afterwards visited in California.*]

A very clever paper by Mr. Kennan* describing visit to Count Tolstoi the Russian novelist, philanthropist and non-resisting nihilist – very suggestive ... a true social hero – a man of the Christ type. Rev^d^. D^r^. Newman* called in afternoon ...

[Sunday, 23 January 1887.] Finished 1st. article on Cope's* book. afternoon walk to outskirts of City – Spec. builder! – row of villas – ornamental but [[pg. 37]] only 15 feet wide each! Very warm. Tea & evening with Riley* and Packard* – Darwinism, – Entomology &c. &c. ...

[Monday, 24 January 1887.] Tremendous rain last night – wet morning – writing – afternoon to see Mr. Ulke's* collection of American beetles – Fine! Evening to Cosmos Club.

[Tuesday, 25 January 1887.] Writing &c. – To [Corcoran] Art Gallery[2] [Figure 12] pm. Evening private Séance at Mrs. Riddel's – curious phenomena of music writing &c. without confederates – To me "William Wallace is here". At Art Gallery fine pictures – Bierstadt's Mt. Corcoran S. [Sierra] Nevada – Church's Niagara – Muller's Charlotte Corday.

[Wednesday, 26 January 1887.] Morning writing. Afternoon called on D^r^.

---

[1] The Literary Society of Washington was formed in 1875. Early presidents of the group included James Garfield, Edward Gallaudet, and George Kennan.

[2] Wallace would have visited The Corcoran Gallery of Art at its original location at 17th Street and Pennsylvania Avenue. It opened its doors to the public in 1874.

Newman* – Prof. Coues* – D[r]. Matthews*, & Mr. Leiter* not at home.

[[pg. 38]]

[Thursday, 27 January 1887.] Morning finished the two articles on Cope[1] ... fine – frost, sunny. Afternoon to Smithsonian – finished Am. Archæol. Coll[ns]. arranged systematically according to use & quality. Showing, development. Evening to Mr. [Joseph A.] Allen's*.

Figure 12: The Corcoran Art Gallery.

[Friday, 28 January 1887.] Batch of newspapers – reading &c. P.M. to Congress [Figures 13 and 14], with Mr. [Joseph A.] Allen*. Debate on Pleuro-Pneumonia Bill. State rights. Unlimited numb. of officials & employés – Speech with much action. Fine chamber – numbers of messenger boys running about – Members children also admitted ... [*The arrangements differ widely from ours. The whole accommodating perhaps several thousand people. Every member has a separate desk and chair, and most of them write or read at their ease while the speeches are going on. Dozens of messenger-boys are always running about, taking letters, telegrams, or messages to friends. To call a boy the member claps his hands. There is much more energy and gesticulation in the speeches than with us. The Capitol is a very fine building, standing on a small*

[1] Wallace's second review of Cope's book appeared in *The Independent* (New York) issue of 17 March 1887.

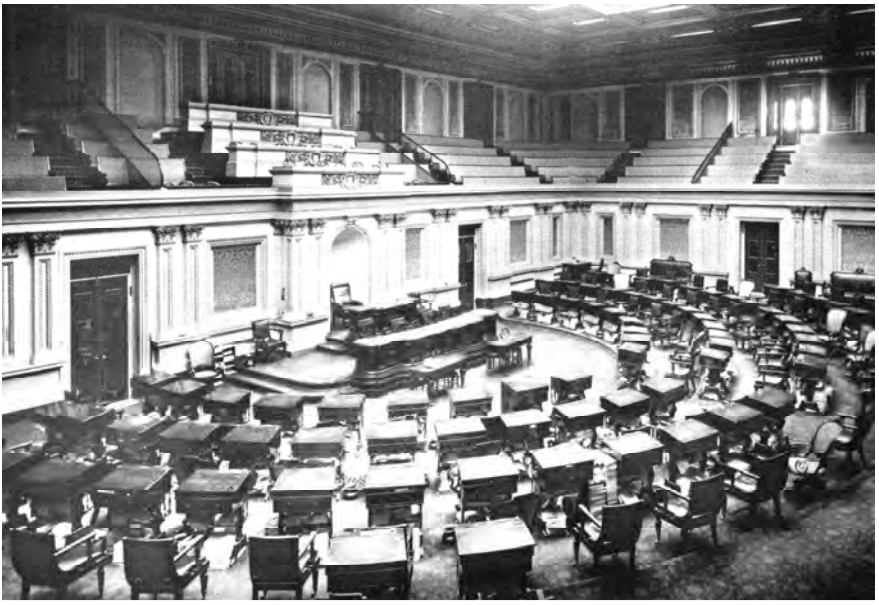


Figure 13: The Senate Chamber.

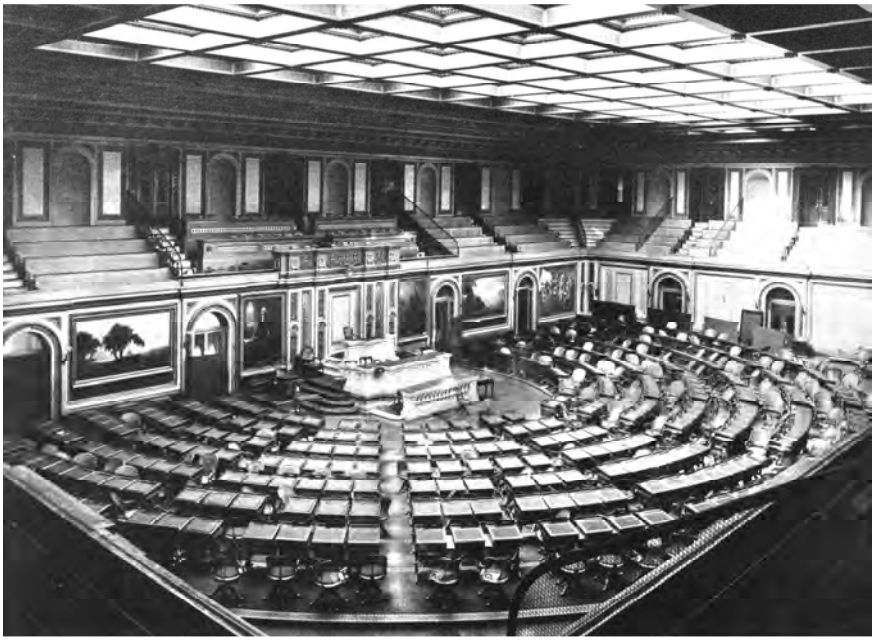


Figure 14: The House of Representatives Chamber.

hill in a fine park. It is in the classical style, with very broad flights of steps, great numbers of columns, and a beautiful central dome, as graceful in form as that of St. Paul's, and over three hundred feet high. The whole building is pure white, part painted stone, the rest white marble. The general effect is really magnificent. The inside is equally fine, the central hall under the dome forming a kind of public lounge. Owing, however, to its being situated in a city which is not a great business centre, it is rarely crowded.]

Evening – Dinner at Mr. Nordhoffs* – Capt^{n}. Greely* & wife. Senator & Mrs. Stanford*, Mr. & Mrs Leiter*, & others. 16 in all. Mr. N[ordhoff].* Washington Rep. of N. Y. Herald. friend of George*. Ladies & Gentlemen leave dinner table together & return to drawing room as they entered.[1]

[[pg. 39]]

[Saturday, 29 January 1887.] Morning soaking rain. Letter to Annie[2] ... To club pm. At home evening writing short reply to Romanes*.

[Sunday, 30 January 1887.] At home morning – pm ... Called on Mr. Hooker* – Evening to D^{r}. Coues*. Met Mrs. _____ very remarkable phenomena, spiritual – medium – very pretty ...

[Monday, 31 January 1887.] To Mrs. Hooker* morning 2 hours talk about her spiritual phenomena H. W. Beecher (her brother)[3] &c. ...

p.m. with Mr. [Joseph A.] Allen* to Surgical museum[4] ... Evening to

---

[1] "Yesterday I was at a dinner party of literary people at the house of Mr. Nordhoff* who is the Washington representative of the New York Herald which is to America what the "Times" is in England. He told people that when he heard I was in Washington he could not believe it – it must be some <u>other</u> Wallace – that he had been longing all his life to see me – & that he considered it a great honour to have me at his table – which of course made me feel rather foolish ...

<u>Every</u> dinner here begins with a large plateful of raw oysters to each person & ends with an immense ice <u>pudding</u>. By the side of each person's plate was a beautiful rose on one of the loose outer petals of which the person's name was printed in <u>gold letters</u>! I could not make out where the names were at first as of course I looked for a <u>card</u>, but the lady I took in was up to the dodge. Another nice improvement was that every gentleman had a tiny envelope (gild-bordered) given him containing a card with the name of the lady he was to take in to dinner. Then, as soon as dinner was over the ladies rose, the gentlemen escorted them back to the drawing room, & all remained there, – but this custom I expect is only introduced in literary society." (from a 1/29 letter to Annie, NHM WP1/5/16)

[2] "There are numbers of tramways along all the principal streets, & you can change from one line to another at all the junctions so that you can go almost anywhere for the uniform fare of 5¢ = 2 1/3 *d.* This is very convenient as they run every 2 or 3 minutes & thus you can get all over the town very quickly & cheaply." (from a 1/29 letter to Annie, NHM WP1/5/16)

[3] Henry Ward Beecher (1813–1887) was one of America's leading preachers and reformers through the middle of the nineteenth century. He died just five weeks after this conversation.

[4] The "Surgical Museum" was usually known as the Army Medical Museum. At that point it oc-

Cosmos Club – Maj. Powell* – Prof. Lester F. Ward*, Prof. _____ Prof. [Elisha] Gray* (Telegraph) &c.

[[pg. 40]]

[Tuesday, 1 February 1887.] Morning to Geol. Lib. Reports on Am. Archæology. pm. walk. collar & cuffs (40^{c}. a pair)

[Wednesday, 2 February 1887.] Breakfast with Mrs. Hooker* & Mr. Hitchins [Hutchins*] – To Geol. Surv. Library ... call on Sen. Stanford* and Mrs. Nordhoff* both out. ~~Mr. Allen's Evening.~~ At home.

[Thursday, 3 February 1887.] Geol. Survey Lib. Mr. [Joseph A.] Allen's* Evening. Poems ...

[Friday, 4 February 1887.] With Major Powell* to President [Cleveland]'s* House – Engaged (Buffalos, only about 25 in all U.S.? except Yellowstone Park!)

Evening Reception with Mrs. Hooker*, many Senators &c. ... & ladies[1] – A handsome young lady from Wisconsin said "Wal, I guess" – rather broad ... [*Another interesting character was Mrs. Beecher Hooker, sister to Henry Ward Beecher and Harriet Beecher Stowe. She was a fine lecturer on social, ethical, and spiritual subjects, and was also a spiritualist and trance speaker, well*

---

cupied the third floor of the building on Tenth Street formerly known as Ford's Theatre, where Lincoln was shot.

[1] The 5 February 1887 issue of *The Washington Post* reported the event on page two: "A large and brilliant reception was given last evening at the residence of Mr. Stilson Hutchins, 1605 Massachusetts Avenue, in compliment to the distinguished English naturalist, author and writer upon social topics, the venerable Prof. Alfred Russell Wallace, of England, who is now on a visit to this city. ... The Senators of the United States with their wives, and other notable people, were invited to meet Prof. Wallace, Mrs. Isabella Beecher Hooker, sister of Mrs. Stowe and H. W. Beecher, receiving the guests. Among the large number present were Senator Eugene Hale, of Maine; Senator Morrill, of Vermont; Senator and Mrs. Aldrich, of Rhode Island; Senator and Mrs. Dolph and Miss Dolph, of Oregon, Senator and Mrs. Pugh, of Alabama; Senator Hawley, of Connecticut; Senator Conger and ladies, of Michigan; Senator and Mrs. Sabin, of Minnesota; Mrs. Senator Cockrell and sister, Mrs. Nickincore, of Missouri; Senator McMillan, wife and daughters, of Minnesota; Senator and Mrs. Van Wyck, of Nebraska; Mrs. Senator Warner Miller, of New York; Mrs. Senator Blair, of New Hampshire, Mrs. Chief Justice Waite and Mrs. T. Waite, Mrs. Marquiss, of Boston; Justice Bradley, Gen. Lippitt, Prof. and Mrs. S. S. Packard, of New York; Rev. and Mrs. Alex. Kent, Rev. Mr. Shippen, Mrs. Gen. Lander, Judge and Mrs. Shipman, Prof. W. T. Hornaday, Maj. J. W. Powell, Lester F. Ward and wife, A. B. and W. D. Johnson, Mr. and Mrs. and Miss Chandler, Dr. and Mrs. Stanton, Miss. E. B. Johnston, Mrs. De Ruy and daughter, Miss Brady, Miss Marie Thompson, D. Lyman, Mrs. Dr. Winslow, and many others. At 10 o'clock a bountiful collation was served. The company separated much pleased to make the acquaintance of Prof. Wallace." *The Washington Critic* also reported on the occasion, including advertising the upcoming event the day before.

known throughout America. One evening she gave a reception, to which she invited her friends to meet me. Many of the clergy and a large number of the senators and congressmen, with their wives and daughters, were present, and she would insist on introducing me to a number of them, so that I had to shake hands with fifty or sixty people. They seemed quite puzzled. I heard one say to another, "I guess he's some Western man, but I never heard of him." "No," said his friend; "he's an Englishman, lecturing on biology and Darwin, and such things." "Wal," said the first, "he hasn't much of the English accent." Mrs. Hooker was very anxious that we should come to live in America (she had visited us in England) and form a kind of home colony, being sure that she could get many advanced thinkers to join; and some years after she wrote to me about it. But my work was at home.]

[[pg. 41]]

[Saturday, 5 February 1887.] Snow ... Proof of "Nation" out.[1] Cope* reading Foster on Prehistoric America ... Evening with Prof L. F. Ward*. to Biol. Soc. ... Extinction of Buffalo! Birds of Sandwich Is. Photos. of animal motion &c. ... Cope*, Dall* (Pres.) &c. ...

[Sunday, 6 February 1887.] Morning with Major Powell* to call on Prof. Baird*. Curious case of new fish on edge of cont. bank.

great numbers for 3 years – suddenly died, floated on surface for hundreds of miles – since then none found – all other forms of marine bottom life which were specially abundant greatly diminished!

Afternoon called on Mr. Nordhoff* – talk on social science &c. ... Evening reading ..

[[pg. 42]]

[Monday, 7 February 1887.] Reading &c. ... Club Evening.

[Tuesday, 8 February 1887.] Evening to private séance Mr. Ogilvie (lawyer) & mother & cousin? medium's table tipping & moving – strong taps &c. ...

[Wednesday, 9 February 1887.] To the Naval Observatory[2] [Figure 15] –

[1] Wallace's first review of the Cope book.

[2] The Naval Observatory (also referred to as the National Observatory) was in those days located

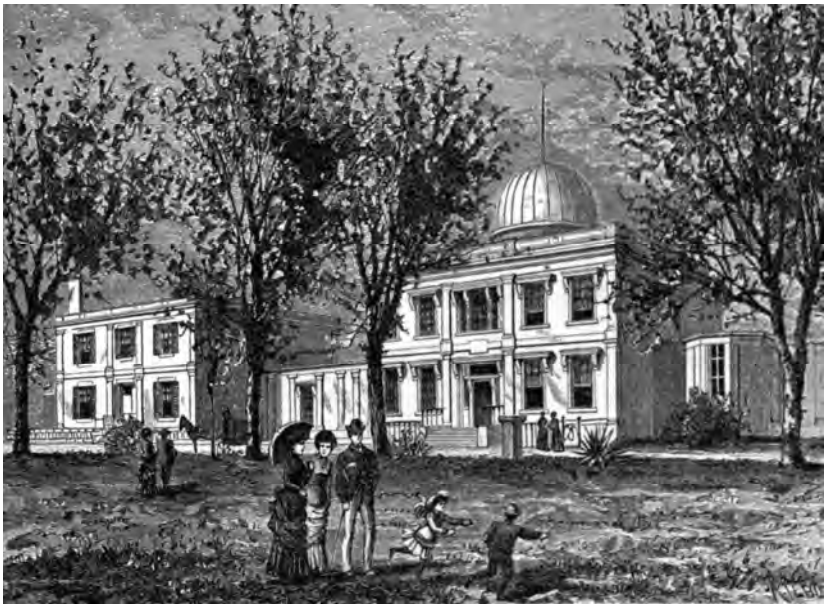
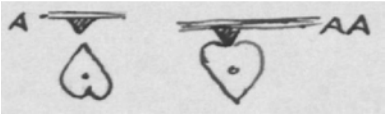


Figure 15: The Naval Observatory.

Capt[n]. Phythian* Sup[t]. Prof. A. Hall*. Prof. [William] Harkness* – Time signals at noon. Ingenious electric arrangement by wh. clocks all over the country are set right automatically at noon the second & minute hands being moved back or forward.



The Heart shaped Cam is as at AA when both hands are at the hour & minute. At noon the bar carrying the tooth is forced down on to this Cam, and in [[pg. 43]] whatever position it may be, turns it round till the tooth rests in the top of the heart as at AA. If it were absolutely vertical point upwards the tooth might strike the point & stick, but practically this never happens and the hands are always turned round to the point of noon wherever they may be.

Fine Transit 8in. object glass 10ft. focus ... Regulating Chronometers for temperature ... G[t]. Equatorial by Alvan Clark[1] 25 in. ob. gl. 30 ft. focus

in the Foggy Bottom district, near the present site of the Lincoln Memorial.

[1] After earlier involvements in engraving and portrait painting, Alvan Clark (1804–1887) founded

mounting very light similar plan to Cooke*s equatorial. Very civil – Am to go any fine night to see Saturn. Evening called on Mrs. De Puy.

[Thursday, 10 February 1887.] To Geol. Lib. "Nature" To Congress Lib. ... To Bot. Gardens [United States Botanic Garden[1]]. Evening to Mrs Taylor meet [Joseph A.] Allens* & Mrs. Hooker* talk till near 12 pm.

[[pg. 44]]

[Friday, 11 February 1887.] To National Museum, "Nature" vol. xxiv. for my art. on "Tylor" ...

Writing notes for address on Problems of Anthropology.

[Saturday, 12 February 1887.] Paper on "The Great Problems of Anthropology" – to Women's Anthrop. Soc.[2] [*There was a Woman's Anthropological Society, which invited me to address them, and being rather puzzled what to talk about, I made a few remarks on "The Great Problems of Anthropology." These I defined as the problem of race and the problem of language. On the first point I stated that there are three great races or divisions of mankind clearly definable – the black, the brown, and the white, or the Negro, Mongolian, and Caucasian. If we once begin to subdivide beyond these primary divisions, there is no possibility of agreement, and we pass insensibly from the five races of Pritchard to the fifty or sixty of some modern ethnologists. The other great problem, that of language and its origin, was important, because it was, above all others, the human characteristic, and was the greatest factor in man's intellectual development. I then laid down the outlines of the theory of mouth-gestures, which I afterwards developed in my article on "The Expressiveness of Speech," showing how greatly it extends the range of mere initiative sounds (which had been ridiculed by some great philologists) and affords a broad and secure foundation for the development of every form of human speech.*] ... 11 to 12 pm. change to cold – yesterday 72º pm. this morning 27º! Letter to Violet

[Sunday, 13 February 1887.] Walk with Mr. Lester Ward* through woods of Woodley Park, by Pres[ts]. Cott. [President's Cottage] &c. about 5 miles[3] – Got

---

Alvan Clark & Sons, an optics firm, in Cambridgeport Massachusetts in 1846. They specialized in preparing lenses for large refractor telescopes, including those at the U. S. Naval, Lick, and Yerkes Observatories.

[1] The U. S. Botanic Garden, established in 1850, was as of 1887 still at its original thirteen-acre site directly to the west of the Capitol.

[2] Wallace's talk was given in the "reception-room of the university building" of the Columbian University (now Georgetown University).

[3] In 1887 the neighborhood now known as Woodley Park in northwestern Washington D.C. was a

two ferns, Goodyera Orchidaceae, Chamælirium Blazing Star Colchicum fam., Carex platyphylla, Epiphegus virginiana Beech drop (Beech drops) Orobanchaceæ, Epigæa repens Mayflower Ericaceæ, saw Kalmia latifolia, Mitchella repens Rubiaceæ, Aralia spinosa (Hercules Club.) Rubus villosus, Smilax like slender Roses! Symplocarpus fœtidus, in bog in flower! Hepatica in flower! white. Vitis cordifolia &c. &c. ... Chimaphila maculata. 2 found nr Pyrola.

Bad cold caught last night ... warm bath & early to bed.

[[pg. 45]]

[Monday, 14 February 1887.] Cold better. At home all day. sent off box of plants to (6 cents) Annie & letter – D[r]. Hoffman* called (arrowheads) Mr. [Henry] Carter* – Hawaiian Minister, left card ...

Rain at night – milder.

[Wednesday, 16 February 1887.] ~~Tuesday, 15th~~ Lunch with Mr. Hooker* & Mrs. De Puy at Mr. Hutchins* ... Mr. Phillips* called ... Land Ref. [Reform] Evening to Observatory – Saw Saturn (26 in. Equatorial 30 ft. focus) power 400 & 600 ... Division of Ring very sharp, but dark ring only just seen as a shadow on two ends ... White equatorial belt very distinct. Gt. Nebula of Orion – trapezium with two double stars. (power 400) Nebula itself beautifully delicate but details rather faint. Double star Castor – comp. nearly equal – blurred somewhat – Cluster in Perseus – very beautiful thousands of stars down to very minute & almost invisible. Telescope not quite achromatic – a deep blue tinge to all bright objects. very steady & clockwork [[pg. 46]] motion very perfect ... General effect rather disappointing as compared with much smaller telescopes ... For most purposes a really fine 6 in. telescope would perhaps be quite as interesting to an ordinary amateur. Saturn looked about as you see it in figure 2 in. or 3 in. diameter while the Orion nebula was not half so distinct or striking

---

wooded area surrounding a few estate buildings, including President Cleveland's summer house. "We walked about 4 miles through woods over hilly ground with little ravines & a swift stream about as large as the Wey which they call here a creek. It had been freezing hard the last two nights but the sun was bright & we had a beautiful walk. The whole country here is gneiss – a kind of granite full of mica which decomposes into a soft loamy sand something like that in our road under the cliff, but far richer & better for plants. Going along Mr. Ward* told me the names of all the trees, but they are so numerous & so puzzling without their leaves that it was impossible for me to recognise many of them ... It is very interesting walking in woods where everything is new and curious, and will be still more so when summer comes on. Still there is a certain raggedness about everything. The fields are more like fallow fields there is so little grass. There are no hedges only tumble-down rail fences, and the woods do not seem so fine as our best though I dare say in summer when all the leaves are out they will be very beautiful." (from a 2/14 letter to Annie, NHM WP1/5/18)

as in most good engravings of it.

[Tuesday, 15 February 1887.] ~~Wednesday 16th~~ ... At home in day with stroll in park – Evening lecture on Social Economy v. Polit. Economy large audience of Scientific Men and Ladies – very attentive. [*given at the request of Major Powell and a few other scientific friends to a large audience of gentlemen and ladies. It was an attempt to show how and why the old "political economy" was effete and useless, in view of modern civilization and modern accumulations of individual wealth. Its one end, aim, and the measure of its success, was the accumulation of wealth, without considering who got the wealth, or how many of the producers of the wealth starved. What we required now was a science of "social economy," whose success should be measured by the good of all ... This paper was altogether too revolutionary for many of my hearers, and the general feeling was perhaps expressed in the following passage from the* Washington Post*: "It is astounding that a man who really possesses the power of induction and ratiocination, and who, in physical synthesis has been a leader of his generation, should express notions of political economy, which belong only or mainly to savage tribes." At that time, however, there was hardly a professed socialist in America, in the eighteen years that have elapsed since this paper was read an enormous advance in opinion has occurred, and to-day, not only to a large proportion of the workers, but to thousands of the professional classes, the views therein expressed would be accepted as in accordance with justice and sound policy.*[1]] wrote to Swinton*.

[Thursday, 17 February 1887.] Out with Dr. Hoffman* in afternoon looking for arrow heads in Sandy field by E. river, found many flakes of quartz & some worked but broken, good one picked up by negro boy while we were there – 2 cents for it. Evening Mr. [Joseph A.] Allen's*. ...

[[pg. 47]]

[Friday, 18 February 1887.] Wet morning. wrote to Mr. Girdlestone*. To Library & Club pm. at home Evening.

[Saturday, 19 February 1887.] Snow all day ... Evening p.m. walk to woods

[1] Wallace's lecture was presented at the 119th regular meeting of the Anthropological Society of Washington, held at the Columbian University (now Georgetown University). Summaries of the lecture appeared the next day in the *Post* and the *National Republican*, and in addition to the caustic remarks that appeared elsewhere in the *Post*, an anonymous commenter in *The Washington Critic* tore into him the same day, closing with: "It may be that Mr. Wallace is one of England's foremost thinkers. He evidently is so far ahead of the average thinker as to have left reason and good common sense far in the rear."

with Miss Allen. – dinner with Mr. Thos. Wilson – gentlemen 4 hours at table! fearfully wearisome!

[Sunday, 20 February 1887.] Letter from Annie – crocusses out first week in Feb. in England – none here yet! Evening to Prof. Riley* to tea ...

[Monday, 21 February 1887.] Morning Mrs. Hibbert[1] and Miss Leonard called – Social questions. Gen. Lippitt* called ... Evening to Séance, with them. All had messages ~~Tues~~ written appropriate – mine from W^m. Martin for William Wallace about the Ross* scandal[2] supporting my view (I think this latter was on the 23^rd. – & the other on this evening.)

[[pg. 48]]

[Tuesday, 22 February 1887.] Prof. Ward* called – To Reform School – district – botanising[3] ... Evening at home.

[Wednesday, 23 February 1887.] To Ag. Department. got plants of Eucalyptus coccifera. Also promise of set of flint arrow heads. Home & packed up plants got yesterday & posted to Annie with a letter ... Letter to Banner of Light[4] ... Evening to Séance – good phenomena. Sat by lady & Keeler* – saw hand close to me come through curtain – also handkerchief drawn through, close by my face. Letter from W. Martin for W. Wallace ... Snow afternoon.

[[pg. 49]]

[Thursday, 24 February 1887.] At home morning ... fine. P.M. called on Mr. T. A. Bland* Ed of "Council Fire".[5] Photos of Indians & half-breeds ... Spiritualist. Photo. of his mother obtained under unexceptionable conditions.

---

[1] Charles H. Hibbert was a glove manufacturer ("C. H. Hibbert & Co.") who lived at 941 Pennsylvania Avenue N.W.

[2] The Boston spiritualist medium Hannah V. Ross* and her husband had been charged with fraud.

[3] "Yesterday I went for a long walk with Prof. L. Ward* to see the place where the Comptonia asplenifolia grows, but it is quite a shrub with long roots and would never live if dug up now besides being too large to send. I will try to get some seeds if I meet with it again, but it is rare here. The two ferns you name are not to be had, as the only one that grows here is deciduous and not common. I got however some more of the little Asplenium ebeneum and also two small plants of the Aspidium acrostichoides which I sent you from Boston. Also some more of the trailing Arbutus, Epigæa repens, two or three small plants of the winter-green Pyrola rotundifolia, some Partridge berry Mitchella repens – the small round leaved creeping plant, and some fine plants of the Chimaphila maculata sent last time." (from a 2/23 letter to Annie, NHM WP1/5/19)

[4] A famous letter to the Editor from Wallace, concerning his séances with Ross (with William James attending) in December 1886, was published in the *Banner of Light* issue of 5 March 1887.

[5] *The Council Fire*, a journal dedicated to defending the rights and civilization of the American Indian, had been founded by Bland and Alfred B. Meacham (1826–1882) in 1878.

Through a private lady medium his mother told him that if he would go with her to any photographer she would get her picture with his. They went to the nearest Photographer who happened to be a R.C. They sat together for a picture (a positive) and when it came out a third face appeared, but not his mother's. The Photog. amazed, said it was witchcraft and he w^{d}. have no more to do with it. They went home had a séance & the mother said the picture was that of a friend of hers who had accompanied her & who could materialise better, but next time she w^{d}. appear & said "go directly". They went, persuaded the photog. to try again, & this time a good picture of his mother appeared. Another time, at request, his mother made change in her dress as test! (saw these pictures.) ... [[pg. 50]] Evening called on Mr. Phillips*, saw Mr. Phillips – talk about Land &c. &c.

[Friday, 25 February 1887.] Finished 2nd article on Am. Mus. P.M. Slate Séance – Keeler* – (with Gen. Lippitt*). writing under best conditions slates cleaned & tied together by myself. held on table – writing done in free hand, but not by scrap of pencil within slate!

Evening – ordinary Séance – fine night, good! Medium's waiscoat taken off & handed over curtain without removing his coat & without the least movement of his parts! waiscoat fully buttoned up – Later stick pushed st. through curtain and tambourine held on end – watches taken from pockets of two sitters with medium & handed to me through the curtain – then the tambourine about 10 in. diam. passed through the curtain. all without any holes in curtain wh. remained entire afterwards – objects passed through diff^{t}. parts of curtain. [[pg. 51]] Later writing very good. Messages to about a dozen people all in different handwritings and many recognised. Messages from Theodore Parker, &c. ... characteristic – Message from Gen. Lippitt's* first wife dead 27 years and English – reminding him that it was her birthday, telling him of her love and expectation of the joys of reunion. (The Gen. assured us that no one in America but himself knew it was his late wife's birthday). A German gentleman got a striking characteristic message written in excellent german – &c. &c. ... I had a message from W^{m}. Martin claiming to be a friend of my father, & in quite a diff. hand from that of the form W^{m}. Martin a friend of my brother. (The facts I do not know as to the Elder Martin.)

[[pg. 52]]

[Saturday, 26 February 1887.] Snowing thickly! At home. Evening to Mr. & Mrs. Hibbert & Mr. Bowen. talk chiefly about Spiritualism

[Sunday, 27 February 1887.] Fine – To Methodist Episc. Ch. to hear D^{r}. J. P. Newman* – sermon on Angels, angelic guides &c. spirits – but no ref. to spirits of men & women ... on whole rather antagonistic to Spiritualism by put all

spiritual influence as from Angels & Archangels. crowded church.
Evening to Prof. Coues*. Met Judge Willard*, Mrs. Hibbert &c.

[Monday, 28 February 1887.] Cold fine – stroll in park pm. Club evening ... writing art. on Antiquity of Man[1] ... Mr. Bland* called morning.

[[pg. 53]]

[Tuesday, 1 March 1887.] (eve. eng. to Mr. Phillips* of Kansas.) Morning at home – P.M. to Ag. Dep. – Riley* – To Smithsonian. arrowheads – not ready ... Eve. to Mr. (Col.) Phillips* – Lots of people[2] – miscellaneous talk ... Indians in Evening dress – look well ... talk well ... Mild fine day ...

[Wednesday, 2 March 1887.] At home morning. dinner with Prof. Riley* – Evening called on Senator Stanford* – out. called on Mr. Nordhoff* – Miss Nordhoff & two other young ladies at home, had tea & talked till 10.30.

[Thursday, 3 March 1887.] (Eve. Eng. to D[r]. Bland's*) Letter to Senator Stanford* about Cal. lectures ... P.M. to Col. Phillips*. long talk about Indians – Land question, Rent &c. &c.
Evening to D[r]. Bland* – small party – preached [[pg. 54]] on Land Nationalisation &c. talk afterwards [*I was asked by Dr. T. A. Bland, editor of* The Council Fire*, and friend of the Indians, who had seen the evils of land-speculation in leading to the robbery of land granted as Indian reserves, to give some of his friends a short address, explaining my views on land reform ... At this time, however, the one subject of private interest everywhere in America was land-speculation, and nobody could see anything bad in it. My ideas, therefore, seemed very wild, and I don't think I made a convert.*]

[Friday, 4 March 1887.] Heavy snow last night! Proof of Cope* Art. in "Independent" – About 2900 words @ 6$ for column of 725 words sh[d]. be about – 24$. Trunk from Rileys*. – Two Spiritualists called ... Ticket to Niagara.
Evening to Mrs. Chase [?], meeting of Psychic Soc[y]. Paper on Atoms,

---

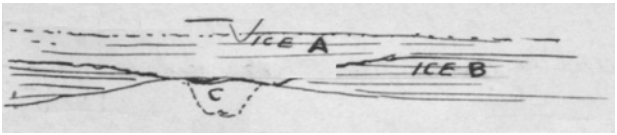
[1] The article, eventually titled "The Antiquity of Man in North America," appeared in the *Nineteenth Century* issue of November 1887.

[2] On March 6 the Washington newspaper *The Capital*, a weekly, reported as follows: "Ex-Congressman and Mrs. William A. Phillips gave a reception in honor of Dr. Alfred Russell Wallace, of England, at their residence, 1008 H street, on Wednesday [actually Tuesday] evening of last week. From 8 o'clock until after 11 their handsome parlors were crowded with a distinguished company, who were cordially received by the host and hostess and presented to the eminent scientist. Among those present were Judge Upton, Prof. Simon Newcomb; General Barnes of Georgia; Colonel Morse and lady, Major Powell and wife, Mr. and Mrs. Larner, Mrs. Hibbetts, General Halderman, ex-Minister to Siam; Mr. and Mrs. Ward, Mrs. Monroe; Mrs. Long, of Richmond; Dr. Parker and many others. The floral decorations in the dining room were profuse and tasteful."

Molecules, force matter, organism, spirit &c. ... Talked on atoms-force theory ... Prof. Coues* glorified Mad. Blavatsky[1] – & theosophy. I claimed for our spiritualism a higher position. good discussion – till 12 o'clock. Judge Willard* talked stuff – Mrs. Hibbert & I showed him up!

[[pg. 55]]

[Saturday, 5 March 1887.] Morning partial packing – afternoon called on Major Powell* – talk – with him & Mr. McGee* about Loess of Mississippi. A glacial mud of a peculiar character – can be traced up in lines to glaciers – rivers in loess districts often run along low ridges – formed by these ridges appearing first through ice sheet & then directing course of surface drainage



Ice surface first at A. – when it has sunk to B. ridge of land appears first on a slight ice valley owing to the Earth-heat melting ice – then water flows in this valley & ultimate[ly] cuts a channel (C.) which when ice has disappeared cuts a channel & then a valley. The loess covers these ridges for a few miles on each side thinning out gradually. [[pg. 56]] Saturday Evening – To dinner to Mr. Nordhoff*. Capt[n]. (Gen) Greely*, Mrs. Hodgson Burnett* – & several others – 12 in all pleasant dinner & conversation ...

[1] Helena Petrovna Blavatsky (1831–1891), born in the Russian Empire in what is today Ukraine, traveled the world for over twenty-five years before arriving in New York in 1873. There in 1875 she co-founded the Theosophical Society, a group concerned with the exploration of esoteric forms of spiritual knowledge. She ultimately became (and remains) the central figure in the dissemination of theosophical doctrines, attracting a wide circle of followers including G. R. S. Mead and Annie Besant.

[Canada: Niagara, Kingston, and Toronto]

[Sunday, 6 March 1887.] Packing. Evening by 10 pm. train to Niagara Suspens. Br. Breakfast 7 am. at Williamsport – good breakfast 75c. all way to Rochester hilly country like Wales but no high mountains – no walls or hedges & wooden houses. The fine yellow branched willow very handsome – at Havana[1] fine waterfall close to village & rail. Watkin's [Watkins Glen] – Seneca lake – very pretty a mile or so wide 15 – 20 miles long. vineyards. Hor. shaly rock about Watkin's with numerous deep gullies, waterfalls & abundant streams. Towards Niagara country flat. At Suspension B. [[pg. 57]] 5 pm. To see Rapids, down an elevator, where Blondin[2] was killed – fine rocks vertical? 200 feet ... Rapids fine but not so excessively wild as I expected ... Suspension Br. & Cantilever Br. fine. No snow from Rochester to Niagara. mild.

Supper at small Hotel. Ham & Eggs – tea jam, rolls – all very nice best Ham yet in America 50c. On to Toronto 12.20 am bed, &c. Breakfast at Hotel $1 – at 8.40 on to Kingston at 2.30 – Prin. Grant* met me. Sleigh to College – country snow-covered. Brill[t]. [Figure 16] Sun. Dinner 3 pm. 4 pm. put up Diagrams ...

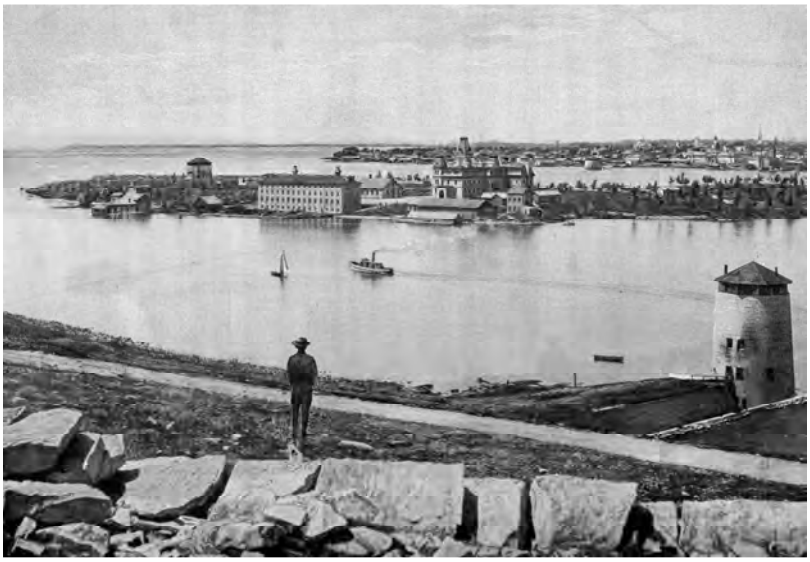


Figure 16: City and harbor of Kingston, Ontario.

[1] More exactly, Havana Glen, Montour Falls, Schuyler County, New York.

[2] Born Jean-François Gravelet in France in 1824, Blondin (an adopted name; often he was referred to as "The Great Blondin") was a renowned tightrope walker whose most famous feat was a series of 1859–60 walks over a rope strung across the gorge directly below Niagara Falls. However, Wallace was mistaken: he died of natural causes many years later, in 1897.

Lecture – good audience 1½ hour. Students in gallery very attentive[1] ...
Talk with Prin. Grant* evening

[[pg. 58]]

[Wednesday, 9 March 1887.] Breakfast. Lady called showed copies of letters written in 1876 by G. J. Romanes* to Darwin narrating his experiences in Spiritualism. Stated his tests of mental questions. These answ[d]. by table tipping with only himself & 2 sisters present. Again with a friend medium & sisters – all possible precautions taken. Communication from Bellew – "I James ... (name in full) ... Bellew, fear no being" – word "fear" not expected thought to be wrong – "being" not expected "thing" expected ... Other tests – sit in dark so

[1] Wallace's lecture ("The Darwinian Theory") to the Kingston audience on March 8 was both well advertised beforehand and reported on after the fact. The city's main newspaper, *The Daily Whig*, carried two sizable stories the day before, including an invitation to attend by J. Fowler: "Every student of natural science must rejoice to hear that the world's greatest living naturalist, Alfred Russell Wallace, is to expound to a Kingston audience the evolution theory, of which he was himself an independent discoverer. No other man, so far as known to the scientific world, has ever seen more of living nature, especially in the tropical regions, or done more to render intelligible the past and present distribution of animal forms." More interestingly, adjoining the invitation was an article by Robert Balmer*, who had gone to the trouble of sending out an enquiry to local clergymen on their feelings about the theory of evolution. Balmer wrote: "In the course of conversations on the subject of Dr. Wallace's [upcoming] lecture I met with some surprising opinions [on the evolutionary theory] expressed by worthy and intelligent citizens. ... It seemed incredible that such misconceptions and such hostility in regard to the theory of evolution should prevail without erroneous teaching on the subject from the pulpit. ... To sixteen of the clergy I accordingly at once sent a note of enquiry couched in the following terms: 'Dear Sir, – In view of the expected arrival here on Tuesday next of the world's foremost living naturalist, Dr. Alf. R. Wallace, and in view also of the exaggerated prejudice of many good citizens against him and his biological theory, it is more than desirable to have better known the well-considered opinion of the more thoughtful of our clergy on this important subject. Would you, therefore, kindly let me know by earliest mail possible whether you consider an acceptance of the theory of evolution, as held by Wallace, to be compatible or not with an acceptance of the old testament and of the Christian faith.'" Of the eight who "ventured a decided opinion," four thought that the two bodies of knowledge could get along, and four didn't. Later in the article Balmer mentions that "The ground taken by Principal Grant on this question is sufficiently evinced by the fact that it is chiefly to his liberality and enterprise that we have the privilege of hearing Mr. Wallace in Kingston."

The fifteen hundred word summary of the event printed two days later in *The Daily Whig* included the following words: "For over an hour and a half [Dr. Wallace] held the closest attention of the cultured audience as he marshalled a bewildering multitude of facts in nature into a line of argument that moved steadily on to its victorious conclusion. ... The heroes of science have not usually that godlike aspect ascribed by romance to the heroes of ancient chivalry, and Dr. Wallace is no exception. The famous naturalist is a man of large frame, over middle height, broad, stooping shoulders, a countenance in which the virtues of kindness and patience predominate. His hair and beard are quite white. As he reads he uses dark-coloured spectacles. His enunciation was clear and deliberate. Not a word was lost through faulty delivery. He used but very few gestures. Those who had the privilege of seeing and hearing the distinguished naturalist have a pleasant and valuable reminiscence for future years."

that countenance not seen. Declares his belief in non-human intelligence commun[g]. ... Had [Charles] Williams[1] to a séance in own house with his own friends present – saw human "hands" – bells &c. carried about, a human head & face & body above table – face with mobile features & [[pg. 59]] [?] ~~luminous~~ moveable eyes. Williams held all the time. His brother (J. Romanes) walked round the table all the time to prove no secret connection, yet bell placed far off on piano taken up by a luminous hand! & rung & carried about!

2nd. letter to Darwin expresses his conviction of truth of facts, – & of existence of spiritual intelligences – of mind without brain &c. &c. has altered his whole conceptions. Formerly totally incredulous. Thought there were two mental natures in Crookes[2] & Wallace one sane the other lunatic! Now he belongs to same class. Darwin had evidently expressed interest, but suggested the usual sceptical doubts – which Romanes* answered, & declared his intention of going on with the investigation. [[pg. 60]] He declares there is no evidence whatever that the intelligences are the spirits of dead men, yet admits they are often very intelligent, & thoroughly up in human ideas, languages &c. &c.!!! Yet he says he knows the literature of the subject!!

Dinner talk about Thought Transference &c. Mr. Balmer* has friend who is a perfect percipient. Can perceive writing or reproduce drawings instantly & with great certainty.

4 pm. to Station for Toronto – Supper at Coburgh [Cobourg]. Rain. – Bf. Steak, sausages, fish, stew, pot. & sw. pot. pickles, cakes, bread &c. & pudding & pie, tea & coffee, all good – ½ dollar ... arrive 10.50 – drive to Prof Wright's* $1 – Bed at 12.

[[pg. 61]]

[Thursday, 10 March 1887.] D[r]. Wilson* called ... fine. To lunch with Dr. Wilson* – met Mr. Hale* Anthropologist & Linguistic[3] – Afternoon Reception

---

[1] Charles E. Williams (born *ca.* 1850) was a British spiritualist medium celebrated for his materializations. Although his results were extraordinary enough to convince most people most of the time (including the renowned D. D. Home, another medium, who was not easy to impress), in 1878 he was caught employing an accomplice. Nevertheless, he remained active into the twentieth century, often producing effects that startled even nonbelievers.

[2] William Crookes (1832–1919) was one of the preeminent chemists and physicists of his day. He was especially known as a superb experimentalist, his studies leading to important discoveries in spectroscopy, radioactivity, vacuum tube technology, plasma science, and a number of other subjects. Crookes was knighted in 1897, made O.M. in 1910, and elected president of the Royal Society in 1913. He was also an early investigator of séance phenomena, for which he, like Wallace, took much abuse.

[3] The transcription of Dr. Wilson's personal journal of his presidency (item B1965–0014/004[02], University of Toronto Archives) contains a fascinating entry on Wallace for 10 March 1887, one

Figure 17: Toronto Street from King Street, Toronto.

at Prof. Wright's* – Eve. Lecture "Darwinism" – good audience. Bishop [Sweatman]* – "felt relieved at conclusion." – Talk with Prof. W. about Thought Transf. Mesmerism &c.

[Friday, 11 March 1887.] Morning see about lantern getting slides in order – fine – Lunch with Mr. Van der Smissen*, Mr. Allan* & others ... To Hall to arrange lantern &c. ... Lecture crowded 1 3/4 hours very fatiguing.[1]

---

that highlights both class and professional differences of the period: "Alfred Russell Wallace lunched with me to-day, and with him my good friend Horatio Hale, and Dr. McCurdy [very probably James Frederick McCurdy 1847–1935]. Dr. Russell Wallace, the co-discoverer of the Darwinian system which has revolutionized natural history as a science, and gone far beyond that legitimate sphere, in the hands and heads of Herbert Spencer and other metaphysical evolutionists, is one who unquestionably takes high rank among men of science. Personal intercourse with him, however, leads me to class him very far below Darwin. He is taken up with sundry crochets, has made 'spiritualism' his religion, appears to be an extreme communist, and personally has left the impression of a selfish man, somewhat cooly trading on his name in a money-making tour. Above all, I was greatly disappointed with the definition of his ideas as to the inspiration of man in his latest evolutionary stage with the higher moral and intellectual elements of the rational and responsible being. His idea places this acquisition far within the lower races of the present day. They are seemingly soulless. His theory is utterly untenable."

[1] Wallace's March 10th and 11th lectures were both well promoted and reported on by the local press. On the 9th *The Toronto Mail* carried both an advertisement for the upcoming lectures, and a full-column background story. Both the *Mail* and the *Toronto Evening News* carried lengthy ac-

Telegram from Prof. Wesley Mills* of McGill Coll. Montreal about lecture P.M. Mr. [Andrew] Smith* called about lecture "Darwinism" – at 3 tomorrow.

[[pg. 62]]

Figure 18: Sherbourne Street, Toronto.

[Saturday, 12 March 1887.] Writing & Telegram to Prof. Mills* ... To Pub. Lib. met Mr. Douglas L.N. P.M. Lecture to Students of Vet. College[1] 300 young

countings of each lecture the next day. From the *Mail*: "A large audience assembled to hear the lecture, the area and gallery of the hall being uncomfortably crowded." From the *News*: "He is tall and of athletic build, and to all appearance strong and active ... He wears spectacles and features are not unlike Justin McCarthy's [a Canadian historian]. He has a clear silvery voice, and his articulation is perfect. He read his lecture from beginning to end from manuscript. It was a plain, simple statement of scientific fact, extremely interesting but entirely free from all tricks of rhetoric, and absolutely devoid of any attempt at humor." Interestingly, a local business capitalized on Wallace's visit by borrowing some of his remarks to head (the first part in very large print) an advertisement in the 12 March edition of the *News*: "THREE FLIES CAN DEVOUR A DEAD HORSE AS FAST AS A LION! So says Dr. Wallace, and he ought to know; but this is nothing as compared with the capacity of the citizens of Toronto in devouring our New Spring Hats ... – Thos. Thompson & Son."

[1] Wikipedia.org succinctly describes the "Vet. College" as follows: "The Ontario Veterinary College (OVC) is the oldest veterinary school in North America. It was established in Toronto in 1862, by the Scot Andrew Smith, a graduate of the Royal School of Veterinary Studies, Edin-

men, very attentive ...

Evening to dinner Prof. Goldwin Smith* [*and a party of scientific men*] – fine old House – bk. walnut staircase & furniture ... Handsomely furnished fine library &c. [*Afterwards we adjourned to his spacious library, where we discussed politics and literature.*]

[Sunday, 13 March 1887.] Morning wrote to Prin. Grant* about Testimonial. Sent papers home & to Williams*. P.M. to Mr. Allan's* nice house, good collection of Can. birds [*was struck by the large number of handsome woodpeckers and other bright-coloured birds as compared with Europe*] – lady Palmistry tried me failed, except that I was delicate when young.

[[pg. 63]]

[Monday, 14 March 1887.] Morning to School of Science saw Menobranchus (3 gilled water newt) and Amia, a large ganoid fish ... also many specimens of bacteria &c. ...

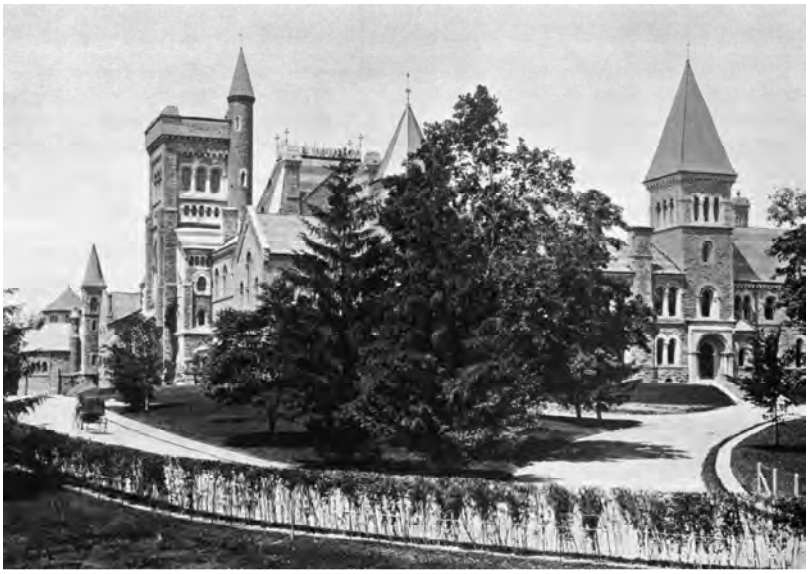


Figure 19: Toronto University.

at 12.30 train to Susp. bridge & Niagara Prospect House hotel – old wooden building ... walk to line of horseshoe falls & beyond, then back to opp.

---

burgh. It later moved to Guelph, Ontario in 1922 and became a founding college of the University of Guelph in 1964."

American falls & half way down road to river steamer. Fine views. American falls very beautiful – Can. grandest – the dense cloud of spray especially in centre of horseshoe gives idea of tremendous force of mass of falling water. (Hard frost)

Horse shoe fall really a double curve meeting in centre at an angle and here the most tremendous mass of spray rises quite obscuring it except when it occasionally shifts a little – The bright green water [[pg. 64]] as it curves over the edge & contrasts with the whiteness below is very beautiful ... Great irregular masses of ice at further side of Can. fall, & all along American, stratified & with fine masses of icicles like organ pipes where water falls less violently ...

My room at end of house with windows toward both falls. At night roar of falls like that of steady gale of wind at sea or the distant roar of London streets in the Parks – When in bed the throb & vibration of the falls can be felt no doubt conveyed by earth vibrations since there is no perceptible motion of the air...

[Tuesday, 15 March 1887.] About 15º of frost last night. cloudy – walked down road to where steamer crosses. no ferns in Limestone or shale rock – fine views of falls – To look at Suspension Bridge – fine & elegant structure, light & well braced, on diag. principle ... [[pg. 65]] 1268 feet between towers – nearly 1/4 mile ... 190 feet above river. After dinner up by falls again, and climbed up in hills to west whence very fine view looking down on central part of Horseshoe falls. These hills of drift or loess – & many scattered blocks on level top, gleams of sunshine occasionally when fine rainbows seen. When great cloud of spray shifts a little with wind the inlet at centre of Horseshoe seen where is the greatest violence of the waters – very grand!

[Wednesday, 16 March 1887.] N. Wind & snow this morning ... cleared at 11 am, went over to American side by Suspension Bridge – fine station close to edge of American falls – over bridge to Goat Island – path to Luna Island at edge of fall. Trees (Thuja americana) old, tall & young coated with ice from frozen spray of falls looking like groves of arboreal corals, magnificent!

fairy-land! On to edge of Goat Island fine views of Horseshoe [[pg. 66]] fall and into bend where force of water greatest – rapids fine. On Three Sisters islands rapids magnificent. Islands rocky & picturesque trees draped with wild vines & virginia creepers [*and afford a sample of the original American forest vegetation of very great interest*]. View from suspension Br. of whole falls very fine – spray of central Horseshoe rose up in cloud over 3 times height of fall or about 500 ft. Bought Photo. of American side of Horseshoe fall $1. [*During these four days I was almost entirely alone, and was glad to be so. I was never tired of the ever-changing aspects of this grand illustration of natural forces engaged in modelling the earth's surface. Usually the centre of the great falls, where the depth and force of the water are greatest, is hidden by the great column of spray ... but occasionally the wind drifts it aside, and allows the great central gulf of falling water to be seen nearly from top to bottom – a most impressive sight.*]

[Thursday, 17 March 1887.] No letter or tel. from Prof. Mills*.[1] To American side – grand view of H. falls from Goat Is. & of rapids from outer 3 Sisters. fine Thuja americana & Tsuga canadensis – 2 ft. diam. 50–60 ft. high – ragged ... Goat Is. partly covered with drift – not a single fern to be found! – exterminated by tourists. Again to Luna Is. – Hard frost ... [[pg. 67]] 3 pm. Bus to Suspension Bridge changed $50 checque at Bank – snowing a little. Sleeper at Rochester – berth at Elmira 11 pm. No. 1 – shaky.

[1] Wallace's contacts with Mills suggest that the two were interested in arranging a lecture in Montreal.

[Final Days in Washington D.C.]

[Friday, 18 March 1887.] Snowing hard – more snow between Balt. & Wash. than near Niagara & Rochester – arrived at the "Hamilton" at 9.50. Breakfast & unpacking – new room No. 42 better ... Wrote to Williams* with checque $35. Afternoon to Geol. Survey – Papers on Niagara and talk with Mr. McGee*, about rapid recession of falls – Centre of Horseshoe has receeded about 200 feet in 40 years. Lower down limestone less thick – river channel narrower. Potomac falls have receeded quite as rapidly in Gneiss, by mere wear [*The conditions that combine to produce the recession of waterfalls are numerous, and so liable to change, that it is impossible to trust to conclusions drawn from observations during limited periods. It is evident, for example, that while the Canadian falls have receded nearly one-third of a mile, the American falls have not receded more than ten or twenty feet.*] ... Two distinct glacial periods in America – first very long, then a mild period marked by forests & also long – then a very cold but comparatively short gl. per. wh. produced the huge terminal moraine S. of lakes.

[[pg. 68]]

[Saturday, 19 March 1887.] Milder, cloudy – setting things straight ... p.m. called on Mr Ulke* ... Evening to Biological Society [of Washington][1] ... Letters from Annie, Willie, Swinton*, Girdlestone[2] and Williams*.

[Sunday, 20 March 1887.] Reading & writing to Swinton*, Mr. Bowles called – Gen. Lippitt* pm. also Mrs. Hibbert and Miss Leonard & Mr. Bowles – introduced Mrs. Bowman (in house) ... Evening with Mr. Armstrong to Sp. meeting at Hall. Speaking poor, – but afterwards good exhibition of trance mediumhip, 15–20 people recognised spirits coming to them with names almost always given – A gentleman medium in Hall got up and said he saw spirit of Horace Greely who told him that a great fire would soon occur in Washington much destruction of property – all would see it [[pg. 69]] shortly – might happen any day now ... If all unconstitutional Acts wh. had been passed by Congress were burnt would make almost as great a conflagration ...

[Monday, 21 March 1887.] Cloudy, to Patent Office – [Figures 20 and 21]

---

[1] Wallace attended at least two of the Biological Society of Washington's 1887 Saturday lectures series. The one this night was on "Earthquakes," delivered by Captain Clarence E. Dutton* of the Geological Survey.

[2] Edward Deacon Girdlestone (1829–1892) was an activist and writer interested in the social problems of his day: *e.g.*, poverty, vivisection, social class, and land reform. For many years he was a vice president of the Land Nationalisation Society, and thus one of Wallace's "right-hand men."

Innumerable models of every possible invention stored in cases. rather gloomy & nothing useful to be seen unless taken out and examined ... The enormous number of different patents for each class of subjects seems to render it probable that many are overlooked and that owing to interest or capital inferior inventions often get used while better ones lie here unknown. Letter to Swinton*. Rec^{d}. $25 from "Independent" for art. on Cope*. Evening snow. To Club. Capt. Dutton* talk about Niagara. Colorado Cañon. Granite bosses in R. Mt^{n}. [Rocky Mountains] &c. &c.

[[pg. 70]]

[Tuesday, 22 March 1887.] Snow on ground. At home reading & writing – walk – letter to Williams* ... Evening talk with Mr. Armstrong.[1] [*at the hotel ... a gentleman and lady of middle age introduced themselves as Mr. and Mrs. Armstrong, and we soon became quite friendly. They had a private sitting-room in the hotel, and I often had afternoon tea with them or spent the evening; and as they were educated people interested in science and literature, while Mr. Armstrong was a spiritualist, they were very agreeable acquaintances. Through them I was introduced to the other occupants of the table – Judge Holman, with his wife and daughter. The judge was a member of Congress, as representative of Indiana, and we had sometimes long conversations at breakfast or dinner on political questions. One of the most interesting was about the Irish in America. He said, "Why does your Government drive the Irish out of their country by not letting them govern themselves? We find them among our best citizens when they have a chance."*] Letter to John [Wallace].

[Wednesday, 23 March 1887.] To Treasury [Figure 22] with Mr. Armstrong – called on Mr. James J. Brooks* chief of Secret Service ... and Mr. Lyman* [*showed us the beautiful machinery for engraving bank-notes, so that every fresh issue – and they are continually being made – may have a new and highly complex pattern.*] ... Saw collections of millions of Notes, and a huge vault with iron partitions about 60 x 30 – filled from floor to ceiling with bags of dollars 1000 in a bag. Total 57 millions in Silver 25 mill. in gold. The double doors closing this vault were of iron or steel like small armour clads – strengthened by cross bars, with huge cylindrical bolts top, bottom, & sides, all connected by a clockwork arrangement which prevented the bolts from being turned back till a certain hour at which the clock was set. These doors were highly finished of polished metal, & fine painted surfaces & must have cost [[pg. 71]] some thousands of dollars each.

[1] William Hamilton Armstrong, of Milford, Pennsylvania, was, according to the title page of his 1889 report *Internal Revenue Taxation in Its Relations to Temperance and Prohibition*, "for many years Assistant Solicitor in the Internal Revenue Bureau, Washington, D.C."

Figure 20: The Patents Office.

Figure 21: The Patents Office: Museum of Models, South Hall.

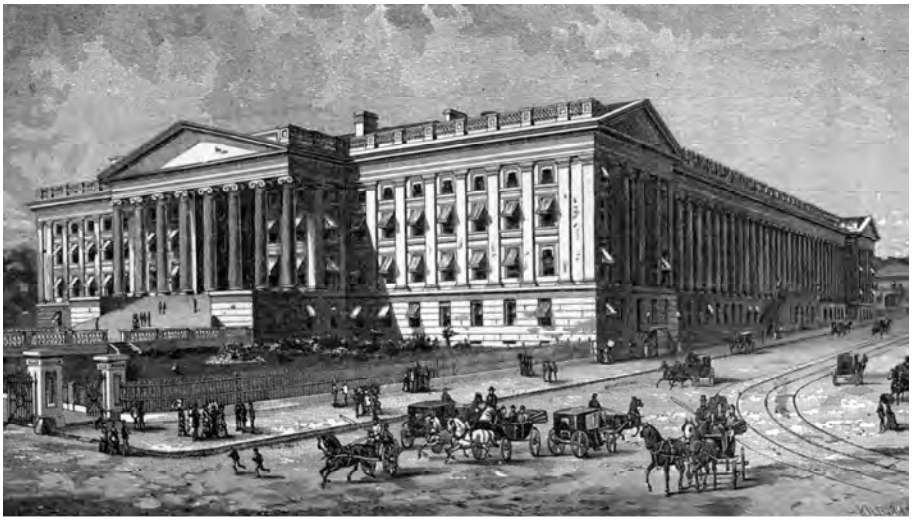


Figure 22: The Treasury Building.

Mr. Lyman gave us some account of his wonderful spiritual experiences. On one occasion recently with a trance medium she said a friend of his was present, then gave an official title, and a lady's name, – then holding out her hand said "ashes" "ashes" he says "ashes". Still Mr. Lyman could not think of who was meant till the medium who was quite a stranger to Mr. L. gave his full name, and said "You know me" when it suddenly flashed upon him who it was – A friend, whose wife was named as given (but the wife not known to Mr. L.) The gentleman's body had been cremated, & Mr. L. had recently attended his funeral!

Had also had numerous cases of materialized spirits reading books in dark under most rigid test conditions varied and repeated. Also of moulds of spirit hands obtained under most stringent [[pg. 72]] test conditions.

Evening to Keeler's* with Mr. & Mrs. Armstrong. Mrs. & Miss Holman &c. ... 30 people – good seance – question asked for communication from a lady – written on paper – "Perhaps she is going up the golden stairs" – Those were the last words she spoke before she died She said "Stand away from the bed I am going up the golden stairs" – Two other uncommon names with initials correctly given, to strangers ... besides many others to frequenters – One from William not in his writing ...

[Thursday, 24 March 1887.] Morning to Deaf & Dumb College [now Gallaudet University] ... saw teaching to speak – rudimentary sounds &c. Pres^{dt}. Gallaudet* a very intelligent man – learnt gesture & sign language before he

learnt to speak – his mother deaf & dumb. [[pg. 73]] His father[1] originator of deaf-mute instruction in America. Speaks by gestures & finger alp. [alphabet] as easily and rapidly as with speech. At college teach all the usual College courses – languages, philosophy, Chemistry, biology &c. &c. [*There are about one hundred and twenty students from all parts of the Union, and the buildings stand in one hundred acres of beautifully wooded grounds, within ten miles of the Capitol. The more advanced students learn every subject taught in the best colleges, such as mathematics, the ancient and modern languages, the various sciences, moral philosophy, etc, and all these subjects are taught as thoroughly and as easily as to those who possess the power of speech. But besides being taught to use the gesture language as easily and as quickly as we use ordinary speech, and to read and write as well as we do, they are also now taught to speak – a much more difficult thing, and long thought impossible, because, not being able to hear either the teacher's voice or their own, they have to be taught by watching their tutor's mouth while speaking, and then trying to imitate the movements of the lips and tongue, aided by feeling the throat with their fingers. It is a very slow process, and success depends much on the special imitative faculties and vocal organization of the learner. Even in the best cases there is a hardness and want of modulation in the voice, but they learn to say everything, even to make a speech in public, and at the same time they learn what is termed lip-reading – that is, to know what a person is saying by watching the motions of the lips and throat.*] ... Evening writing paper on "Immortality". To Mr Armstrong's room for talk.

[Friday, 25 March 1887.] Morning writing p.m. to Cemetery. Evening with Mr. Armstrong to Mrs. Case's, – read paper on "Proof of Immortality"[2] &c. discussion – Mason – ignorant! but yet discussed & objected largely – fine.

[Saturday, 26 March 1887.] fine. With Mr. Armstrong to Gov. Printing Engraving office. To go on Tuesday. Called on Mr. [Charles S.] Fairchild* at Treasury. Evening to call on Mrs. Hibbert & Mr. Hibbert.

[[pg. 74]]

[Sunday, 27 March 1887.] Morning with Prof L. F. Ward* to High Island found many interesting plants, got specimens – walk about 9 miles very cold wind. home about 4.30. [*our first really good spring botanizing was on March 27, when we went a rather long walk of about nine miles to High Island, a*

[1] Thomas Hopkins Gallaudet (1787–1851).

[2] Wallace's "paper on immortality" may refer to a short response he wrote to an inquiry from *The Christian Register* (Boston) that was printed in that paper's issue of 7 April 1887 as part of a symposium on the subject. But it also may refer to the rather long paper ("If a Man Die, Shall He Live Again?") he wrote for presentation at the spiritualists convention in San Francisco in June.

locality for many rarities. Here we found several pretty or curious spring flowers, the most interesting to me being the strange little white-flowered umbelliferous plant, Erigena [Erigenia] bulbosa*; but other peculiar American plants – Claytonia, Podophyllum, Jeffersonia, etc. – I now saw in flower for the first time. During these excursions we had many long talks and discussions while taking our lunch. At that time I was not a convinced socialist, and in that respect Lester Ward was in advance of me, though he could not quite convince me. He was also an absolute agnostic or monist, and around this question our discussions most frequently turned. But as I had a basis of spiritualistic experiences of which he was totally ignorant, we looked at the subject from different points of view; and I was limited to urging the inherent and absolute differences of nature between matter and mind, and that though, as a verbal proposition, it may be as easy to assume the eternal and necessary existence of matter and its forces as it is to assume mind as the fundamental cause of matter, yet it is not really so complete an explanation or so truly monistic, since we cannot actually conceive matter as producing mind, whereas we certainly can conceive mind as producing matter.*] Evening to Prof. Coues* – Mr. Bowles, Mrs. Hibbert, Miss _____ and several other ladies – & Mrs. Anderson a medium. Prof. Coues* mesmerized her – cataleptic – afterwards went into trance and wrote a long message backwards as she always does. very wet night.

[Monday, 28 March 1887.] Washing & packing up plants (10 sp.) sent to Miss Jekyll*, Munstead Heath, & letter. Afternoon call on Prof. Baird*, out. Evening to Cosmos Club.

[[pg. 75]]

[Tuesday, 29 March 1887.] Miserably cold strong wind. Thermometer 28º in shade all day! To Bureau of Engraving [Figure 23] with Mr. & Mrs. Armstrong, Miss Holman & friends – saw engraving notes, wonderful engine-turning lathe – printing the notes by hand or stream presses – more women than men employed – women get 1 1/4 doll. a day = 5/–, skilled men printers $5! Engravers about $2500 a year work all piece work – hours 8 to 3 and stop as long as they like for meals ... about 400 men and 450 women & girls employed – Print notes and all the Internal revenue stamps which are very elaborate and numerous ...

~~Evening called~~ P.M. called on Prof. Baird* offered to send books home – & on Prof. Coues* ... Evening called on Mr & Mrs. Ward in their room. talk on Ethnology, Deaf & dumb, – & on to Spiritualism – Interested – believers, not seen anything

[[pg. 76]]

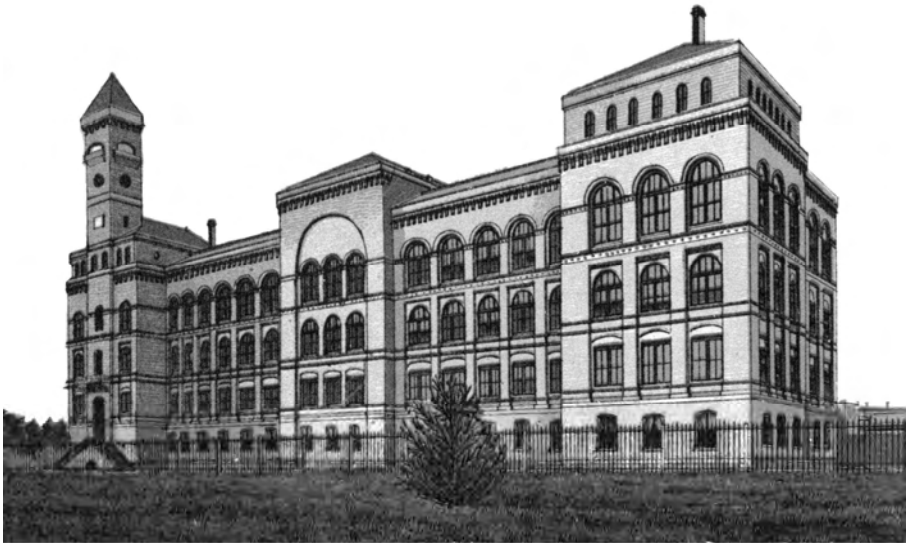


Figure 23: The Bureau of Engraving and Printing.

[Wednesday, 30 March 1887.] Called on Mr Phillips* & on Col. Morse of Redpath Lecture Lyceum. Advised to arrange with R. L. L. for a set of Lectures at Colleges, Institutions &c. at fixed terms ... Then to get young Denton* as advance Agent, and take Swinton* with me as personal assistant – & fill up lectures in all adjacent towns & Cities ... Expenses $25 a week each. Give small salary say $5 a week & a liberal share of profits say 10–15 or 20 p.c.

Evening Mr. Bookwalter* of Springfield, Ohio, called 1½ hours talk & friend – Will see me in Cincinnati. Then to Prof Ward*. Talk and supper of Biscuit & cheese with a beer ...

[[pg. 77]]

[Thursday, 31 March 1887.] Snowing fast all morning arranging for packing ... lent "Miracles" to Mrs. Ward – read Hale*s "Origin of Language" ... Evening to Col. Phillips*, Mrs. P. & 3 ladies. Talk of Malay Arch. lectures – Spiritualism &c. ...

[Friday, 1 April 1887.] Friday – Snow on ground like January! To Capitol law lib. with Mr. Armstrong – notes of case of disputed will on acct. of Belief in Witchcraft. To Gen. Lib. notes of American houses – & of young Snakes running down mother's throat ...

Evening called on Mr. Nordhoff* talk about Niagara, Irish matters, California, Land question &c. &c. – Snowing.

Saw Mr. Frank Stockton* in Hotel. [*There was a very good circulating*

library of general literature to which I subscribed for a quarter, and was thus enabled to read many of the gems of American literature which I had not before met with. Among these I read a good many of the works of Frank Stockton, perhaps the most thoroughly original of modern story-writers. "Rudder Grange" and "The Adventures of Mrs. Leek and Mrs. Aleshine" are among the best known; but I found here quite a small book, called "Every Man his own Letter-Writer," which professes to supply a long-felt want in giving forms of letters adapted to all the varied conditions of our modem civilization. The result is that these conditions are found to be so complex that to merely state them from "so-and-so" to "so-and-so" takes up much more space than the letter itself, and is made so humorously involved that I was, and am still, quite unable to read them for laughter. One day a small, active-looking man was pointed out to me as this very clever writer, and though I did not speak to him, it is a pleasure to recall his appearance when I read any of his delightfully fantastic works.]

[[pg. 78]]

[Saturday, 2 April 1887.] Snow – sunshine. Afternoon to lecture on Forestry in Nat. Mus. not very good[1] – usual illust. of injury to climate – water supply, winds, &c. but not well illustrated . . .

Eve. at home & with Mr. & Mrs. Armstrong.

[Sunday, 3 April 1887.] Called on Col. Phillips* morn[g.] talk about Indian socials state, &c. . . . Afternoon walk of N. Side of Potomac in Virginia[2],

---

[1] *The Proceedings of the Biological Society of Washington, Volumes 4–6* indicate that the title of this lecture was "Our Forestry Problem," and that it was delivered by Dr. Bernhard E. Fernow (1851–1923), a prominent American forester who worked for the Department of Agriculture.

[2] As there is no such thing as a "north side of the Potomac in Virginia" (at least, near D. C.), Wallace's remarks here are difficult to interpret. "I send you by this post (but it may perhaps be delayed) a tin box with a lot of bulbs of spiny plants gathered in an excursion yesterday with Prof. Ward, in the woods on the N. bank of the Potomac R. There are a good lot of the Erythronium Americanum (yellow) which grows in masses in the shade among leaf mould, or stiff granitic clay, indifferently. If you will plant them in a bed anywhere in your garden I dare say they will grow. The purple leaf is Tipularia discolor a rare American orchid – "The Crane Fly Orchid" – this grows in very light half decomposed leaf mould, and if planted in a bed in your greenhouse will no doubt flower. There is also one plant of Aplectrum hyemale – "Adam & Eve Orchis" – much more common but the tubers were mostly so large that I had not room for them in the box. The leaves are green pale striped, and rich purple beneath. This also in leaf mould. Both flower in July or August after leaves have died away.

The flora here is rich, there being about 1300 species of flowering plants and ferns within a dozen miles of the city, though a considerable number of them are extremely local. It must be grand here in summer when the Tecoma radicans with its great scarlet blossoms is in flower. It climbs over trees & bushes just like our Clematis. The vines too are most luxuriant running up to the tops of the highest trees, while the variety of the trees & shrubs is most puzzling. But there is a bareness on the ground, a want of any carpet of vegetation like our turf, which is disagreeable. I

collected Tipularia & Erythronium. Eve. to Prof. Coues* – talk – Theosophy . . .

[Monday, 4 April 1887.] called on Sir L. West* . . .

Mrs. de Puy – Gen. Lippitt* . . .

P.M. Hair cut 25c.

Wrote to Mitten – box of plants – to Edwards* there Friday morn$^{g.}$ – to Dury*, Cincinnati, offered [[pg. 79]] lecture free for Nat. Hist. Soc. B. fund . . . Evening to Cosmos Club. – Prof. Langley* – Prof. Clarke – Ward*, Newcombe [Simon Newcomb?] &c. &c.

[Tuesday, 5 April 1887.] Called on President [Cleveland]* with Judge Holman*. Conversation on California chiefly wines, raisins &c. . . Pleasant – No ceremony – standing by his Lib desk – faces large oval room – 5–6 visitors . . . [*Before I left Washington, Judge Holman took me one morning to call upon the President, Mr. Cleveland. The judge told him I was going to visit California, and that turned the conversation on wine, raisins, etc., which did not at all interest me. There was no ceremony whatever, but, of course, I had nothing special to say to him, and he had nothing special to say to me, the result being that we were both rather bored, and glad to get it over as soon as we could.*]

Went over White House – fine rooms East room grand [Figure 24] – white & gold largely decorated – Portraits of Washington & wife only. Fine Conservatory . . .

Aft. packing Inq. about tickets &c. Evening packing & writing to Annie. [*Washington itself is a very fine and even picturesque city, owing to its designer having departed from the rigid rectangularity of most American cities by the addition of a number of broad diagonal avenues crossing the rectangles at different angles, and varying from one to four miles long. The broadest of these are one hundred and sixty feet wide, planted with two double avenues of trees, and with wide grassy spaces between the houses and the pavements. Wherever these diagonal avenues intersect the principal streets, there are quadrangular open spaces forming gardens or small parks, planted with shrubs and trees, and with numerous seats. Conspicuous in these parks are the many specimens of the fine* Paulowina [Paulownia] imperialis*, one of the handsomest flowering trees of the temperate zone, but which rarely flowers with us for want of sun-heat. It has very large cordate leaves and erect panicles of purple flowers, in shape like those of a foxglove. It was a great regret to me that I had to leave before the flowering season of these splendid trees.*

---

do not know whether it is the same everywhere, but the ground around all the towns & cities & villages seems to have been exhausted & to bear only a scraggy weedy vegetation. In summer and autumn however it is no doubt very different, and the display of the Compositæ then is said to be fine." (from a 4/4 letter to Mitten, NHM WP1/5/23)

Figure 24: Historic East Room in the White House.

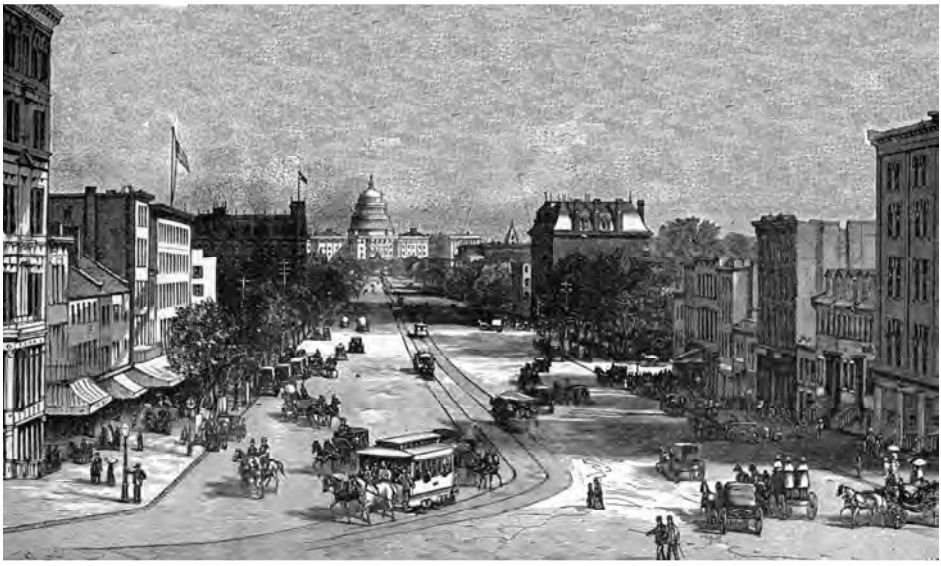


Figure 25: Pennsylvania Avenue from the Treasury Building.

It is, however, a great pity that when the city was founded it was not perceived that the whole of the land should be kept by the Government, not only to obtain the very large revenue that would be sure to accrue from it, but, what is much more important, to prevent the growth of slums and of crowded

Figure 26: Pennsylvania Avenue from the State Department.

insanitary dwellings as the result of land and building speculation. As it is now, some of the suburbs are miserable in the extreme. Any kind of huts and hovels are put up on undrained and almost poisonous ground, while in some of these remoter streets I saw rows of little villas closely packed together, but each house only fifteen feet wide.

My three months' sojourn in Washington, though a considerable loss to me financially, was in all other respects most enjoyable. I met more interesting people there than in any other part of America, and became on terms of intimacy, and even of friendship, with many of them. ... For many reasons I left Washington with very great regret.]

[Westward, D.C. to Cincinnati]

[[pg. 80]]

[Wednesday, 6 April 1887.] Ticket. Packing. Talk with Judge Holman* about Irish in America. He has known them for 50 years. Near him in Indiana is a township half Irish half Germans both Catholics settled 40 years ago. The Germans have increased – the Irish diminished, by emigration further west & other causes. Many of the Irish became public men of eminence & many took a good position. They cultivated their farms as well as the Germans & showed equal industry. On the whole Judge Holman* is of opinion, that, considering the low class of Irishmen who came over & their usual extreme poverty as compared with the Germans & other emigrants it can not be said that they are at all inferior in industry & in success in life.

[[pg. 81]] Sent package to Williams*, Boston, cont^{g}. Lamp, map & rug, ulster, arctics, fur gloves &c. ... 3 pm. to train for Shenandoah Junction. [*I had two lecture engagements at Cincinnati, and had also an invitation to visit Mr. W. H. Edwards, the lepidopterist, whose book induced Bates and myself to go to Para, and who resided at Coalburgh, in West Virginia. I was also very anxious to see a new cavern which had been discovered about ten years before, and which was said to be far superior to the Mammoth Cave in the variety and beauty of its stalagmitic formations, though not so extensive. I therefore took a rather circuitous route in order to carry out this programme.*] Country towards Harper's ferry fairly cultivated, & a few fields green with young wheat. A little green grass also seen in damp places! Harper's Ferry – picturesque rocks, & gorge like Wales. Shen. Junc. to Luray valley open with background of mountains. country undulating, cultivated in parts – ploughing. Supper & bed at Livery Inn, cold night [... *reached Luray station about 9 p.m. There was a rather rough hotel here, where I had supper and bed*]. Morning after Breakfast, waggon to Cavern explored for two hours – very remarkable. every form of stalagmite & stalactite it is possible to conceive. The forms like hanging folds of drapery are exquisite. pillars of any form & size some over 50 ft high – one grand round stalactite about 60 feet long nearly reaching floor. Moorish tent lovely – Ball room [[pg. 82]] exquisite. fine musical notes like piano tune can be played on them. Huge fallen masses of stalagmite – over which fresh stalactites have formed. Some of drapery beautifully translucent showing bands & stripes like a shawl. Many of the stalactites curiously ribbed other with lateral growths & semi horizontal processes very curious.

Many old stalagmite floors in cave with clay beneath full of bones of bats &c. In one place human bones are embedded in floor at foot of a chasm. Supposed Indian in dark fell & died. In another floor a print of a mocassin is

petrified.

Under the stalagmite floor in one part is a layer of dark brown carbonaceous matter. Blind insects & centipedes are found in cavern. Bats, Rats & mice numerous with large eyes! what do they feed on. [[pg. 83]] Two or three miles of passages, several of the halls ab^{t}. 100 feet high, & completely draped with stalactites – some resemble waterfalls, some organs, some statues. vistas often very grand when lit by electric light.

Luray to Waynesboro Junc. nearer west <illeg.>. Blue ridge, limestone land very stony, woods young growth. Dinner at Waynes [*I dined, and had to wait two or three hours for the train on at 5 p.m.*]. – walk on hill – Epigæa repens in flower but generally no more spring vegetation than with us in Feb! On at 5 pm to Clifton Forge. 8 pm. Hotel full – to small hotel dirty – ruinous – small dirty room, broken crockery, no sash weights – prop window open with piece of rough wood – tea bad – hay bed on laths hard.

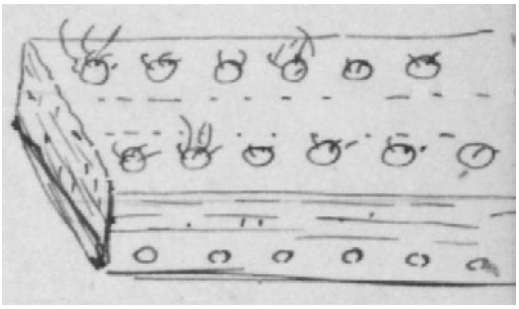
[Friday, 8 April 1887.] up at 6 – rough breakfast. got into wrong train. started, ticket taken stopped train a mile on walked back. [*I was so unlucky as to lose my train by getting into the wrong one, which was standing ready on the line with steam up. The conductor, after seeing my ticket, stopped the train and set me down, telling me that if I walked back quickly I might be in time. But I had a heavy bag to carry, and a mile to walk, and arrived dripping with perspiration to find that the*] train just gone 5 min. none till next day. wired to Edwards 8 am [*and spent the day exploring the country for several miles around*].

[[pg. 84]] At Clifton Forge 10 am. walked south up hill, & then along valley to gorge of Jackson R. branch of James R. 2 m. above junction. Grand arched strata.

No flowers but a few barely opened buds of Epigæa & red maple & yellow _____. Fine mountain scenery range beyond range like Wales but not so ~~rocky~~ jagged & more wooded. Roads & paths very rude & new looking. Everything untidy & unfinished. Kalmia the only pleasant green in the woods. Woods all new growth & lots of trees lying cut. Much pine, oak & acacia. Afternoon fine scenery, walked 2 miles along S. ~~bank~~ side of river along a rough road on side of mountain – fine views. patch of Rhododendrons first seen wild. Tulip trees with big capsules handsome Red maple brilliant, – yellow

Benzoin odiferum [*i.e.*, *Lindera benzoin*] "Spice bush". [[pg. 85]] Kalmia forming green undergrowth. no flowers & but few leaves of herbaceous plants appearing.

[Saturday, 9 April 1887.] Left Clifton Forge at 7 am. up long wide valley – at Lowmoor (1st station) a number of iron furnaces in double rows with roadway between for filling ...

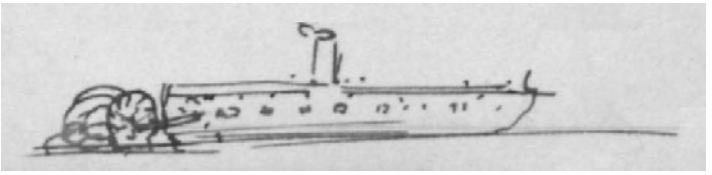


Just beyond a square mound in valley apparently end of nat. rocky mound ? earthwork ...

At Covington (7.35) a flat valley about ½ mile wide and 1–2 miles long with large farm & village ... Some mounds of drift towards sides of valley – rich alluvial soil? Lake basin.

Further on valley branches & twists much, – tunnels cutting off points – arched rocks – on some poor brown pasture a few poor looking sheep & lambs ... [[pg. 86]] Backbone Station – 8.10 – among high and often dry valleys near summit of Alleghanies, then out again into large valley still up. at 8.20 tunnel & deep cutting – out into valley again, still up. A good country road up valley to Alleghany Station at 8.25. very steep slopes, all wood, firs & oaks, all small & scraggy. At 8.30 tunnel on summit level coming out of which we curved into a wide deep valley with stream flowing west. At 8.40 "White Sulphur Springs" in an open basin quite surrounded with mountains. pretty church, neat houses & roads & painted wood fences! the first bit of neatness in landscape seen! some fine pines. The ground ridged & undulated mountains wooded to top, remind one of Switzerland without its great charms, the lowland and upland pastures and the snowcapped summits. Further on we have rock in hor. layers instead of the highly inclined schists & slates, & curved strata on [[pg. 87]] east side of range. The valley wide and many good looking fields, often still full of the stumps of the forest. Very light small ploughs used which pass readily close round these – and also easy to work on hilly ground. Snake fences everywhere – queer little wooden huts dotted about, ragged dirty children. A long tunnel, over a mile, cuts off great bend of river, 10 miles long. The Greenbrier river a quiet

stream has greenish water & full of logs cut on surrounding mount[n]. & floated down. At Hinton the New River joins coming from the central western valley of the Alleghanies in N. Carolina ... The New River is more rapid; the valley gradually narrows, till we have grand crags and precipices, enormous fallen boulders, and the river foaming over ledges and rapids. Hawk's nest is a fine point, and on to Kanakwha [Kanawha] where the river falls a few feet over rock ledges. Here we are in the coal region of W. Virginia & the river now the Kanakwha [Kanawha] River wh. joins it from the N.E. is navigable down to the Ohio. A steamboat with stem paddle here seen



[[pg. 88]] Climate now warmer. Peach trees in full blossom. Saw a greenhouse attached to small house! A park-like grass field seen, the first! All down the valley in alluvial flats the Platanus occidentalis looks very curious its upper half pure white as if whitewashed. [*This is the colour of the young bark before it flakes off, as it does on the trunk and larger limbs. The peculiar appearance is not noticed by Loudon, so perhaps it is not produced in our less sunny climate.*] Reached Coalburg at 3. Mr. Edwards* met me not seen him for 40 years! Nice house with broad verandah in sloping orchard at foot of mountain – which rises forest-covered behind. The grass full of the beautiful wh. fl[s]. of the Blood-root (Sanguinaria can[d].) and yellow & blue violets ... fine view of river and high slopes [*and here and there the chimneys of a colliery engine*] like some of the S. Wales Valleys ...

[Sunday, 10 April 1887.] Walk with Mr Edwards'* son to top of mountain behind the house – fine view, narrow ridge.

Afternoon saw some of Mr. Edwards'* coll. of American butts. [butterflies] drawings of larvae &c. at [[pg. 89]] each moult. eggs, pupæ ... most elaborate & accurate ... wonderful cases of dimorphism ...

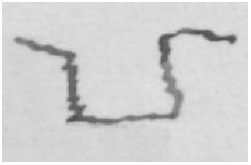
[Monday, 11 April 1887.] Drive with Mr. Edwards* down valley – hot, saw Pap. _____ , Vanessa antiopa &c. ... Dodecatheon americanum [?] in flower, bright yellow ... Evening visit. Reading interesting book "Our Country its possible future & its present Crisis" by Rev. Josiah Strong D.D.[1] Cincinnati,

[1] Josiah Strong (1847–1916), one of the founders of the progressive Social Gospel movement in late nineteenth century America.

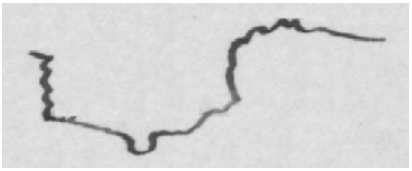
Baker & Taylor, 9 Bond St., New York – Good account of nat. resouces of America, of the Perils from Immigration, Romanism, Mormonism, Socialism, Wealth, – Cities &c. ... striking facts, powerfully written. Sent box with Anemonella thalictroides &c. to Miss J[ekyll].* fern, – dodecatheon ? ...[1]

[Tuesday, 12 April 1887.] Letter to Pres. Myers*, Belmont Coll. Drive to call on Mrs. Buck – out – saw Mr. Buck & young lady. Hot. reading. Village here very untidy – rough cottages, pigsties [[pg. 90]] next road fences of old broken bits of board, ground all irregular & unused ... (Squirrels in woods) Temporary occupiers – miners. Another village close by the Miners are mostly owners of the Cottages, which are neat & almost pretty nicely painted & with gardens which are cultivated, though not very ornamental. Mr. Edwards* who has been in the valley 25 years since its opening says that the Irish do well, are industrious & very intelligent & enterprising & many of them rise to high positions ... As workmen they are better than the welsh & equal to the Germans ...

[Wednesday, 13 April 1887.] Train to Cincinnati at 8.30 am. Mr. Edwards* to Charleston pretty town with nice hilly country... Pass now into the salt district below the [[pg. 91]] coal. More whitewashed American planes in alluvial bottoms. At 11.30–12.0 passed through a series of small valleys between low vertical cliffs of sands[t]one, some



then some



[1] "When I was at Coalburg, W. Virginia, the other day at Mr. Edwards'* I sent a few more plants to Miss Jekyll*, a lot of a pretty bulbous American Anemone like our wood anemone but with numbers of flowers on each plant, and a few "walking ferns" which grow there abundantly on the rocks – Mr. Edwards' orchard & the forest behind his house are full of the beautiful white flowers of the blood-wort (Sanguinaria) which are like the flowers of the Japan anemone. I also saw the first flowers of the yellow American Dog's Tooth violet, while all the gardens were full of peach trees in blossom looking lovely." (from a 4/17 letter to Violet, NHM WP1/5/25)

or thus, many lateral valleys very picturesque all woody with slopes above & hills – much like the Tunbridge Wells cliffs ... sometimes all pines, sometimes decid. trees ... In the villages Peach trees very gay – no sign of verdure yet in woods, but many green fields & pastures after passing Mt. Sterling, Kentucky. Hor. [Horizontal] oolitic looking rock in narrow hard & soft beds, but Silurian! In one place an actual short piece of a hedge seen!

Cincinnati at 6 pm. on the way gained an hour arriving at 10.30 & leaving it at 9.30 – [[pg. 92]] Letters on arrival from Mitten, John [Wallace] & Riley* –

[Thursday, 14 April 1887.] Mr. Charles Dury* called, and Mr. Warder*? Later called on Mr. Skinner* ~~called~~, showed us fine arrow head of Jade & many others – took us for a drive round beautiful suburb of Clifton – fine houses in spacious grounds grass, wild flowers, & trees & shrubs, but no fences between or at roads giving a delightfully rural aspect ... Hill & deep abrupt valleys all round Cincinnati, the city in a dense smoky hollow – home to dine with Mr. Skinner* talk about Spiritualism, & pyramid & bible measures. Two hours of Hebrew & numbers! deducing π and all kinds of geometrical data and measures [[pg. 93]] from Hebrew biblical names! a Paradoxer! [*afterwards gave me many papers he had published, but I was quite unable to follow them, or to decide whether or not there was anything of value in them. In all other subjects he was a pleasant companion, interested in local antiquities, and an enthusiastic lover of native birds.*] Evening D^{r}. Heighway* & D^{r}. Langden [Langdon*] called. Dr. H. stayed 1½ hours talking of his own doings & sayings & thinkings – his philosophy, his admiration of H. Spencer – his recollection of Sir C. Lyell &c. &c. &c. till I was tired. Called on Mr. Perry not in. very hot today therm. 80º ... very warm but fresh air.

[Friday, 15 April 1887.] R. H. Warder* Esq. called also Mr. Skinner* & Rev^{d}. H. D. Moore*. Mr. Warder invited me to his house to morrow & to see mounds.[1] D^{r}. Walter A. Dunn [Dun*] also called and invited me to go to see mounds offered to take me Sunday morning @ 10 am.

[[pg. 94]] With Mr. Dury* to Cuvier Club.[2] nice birds. Library – reading & Chess opens every day & Sunday. Left letter of Introduction. Mr. Perry a lawyer not in –

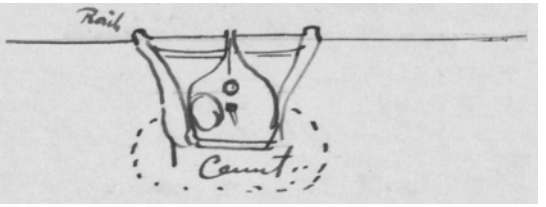
In large shops here an ingenious arrangement for communicating with cashier. Fine wires stretched overhead from each counter to cashier's desk, on

[1] Wallace is referring to the earthen mounds built by prehistoric cultures ("Mound Builders") of North America over a period of several thousand years ending roughly in the 1500s. The Cincinnati region hosts some particularly fine examples of these structures.

[2] The Cuvier Club was founded in 1871 primarily as a sportsmen's society, but they soon expanded their mission to support natural history collecting and educational and library services. At the time of Wallace's visit they were located at No. 30 Longworth Street.

each of these runs a little metal box – the bill & cash is put in this & with a push runs rapidly across like a little railway. Bill returned with change in the same way. continual rattle of these small railway boxes going & returning ...

Tramways in all Cincinnati chief streets – Some worked by an endless rope underground connected with cars by steel arms beneath car & clips [[pg. 95]] go round angles &c. work well. also steep inclines up the hills round the city, up which car & horses are taken on a level platform!



It looks very curious to see cars running along the street apparently without cause. D^{r}. Heighway* in afternoon to Art Museum a few good & many bad pictures – vile copies of old masters – gorgeous silver and bronze work, Japanese vases &c. ... fine coll^{n}. of stone implements &c. ... a few very remarkable ... fine series of hematite implements ... D^{r}. H. has curious soapstone, marble, hematite, manganese & other minerals from N. Carolina S.W. of Ashville ... [[pg. 96]] Public Lib. fine building[1] – Young Mens' Mercantile Lit. Ass. good reading room[2] ...

[Saturday, 16 April 1887.] Cold With Mr. Skinner* to meet Mr. Warder* at Valley Junction about 20 miles below Cincinnati. Drove in light waggon to see some mounds. One very large tumulus about 25 feet high had been opened by pit in centre to bottom. Went to adjacent farm house found farmer had opened it last winter, had found a skeleton, & 2 copper bracelets, also a large stone axe, a finely worked adze, two large flint spear heads one very finely formed, a round stone ball, and a lamp of pure graphite or plumbago. Mr. Skinner* believes graphite never found before in mounds.

Coming back visited a very large elongate [[pg. 97]] mound overgrown with trees close to a village.

Valley of Ohio very pleasant, with its rich fields & low wooded hills of varied outline. Many birds about, the brown thrush, red-winged blackbird, – & many others ... The red-bud or American Judas Tree (Cercis canadensis)

[1] The library at 6th and Vine that Wallace visited opened its doors in 1870, and in its time was a much-admired facility.

[2] In 1887 the library of the Young Mens Mercantile Library Association was located in the Cincinnati College Building, Walnut Street, between Fourth and Fifth Streets. It was, and still is, a subscription library, one of the few remaining in the United States.

abundant in the thickets in full blossom. Claytonia virginica forming sheets of blossom on skirts of woods. Many fine trees, and some patches of virgin forest on hills about North Bend ...

The people here "enthuse" very much – A young naturalist is quite "enthused" with the study, &c. &c.

[Sunday, 17 April 1887.] Very wet all day – At house writing letters to Violet,[1] &c. & Willie – To Mercantile Lib. afternoon D[r]. Longden [Langdon*] called morning.

[[pg. 98]]

[Monday, 18 April 1887.] Wet, packing – called on Judge Cox*, Pres[t]. of Cincinnati University – Afternoon at Mercantile Lib. seeing Capt. Mackenzie* play 7 games of chess simultaneously. Lost 2, won 4 – 1 not finished in 1¾ hours ...

5 pm. to Avondale to Mr. Dury's* – small wooden house ... Frost at night.

[Tuesday, 19 April 1887.] Pretty villas & grounds – open, nice grass. Walk in woods pm. fine flowers –

Asplenium montanum? – Anemonella thalictroides (=Thalictrum anemonoides) – Dicentra cucullaria – Stylophorum diphylla [diphyllum] – Claytonia pulchella [?] Spring Beauty – Phlox divaricata – Viola pubescens – Collinsia verna (Innocence; Blue-eyed Mary) – Delphinium tricorne – Ranunculus repens

In gardens –

Pyrus japonica – Cherries – Pears – double wh. Spiræa – Cercis canadensis

[[pg. 99]] In the woods fine deep leaf-mould – acres of Dicentra – large patches of Claytonia pulchella [?], numerous clumps of Anemonella thalictroides, and Meconopsis diphylla yellow and blue & white violets – Podophyllum leaves in abundance. Jeffersonia diphylla flowers over leaves abundant ... Trillium buds showing – large patches of Erythronium americanum – some yellow flowers & some patches of white flowers. Large shining

[1] "This is a dreadfully smoky city as bad as Glasgow or Newcastle, but all around are hills covered with pretty villas each with grass all round them planted with trees & shrubs & no fences at all either between the houses or the roads, which looks quite charming and rural just like a lot of nice houses in an extensive park. In some of the pretty villages near I have seen the same thing. It saves the expense of fences and looks very nice. Hardly any body seems to have flower or vegetable gardens here so it does not matter being open. Gardeners I suppose are dear & scarce & people buy their vegetables & flowers. In the grass & woods are great patches of a pretty little white flower striped with pink called "Spring-beauty" (Claytonia virginica) and the people here greatly admire our common dandelion as a beautiful flower!" (from a 4/17 letter to Violet, NHM WP1/5/25)

flowered Ranunculus ? ~~fasciculatis~~ repens, lovely white and blue annual flowers of Collinsia verna.

Evening Mr. James* & D^r^. _____ called – game at Chess.

[Wednesday, 20 April 1887.] Fine. walked into some fine beech woods with valleys & streams – flowers much same as yesterday but no Collinsia, Trillium, & little Erythronium – an orchid, probably Habenaria, coming up in clumps. Saw a fine villa, handsomely finished in ornamental woods ... [[pg. 100]] Afternoon to Zoo. Gard., very brilliant Mandrill[1] – <illeg.> violet tints behind ... fine grizzly bears & Giraffes, undulating grounds – grass, woods, lake ... Evening an interviewer called.[2] questions displayed remarkable ignorance as to geography, cannibals! – Darwin &c. ... monkeys & man. Abused the queen – English accent, taken from Lord Dundreary & roughs. America the first country in the world! &c. &c. &c. ...

Mr. Dury* once bitten by a dead rattlesnake nearly cost him his life. In ~~South~~ Florida shot a very large rattlesnake, cut off its head to take home to examine dentition & success^n^. of fangs. Opened mouth with stick & saw it had tremendous fangs, & proceeded to wrap it up in handkerchief, while doing so he supposes he touched some nerve on the cut portion, for the mouth snapped and a fang pierced his thumb. He instantly put a strong ligature round the [[pg. 101]] thumb at base, got a friend with him to cut it open with a penknife, & sucked it. On releasing the ligature, after ~~some time~~ an hour his arm swelled up & all his side & he suffered great pain, ~~so the ligature was replaced & kept on for~~ water was applied & he drank a quantity of whiskey, & kept quiet for some days the result being that the thumb suppurated, & decayed half the bone of term. joint coming away & remained permanently reduced to half the size of the other with a small nail. It is <illeg.> quite serviceable & being hard & small is for many purposes more useful than the other.

[Thursday, 21 April 1887.] Looked over Mr. Dury's* Collection of Land & Fresh w. [water] shells – many fine forms – strange contractions of lip in many species to keep out birds, ants, &c. Unionidæ very fine, some solid – some curiously tuberculated or ribbed & one with several long spines! Finely & variously coloured nacre inside – white, pink, yellow or orange – varied forms of two sexes in many species! Afternoon walk to Bloody Run[3], scene of a

---

[1] The Cincinnati Zoo and Botanical Garden opened in 1875, making it the second oldest zoo in the United States. It remains at its original location, now listed as 3400 Vine Street.

[2] The interview was printed in *The Cincinnati Enquirer* issue of 22 April 1887. See http://people.wku.edu/charles.smith/wallace/S735A.htm

[3] This section of North Avondale (now known as Victory Parkway) has obscure historical ties. Some sources refer it to a minor Indian battle, others to runoff from an old slaughterhouse in the

massacre formerly by Indians – through some nice wood. Found [[pg. 102]] plants of Mertensia virginica on flat, and Asarum canadense on side of ravine – very large Plane trees [*i.e.*, *Platanus*] in river-bottom. Mr. Dury* got some nice beetles – a Pselaphus – a buprestid, elaters, &c. under bark ... Country around Cincinnati very prettily undulating & cut up into numerous ravines with intervening ridges often with old trees & remnants of virgin forest – very picturesque & rich in flowers ...

[Friday, 22 April 1887.] Very wet all night, rain thunder & lightning. Sent box of flowers to Annie. To city 10 am. letters from Annie, [William] James* &c. card from Swinton*. called on Mr. [Robert] Clarke* & Mr. James*, bot. & bookseller. Evening lecture fair audience – bad lantern operator and my lamp bad & went out! 1¾ hour. very tired.[1]

[[pg. 103]]

[Saturday, 23 April 1887.] Mess[rs]. Langdon*, Dun*, Dury* & James* Called. Lecture produced $50 net. To Museum, saw curious carved stones & alleged measuring stone ... pottery, flints, crania &c. from Madisonville – Letter to Annie[2] ... finer.

Afternoon to College Hill – pretty country & suburb – 15 miles. Dr. & Mrs. Myers* pleasant & sympathetic – interested in Spiritualism. D[r]. Myers* became a sceptic through Darwinism & is recovering belief through Sp[m]. Lecture fair

---

area.

[1] The next day there was coverage of the lecture in the *Cincinnati Enquirer*: "A large and cultivated audience listened to Dr. Alfred Russell Wallace's lecture at Smith & Nixon's hall last night. The noted naturalist discussed 'The Origin and Uses of the Colors of Animals and on Mimicry.' In the assemblage were many prominent citizens whose presence was a compliment to the famous scientist. Dr. Wallace is an elderly gentleman, sixty-six [actually, sixty-four] years of age. Like most of his countrymen who have appeared on the public platform in America, his speech is drawling and monotonous. The subject was, however, treated in a highly entertaining style, and showed clearly the deep research and splendid attainments of Dr. Wallace. His subject was profusely illustrated by stereopticon views, which added to the pleasure of the address. The lecturer was introduced in a few complimentary words by F. W. Langdon ... Dr. Wallace created a favorable impression on his hearers, and the lecture was most entertaining. He will speak in the Town Hall at College Hill to-night."

[2] "The country round here is very pretty, undulating, with numbers of small valleys & ravines in which there is often some remains of the original forests, while most of the country is pasture, the grass being as fine and green as in England, and with the absence of hedges and the numbers of trees & clumps of wood about looking quite park-like. It is a very rich locality for birds, insects & fossils, as well as land-shells, all of which are three or four times as numerous as in England, with much finer & more varied species. It is only in the woods however that there are any flowers. In the grass fields, so far as I have seen, there are absolutely none except dandelions and sometimes some clumps of the Spring beauty." (from a 4/22 letter to Annie, NHM WP1/5/26)

attendance, pretty Hall, – good lamp. went of[f] swimmingly.[1] Paid for Lantern & operator $15. – Rec^{d}. $50 ...

Evening fine – home and bed 11.30 ...

[[pg. 104]]

[Sunday, 24 April 1887.] D^{r}. Dunn [Dun]* took me in buggy to Madisonville Cemeteries[2] – D^{r}. Langdon*, J. R. Skinner Esq.* along – D^{r}. Metz* and Mr. Low* met us & went on to the Turner Group of mounds[3] – Large low oval mound in ploughed field enclosing circular mound and group of sacrificial mounds containing stone altars – connected by graded road with large circular mound formed by cutting deep trenches across a gravel ridge & completing with an an inner embankment, enclosing a mound. Here got a few flints, spears &c. & some fine flake knives, & a large piece of mica. Mr. Low* gave me a box of relics from the mounds of the district. On way back saw a fine tumulus preserved in a cemetery and a field near river full of remains, pottery, [[pg. 105]] flints, pipes, bones, &c. & close to a small oval mound. Then called on Mr. Anderson, pretty house in a most lovely site – grand view of river with swelling hills & numerous valleys & ridges rising from it – prettily wooded & park-like. Drove home at 9 pm ... delightful day ...

[1] College Hill, now a neighborhood in northern Cincinnati, was a distant suburb in those days. Dr. Myers was president of Belmont College, which in 1884 had risen from the ashes of the former Farmers' College (in 1890 Belmont itself metamorphosed into the Ohio Military Institute, which closed its doors in 1958). The College Hill Town Hall, at 1805 Larch Avenue, is now the home of the area's Contemporary Dance Theater and is on the National Register of Historic Places.

[2] Madisonville is a neighborhood in eastern Cincinnati. Thousands of artifacts, human burial sites, and storage pits have been discovered and unearthed since investigations in the area began in earnest in the 1870s.

[3] The Turner Earthworks site, located along the Little Miami River in Hamilton County, features large mound structures from the Hopewell culture era (100 B.C. to 500 A.D.). Systematic exploration of the site began in the early 1880s.

[Indiana, Missouri, Iowa, and Kansas]

[Monday, 25 April 1887.] Left Cincinnati 8.30. till 9.30 in Ohio Valley very pretty suburbs houses in green orchards – fine wooded slopes of drift & river-terraces – valley often flooded – corn-stalks collect & form masses of debris. In woods Red-bud abundant forming bright masses of colour – purple red, not so brilliant as European sp. Then turned up lateral valley with small stream, and soon onto plateau – sometime level, – undulating wood, pasture, & arable alternating, about half wood. [[pg. 106]] Near Indianapolis a wide alluvial plain. Carriage of fine oak, the panels prettily & well carved in graceful plants & flowers ...

At Greencastle Junction lunch 25c. very good. Walked in country & through a wood, very few flowers. Saw a Chipmunk![1]

On to Bloomington through undulating country, a good deal of wood.

Mr. Stewart, a student, met me at Station & took me to D[r]. Branner's* – D[r]. B. several years in Brazil under Hartt.[2] Knew Para and Manãos, – most of Brazil, & La Plata. Hart[t]'s glacier theory all erroneous – all due to the disintegration of granite ... Mrs. Branner a student at Vassar.

The University here at Bloomington & all the public schools have co-education of the sexes. Succeeds well. Boys & girls board [[pg. 107]] out, but meet on perfect equality in the classes. Meet also in debates &c. ... It succeeds well & Mrs. B. thinks it has beneficial results.

[Tuesday, 26 April 1887.] D[r]. Branner* took me a drive some miles out – saw limestone & sand formations of the Carboniferous – all near horizontal, form pretty hills & valleys with rather abrupt slopes – Fine tracts of forest. Few flowers – but fine red maple, and the Amelanchier canadensis. Return at 3 pm. diagrams not come! To college to make d. [diagrams] ... from memory I sketched 2 – D[r]. Branner* made three [*I sketched out the four or five diagrams (of curves of variation, lines and dots showing amounts of variation, etc.) on a small scale, and then Dr. Branner and myself, with the assistance of one of the students, set to work to enlarge them, and draw them in thick black ink, the result at a distance being almost as good as the more accurate originals, which turned up after I had left, and were sent after me*], back at 6.30 – dinner – Dr. _____ & others – talk about snakes – wheel-snake myth – rolls along & sticks

[1] Chipmunks (Sciuridae, genus *Tamias*, about twenty-five species) are not native to Western Europe, or to anywhere else Wallace had visited before coming to the U. S. – thus the exclamation point here (see also the *My Life* commentary in the entry for 22 July).

[2] Canadian-American Charles Frederick Hartt (1840–1878) began his career as an assistant to Louis Agassiz, but quickly made his own reputation as a geologist, biologist and ethnologist through continuing field studies in Brazil. Unfortunately he died there at the early age of thirty-eight, a victim of yellow fever.

its tail in tree & kills the tree! ... Hurry to lecture. [[pg. 108]] Went off well not withstanding bad Diagrams.[1]

Woodpeckers abundant, Com. handsome sp. white back red head very conspicuous – powerful birds & require no concealment from prey ...

[Wednesday, 27 April 1887.] Saw D^{r}. Branner's* drawings of Palms &c. & photographs of Braz. scenery. Rio Jan. & Fernando Noronha I. interesting ... At 11 back to Greencastle Junction ... Diagrams arrived too late ... Dinner 35c. Parlour car to St. Louis. At 5 pm. car boy offered to get me a cup of tea from Buffet car – bad tea, a stony biscuit ... charge ½ dollar!

On way to St. Louis alternations of open level prairie, rolling do. & broken bumpy ground – the latter woody, & always wood in sight ... All wood fences, no hedges seen in this part of Illinois [*the general effect was usually ragged*] ... much rich land ... fine 3 arch bridge over [[pg. 109]] Mississippi at St. Louis – then tunnel to Union Station – Supper at Laclede Hotel.[2] Bag not till 9 – slept well

[Thursday, 28 April 1887.] Morning got ticket to Kansas City – $7.50 $2. sleeping berth. To D^{r}. Trelease's* – out – On to Shaw's garden[3] – a poor botanical garden – fine plant houses & ornamental seats &c. [*The many American, Rocky Mountain, and other plants I wanted to see were not to be found, ordinary South European garden plants and a few Cape and Australian species being the chief occupants of the garden.*] ... very weedy – Osmunda interrupta = Claytoniana – striking sp.? name – Amsonia tabermontana [tabernaemontana] – very pretty blue – Apocynaceæ – grows near St. Louis.

---

[1] According to page 381 of James Albert Woodburn's *History of Indiana University 1820–1902* (1940), Wallace was invited to Bloomington by its president, David Starr Jordan, the famous ichthyologist and later president of Stanford University, who "cooperated with the students' Lecture Association to bring to the University lecturers of distinction." Jordan frequently cited Wallace in his own voluminous writings and certainly would have wanted to meet him, but as there is no mention in Wallace's notes of such a meeting Jordan must have been away at the time or otherwise indisposed. The *Bloomington Telephone* for 26 April 1887 contains a short announcement of Wallace's talk later that day, but more interestingly it adds, separately, "Prof. Coulter, of Wabash, writes that he will bring a delegation of students to hear Wallace's lecture to-night. A similar intention is declared by students and professors from Terre Haute. Surely none here can afford to miss hearing so distinguished a lecturer." Wallace and Coulter (John Merle Coulter, 1851–1928) very likely met during the visit, as Wallace later notes (9 May entry), while in Manhattan KS, that he has received (by mail, one assumes) a copy of Coulter's *Manual of the Botany of the Rocky Mountain Region* (1885) – a work he made good use of in the following few months.

[2] Constructed in 1872, the Laclede Hotel was a famed landmark in downtown St. Louis (at Fifth and Chestnut Streets) for many years. After many years in decline, it was mercifully torn down in 1961.

[3] Shaw's Garden is an informal name sometimes applied to the Missouri Botanical Garden, located at 4344 Shaw Boulevard. Businessman and philanthropist Henry Shaw (1800–1889) founded it in 1859.

Potentilla nevadensis. Pretty white flowers.

Back at 1 – got baggage re-checked Home to dinner – hot ...

4 o.c. D^r. Trelease* called, young man very pleasant talked two hours ... offered [[pg. 110]] me plants, seeds, &c. ... Hotel $3.75

At 8.20 in Sleeping Car to Kansas City.

[Friday, 29 April 1887.] At 5.30 am. sunrise saw Missouri [*river on our right*] about ½ – ¾ miles wide wooded opp. bank [*We soon left it, crossing the prairie in a nearly straight line for Kansas City*], country to K. City a rich alluvial flat, farms with a good deal of wood – planes, poplars, &c. there. On East bluffs come sometimes close sometimes a mile or more away. perhaps 100–200 ft. high – slopes steep – bare or wooded – R.R. sometimes ran close to rivers edge – dangerous – weirs making to protect – towards K. C. bluffs of rock ... limestone or sand of cretaceous – hard hor. strata. Missouri like liquid mud. with swift stream & numerous eddies & ½ m. or less wide – sometimes with great mud & sand flats & reaches, & usually wooded banks – Bottoms lands seem all to have been once thin wood.

[[pg. 111]] At 8.20 Kansas City – smoky on low terrace with abrupt loamy or rocky bluffs rising 150? ft. with houses on top – Hotel at Station – good Breakfast & use of room $1. Ticket to Sioux City – by Council Bluffs – $8.86 – Parl. car $1 – Baggage checked on to Sioux City after difficulty about Lecture Diagrams [*after much trouble got my trunk and lecture diagrams checked through*] – Bought fruit. Left at 11.10. 12.30 picturesque rocky bluffs, wooded. Hot. Strong wind very dusty.

6.20 pm. Bluffs 200–300. ft modelled by rain into peaks & valleys, a mt^n. range in miniature finely brought out by shadows from setting sun. to Council Bluffs a straggling village & R. R. centre – over flat plain a mile or more wide to bluffs. Hotel at Station – supper, nice female waiters [*instead of the usual white, brown, or black men waiters*] – bed early as start at 7 am.

[[pg. 112]]

[Saturday, 30 April 1887.] Left 7.10 am. Numerous water birds in Missouri. Thousands of Podiceps scuttling off from banks as train passes making long trails on water – also a few ducks &c.

At Missouri Valley – a large village, the plain is several miles wide – at foot of sloping bluffs of loess. often covered with deep black mould. walked on to some waste ground – dry, no flowers, brown with a little grass & some half-shrubby plants sprouting ... 1½ hour stay here.

Bridge over Missouri for R.R. from Chicago through Nebraska and Wyoming – wide flats for 20 miles on to Sioux City – some forest. At Sioux City bluffs come close to river. City on slopes which merge into high rolling prairie with deep valleys [*at this time of year it was looking rather arid*] ...

[*Three lectures had been arranged for me here by Mr. D. H. Talbot* on behalf of the Natural History Society*[1]*, and Mr. E. H. Stone* had kindly offered me hospitality in his very pretty house.*] After difficulty, met Mr. Talbot, took me [[pg. 113]] to Mr. Stone's (E. H. Stone Esq.) – saw Mrs. Stone, – had dinner & asked to stay ... nice new house [*in the suburbs*], most tastefully furnished with oak carving &c. ...

With Mr. Talbot to Miss Wakefield's* beautiful oil sketches of nature flowers; very skilful. almost equal to Mrs. North's* but backgrounds too dull & monotonous ...

Back to Mrs. Stone's unpacking trunk &c. Evening to Meeting of Sc. Ass^{n}. Mr. Hoskings [Hoskins*] (Am. Geol.) about river courses &c.

[Sunday, 1 May 1887.] [*every day had drives or excursions about the country or to Mr. Talbot's* zoological farm*] Very hot & dusty. Mr. Talbot in buggy with two horses called to take me into country for day – Mr. Hoskings [Hoskins*] with Mr. _____ in another. Judge Wakefield*, Miss Wakefield* & two children in a third ... To bluff near town to see Loess perhaps 50 ft. resting on glacial drift & this on Cretaceous sand rock. [[pg. 114]] On up valley of Great Sioux river [Big Sioux River] – clear stream, passing another bluff in which gravel pit showing thick bed of modified gravel with pebbles & boulders – stratified obliquely – with perhaps 150 feet of loess over it. Up wooded valley

---

[1] On pages 56–57 of an article by J. H. Charles in Volume 2 of the *Proceedings of the Academy of Science and Letters of Sioux City* (1905–6) entitled "Reminiscences of John H. Charles," the circumstances of Wallace's visit to Sioux City are outlined: "When the old Scientific Association, the parent of the present Academy of Science and Letters, was in its second year, having some money in the treasury, we decided to secure some noted man for a course of lectures. At the suggestion of D. H. Talbot, one of our charter members, correspondence was begun with Alfred Russell Wallace, the great English scientist, who was then in this country. The result of the correspondence was that Mr. Wallace, after finishing an engagement in New York State, came out to Sioux City and gave us a course of ... lectures upon the subject of Evolution. We threw the lectures open to the public, and they were well received.

Several of us became quite well acquainted with Mr. Wallace during his stay of a week in Sioux City. We found him a typical English gentleman in every particular. He was a much traveled man of wide acquaintance. He understood himself and had confidence in himself. Though nothing of a society man he was easily approached by friends. Only those who felt antagonized by his views had any reason to feel his reserve.

Polite, genteel, neat in dress, he stood six feet high and was built in proportion. At the time of his visit here he was wearing a closely cropped beard. Wallace was not an orator, not even a smooth speaker. He spoke carefully, without notes, and always kept within bounds. His lectures were strictly scientific. It was what he said, rather than how, that attracted. He was a pleasing conversationalist, one not given at all to small talk. Though it was hard for him to get away from the subject of evolution, I do not remember that he spoke a single time while here concerning his own great part in the working out of the evolutionary hypothesis.

Wallace's outdoor habits clung to him while he was here. He spent several days in the woods. I remember that he was greatly interested in the grasses on the Talbot farm and in the drift deposits along the Big Sioux."

to Mr. Talbot's farm about 4 miles from city, where lunched in a small wooded valley [*picnicked in a rather scrubby wood with very little shade*] – very hot & dusty as foliage not out ... Luxurious repast, fruit, chicken, jellies & preserves, peach pickle – cakes, cheese, cream, tea, & coffee – After saw Mr. Talbot's animals 6 fine buffaloes, a herd (12) of Elks – an Indian wild ox? – drove of solid hoofed pigs, – flock of 4-horned sheep – Zebu & crosses, – pigeons, rabbits – fine trotting colt – wolves, foxes, – geese & other aquatic birds – rattlesnakes &c. [*keeping all these animals in order to observe their habits, make experiments on their instincts, etc., he carries on a considerable business in growing agricultural seeds of choice qualities, breeding the solid-hoofed hogs, which are said to be superior for fattening purposes, as well as the four-horned sheep, Angora goats, hybrid cattle, etc. He has also patented metallic tags for identifying cattle and other farm stock, and several agricultural implements. These animals are all looked after by youths trained by himself – boys and girls, who are, he finds, as soon as they take an interest in the work, much more trustworthy than any men. He has also a large building for a museum, or rather laboratory, of experimental zoology. Here he showed me several hundred skins of wild geese, roughly prepared, but every one with numbered labels giving the date, hour, and exact spot where they were each shot, with the direction of their flight, while the contents of the stomach of each is preserved for examination. These have been obtained from various north-western States, and by a close study of them he hopes to trace out the exact course of their migration year by year. He hoped that in time some of his land would be included within the city limits, and would sell for a high price, in which case he would leave the rest as a zoological experimental station to the public. I made some suggestions to him as to experiments in regard to instinct, heredity, and evolution, which were much needed, and he said he would take them in hand when his affairs were more settled.*] Has 6000 acres of land – fine wooded valleys & Prairie.

[[pg. 115]] On to beautiful valley where another house – herd of solid hoofed pigs ... fine example of Cretaceous rocks near summit of a ridge, with thin layer a few inches of glacial gravel (quartz syenite & granitic pebbles) & 6 or 8 feet of loess above – similar cases elsewhere, show that the denudation of the low rolling country into hill & valley with all the characteristics of a range of mountains is <u>preglacial</u>.

This valley very rich with covering of black mould, a small perennial stream, abundant wood & brush & small trees – larger trees have been cut ... <u>Viola delphinifolia</u> abundant! <u>Astragalus caryocarpus</u>, very beautiful pink purple on dry hills – most luxuriant veg. in valley! Wild gooseberry common, <u>Ribes cynosbati</u>? <u>Smilacina stellata</u>, "Dutchman's breeches", "Anemonella thalictroides" & violets &c. abundant ... [[pg. 116]] On way home overtaken by a violent wind & dust-storm. At one time so thick that we could not see road a

yard in front of horses ... Let down hood of buggy to avoid hair turned over ... Got home safe – great fall of temp.

A boom here – land bought at $10 an acre 3 or 4 years back now selling at $150. 2 miles from town, bare, open, unimproved prairie ...

Prohibition in State of Iowa – general ... less drunkenness. see newspaper extracts

[Monday, 2 May 1887.] very cold wind, gloomy. At home letters to Prof. Call. & Tuttle, to Mr. Knight & ...

Afternoon getting up diagrams ... usual delay & trouble ... 2.30 to 5 ... Home, rest, dress, supper, – lecture ... went off well – good lamp ... good audience Judge Wakefield* in Chair.[1]

[[pg. 117]]

[Tuesday, 3 May 1887.] Fine, sunny... diary ... Mr. Talbot* drove me & Miss Wakefield* to his farm, deep ravine, got a lot of interesting plants. Sanguinaria canadensis, Trillium nivale, Aquilegia canadensis, Viola sagittata, V. canadensis, V. delphinifolia, Erythronium albidum, Anemone patens v. Nuttalliana, Uvularia lutea [?] ...

Afternoon to Hall seeing about Lantern, screen &c. ...

Eve. Lecture – good lantern.

[Wednesday, 4 May 1887.] Morning with Mr. Talbot* to see pork curing establishment – kill 1000 hogs a day – hogs walk up to top of building, hung up by one leg slide along to man who cuts throat, drop into tank of boiling water, into machine which takes off most of hair, then along counter where other men finish scraping, then cut up, entrails pour to tanks where lots of men clean [[pg. 118]] them – fat out to make lard – sausages – hams – salted pork – blood & refuse all passed through steam heater dryers & forms a dry fertiliser – whole place dark, confined passages, steep ladders, all wet with water brine, blood &c. ... very sickening [*to go through it all, as I was obliged to do, along narrow planks and ladders slippery with blood and water, and in the warm, close, reeking atmosphere, was utterly disgusting. My friend was, however, quite amazed at my feeling anything but admiration of the whole establishment,*

[1] Wallace's three Sioux City lectures were promoted both with ads and a background story in *The Sioux City Daily Journal* during the week leading up to them. On May 3rd the same source reported: "The large audience last night was treated to a delightful exposition, in a lucid, compact and beautifully systemized style, of some of the profoundest results of modern scientific research. ... One feature ... worthy of remark is the absolute simplicity and frankness of Dr. Wallace's qualities ... In this respect the lecture presented so strong a contrast with the vaporizings and lordly mouthings of so many pretentious but shallow men as to be perfectly refreshing." The *Journal* also printed an interview of Wallace in its May 6th issue (*see* http://people.wku.edu/charles.smith/wallace/S735B.htm).

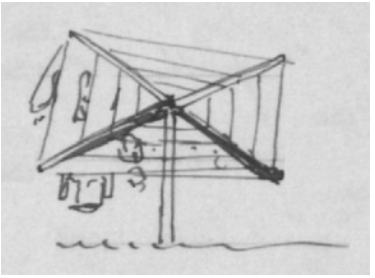
which was considered one of the sights and glories of the city.] ...

Then to linseed oil & cake factory – largest in U.S. seed ground between steel rollers in tiers 6 or 8 top of each other solid & ~~close~~ ground by their weight only ... then steamed & heated – then formed in moulds, then pressed in hydraulic presses – oil afterwards strained by pressure through thick canvas strainers ... cake very dry & hard no oil left in.

Tornado two years back, lifted and overturned a large iron oil reservoir, not touching small wooden houses close by [*the subject of tornadoes came up, in reference to one that had done some damage there two years before. There was a very large iron oil reservoir a few yards from the office, something like the largest-sized cylindrical steam boilers, supported on a strong wooden framework. The tornado struck this cylinder, lifted it off its support, and threw it down some yards away. Yet our friend's office and other small wooden buildings close by were absolutely untouched by it. This illustrates a peculiar feature of these storms, which, though sometimes sweeping along the surface and destroying everything in their track for miles, at other times seem to pass overhead, descending occasionally to the surface and then rising again, picking up a house or a tree at intervals.*] ...

[[pg. 119]] Afternoon to Hall – 2 hours hanging diagrams ... very tired – Home & rest – supper, dress, & to lecture – Oceanic Islands ... ? not very interesting lecture ...

[Thursday, 5 May 1887.] Packing – reducing box of plants sent off to Miss Jekyll*. Wrote to Annie sent papers to John & Williams* ... Ingenious clothes dryer four light arms freely turning on post 5 ft. high



– four rows of thin cord – holds many clothes which are turned by the wind, & not blown to pieces, – also all turned to sun – also servant can hang all from one spot ...

In all schools & colleges there is co-education. Ladies form a considerable proportion of the Professors & Teachers. A lady is the Principal of the High School at Des Moines [[pg. 120]] where boys & girls up to 16 or 18 are taught. In these schools & colleges the girls quite hold their own with the boys, often surpassing them in languages.

[*Sioux City had recently become a centre for agricultural produce ... and, as in many other Western cities, there had been "a great boom in real estate."*] Land in residential part of this City of about 20,000 inhab. sells at $9000 for 150 x 150 feet (=£3500 an acre!) ... and in the business part of the city at ten times this rate. All over these rich western States there is an immense excitement now, and "booms" are proclaimed everywhere.

3.30 pm. train for Kansas City ... change at Missouri valley [, Iowa]– delay 1¾ hours. tea – on to Council Bluffs at 8 pm change again – On to Pacific Junction [, Iowa], sleeper attached, but all lower berths full had to take an upper – hot at first but pretty comfortable afterwards. [[pg. 121]] Car ran pretty smooth, slept fairly well till 6 am [*reached Kansas City at six next morning*].

[Friday, 6 May 1887.] Breakfast at Union Hotel[1] Kansas City [KS], 50c. good ... Ticket to Lawrence – pretty country – hor. strata of Cretaceous? or Silurian? – undulating – along Kansas river. rich bottoms some still covered with wood – several camps of emmigrants or migrants ... much land with wood apparently still unoccupied. Flowers of Phlox divaricata brilliant purp. blue on R.R. side in dots, clumps, & patches, very beautiful. No other flowers but trees coming out beautifully in leaf like our May at home.

11.10 am at Lawrence, to Eldridge House hotel.[2] Mr. F. H. Snow*, called – deaf – will take me to ~~College~~ University at 4 pm.

[[pg. 122]] 3.30 pm to University in buggy – slow going. Fine wide business street, & pretty well-treed suburbs. University on a hill with plateau of rock – lower Carboniferous – quite flat like ancient pavement ... fine new build^{gs}. ... fine build^{g}. for Nat. Hist. Museum[3], very fine Collection of Dicotyl. plants from cretaceous rocks of West. Kansas – In a fine iron sandstone mostly in modules which split open showing perfect impression of leaf with all its veins & often the perfect stalk to articulation. In one case a bud is seen in an axil – very curious forms of leaves or plants some like this ...

Fine specimen of Ichthyausauren [Ichthyosaurus] with portion of skin, showing small perfect keeled scales like those of a rattlesnake! Many other fine fossils ...

[1] The Union Hotel was located on 5th Street, between Missouri and Euclid Avenues.

[2] The Eldridge House stands at the corner of 7th Street and Massachusetts in Lawrence, but it has gone through several incarnations since the original structure opened in 1855. Wallace stayed at the third one, but even the second had been referred to in John W. Barber's 1867 book *All the Western States and Territories* as "by far the finest building in Kansas."

[3] The building Wallace refers to was Snow Hall, which had just been completed the year before.

[[pg. 123]] University on hill with grand view of plains of Kansas all round – something like views over weald from N. & S. downs, – but less finished ...

Coeducation – boys, girls ... A lady is professor of Greek, and another teaches Latin, French, & German. At High School Commencement (? Exam for Diplomas) 13 girls and 11 boys "graduated". Lecture evening[1] – Reception after, Professors & their families. [*After my lecture in the evening there was a reception of the professors and their families. I heard much of the co-education system, and, as usual, all in its favour. A lady is professor of Greek, and at Des Moines a lady is the principal, although there are pupils of both sexes up to eighteen years old. Everywhere the girls hold their own with the boys, and are often superior to them in languages.*]

[Saturday, 7 May 1887.] 11.30 Cross river in bus; & by rail to Manhattan. Passed much fine flat bottom land, with rolling prairie in the distance. Then bluffs of horizontal strata, with large flat blocks of rock breaking off & rolling down. Wooded gullies – some hedges of osage orange. no flowers visible though trees nearly full leaf. Many trees planted in farms – rows or clumps. Some good orchards – some vineyards. [[pg. 124]] Reached Manhattan at 2.20 – Met Prof. Marlott [Marlatt*] at hotel – Awfully hot! dust on road tremendous ... Sponge & changed. – 5 pm. Pres^{t}. Geo. F. T. Fairchild* called ... State Ag. College [now Kansas State University] – Free both sexes – 1/3 women 2/3 men – average age 19 – come from Common schools, or adults – men learn theory & practice of agriculture, ag. chem., mathematics, English, Mechanics, use of tools &c. ... women, domestic economy, cooking, horticulture &c. &c. ...

Eve. walk in town; numerous Land and Loan offices [*no liquor-shops, but abundance of "real estate" and loan offices, the former a common mode of gambling in Western America.*] ... got Hardy's Woodlanders, good print paper covers 20c. Therm. said to have been 95º in shade today. Hot all night.

[[pg. 125]]

[Sunday, 8 May 1887.] Breakfast at 8.30 – at 10 Prof. Marlott [Marlatt*] and

[1] Notices of the upcoming lecture appeared in the 5 May 1887 issue of *The Lawrence Daily Journal* and the 6 May issue of *The Weekly University Courier*. The latter also printed a separate story, stating: "We suppose that there is no necessity for urging all students to attend the lecture this evening. The fact that Mr. Wallace is the most eminent of living naturalists ought of itself to be sufficient to fill the chapel to its utmost capacity." After the lecture, the *Courier* reported (13 May): "He seems to be in robust health with faculties unimpaired and his voice, though he spoke in an ordinary conversational tone, was distinctly audible throughout the hall." The *Journal* added (7 May): "A large and select audience listened to Dr. Alfred Russell Wallace lecture at the University last evening, on the subject 'The Origin and Uses of Colors of Animals and on Mimicry.' The subject was, however, treated in a highly entertaining style, and ... was profusely illustrated by stereopticon views, which added to the pleasure of the address."

Mr. Hogg* called. Mr. Hogg son of Sir Paul Hogg[1] a young Englishman farming here – has 1000 acre ranch – 12 miles off. Offered to take me on a drive. Saw the prairie, improved, fine grassy fields – small pretty pink Oxalis and large yellow flowered peas ...

No flowers in fields. Mr. Hogg complained of climate cold winters often 20º below zero, and very hot dusty summers ... A month or two in winter & spring very pleasant – hardly any nice houses – no gardens ...

Wrote to John – decided to go to Cal.[2] Stroll out after dinner across river, woods & fields alluvial, dusty, no flowers. [[pg. 126]] After tea Prof. E. A. Popenoe* called, offered to take me for a drive – went to top of bluff, rocky, – several plants in flower – Zygadenus &c. ... Offered to send me seeds or plants ...

[Monday, 9 May 1887.] Morning to College with diagrams ... saw new building, Stock &c. ... every body wanted to show me everything – the clothes the girls made, the cupboards they kept the clothes in, – the stores for flour, spices, &c. &c. in kitchen – every class room & all the classes & all the teachers &c. Then out to see the cattle, & the sheds, & the machines, – how the calves & the cows are fed &c. &c. then the tool & work-shops, the garden, greenhouse, & tree-nursery ...

Back to hotel – letters from R.R. agent about excursion to Cal. & from Col. Phillips* at [[pg. 127]] Salina. Wrote to him accepting to visit him on Wed. for a week. Copy Coulter's Flora Rocky Mt^{ns}. came. Letter to Prof. D. J. [A. J.] Cook*, Mich. Ag. Coll. – about lecture in July...

Eve. to tea with Pres. [G. T.] Fairchild* – cold meat, strawberries, oranges, cake, weak green tea. Talk about politics &c. and prohibition. Kansas like Iowa is a prohibition State, has been 7 or 8 years – has had a good effect, not one twentieth of the noise, dirt, & bad language formerly met with. The feeling in favour of prohibition is increasing. More stringent laws recently passed against sale of spirits by druggists. Had not heard of Gothenburgh System.[3] Thought it good in principle. also agreed to my principle of local option of dwellers in a fixed area around a liquor shop, or saloon. [[pg. 128]] I notice the hotels in a prohibition place are quieter. Liquor is sold in private but there is little drunkenness to what there was formerly.

Lecture, "Darwinism" went off well & gave much satisfaction[4] ... very hot!

---

[1] Actually, the latter individual's name was Sir Stuart Saunders Hogg (1833–1921).
[2] Apparently Wallace had still not absolutely decided to proceed on to California to this point.
[3] The Gothenburg system was a plan adopted in Sweden for regulating the drink traffic.
[4] The talk was advertised in at least three local papers, the *Republic* (5 May), *Nationalist* (6 May), and *Industrialist* (7 May). The first indicated that the lecture was to be free to the public through subscription efforts organized by Messrs. Marlatt and Rogers. The lecture itself was written up in

[Tuesday, 10 May 1887.] Wrote letters to (1) Williams* with checque for Comm. ($.37.20) (2) New Eng. Trust Co. sent checque for $275. (3) J. W. Morse. Ticket Agent ... (4) Mrs. Wallace P. Card. (to write to John's – Denver P.O. and Montreal P.O.)

After dinner Mr. Popenhoe [Popenoe*] with buggy to botanize. Found in Flower Zygadenus sp. Sisyrhynchium Berm. [*Sisyrinchium bermudianum*] v. anceps (white) Baptisia (yel.) and Do. blue form ? new sp. near australis – on dry rocky banks ... fine flora later – End of May –

[[pg. 129]] Plants to send not in flower x Salvia azurea var. grandiflora ... x Ruellia ciliosa ... (gen. not in Coulter[1]) x Houstonia angustifolia ... (gen. not in Coulter) x Echinacea angustifolia ... (round tuber) Aster sericeus ... (sp. not in Coulter) Delphinium azureum (a Western sp.) (Also Tradescantia virginica coll^{d}. not sent)

Above packed in small box, & sent next morning. Saw a Phrynosoma horned toad. Prof. P. caught it. like Cal. sp. but smaller. Prof. Popenhoe [Popenoe*] has been in Rocky Mt^{ns}. says the flora is fine and flowers most abundant little valley meadows often like gardens ... Saw some of his plants coll^{d}. in S. Colorado in August – July a better month ...

Home at 6.30 tired ... after supper read little and to bed before 9.

[[pg. 130]]

[Wednesday, 11 May 1887.] Kind letter of invite from Mr. Phillips* [*whom I met at Washington, and who invited me to stay a week with him at Salina, a new town he had himself founded, and where he was a large landowner*] – packing ... To Station at 2.30 & to Salina – very wide alluvial plain near, miles of rich land – rather handsome new town. At Wittman Hotel ... still hot.

[Thursday, 12 May 1887.] After breakfast driven through town & out to hills over river where Mr. Phillips* is to build new house [*on an elevation, called Iron Hill*] ... very hard sandstone with iron modules. Flowers of Tradescantia virginica abundant & beautiful blue or pink, growing in clusters almost close to ground. Also a small Allium the fine blue Baptisia, Yucca angustifolia, Oxytropus Lamberti, Pentstemon cobæa!

After dinner heavy rain & thunder. Evening visited Mrs. Campbell, Col. P's sister.

---

the *Nationalist* issue of 13 May, and the *Industrialist* issue of 14 May, the latter reporting: "The lecture of Dr. Alfred Russel Wallace on Monday evening called out an attentive audience of nearly four hundred ... Dr. Wallace seemed almost the embodiment of calm inquiry after truth, without the least ostentation or bias of enthusiasm; indeed, to one unfamiliar with the history of his investigations, he might seem lacking in the natural vivacity of one whose life has been spent in such study."

[1] That is, in Coulter's *Manual of the Botany of the Rocky Mountain Region* (1885).

[[pg. 131]]

[Friday, 13 May 1887.] Morning drove with Col. Mrs. & Miss Phillips* to the Iron Mountain [Iron Mound[1]] a hill about 400 ft. above valley of hard iron-stone – few plants except Malvastrum coccineum ? & the Blue Baptisia ...

Afternoon heavy rain, & much thunder & lightening ... Eve[ng]. wrote to Mitten[2] – & conversation.

[Saturday, 14 May 1887.] Cooler, cloudy ... Called on Mr. Seitz (druggist) about Stereopticon for lecture – To Masonic Hall – not find it. Afternoon to Wesleyan College [now Kansas Wesleyan University], and to Normal University.[3] saw a Professor at each. At N. University – Tuition Room & Board $32 for a term of 10 weeks paid in advance. Board only $1.50 to $1.90 a week! Profess to teach almost everything ... [[pg. 132]] After tea to find Mr. Chapman about Stereopticon. A good but ordinary magic lantern with a paraffin lamp – disc about 4 ft. 6 in. diam. Arranged about frame for slides ... &c. &c. Evening cooler.

[Sunday, 15 May 1887.] Cooler at night ... Letter from R.R. agent about ticket to Cal. warm again – some callers – wet evening wrote to Willie ... Golden orioles abundant now.

[Monday, 16 May 1887.] Wet morning ... Called on a Democratic Editor ...

---

[1] Iron Mound rises to an elevation of 1497 feet at 38º 48' N, 97º 30' W, several miles east of Salina.

[2] "Here in Kansas there is ... [no] loess, and the general surface has rather less steep undulations except here and there where bluffs are formed by a hard bed of rock at the summits of the hills ... The curious thing is that over most of the upland surface there is a deep rich black soil, except on the few abrupt summits where the rock comes to the surface. Here & for hundreds of miles East to the Missouri River there is no wood except close along the streams, but water is everywhere met with a few feet (20 to 40) below the surface, & is pumped up by windmills for the use of the cattle. An immense area of this country is under cultivation and railroads so intersect it that few parts are more than 10 or 15 miles away from one. Wherever the ground has been cultivated the vegetation is very monotonous and weedy, but on the untouched hill sides especially where stony & rocky there is an abundant and varied flora of very fine plants. One of the most common is a Baptisia said to be B. australis (which I have in the garden) but I think distinct, being dwarf with a magnificent erect raceme of large deep blue flowers, one I gathered today being 18 in. high. I also found the Malvastrum coccineum, the curious dwarf brick red flower I have on the bulb-bed, and in one place the ground was gay with the blue and pink flowers of Tradescantia virginica among which were many plants of Yucca angustifolia. Numerous Asters, Echinaceas, Salvias, Astralagus, Oxytropus, Delphiniums, Houstonia, Ruellia, and scores of curious Compositæ are coming up & will form a succession of flowers during the summer. Pentstemon cobæa is also abundant here with its fine large lilac flowers." (from a 5/13 letter to Mitten, NHM WP1/5/29)

[3] Salina Normal University, an independent normal school, opened in 1884. It was modestly successful but suffered from poor financial backing and when a fire destroyed most of it in 1904 it was not rebuilt.

Wrote to Violet enclosing one to Willie ...

Evening lecture about 80–100 people. Lamp went out! Lantern small & poor disc about 4 ft. & weak – yet [[pg. 133]] people pretty well satisfied[1] – ... Paid Hall $15 – Printing &c. ... Net profits $26 ...

[Tuesday, 17 May 1887.] Drove to Mr. Joseph Henrys* – met him coming back. Old frenchman 74 yet looks not 65 – very active very broken English – collects grasses & mosses – has discovered a new moss, Barbula Henrici ... Gave him Mitten's address & told him to send him mosses [*He had been in the country twenty years but could only speak very broken English, and when he found we could not speak any better French, he was quite indignant that a scientific man could not speak in his beautiful language – the language of the civilized world! He made me feel quite small. However, he managed to tell us that the American botanists did not know their own country. "They all say there are no mosses in Kansas. But* I *have found mosses! I have found new species of mosses! And when I send them my discoveries they will not give me the names – they will not write to me even!" So we condoled with him, and said good-bye to the unappreciated botanist of the arid plains of Kansas.*] ... Afternoon – reading & packing ... fine & cool.

Eve[g]. – called on Mrs. Phillips mother of the Col. 88 years old and wonderfully active & lively – talks broad Scotch still – has been 48 years in America.

Real Estate here everywhere. Everybody talks about rise in value of land – frequently doubles in a month, 4 fold in a year, & so on ...

In business parts of this new town, lots 25 ft. wide [[pg. 134]] 120 ft. deep, in main street sells for from $6000 to $10,000. In suburbs a mile from centre of town $1200. New addition to town now building in – $250 to $600 ... (50 x 180). Farms near town – $30–40 hill, bottom land $50. an acre.

Pop. of Salina (185 m. from Kansas City) 8000 – 5 railways – 29 years ago indians & buffalo over the country, not a house or hut for 50 mile round.

Arcola (200 m.) [*i.e.*, 200 miles from Kansas City] Bluffs & mesas. Downs-like hills with rugged caps – further on grand open prairies undulating for great distances. Villages & towns at intervals of 15–20 miles – often in absolutely open prairie. rarely with trees planted round them. [[pg. 135]] Till 300 miles (8.30 pm) very level undulating prairie with little cultivation here & there.

---

[1] News of Wallace's "upcoming" lecture appeared in the 19 May 1887 issue of the *Saline County Journal*, a weekly. The same issue provided a decent synopsis of the talk ("The Origin and Uses of the Colors of Animals"), mentioning the presence of "a fair and appreciative audience," and commenting: "He is an easy and fluent talker, and has a good command of language."

[Westward, Colorado to California; San Francisco and Stockton]

[Thursday, 19 May 1887.] 5 am. In the plains. Undulating, sandy, very scanty grass with tufts of herbaceous plants – white flowers like Gnaphaliums – some plants like sand hillocks. Some hills with hor. sandstone (Tertiary ?) Streams small, broad & sandy – sometimes a few cottonwoods along them. Saw Prairie Dog sitting up.

The lower undulations very like the tops of chalk downs – but sandy & less grass. In places deep alluvium hor. stratified.

Denver at 8.20 breakfast – called on Mr. Babcock* of "Graphic" – Mr. J. F. [T. F.] Dawson* of "Ev. Times" Prof. James H. Baker* Princ. of High School[1] – & Miss Alice Eastwood* teacher of Anc[t]. History &c. – Botanist shewed me plants from Pike's Peak &c. &c. [*after breakfast I called on Professor James H. Baker, Principal of the High School, to inquire if he knew of any local botanist who could give me information as to any good localities in the mountains for alpine plants. He told me that one of his lady teachers was a botanist, and took me into her class-room. As she was engaged in giving a lesson on ancient history to a class of boys and girls, we sat down and waited till it was over, when I was introduced to her, and we had an hour's talk, and she showed me dried plants she had collected on Pike's Peak. She told me that Graymount [Graymont], near Gray's Peak, was a fine spot, and I decided to visit it on my return from California.*] ... [[pg. 136]] In train a lady chewing gum – saw her at intervals for an hour her jaws going all the time like those of a cow ruminating.

1.30 on to Cheyenne open plains of thin grass partly irrigated & cultivated. Supper at Cheyenne a crush. On up slope of pass of Rockies like downs or moors no mountains in sight. All along fences for snow screens – sometimes above sometimes below the road, according as it drifts – some snow sheds & tunnels – reached summit at 8 pm. only 2000 feet above the plain at Cheyenne. On highest point a large cone monument to Ames[2] the designer of the road.

---

[1] Baker arrived from Maine in 1875 to become the first principal of the high school grades of the Arapahoe School, located on Arapahoe Street between 17th and 18th. This eventually evolved into what is now known as East High School.

[2] The Ames Monument is a pyramidal structure built in 1880 to honor the financiers Oakes Ames

[Friday, 20 May 1887.] morning 5.30 in similar low rolling country but grease wood instead of grass & much bare sand [*or mud flats white with alkali*] – further on low rocky hills like indurated sand-hills – bare. Saw small herd of Antelopes very small in brush – like long legged rabbits but prettily marked heads.[1] [[pg. 137]] At Green R. [*one of the upper tributaries of the great Colorado river*] rocks like castles. Greasewood (Sarcobatus vermiculatus) prickly with fleshy narrow leaves – Soda or Alkali over whole surface more or less. An hour further rocky valleys from sandstone rocks on right often denuded into strange [*wind-worn*] pinnacles & detached masses. Often fine precipices – Echo Cañon, Weber's Cañon. Devil's slide, two vertical dykes descending mountain side perpendicularly with a narrow passage 2–3 feet wide between them.

Ogden finely situated among Wasatch Mt^{ns}. [*Reaching Ogden in the afternoon, I took the train to Salt Lake City ...*]

Salt lake fine – beautiful plain between it & mountains highly cultivated by irrigation. Meadows with masses & sheets of blue flower Camassia – On to Salt Lake City.

[[pg. 138]]

[Saturday, 21 May 1887.] At Salt Lake. Tabernacle [Figures 27 and 28] seats 6000 – all hear an ordinary voice. Ellipt. low Temple unfinished – open roof – imperfect & ungraceful Norman Arch in solid carv^{d}. granite. [*is so shaped that a speaker at one end can be heard distinctly over the whole building when speaking in an ordinary conversational tone. To produce this effect it is a flat semi-ellipsoid, so that the regularly curved ceiling is very low for the size of the building. But the result is acoustically perfect, and such as none of our architects have equalled.*] Pretty villas & rude cottages interspersed. Large gardens & orchards – flowers sold in streets & some flower gardens! Creepers abundant. In many streets the most primitive huts alternate with solid brick houses. [*The city itself* [Figure 29] *is in many respects unique and admirable. It is a kind of "Garden" city, since every house (except in the few business streets) stands in from half an acre to one acre and a half of garden. Some are pretty stone-built villas, some mere rude hovels, but all have the spacious garden. And they are real gardens, the first I have seen in America, full of flowers and fruit trees, and with abundant creepers over the houses.*

The streets are about one hundred and thirty feet wide, with shady trees,

---

and Oliver James, Jr., who had a central role in the construction of the first transcontinental railroad.

[1] One assumes Wallace refers here to the pronghorn (*Antilocapra americana*), an antelope-like form that frequents Western prairies. These animals grow to weights of up to 150 pounds, however, so Wallace's use of the word "small" is odd; perhaps he saw a group of young individuals.

and a channel of clear water on both sides of each street brought from the mountain. Every garden is thus supplied with abundance of water for irrigation, when required, by small channels under the side walks, and sluice gates to

Figure 27: Temple Block, Salt Lake City.

Figure 28: Interior of the Mormon Tabernacle.

regulate the supply. Crops can thus be grown during a large part of the year. I walked a few miles into the country, and seeing a small house and pretty flower garden with some of our commonest garden flowers, roses, stocks, marigolds, etc., I spoke to a homely looking woman and found she was Welsh. A good many Welsh have become Mormons.] Grand views of Wasatch & _____ Mt^{ns}.

Afternoon to Ogden. walk in suburbs. Gathered Allium acuminatum – Coreopsis – (white) Phlox Phlox Pea blue – Phacelia menziesii [*went on by train in the evening*]

[[pg. 139]]

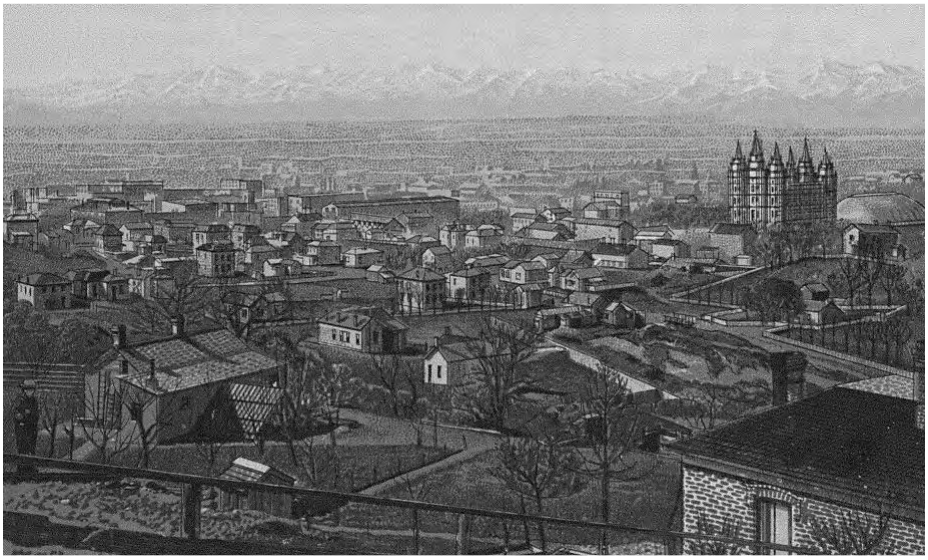


Figure 29: Salt Lake City, looking southwest from Prospect Hill.

[Sunday, 22 May 1887.] Dreary country, sage-brush (Artemisia spinescens) in tufts – often very regular like a crop – not unpleasing but for the saline incrustation

At Carlin gathered a small Ranunculus, a small Myosotis sylvatica – also small-flowered yel. Crucifer.

Many Indians at Stations – fairly dressed, painted – one old man only with blanket looked well. Group of men & women playing cards – Boys shooting with bows & arrows [*The passengers give them money or buy ornaments, etc., and thus they live idly, get fat, and are thoroughly demoralized.*] –

Near Humboldt fine very dwarf Œnothera (white) turning purple ? Œ. triloba. Afternoon very arid & salt sometimes miles almost pure white like snow with a few tufts of green or gray plants. [[pg. 140]] A valley of a mile to several

miles wide – an old lake basin – at Humboldt artesian wells, & some cultivation by irrigation – wells rise to surface, but probably not enough water can be obtained thus to irrigate large areas. Only at intervals of 50 miles or so a few flowers seen on road-side – Œnotheras or Phlox or Gilia. Mountains on each side not very large but sometimes snow-flecked.

At Reno supper – Rain – new climate to 6 miles east. good farm lands – farmer gave me information.

[Monday, 23 May 1887.] 4.20 am. in foothills, undulating rather bare, a few fine pines, mostly small second. growth – farms, vineyards, orchards Eucalyptus planted round all houses. grow [[pg. 141]] strong & well branched – several species ... About 8 Sacramento, breakfast – low flat country with extensive marshes ... Ferry at Oakland 11 am. John [*whom I had not seen since I left for the Amazon in 1848*] met me – To San Francisco to the Baldwin hotel[1] [Figure 30] [*where he had taken rooms for us, and had made arrangements for me to give two lectures on Wednesday and Friday.*] – good sitting & two bedrooms on 1st. floor – Lots of callers. To see Hall –

Figure 30: The Baldwin Hotel, San Francisco.

[1] The Baldwin Hotel, at the northeast corner of Powell and Market Streets, was completed in 1877 and operated for only twenty years until 1898, when it was destroyed by fire. In its heyday it was known for its flashy accommodations, eateries, and separate theatre facility. (See Fig. 30).

San Francisco cold winds, undulating streets – cable tramroads – Pres. Holden*, D^r. LeConte*, D^r. Clark*, D^r. [H. W.] Harkness* – Mr. Geo. Davidson* of Geodet. Survey – Prof Hilgard*.

[Tuesday, 24 May 1887.] Trying to get Stereopticon, D^r. W. P. Gibbons* to take me to hills on Saturday – called on several people – James G. Maguire* – "Georgeite" ... Mr & Mrs Owen* (Sp. Ed. of Golden gate[1]) Prof G. H. Howison* &c. &c.

[Wednesday, 25 May 1887.] Callers. Evening lecture on "Darwinism" fair audience successful.[2]

[[pg. 142]]

[Thursday, 26 May 1887.] Arranged with Mr. Albert Morton* about lecture for Sunday week. To R.R. agent to get ticket altered ... Arrange about lamp-screen, and Stereopticon for tomorrow. To dinner with Pres. Holden*, Prof. Hilgard*, Mr. Sutro*, Judge Bolt [Boalt*] &c. ...

[Friday, 27 May 1887.] Morning to a séance with Fred. Evans*, John, Mr. Owen* & Mr. _____ present. Wonderful slate-writing & portraits – (see printed Acct.) most demonstrative ...[3]

---

[1] *Golden Gate* lasted only several years beginning in 1885, but during its period of existence it was one of America's most important spiritualist newspapers.

[2] Wallace's visit to San Francisco was well publicized, both before and during. Many newspapers carried stories of his impending arrival, and one or both of the scientific lectures given on May 25th and 27th were covered by local titles, including the *Daily Alta California*, the *San Francisco Chronicle*, *The Morning Call*, and the *Daily Evening Bulletin*. From the *Chronicle*: "... a large and cultured audience was present in Pioneer Hall last evening to listen to the lecture by Alfred R. Wallace ... The lecturer was introduced by Professor Joseph Le Conte of the chair of geology and zoology in the State University ...". The *Call*: "... The notable features of the subject were illustrated in a series of several scores of lifelike and highly colored places thrown upon a broad canvas with a stereopticon ... The lecture ... proved a highly instructive and pleasing hour to the audience." The *Alta California*: "... Professor Le Conte briefly alluded to evolution as the greatest idea of modern times, and the lecturer as the greatest living champion of that theory."

[3] "While in San Francisco I had an invitation to see a wonderful Slate-writing medium, and I & John went & had the most surprising & satisfactory seànce I have ever had. It has completely staggered & converted John. In less than half an hour we had four slates covered with writing all lying on the table under our own hands after having been thoroughly cleaned, & in a bright room close to a window, at 10 am. The messages were signed 'Elizabeth Wallace' – 'T. V. Wallace' – 'O. Wallace' – and another 'John Gray' is written in four colours on a marked slate without any coloured pencils being on it! One of the longest messages was written in about 20 seconds, cont^g. over 100 words! Besides this I asked if writing could be done on paper, & I was told to take off the 6 sheets from a paper block or pad such as are sold here for note writing. I tore off six sheets quite fresh from the shop, put them myself between two slates, held my hand on them, & in a few minutes was told to open the slates. The six sheets of paper lay there apparently blank, but on turning them up successively each had on the under surface a good outline portrait of well known

Afterwards to Park & to Mr Sutro's* to breakfast. Beautiful grounds, & gardens – Seals on rock – numerous – large ... [*Mr. Sutro was a wealthy merchant and one of the magnates of San Francisco; he gave us one of the most luxurious and pleasant breakfasts I ever enjoyed, beginning with cups of very hot, clear soup, followed by fish, cutlets, game, etc., with various delicate wines, tea and coffee, hot cakes of various kinds, and choice fruits. He entertained us also with interesting conversation, being a man of extensive knowledge and culture.*]

Sand hills planted with grass, Austral[n]. Acacias & Eucalypti – fine, & quantities of yellow & blue lupins covering acres of ground with masses of blue & yellow ... San Francisco built much on sandhills. [[pg. 143]] Streets undulating up & down. Cable trams run over them continually ... Curious changes of temp. evenings very cool in summers – winter clothes – Some streets warm, others cold ... Curious local deviations of temp. in vicinity of San Francisco & in Cent. California. Small areas fit for special crops, in other areas close by impossible to grow them. Wind, temp. & rainfall all differ. Rain varies from 10 in. to 28 ... 30 in adjacent districts ... Lecture Evening.

[Saturday, 28 May 1887.] To Alameda with Mr. Muir* & D[r]. Gibbons* [*of Alameda*] in D[r]. G's buggy to Mountains a few miles back. [*Our companion was Mr. John Muir, whose beautiful volume, "The Mountains of California," is, in its way, as fine a piece of work as Mr. Hudson's "Naturalist in La Plata."*] At foot of hills a field & roadside with Calochortus luteus abundant & in full flower – splendid – dug up lots of bulbs. [[pg. 144]] On winding about to top of Mountain. very bare & perfectly dry ... water courses all dry – A few red-wood groves in small valleys ... On top of Mt[s]. about 1500 feet high many clumps of Redwood (Sequoia sempervirens) from stumps of the old trees – growing round in a ring from the old wood – buds everywhere in clusters. Lunched inside stump of a tree 34 feet diameter – was cut down about 40 years ago. [*The doctor has searched all over these hills, and this was the largest stump he had found, though there were numbers between twenty and thirty feet. The tree derives its botanical name,* sempervirens*, from the peculiar habit of producing young trees from the burnt or decayed roots of the old trees. These enormous trees being too large to cut down, were burnt till sufficiently weakened to fall.*] many others on hills 20 to 30 feet diam. were sometimes 300 feet high.

Day intensely hot – 95º to 100º in shade. Hot wind, north, over large area of lava bare – back at 9.30 ... Diplacus glutinosus, plentiful on hills. Mimulus comn. genus

---

men, one D. D. Home quite recognisable, one said to be 'the spirit portrait of Mary Wallace'. This was the most marvellous thing I have ever seen, as the paper was used at my suggestion, & no one's hands touched it but my own from beginning to end!" (from a 5/30 letter to Fanny, NHM WP1/5/33)

[[pg. 145]]

[Sunday, 29 May 1887.] Morning 8.30 to Stockton arrived 1.30 – through pretty valleys of range of hills but very bare & dry –

Mary, May, Arthur, William & his wife [John's family] met us [*as well as two of [John's] grandchildren.*] ... Dinner, and at home talking & resting – a few callers Mr. Freeman* in Evening [*Mr. Freeman, a friend of my brother, who had called on me at Godalming with his wife two or three years before, on their way round the world on a pleasure tour. He told me then that he had had good luck in his business, had made a few thousand dollars, his only daughter was just married, so he thought that he and his wife might as well see the world. On asking him how he had made the money, he said, "By handling mules," and this enigmatic profession was explained as buying them in some of the Western States, where they are largely bred, and selling them in Nevada, where there was a great demand for them at the mines, etc. Now he had taken to store-keeping, while his wife kept poultry, and as soon as they had made some more money they meant to go another tour. They had been through Central Europe and Italy, the Holy Land, India, China, Japan, and the Sandwich Islands, and had brought home many ornaments and fabrics from the East*] – very hot ...

[Monday, 30 May 1887.] Holiday – Decoration day – hot – writing letters to Fanny, & to D^{r}. Clarke [Clark*] & Prof. Davidson* – Afternoon to see Baseball game. Evening visitors ...

[Tuesday, 31 May 1887.] Writing lecture ... Afternoon reading. Evening visitors. hot.

[[pg. 146]]

[Wednesday, 1 June 1887.] At home writing & reading – seeing about lamp &c. ... visitors. Call on D^{r}. _____ spiritualist ... Evening lecture – about 130 people[1]

[Thursday, 2 June 1887.] Tin boxes – too large ... Cooler. Afternoon dinner at

[1] The Stockton lectures of 1 and 3 June were not well attended and didn't make Wallace much money, but they were well reported by the city's newspapers. Both *The Evening Mail* and the *Stockton Daily Independent* carried notices of his upcoming dates, and the *Mail* additionally presented a full-column feature on him in its 30 May issue. Both papers covered each lecture with two-column stories including many details of the presentations. On 2 June the *Independent* noted: "At the conclusion of his [first] lecture the speaker was warmly applauded by his appreciative listeners, whose close attention he had held during his remarks. His delivery was not marked by eloquence, but was plain and straightforward, without any unnecessary flourish, as was befitting his subject."

Mr. Freeman's*. Indian & Chineese & Jap. articles. To Pub. Library ...

[Friday, 3 June 1887.] Much cooler ... Hanging up diagrams &c. ... Lecture "Island Life" about 70 people ...

[Saturday, 4 June 1887.] To take down diagrams. Station about tickets to Yosemite ... Boats for S. Francisco full – John got subpœna as Witness for Wednesday. In John's Garden. Pomegranate, Bignonia (Tecoma), Cactuses, Poinciana gilliesii ...

[[pg. 147]]

[Sunday, 5 June 1887.] [*While in San Francisco I had agreed to give a lecture on "Spiritualism," under the management of Mr. Albert Morton ...*] 6 am. to S. Francisco – pm to G. Gate Park [Figure 31] ... Eucalyp. 60 ft. high. Acacias

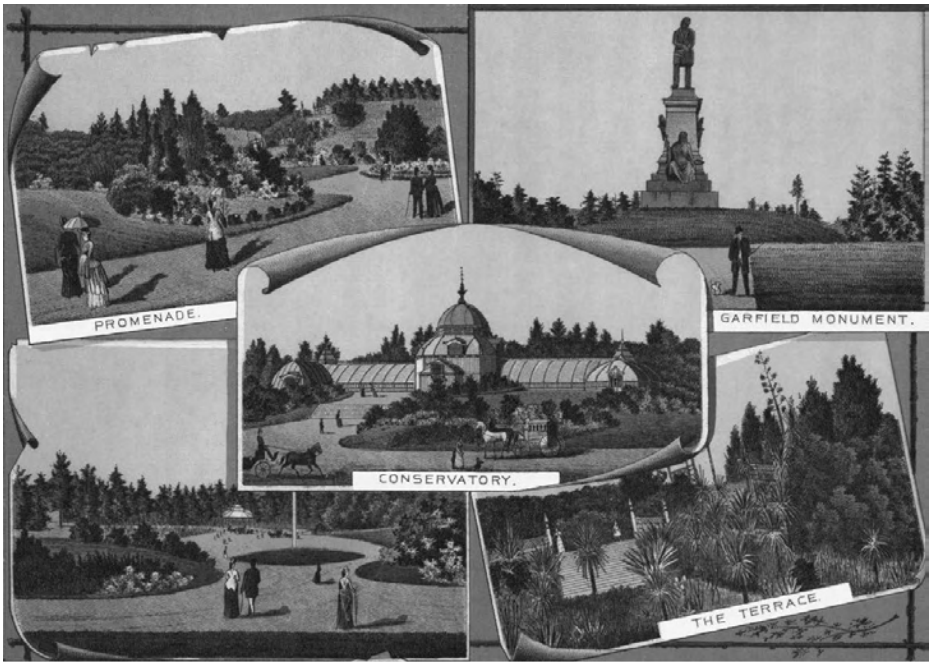


Figure 31: The Conservatory and environs, Golden Gate Park.

numerous – Polyg. [Polygala] Dalmaisiana fine in border – many greenhouse plants out of doors – fine mesembryanthemums – N. Z. shrubs – N. Z. flax & Pittosporums ... Grand Bougainvillea in conservatory – Fine Aloes 20 ft high – Dracæna in flower. Calla ethiopica [aethiopica] abundant. [*I also had a fine*

view of the extensive sandhills, covered with huge clumps of blue and yellow tree-lupines, which produced a splendid effect.]

Eve. Lecture "If a man die shall he live again" 1000 people, 1½ hour – Metropol Theatre [*The audience was most attentive, and it was not only a better audience, but the net proceeds were more than for any single scientific lecture I gave in America.*[1]] ... A. T. Dewey* spoke about Portrait ...

[Monday, 6 June 1887.] To Taber's* – photographs of Yosemite, & portrait for Mining & Sc. Press[2] Chas. G. Sade. (Ed.) Called on Mr. Owens [Owen*] saw 33 colours on Slate under test conditions! Mr. Morton* – $146 for a lecture. To Mr L. Stanford* not at home – D^{r}. Schlesinger* met me – with him séance remarkable. Father [[pg. 148]] and William sent message to Violet to sit – & they will communicate through her – corresponds to father's message on slate! ... P.M. back to Stockton ...

[Tuesday, 7 June 1887.] Wrote to Prof. H. _____ & Mr. L. Stanford*. Evening to Mr _____ cribbage ...

[1] Wallace's June 5th lecture on spiritualism is most likely his most reprinted work. It was presented in full as at least three different pamphlets, and in issues of *Banner of Light* (25 June), *Harbinger of Light* (Melbourne; 1 September), *The Carrier Dove* (San Francisco; July), *Light* (London; 2 July), and doubtlessly many other spiritualist titles around the world. Summaries also appeared in many places, including the day after in the San Francisco newspapers *The Chronicle*, *The Daily Alta California*, *The Morning Call*, and *The Daily Examiner*. Wallace's talk was given as part of the festivities at the annual camp meeting of the California Spiritualists' Association.

[2] This portrait photograph, our frontispiece, was taken June 6th and appeared in the *Mining and Scientific Press* issue of 18 June 1887, as part of a brief feature on him.

[Yosemite, Calaveras, and Final Days in California]

[Wednesday, 8 June 1887.] To Milton for Yosemite at 10 am. Coach at 12 very hot & dusty almost insufferable[1] – To Copperopolis 1000 ft. deserted mining town – wild rugged hills & valleys scrubby vegetation – a few pines, scrub – Pinus sabiniana Chineese [Chinese] Camp (1300 ft.) another pine Pinus Jeffreyi? – Priests [Priest] at 9 pm. supper & bed – long pull up hill – (2,558 ft.)

[[pg. 149]]

[Thursday, 9 June 1887.] [*breakfast [at Priest]*.] Up and down all day – wood gets finer & more varied pines. Sugar pine Pinus lambertiana – fine tall. After Big Oak Flat (2,800 ft.) Abies douglasii & Libocedrus decurrens (Cedar) (=Thuja gigantea of gardens). Crockers (4000 ft.) lunch afterwards fine trees – Silver firs & Big trees. Abies concolor?, & A. nobilis. [*And as we got deeper into the sierra, the vegetation continually changed, the pines became finer both in form, size, and beauty.*]

Sequoia gigantea – coach through [Figure 32] – one fine (5,790 ft.) tree measured 50 ft. round at 6 ft. high – others seen towering over other pine 200 ft. grand columnar trunks very diff. from other pines. At Tamarack flat (6,250 ft.) a few tamaracks Pinus contorta. [*Higher up still we saw the tamarisk pine (*Pinus contorta*) and the grand sugar-pines (*Pinus lambertiana*) the resin of which is quite sugary, with very little of the turpentine taste; and among these, especially on the valley slopes, is an undergrowth of the beautiful white azalea and the handsome dogwood (*Cornus Nuttallii*), with very large white bracts.*] Then to summit 7000, many snow plants Sarcodes sanguinea & down to valley by zigzag road – Bridal veil fall [Figure 33] – & under El Capitan to Hotel. [*From the summit we descended towards the valley, and then down a steep zigzag road, with the beautiful Bridal Veil fall opposite, and the grand precipice of El Capitan before us, then into the valley itself with its rushing river, to the hotel in the dusk.*]

[[pg. 150]]

[Friday, 10 June 1887.] [*As both hotel and excursions were here very costly, we only stayed two clear days, and went one "excursion" to the Nevada Fall, the grandest, if not the most beautiful, in the valley. My brother and niece rode up, but I walked to enjoy the scenery, and especially the flowers and ferns and*

[1] "John went with me to the valley & we took Mary between us. The journey there was dreadful. Two days in a coach awfully jolting, and terribly dusty, clouds of choking dust for hours together and a blazing sun. For half the way we passed through a country all burnt up, the hills all yellow like stubble fields in October and not a blade of green grass anywhere. Then we got into the forest and it was grand and beautiful." (from a 6/24 letter to Violet, NHM WP1/5/35)

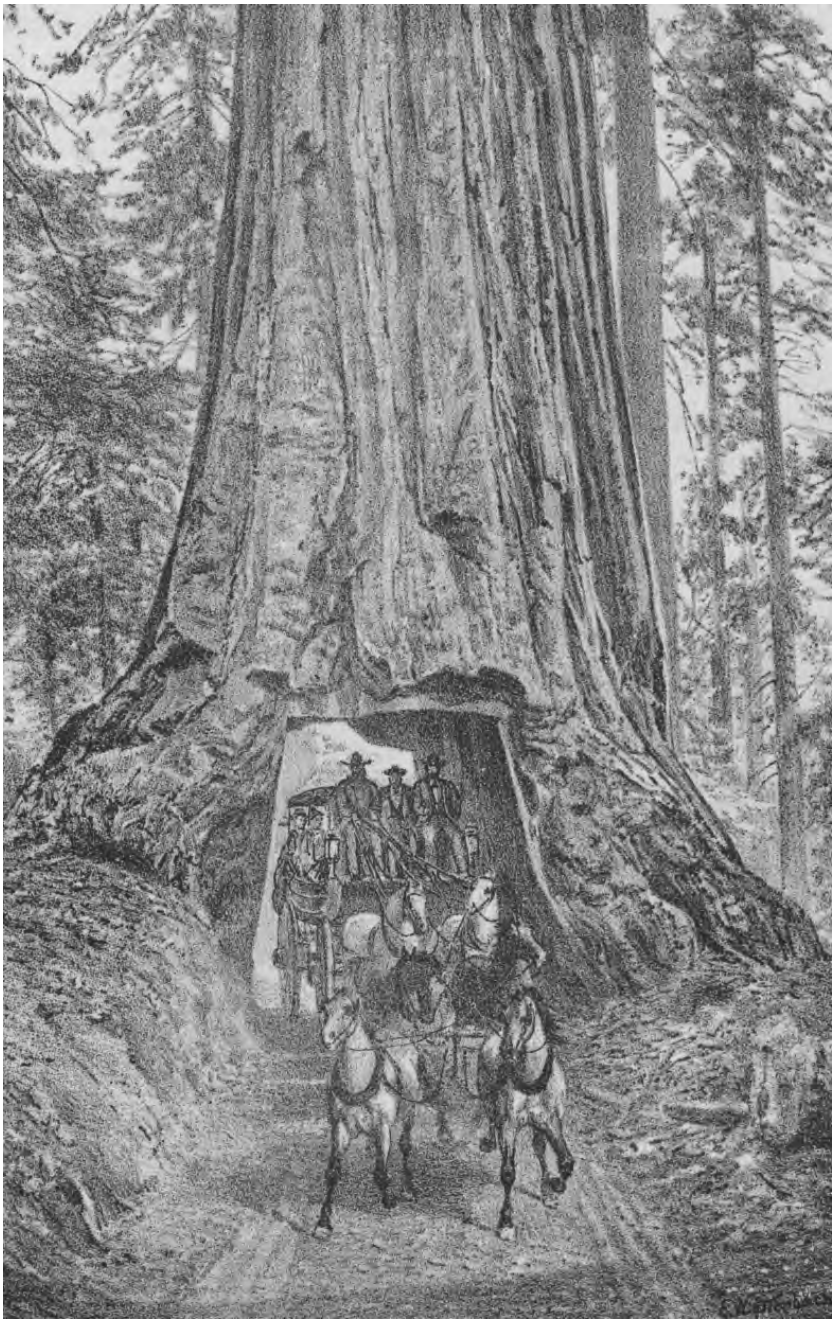


Figure 32: The Warwona Tunnel Tree, Mariposa Grove, stood until 1969, when it was felled by a snowstorm.

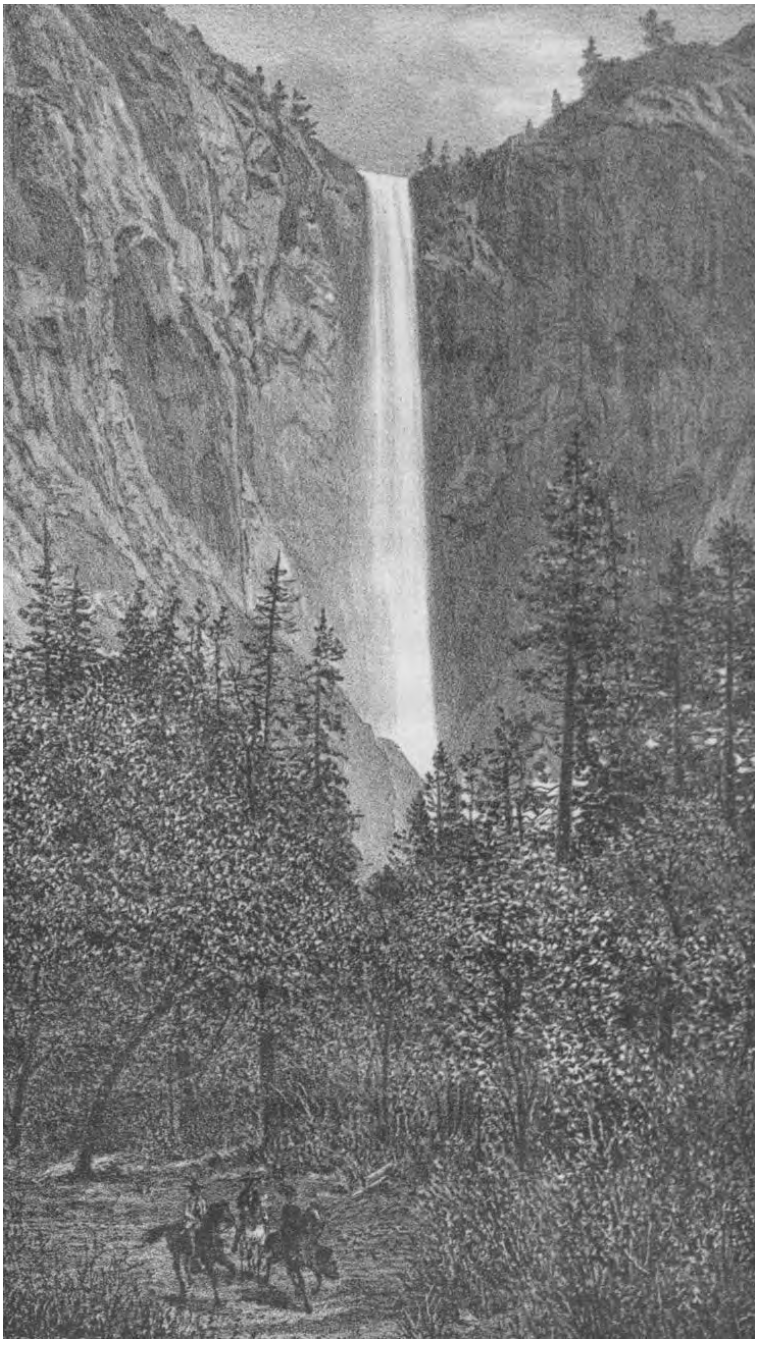


Figure 33: Bridal Veil Falls, Yosemite.

the fine glaciated rocks of the higher valley. The rest of my time I spent roaming about the valley itself and some of its lower precipices, looking after its flowers, and pondering over its strange, wild, majestic beauty and the mode of its formation.] At valley – walk to foot of Yosemite falls – then up trail towards Aquilegia truncata – rich colour, Antirrhinum glandulosum small deep blue – upper falls about 1000 feet & back – many flowers – Calochortus nuttallii, Penstemon lætus fine blue – Castilleja parviflora. fine red bracted – Ceanothus integerrimus. fine white spikes of flower Convolvulus villosus – trailing creamy wh. flowers Eriodictyon glutinosum. shrub – Hydrophyllaceae lilac white tub. flowers ... Valerianella anomala Cur. small, perfoliate leaves, deep yel. flowers Hosackia tomentosa. yel. prostrate legumes. Up^{r}. Yosem. falls grand vapour streams & rockets ... In bogs Dodecatheon – abundant!

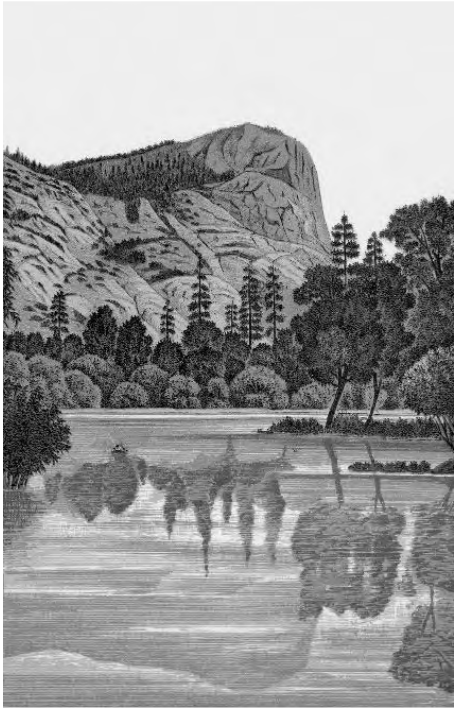
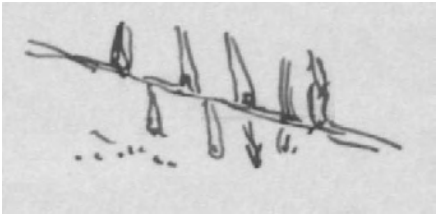


Figure 34: Mirror Lake, Yosemite.

[[pg. 151]]

[Saturday, 11 June 1887.] Up at 6. breakfast & in carriage to Mirror Lake [Figure 34] – grand pass under vert. precipices – great arches of rock (as in Canon of Colorado) domes peeling off – others splitting – vast masses of rock

below – valley in process of formation all very fine. Lake small & from reflections pretty – sunrise & "double reflection" a fraud! sloping



ledge looks like ground with trees growing on it tops of some trees below come up to it & in imperfect light of dawn when reflected seem to grow out of it. People all eager to see this, & the reflected sun, & the profiles, cranes [?], bonnets [?] &c. in the rock markings but blind to grand processes of nature around them Noble trees &c. City life of American people – ignorant of nature! – sad!

[[pg. 152]] Then back to bridge at foot of trail to upper valley of Yosemite. John & May horses, I walk up road above river – grand views of domes precipices & Yosemite falls. At upper bridge fine view of vernal falls – like Hepste fall[1] but 5 times as high & 20 times as much water. Then on up zigzag road above huge precipice over a shoulder 2500 ft. above valley then down to river with fine view of Nevada fall – Many nice ferns in rocks – Pellæa (2 or 3 sp.) Cryptogramma acrostichoides ? Woodsia &c. then on over bridge to Snow's hotel[2] with fine view of fall. Lunch & near to fall with May to get view. Grand fall – water foams & dashes & forms incessant stream [[pg. 153]] of foam rockets in endless forms – the finest fall in valley & prob. one of most beautiful in world. Lovely Penstemon Newberryi in clefts of rocks in sunshine – shrubby – curious Gilia rattani [rattanii] like an Androsace & numerous other pretty alpine plants. The Gilias take on the forms of many other groups, very abundant. Then back by path to top of Vernal fall great parapet of rock with rock wedges below. Then down steps along face of overhanging precipice with ferns &c. down steep slope of ravine with splendid views of Vernal falls. A great Douglas fir just opp the falls – base about 40 ft. above base of fall & top ~~60 or 80 ft. above it. 300 ft. high~~ nearly level. Then above face of steep smooth rock precipice down to foaming torrent, very [[pg. 154]] narrow ledge – nervous – steep granite steps, & then back to horse trail – a very interesting & grand walk.

[1] Hepste Falls (Afon Hepste in Welsh) is a small but attractive waterfall in South Wales.

[2] Transplanted New Englanders Albert and Emily Snow were operating a hotel in Groveland, California, in the 1860s when they decided to seek permission to build an operation at the base of Nevada Fall in Yosemite. Permission was granted and the facility they eventually named La Casa Nevada opened in 1870. They retired as innkeepers in 1889, two years after Wallace's visit.

[Sunday, 12 June 1887.] At 6 am. by coach back, dinner at Crocketts [Crockers] after passing summit nice locality for botanist grand trees about, beautiful Cypripedium montanum grows close by. All about here & summit numbers of the snow plant (Sarcodes sanguinea). Also found fine scarlet Silene Californica – root a long tuber ... Chamæbatia foliolosa covers acres of forest. Mag. Calochortus venustus varying from white to rich purple or pink with darker central bands & vivid spots. banks covered, & in old reservoir thousands along with the beautiful blue Hookera coronaria.

In dryer country near Tuolumne River the curious Brodiæa volubilis twining among birches and sides of long hill from Priest's to river. [[pg. 155]] many ferns new to me, apparently some Adiantums. A small shrub (Prunus fasciculata) with slender racemes of Spiraea like flowers & general heathy appearance covers slopes of valleys –

In Stanislaus valley the fine table mountains formed by cappings of lava, often broken with picturesque castellated headlands, or stretching in long slightly sloping plateaus – Road passed through old river bed of gravel pebbles & sand about midway between summit of hill & present river bed perhaps 300 or 400 ft. from each. The slate rock surface of old land often visible at considerable heights showing that river has cut deeply through rock as well as through gravel since lava-flow.

Supper at Priest's [Priest] at 5.30. Mrs. P. a Scotch woman, asked if I was Scotch – pleasant ... Bed at Chineese [Chinese] Camp.

[Monday, 13 June 1887.] Up at 4 – started at five after coffee & milk. Reached Reservoir (1,010 ft) at 10.30 – John & May went on I stayed to go to [[pg. 156]] the Calaveras Big Trees. At 11 am walked to Reservoir – much parched around. A few curious plants – small Eryngium ? A small leguminosa ? Hosackia with, pale purp. flowers & leaves purp. above & green beneath. a tall Mimulus in marls & other ...

12.30 – waggon to Murphy's [Murphys]. Road very hard & stony – only passenger – tried outside, too much work to hold on – inside rest of way – jolting tremendous – very uninteresting road over open country with low hills, ravines &c. Scrub pines & oaks with ceanothus, wild plum, Aesculus dwarf & other shrubs – all burnt up & dusty – no green on the ground except in very rare patches of swamp. Brodiaea grandiflora (=Hookera) very abundant on road sides, in fields of corn like our English Corn-flower! – 6.30 reached Murphys (2200 ft.) – a large straggling mining town. good hotel[1] – Walked to see mining.

[1] The "good hotel" of which Wallace speaks was originally known as the Sperry and Perry Hotel when it opened in 1856; as of Wallace's visit its name was the Mitchler Hotel (see Figure 35), and it had become a famous vacation destination. In 1945 it was renamed again: the Murphys Hotel. It is still operating, and is both registered as a California Historical Landmark, and listed on the National Register of Historic Places.

cottages with gardens & nice flower-borders with old English garden [[pg. 157]] flowers reminding of England – prob. English miners – Fantastic limestone rocks here & a cavern.

[Tuesday, 14 June 1887.] Start at 7 in a small open car. 2 horses. only passenger – driver a young man very proud of his "colt" a fine young mare he was driving – asked me what I thought of her – asked the same of every acquaintance he met on road – for ten miles the country nearly similar but up

Figure 35: Mammoth Grove (Murphys) Hotel at Calaveras Grove.

valleys or ravines constantly rising – At one place saw a small field completely yellow with a dwarf Mimulus just as with buttercups in England – Pines & firs began to be more numerous – about half way to Trees passed a rocky hillock formed of a light grey volcanic rock – apparently consolidated volcanic mud. Within 4–5 miles of Trees enter forest of grand firs & pines as on the way to Yosemite.

[[pg. 158]] Entered between two fine trees – the Sentinels – again felt difficulty of realising size from short distance or while hastily passing ... After lunch spent whole afternoon walking through grove, noticing all the large trees & measuring some – very varied in character – some swell enormously at base giving room for the large measurements given of these trees – over 100 ft. circumference ... The huge dimensions of these trees are seen best by measuring them at considerable heights.

The 4,700 ft. original "Big Tree" (cut down) is full 25 ft. diam. at 6 ft. from

ground (30 ft. at base) without bark (say 27 ft. with) at 22 ft. high it is 15 ft. diam. (exc. bark) At 80 ft. it is still 13 ft. diam (exc. bark) ...

The "father of the forest" is 9 ft. diam. at 170 ft. up! 14 ft. at 90 ft. up! A grand group of 7 trees round it.

[[pg. 159]] The "Fallen Monarch" is 14 ft. diam. at 26 ft. from ground – and even at 135 ft. is still about 12 ft. diam. (exc. bark).

The highest living tree "Starr King" is 366 ft. high and at 6 ft. from the ground is about 18 ft. diam. tapering upwards very slowly.

"Abraham Lincoln" is a perfect tree to the top swelling little at base, and at 6 ft. from ground is 14 ft. 4 in. feet diameter.

The other pines and firs are very large – many of the Sugar pines being 5 to 6 ft. diam. & one measured at 5 ft. up above the root swelling is 22' 8" circumference = 7 ft. 2 in. diam. The white pines reach nearly the same size – one measured being 5' 9" above swelling. These rise up grand cylinders with a very slow taper but are pigmies by the Sequoias ...

[[pg. 160]]

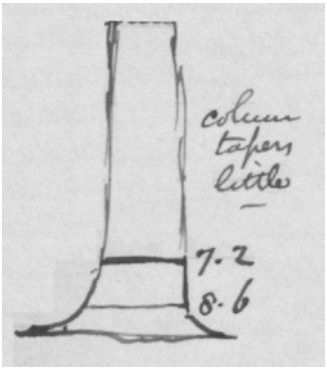
[Wednesday, 15 June 1887.] Walk to S. Grove 6 miles – over a spur & then down a long descent through fine forest with small clearing & lumber camp to Stanislaus River rushing over huge boulders of granite & among massive rocks – Then up a very long steep ascent with still finer timber, one Cedar Libocedrus decurrens (= Thuja gigantea of gardens), near a trickle of water being 7 ft. diam. above root swelling. Reaching the top after a short distance level a moderate descent to Beaver Creek a shallow stream over a pebbly bed – Crossed barefooted knee deep. Then up again & soon after passing ridge met first Sequoias – of fine diameter but not the largest. Over Creek are two grand trees Massachusetts & Ohio. [[pg. 161]] Further east are many fine trees – singly or in groups. One named Agassiz is 33 feet wide at base and has an enormous cavity burnt in it 18 feet wide at entrance & the same in depth, and extending upwards 90 feet – yet tree is in vigorous growth. Here are numbers of moderate sized trees remarkable for their fine clean straight stems, of a brilliant orange brown tint, delicately mottled and with a silky gloss giving them a most exquisite appearance. This seems the indication of vig. growth & health. Here trees can be seen in every direction scattered among the other pines & firs, often groups of several together. Also many twin trees joined to 20 or 30 feet high – [*In no forest that I am acquainted with is there any tree with so beautiful a bark or with one so thick and elastic.*] [*... of all the natural wonders I saw in America, nothing impressed me so much as these glorious trees. Like Niagara, their majesty grows upon one by living among them. The forests of which they form a part contain a number of the finest conifers in the world – trees that in Europe or in any other northern forest would take the very first rank. These grand pines are often from two hundred to two hundred and fifty feet high, and*

seven or eight feet in diameter at five feet above the ground, where they spread out to about ten feet. Looked at alone, these are noble trees, and there is every gradation of size up to these. But the Sequoias take a sudden leap, so that the average full-grown trees are twice this diameter, and the largest three times the diameter of these largest pines; so that when first found the accounts of the discoveries were disbelieved.]

[[pg. 162]]

[Thursday, 16 June 1887.] Morning walking over grove with Prop[r]. & landlord of Inn [Murphys Hotel]. Mr. Sperry* to see the young Sequoias. These are of all ages, but decidedly not so numerous in proportion as other species. They have to be looked for. They grow differently from English specimens being much more slender, soon losing lower branches & not exhibiting the great thickening of base till 30 or 40 feet high. Few of them look very vigorous. The ~~young trees~~ seeds appear to germinate only on moist soil, otherwise cannot compete with other species – All Sequoias burnt more or less – papery dry bark easily catches fire. Supposed by Mr. Sperry* to be due to enormous fire that raged 1000 years ago because very [[pg. 163]] large pines near show no signs of fire. Bad theory – Pines of 6 ft. diam. have 700 rings or more, one has been counted with 900. Great Sequoia Stump – counted by Prof. Bradley* of Berkley University – (1220)

Afterwards measured a grand Sugar Pine near creek s.w. of house – at 5 ft. from ground 7' 2" diam. – and at 1 ft. 8' 6" diam.



Height by shadow about 225 feet. A white pine near it was 5.9 at 4 ft. high – quite clear of root swelling – A sugar pine W. house was felled & measured 252 feet high –

[[pg. 164]] Interesting plants noticed here –
Pentstemon [Penstemon] Newberryi – on Rocks at Stan. [Stanislaus] bridge.
Saxifraga peltata – in water at do.

Dicentra formosa – by small brook – on B. tree trail
Viola lobata – yel. lobed leaves. Com. in woods.
Silene Californica – between Murphys & B.T. [Big Trees]
Ceanothus integerrimus – fl. white like Privet – in all the forests.
Chamæbatia foliolosa – Carpeting woods by acres.
Silene Lemmonii – 4 cleft petals white or pinkish .
Godetia Romanzovii lovely pink on dry open ground
Rhododendron occidentale. The Azalea or Honeysuckle.
Trientalis europaea var. latifolia. Pink. pretty in woods abundant.
Echinospermum Californicum. Fine blue like Myosotis.
Antirrhinum – Collinsia [?] – pretty annuals.
Mimulus – several pretty sp. yel. or yel. & wh.
Corallorhiza striata – fine – yel st[em?] purp-veined.
Epipactis gigantea? by brook – meadow.
Sarcodes sanguinea – Snow plant. fine
Habenaria leucostachys – small white orchis in meadows.
Lathyrus nevadensis? Pretty dwarf bluish pea in woods.

[[pg. 165]] Afternoon walked with Mrs. Paulson & two other ladies to ridge to see the Dardanelles on Sierras – distant prob. 50 miles – snow patched with 7 curious rocky points shaped like towers ...

A vast series of forest clad slopes between. The great extent of the foothills to the Sierra Nevada greatly diminished its effect as a mountain range.

Lichen on all the trees in these forest bright sulphur yellow – very charming effect – on lower foot hills gray as elsewhere.

[[pg. 166]] Dimensions of the Big Tree (cut down) by measurement.

At ground	"	30 feet	
6 feet up	"	25 "	
20 "	"	14.6	All these dimensions are without the bark,
75 "	"	13.0	which being about 1 ft. thick would add say
130 "	"	12.6	2 feet to dimensions below and 1.6 above
165 "	"	10.6	
215 "	"	6.0	

The rings of this tree have been carefully counted at the section 20 feet up & wire marks put in at each 100 from centre by Prof _____ [probably Bradley*] of Berkeley (University of Cal.). The number is about 1220 ...

[[pg. 167]] "Father of the Forest"

At ground 35 feet diameter.
90 feet up 15 " " about These are estimates with bark.
270 " up. 9 " " "
as nearly as I could measure. All this length it is hollow, & for a great part of the distance a man on horseback (both small) can ride.

This great tree therefore seems to have been a little larger than the cut tree at the base, but to have been taller & to have carried its huge size much farther up ...

[[pg. 168]]

[Friday, 17 June 1887.] Walked about Grove took final measures of orig. big tree ... & Father of Forest.[1] At 3 pm. started in coach back – 6 pm. reached Murphy's [Murphys]. After supper walked with 3 ladies & boy to Hydraulic mine. Welshmen, Scotchmen, & Americans, all working miners own it. Turned on the water for us. Mine very rich. Gravel about 30 ft. the lava bed, then white clay (volc. ash) also very rich, in old river bed. Showed me a few nuggets.

[Saturday, 18 June 1887.] Up at 3.30. started at 4 ... To Milton at 11. Hot and dusty. Stockton. 12.30 Found letters from Annie, Violet, Willie, Mitten. G. S. Silk and Miss Jekyll*.[2] Also invitation from Senator Stanford* with free ticket for his R.R. [*When I met him and Mrs. Stanford in Washington, through the introduction of Mrs. Beecher Hooker*, it was as a spiritualist, and to talk about spiritualism.*] awfully hot ...

---

[1] "I walked about among the trees and measured them, and sketched them, & measured them again, till I was well acquainted with them, and I never saw anything as grand and beautiful even in the forests of New Guinea or the Amazon. They are scattered through a forest of other great pines and firs such as I have already described, standing in twos or threes or larger groups, or singly, so that you generally have 5 or 6 in view at once. They are different from all the other trees not only by their great size but by the colours & appearance of their bark which is of a rich orange brown colour and often in the sunshine shines like plush. They usually rise up in straight columns 100 or 150 feet without a branch and from 8 to 12 feet diameter, spreading out at the ground to 20 or even thirty feet diameter. At a distance they look about the same size as other trees & you cannot believe they are so big till you walk up to them, or compare them with the other trees which are only about half the size." (from a 6/24 letter to Violet, NHM WP1/5/35)

[2] "I also have a letter from Miss Jekyll* telling me that most of the plants I sent her arrived safely & all but the lot from Sioux City in good condition. The next lots from Manhattan and Salina in Kansas I fear will not arrive at all as I have just found that the U.S. government have reduced the weight allowed in the Foreign Sample Post from 12 oz. to 8 ¾ oz. My last parcels were just under 12 oz. so they will doubtless be stopped. I have had a lot of tin boxes made here just before I learnt about the alteration & now they will be useless as they weigh 5 or 6 oz. each & that will allow only 2 oz. for plants & cover. I have however hit upon a new plan which I think will do excellently. I have got a lot of tea-lead from the grocers & by wrapping up the plants in that I think they will go safely & well, and with a great saving in weight over boxes." (from a 6/19 letter to Annie, NHM WP1/5/34)

[[pg. 169]]

[Sunday, 19 June 1887.] Writing letters to Meldola, Miss Jekyll*. intensely hot. Sent Plants from Yosemite & Big Trees ...

[Monday, 20 June 1887.] At 6 am. to San Francisco. Called at Tabers* about Photo. To Mr Dewey's* office, out. – To Watkins'*. Photo of "Big Tree". Lunch ... to Mr. Owen's*, talk till near 3. Car & just caught train. Met Senator Stanford* – with him to Menlo Park – drove a mile & a half to Palo Alto flat. fine shrubs & trees. good sized pines & Eucalypti growth of 8–10 years. Green grass bedding in ribbons & patterns. Pleasant shade around house. Cottage, large & roomy, well & luxuriously furnished. Very wide verandahs, shaded by trees & awnings, & with carpets, making a beautiful open air room.

After dinner drove round several [[pg. 170]] neighbouring grounds. Flood's* magnificent mansion, wood, highly decorated, ~~turretted~~ pinnacled & towered painted all pure white, quite a fairy palace, – grounds and gardens full of choice shrubs trees & flowers, but not so well kept as Sen. Stanford's. Two other grounds visited with fine palms, trees & flowers ...

Sen. Stanford employs only Chinamen in his garden, a head gardener and about 30 men. They keep everything perfectly neat & in good order and make wonderful ribband & pattern beds, even having great embossed beds with animals in high relief of coloured foliage plants, – all kept perfect by daily attendance. The verandahs are surrounded by large pots of geraniums & other pot plants, with creepers up to pillars. There are palms, aloes, dracænas & other subtropical plants about with abundance of evergreen oaks producing a fine and pleasant shade in [[pg. 171]] contrast with the bare yellow fields & hills all around.

Sen. Stanford was one of the originators & chief carrier out of the first Pacific RR. across the Sierra Nevada, and is now one of the wealthiest men in America, being able to lay out 20 millions of dollars in founding an University to the memory of his only son who died two years since at Florence or Rome, aged 16. His photo[g]. shows a very pleasing intelligent and amiable youth.

The plans of the building show an ornate central chapel in a kind of Norman Moorish architecture surrounded by a number of low one story buildings forming a series of spacious courts 500 ft. by 250 about – to be laid out in grass, trees, & ~~groups~~ beds of flowers. It is intended for all classes, even the poorest, and arrangements will be made for them to board themselves [[pg. 172]] at the lowest possible cost. The Senator assured me that in the most expensive hotels where the rates are $4–5 a day the actual cost of the provisions consumed is not more than $2½ – 3 per head, per week.

Senator Stanford is a great breeder of racing & trotting horses of which he

has about 500. He took up this as a relaxation from business, – has got the best stock England & America afford, & will no doubt make his amusement pay, as he has done everything else he has undertaken.

Mr. Stanford has a great opinion of his adopted State, California, as the richest part of the Union. He delates on its million of inhabitants producing corn enough for 10 millions – of the illimitable fruit production & the general [[pg. 173]] well being of its people. He wonders why we do not federate the English speaking Colonies & form a Union comparable in strength & extent with their own. Having been Governor of the State, Senator to Congress and for 30 years one of the most prominent men in the country he has received all the most distinguished European visitors, & has been many times to England & to Europe himself. He seems to be a thoroughly practical, energetic, man of good intellect & good feelings; and both he and Mrs. Stanford are now endeavouring to make as good a use of their vast wealth as possible. This they acknowledge is largely due to the loss of their only son in whose memory they are devoting themselves to works of public use and philanthropy.

[[pg. 174]]

[Tuesday, 21 June 1887.] [*Next morning I was taken to see the site of the great university he was going to build to the memory of his son. He had here about eight thousand acres of land, in the midst of which the buildings and residences were to stand. There were large wooden offices close by, occupied by the architect and draughtsmen preparing the plans and working drawings; and the surrounding land was already planted with shade-trees and avenues.*] At 3 pm back to San Francisco. To Baldwin Hotel. called on Mr. Owens [Owen*], out – on Mr. [J. J.] Morse* – out. To hear Prof. Carpenter* Evening lecture on Mesmerism. Good exper^{ts}. very interesting. Boys & Girls at School. Dominoes with imaginary player. Slipping off chair. Cold weather &c. &c.

Back with Carpenter & wife – 2 hours conversation – Spiritualist – Mrs. C. clairvoyante & medium. Cold weath. San Francisco – Ferry boats, Road Cable Cars 4 tracks in Market St. [Figure 36] Undulating streets – Pal. [Palace] Hotel[1] – G. Gate Park.

[Wednesday, 22 June 1887.] back to Stockton l pm. (Pocket book from Big Trees letter from Morton* – Hot –)

[[pg. 175]]

[1] The original Palace Hotel operated from 1875 to 1906, when it was destroyed by the fires following the great earthquake. In its time it was one of the largest, and very finest, hotels in the world.

[Thursday, 23 June 1887.] Nephews Herbert and Percy came. Letters to – D^r^. Gibbons*, D^r^. Bushnell* (Chicago Lecture) Prof. A. J. Cook* (Ag. Coll. Mich. Lecture) Mr. Albert Morton* ... Mr. Stebbins* – Detroit (Lecture) Mr. Lees* Cleveland, O. (Lecture) ...

Evening Lecture on Spiritualism – only about 100 people ... After reducing all Expenses to minimum, loss of 1½ dollars![1] Very hot.

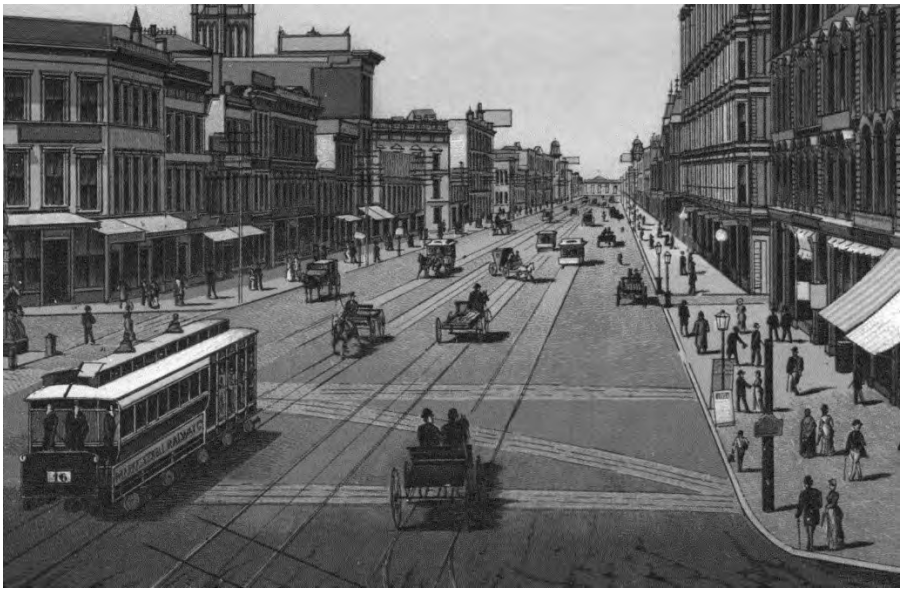


Figure 36: Market Street, San Francisco, looking east from Third.

[Friday, 24 June 1887.] Fine warm, packing – Wrote to New England Trust Co. with $200 cheques & returned Pass Book. Jesse Shephard [Shepard*] – San Diego – Mrs. Wallace with letters to Annie & Violet. Maps of Yosemite &c. returned to Prof. Davidson*.

At l pm. by train to S. Jose & on to Sta. Cruz. Ticket Collector refused Stanford's* pass from Pajaro to S. Cruz. Saying it did not apply to N. division. In Sta. Cruz supper [[pg. 176]] & called on Miss _____ a lady interested in Botany ... talk. has a fine Tacsonia growing out of doors. [*While at Santa Cruz for a day, both going and returning, I saw something of the luxuriance of*

[1] The *Stockton Independent* advertised Wallace's talk ("price of admission will be 25 cent") in its 22 June issue, but it was the city's *Evening Mail* that provided a detailed summary of the talk on June 24th. The summary includes mentions of personal experiences of spiritualistic manifestations not revealed elsewhere in Wallace's writings.

*Californian gardens. The common scarlet geranium grew into large bushes, forming clumps six or eight feet high, a mass of dazzling colour, and in the small back garden of a lady we visited was a plant of Tacsonia van Volexemi [*Tacsonia vanvolxemii*], which grew all over the house, and had sent branches out to an apple tree some yards away, and covered it completely with its foliage and hundreds of its drooping crimson flowers. On the sand of the sea beach were masses of calandrinia a yard across, covered with their gorgeous blossoms, which seemed to luxuriate in the intense heat and sun-glare.*]

[Saturday, 25 June 1887.] Saw Station Master about pass thinks us right. Collector will not change – Telegraphed to Stanford*. Called on D^r^. Anderson* list of Sta. Cruz ferns & saw specimens. To beach – at 2.30 train to Big Trees 2.50 – fine ravine, grand forests group of Redwoods at little Hotel very fine. Largest tree "Giant" 47 feet round at 6 ft. high. 60 ft. at ground – 296 ft. high – many most interesting groups. Col. Ingersoll's Cathedral a wonderful group of 5 or 6 large trees growing out of one base ... numerous rings of fine trees around old trees & stumps – foliage much finer than of S. gigantea – general effect of more vigour & life ...

[[pg. 177]]

[Sunday, 26 June 1887.] Very chilly morning – Walk along road – got several ferns – Gymnogramme triangularis (Gold fern) Adiantum pedatum – Woodwardia radicans – grand 5–6 feet high. Aspidium munitum – fine 4 feet long fronds. Pretty scenery. fine gorge, grand woods – Rock decomposing coarse granite – back along Railroad – very hot. Packing ferns – sent to Miss Jekyll*. Photos. of trees. Lip greatly swollen.

Eve. to Sta Cruz – called on Miss Lemabecker [Lennebacker*]

[Monday, 27 June 1887.] Back to Stockton ... A week at home with swollen upper lip – Had it lanced – poultice, plaster, <illeg.> &c. very painful & awkward[1] ... D^r^. Grattan <illeg.> me water from Art. Well

[1] Wallace was indisposed for a full week. "I am delayed here by a very disagreeable and annoying illness. Just a week ago when I & John started for Santa Cruz I had a little swelling on my upper lip which I thought nothing of. It increased however rapidly till the lip swelled to double its size & became very painful besides making me look hideous. Returning home after 3 days it was as bad & as impossible to poultice – for it was worst on the lower edge of the lip – that I had a doctor & he lanced it, but nothing came out but some dark blood – Since then I have been in the house with a large open ulcer on the edge of the lip, swollen out so as to make it most difficult to eat or drink or to keep anything on it & so tender and sore that nothing can be fastened on it. So I have been holding it in warm milk & water, half the day, & living on slop, and a spiritual friend has mesmerised it, & it is I think getting slowly better." (from a 7/1 letter to Annie, NHM WP1/5/35)

[Monday, 4 July 1887.] To see procession & to hall, to hear Dec. Independence read – boy, well – Oration good – but outrageously delivered. Theory of influence [[pg. 178]] of environment on nat. character – imperfect representation 10 mill. out of 60 mill. – women – &c. ... responsibility of voters &c. &c. ... poem, fairly well recited by lady – but 2 crying infants and crackers outside greatly interfered ...

Procession of all kinds of institutions firemen, volunteers, army corps – officials Associations, &c. .. trades & tradesmen. Crackers all over town.

Evening a procession of animals, clowns &c. ... crowds of people – hosts of crackers & Roman Candles – carriages & buggeys – like a carnival on a small & rude scale ...

[[pg. 179]] Letters to Colby* ab^{t}. lecture ... Boston – Bushnell* (Chicago) Cook* (Michigan) lectures later, Willie – & Redman (ab^{t}. Sex. select^{n}.) Silk ... Meldola ab^{t}. lectures James Clark Esq. (Newcastle) lecture after Xmas. W. Stanley Withers – Sale, Cheshire (Lecture £15.15 clear).

[Tuesday, 5 July 1887.] Got Notary Publics Cert. of living (50c.) & sent off form for Pension to Manager of London & C. Bank. Godalming ... Bt. [Bought] sun hat ... &c. ...

Afternoon D^{r}. Hudson[1] took me to see Harvester at work – Cut, thrash, winnow, & deliver corn into sack all at once – drawn by 16 mules behind – An improved one drawn by steam engine – very light, very compact – very simple and effective – will cut 10 to 15 acres a day. Engine can be detached & used for other purposes.

[[pg. 180]]

[Wednesday, 6 July 1887.] At home packing – gave writing case & amber brooch to May – watch m.spring $1.50. D^{r}. Grattan called – farewell ... Do. D^{r}. Hudson gave each photo.

[1] Probably Dr. A. T. Hudson, M.D., at that time of Stockton.

[Eastward, California to Colorado]

[Thursday, 7 July 1887.] Started at 7 am. left diagrams to be sent to Mich. Ag. Coll. [now Michigan State University] – 9 am. at Sacramento. walk in town fine business street – covered footwalks very pleasant – suburbs shady plenty of trees in side streets. Bought 2 ft. Rule 75c. [*I bought here a very handy two-foot rule, which folded up into a length of four inches ... It was well made, would go into my waistcoat pocket, and has been very useful to me ever since. I have never seen one like it in any English tool-shop, and though it was rather dear (three shillings), it has served as a pleasant and useful memento of my American tour.*] Good breakfast @ 10.30 – train at 12.0 At Colfax in foothills, ascent very gradual. At Gold Run saw effects of Hydraulic mining, a valley for several miles rendered a waste of torn up sand gravel & rock – a little further saw fine golden yel. lilies blazed out grandly – Near Blue Cañon about [[pg. 181]] 4500 ft. el. snow sheds [Figure 37] commenced, and short at first became

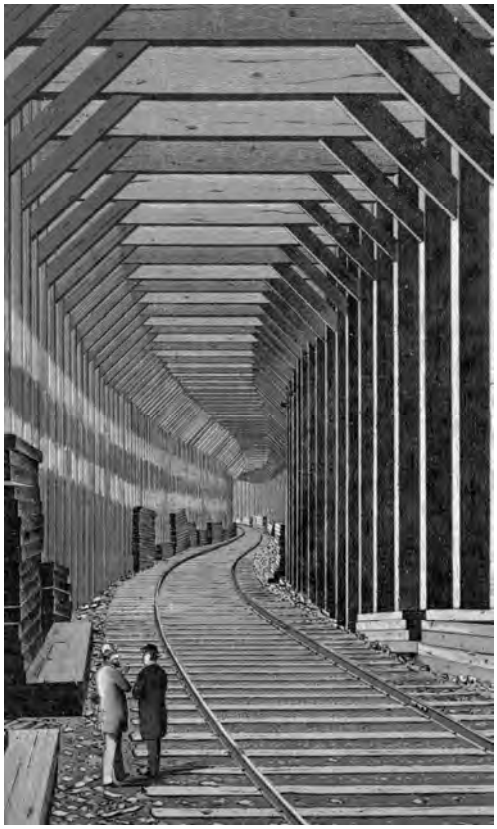


Figure 37: Snow shed on the Central Pacific Railroad.

more frequent till from Cisco to the Summit – 14 miles – they were almost continuous. [*They are formed of massive roughly-hewn or sawed logs completely enclosing the line, but with so many crevices as to let in a good deal of light; but the snow soon stops these up, and in the winter they are as dark as a bricked tunnel.*] Before entering them we had fine views down deep valleys & lateral ravines among the slopes & ridges of which the railroad wound its way.

Country almost all denuded of its large timber, but abundance of young growth of sugar pines, white pines, douglas fir and silver firs, & some cedar.

Rocks granite with considerable area of talcose slaty rocks and decomposing gneiss, also tracts of white volcanic clay or ash, in which gold miners work, and the layers of large round pebless [pebbles] in beds at long intervals showed when ancient river channels were cut across. [[pg. 182]] Arrived at Summit – 6.15 pm. Hotel at Station – large building supplies workers on Railway. Country round bare giant knolls & hills & mountains – little lakes in hollows. Snow on N. side of Mt^{n}. tops. Trees mostly young growth likely place for flowers.

After dinner strolled out to small lake, found fine subalpine vegetation see list at end (flyleaf) of Rattan's* Cal. Flora. [*After dinner I strolled out to a small marshy lake in a hollow, and found a fine subalpine vegetation with abundance of flowers, promising me a great treat in its examination. The country immediately around consists of bare granite hills and knolls, with little lakes in the hollows. Just beyond the hotel there is a short tunnel which brings the railway out to the western slope of the Sierra, whence it winds round the southern shore of Donner Lake on a continuous descent to Truckee and the great Nevada silver mines. The granite rocks in the pass are everywhere ground smooth by ice into great bosses and slopes, in the fissures of which nestle many curious little alpine plants.*

I stayed here four days, taking walks in different directions, ascending some of the nearest mountains, exploring little hidden valleys, and everywhere finding flowers quite new to me, and of very great interest.]

[Friday, 8 July 1887.] After breakfast walked to see Donner lake [Figure 38]. Then climbed up rocks to Donner Peak – ?8500 ft. – Volcanic – On rocks around Summit fine flora – some hollows quite flower gardens, with Penstemons, Eriogonum, Gilia, Potentilla, Bryanthus, Eryngium, and many [[pg. 183]] other flowers. Higher up on bare slopes abundance of Calochortus nuttallii, a few large yellow Composita, and many small species ... Pretty ferns in rocks. Granite rocks often bare and ground down by ice. Railway in tunnel through granite or in sheds ... Sent off Parcel to Miss Jekyll* cont^{g}. Cassiope lycopodoides [lycopodioides], Bryanthus Breweri, and Phægopteris [Phegopteris] alpestris ? Wrote to D^{r}. Bushnell* & John.

Figure 38: Donner Lake.

[Saturday, 9 July 1887.] Morning walking about collecting plants & moss! – Put up parcels for Mitten & Miss Jekyll* – (M. Pent. [Penstemon] newberryi, Pedic. grœn. [Pedicularis grœnlandica], Gilia pungens. Aster scop. [scopulorum] 3 sp. Ferns. Cryp. acrostic. [Cryptogramma acrostichoides] Cheil. gracill. [Cheilanthes gracillima] & Pell. [Pellaea] Bridgesii) (J.) Pent. newberryi, P. heterophyllus, Eriogonum flavum, & the 2 last ferns. Wrote to Mitten.[1]

[1] "Here everything is in perfection and for flowers rivals the Alps at its best. The Sierra Nevada differs from all other mountain chains I have seen or read of in their very gradual rise. The foothills are 70 or 80 miles from the crest the whole intervening space being a series of hills and valleys gradually rising higher, & becoming wilder, till round here the country consists of an undulating plateau of granite broken by rocky knolls & hills & mountains, and diversified by streamlets and lakes and craggy peaks rising one or two thousand feet above it. The general appearance is something like the plateau on top of <illeg.> pass but granite instead of limestone and with no snow clad peaks around. Wherever there is soil among the granite rocks there is a vigorous shrubby vegetation of Prunus, Arbutus, Spiræa, Sambucus, <illeg.>, &c. rendering it impossible to walk about, and on the barer slopes of the mountains are groves of Douglas fir, Abies nobilis, Cedar = Libocedrus decurrens (= Thuja lobbi I think), and two or three pines. Among the precipices and ravines there are some beautiful little Ericaceæ, two of which – Bryanthus Breweri with bunches of red flowers, and Cassiope lycopodioides with lovely white bells I sent yesterday to Miss Jekyll. Among the rocks and on little marshy flats are lovely displays of colours in masses, of 4 or 5 species of Pentstemon, Aquilegia truncata, a lovely dwarf azure blue Delphinium, a blazing red Castilleja, pale yellow tufts of Eriogonum flavum, Sidalcea spicata like a delicate mallow, a pale and a dark yellow potentilla, – with blue lupines, Aconitum columbianum, two or three blue Asters and lots of curious little yellow Composites; and in boggy places masses of Podicu-

Evening saw a Skunk! walked quietly along a few yards from me, saw me, came on quite like a tame animal & ran under a shed in search prob. of chickens.

[[pg. 184]]

[Sunday, 10 July 1887.] Morning down valley & in woods. not much success more Ipomopsis on way home. Sent parcel to Miss Jekyll* – with Ipomopsis aggregata, Heliopsis sp. & Pedicularis grœnlandica – & letter. Valley wide & flat meadows an old lake bottom, abundance of white Polygonum imbricatum, Camassia esculenta, and some Dodecatheon, with the small Pentstemon [Penstemon] in dryer places. This carpets the woods in open grassy places with a sheet of delicate purplish blue (P. confertus, v. cariles purpureus [cæruleo-purpureus]) In pine woods towards Castle Peak saw the Parnassius butterfly.

[[pg. 185]]

[Monday, 11 July 1887.] Walked to small rocky valleys with snow drifts & rivulets above head of lake valley to get moss for packing – Enjoyed lovely bits of rock & water & flowers – grand examples of ice-action everywhere, modified by denudation & degradation since – huge granite blocks everywhere cracking & splitting & moving slowly down to valley. Frost, snow, vegetation, sunheat, all help. Found a gentian not in flower! Gentiana calycosa sent specimens to Miss Jekyll.* Sketch of granite roches moutonées & volcanic hills & peaks. All mountains round here by their forms volcanic. Pliocene volcanoes source of the lava and ash beds lower down. The granite here is a gneiss rudely stratified & full of fragments of other rocks crystalline or volcanic – !? volcanoes broke through it, remelted parts with fragments included? The rounded forms of the granite rocks are here [[pg. 186]] plainly due to glaciation, & have quite a different character to the globular or dome form at the Yosemite & elsewhere due to structural exfoliation. Here they have all the character of rugged, weathered peaks & pinnacles worn down smooth in rounded hummocks – Striation sometimes visible faintly, but weathering is very rapid & has mostly destroyed it.

Even[g]. to Truckee. R.R. winds up a lateral valley for 4–5 miles filled with drift.

---

laris grœnlandica with its queer beaked flowers like a strange Orchis, and the pretty Dodecatheon ellipticum, Dwarf Polemonium, lilies, Erysimums, and a host of others combine to form a charming picture, and of course there are hosts of other things not yet in flower which excite my curiosity. There is also the lovely white and yellow Calochortus nuttallii quite abundant, & growing in the middle of other plants, or by hundreds on the stony mountain slopes, but which is absolutely un-dig-up-able! Its bulb is buried among stones and connected with the stem by a slender radicle which breaks off at the least touch & the small bulb can never be found among the stones. I have tried till I am tired, & give it up." (from a 7/9 letter to Mitten, NHM WP1/5/38)

[Tuesday, 12 July 1887.] 7 am. Stage to Tahoe & return afternoon – 14 miles. Valley winds – East side more precipitous & rocky. W. side more sloping. All volcanic upon granite base. Granite seen only at mouth of valley. [[pg. 187]] East side tiers of crags, 200–500 feet above valley – sometimes semi-basaltic or laminated – sometimes scoriaceous. Peaks & pillars often detached & in strange forms – very picturesque.

? Valley once filled with lava – & lake then deeper. Much of the rock full of pebbles & sub-stratified ? Mud lava.

Lake now partly dammed up with drift – partly rock-basin.

Mountains around it bare & monotonous, higher & flecked with snow on the W.

Highest peaks just over 10,000 ft. Most wood on W. Mountains 2000–4000 ft. above lake – not high in proportion to its size – looks less imposing than the Loch Lomond & Windermere mountains far less grand than the Swiss & Italian Lakes. [[pg. 188]] Dusty, arid! very monotonous. The fine red Ipomopsis abundant & Pentstemons, Pedicularis in meadows pretty. Blue Echinospermum as at Big Trees. Low numbers of small striped squirrels on ground & on trees – tame. Hills & mountains round lake all volcanic and a large sub-circular depression some miles W. of it named Devil's valley (seen on Gov. map) ? a crater – long-continued period of volcanic activity, then denuded & after modified by ice. [*I strolled about the shores of the lake, and into some of the woods near, but all was very dusty and arid, and I found only a few flowers already familiar to me. The hotel* [Figure 39] *looked clean and comfortable, and I had a very good dinner there, and in the afternoon sat on the verandah admiring the view over the lake, it being too hot and dry to go out. I was glad I had seen it, and especially the valley up to it, but I had preferred to get on to the Rockies as soon as possible. I therefore went back to Truckee by the return of the stage in the afternoon, and went on.*]

Evening by train to Reno. Just at starting two ladies addressed me who had met me at Boston at Meeting of the Am. Ass. both Botanists who had been camping out in the Californian mountains – Miss J. W. Williams (younger) 964, 18th. St. Oakland, Cal. & Miss Sarah W. Horton* same address. (Elder) [[pg. 189]] Had ¼ hour's int^{g}. bot^{l}. conversation while Train was waiting. Road from Truckee to Verdi (24 miles) passes through most interesting gorges, all volcanic. The rocks in strange forms & exhibiting every character of lava, ash, basalt &c. with numerous layers of river gravels & glacial drift – Side gorges give peeps into interior with castellated cliffs, & sometimes the main gorge narrows leaving just room for the Railway with the river foaming against the black rugged precipice.

Whole country from Gold Run in Cal. to Verdi in Nevada – 80 miles – is a

Figure 39: Grand Central Hotel on Lake Tahoe.

region of old (? Pliocene) volcanoes, only in the district about the Summit denuded down to the granite which there exhibits the grinding power of ice on a fine scale. In this region we have the powers of fire, water, & ice, all manifested together & beautifully illustrating their respective [[pg. 190]] shares in modelling the earth's surface. The long & deep valley of the Truckee has probably been entirely excavated through volcanic rocks since a quite recent Geol. period.

[Wednesday, 13 July 1887.] In Sleeping Car at 7 am. slow porter beds not done up till 9 o'clock – slept at work! quite amusing. Wide valley with volc. mountain arid – turbid Truckee river – where moisture green ... very hot – salt incrustations. Indians & babies at Stations.

At 350 miles from Ogden a great perfectly flat plain – an old lake basin, surrounded by Mt^{ns}.

Between Carlin & Elko, first appearance of rocks that appear to be stratified – slaty.

[[pg. 191]]

[Thursday, 14 July 1887.] 10 am. Leave Ogden – Wahsatch [Wasatch] Mt^{ns}. apparently stratified? schists – lower slopes of debris – cloudy sky.

[*passing Salt Lake City, about fifty miles beyond which,*] Beyond Provo – fine gorge – Thistle Creek – Mt^{n}. clothed with vegetation fine valleys – flowers

Figure 40: Scene in the Utah Valley, Provo in the distance.

Cleome integrifolia – Red soil in bottom – Cliffs of red conglomerate with pebbles – cave – Rain! Yellow Œnotheras, handsome Thistles – Maloaceæ [Malvaceæ] – Garden Golden Rod

Red Castillejas – valley opens at Clear Creek – Strata dipping 30° – whitish ? Tertiary rock. [*When the train stopped at small stations, for water or other causes, I would jump out and gather any flowers I saw near me, keeping a sharp watch for the conductor's cry of "All aboard!" Having with me Coulter's "Flora of the Rocky Mountains," I was able to make out many of the species.*]

Then high open valley with rolling Mt^{ns}. finely cov^{d}. with veg^{n}. to Soldier Summit [*the divide between the Salt Lake and the Colorado basins*] open upland valley pass – ½ mile of snow sheds on Summit – Passed a lot of gipsy like carts & sacks of wool – a Sheep-ranch! Many flowers in this upland valley. Good bot. camp. place [[pg. 192]] Quite a flower gard. blue Pent. [Penstemon] yel. red Ipomopsis & Castillejas fine! 7500 ft. pass. Country like parts of Wales or Scotl^{d}.

Few miles beyond Pleasant Valley Junction [Colton] a fine sandy hor. stratified rock. A pretty close-leaved bluish fir. Also a pine & a cedar? Winding valley – smoke. Castle Gate – & rocks beyond! Lower <illeg.> rocks further valley wider, rocks soften more drift & debris – bare earth &c. beds of blue clay – &c. Tufts of desert vegetation Hor. strata of rock below forms Buttes [[pg. 193]] long narrow mounds of gravel across the valley bottom in various directions sometimes isolated mounds & rows of mounds. very heavy rain ground flooded – no rain before since Sept^{r}. last year.

[Friday, 15 July 1887.] Went back last night, & waited on account of several washouts on the line by the flood of yesterday. A gentleman who got up at 4 am. & saw it tells me an embankment 12–15 feet high was washed away for several yards. A lot of workers were on the spot & built it up with sleepers ~~making~~ laid across ~~tracks~~ & across solid, & we passed over safely. At 8 this morning we were at Excelsior where we sh^{d}. have been at 11 last night & stopped again with news of 2 or 3 more washouts ahead of us, & other trains blocked between them.[1] Uncertain therefore when [[pg. 194]] we shall get on. Luckily the Sleeping cars on this line are Buffet Cars, & we are to have breakfast. 9.30 am Tea, bread & bad ham. Malvastrum Coccineum here. a dwarf wallflower & some prostrate Chenopods and Polygonaceæ. a dreary desert. Mt^{n}. in distance on S.

With few exceptions so far America hardly equals England in floweriness – the swamps, meadows, & Railway banks are often quite destitute of flower colour for scores & hundreds of miles. Here & there are patches of great floweriness, but even then except for novelty, they do not exceed our English Ry. banks & hedge rows & meadows & woods. The Cleome so abundant yesterday by no means excelled our willow herbs and Lythrum; the Pedicularis at Summit did not surpass our Orchises, and I have seen nothing yet equal to our common display of Primroses, Cowslips, Bluebells, Gorse, & Heather. [[pg. 195]] 12.45 pm. Train came up from opp. direct. & we started – 2.45 Grand Junction. Then up banks of Gunnison R. a turbid shoot between cliffs of sandstone, often varied & fantastic but not very high. Here and there patches of cultivated lands & little cabins.

An unfinished country. Bare earth, stones, &c. Rising in the Clear Creek valley country becomes smoother, hills more rounded & more clothed with vegetation – like parts of Wales or Scotl^{d}. ~~Nut-pines~~ Cedars appear at Cedar Creek & other trees by stream. Cutting shows slopes of hills to be a deep alluvial wash, with boulders from above – rich earth. Effect of snow? Yes –

[1] "Such rainstorms & washouts as this occur nearly every year once or twice, and it has been our luck to hit upon it. Had we come on it without warning we might have had a serious accident & in fact we did cross some holes where the strength of the rails was our only support." (from a 7/16 letter to Mitten, NHM WP1/5/39)

wind round among mountains & round head of valleys. 5 short snow sheds before reaching Summit – very like Scotland Cerro Summit 7964 feet. E. side of summit no snow sheds – more grassy vegetation, exactly like [[pg. 196]] upland valleys of Scotland. Both sides patches of flowers – most on west. Clouds heavy about mountains around. Slept at Cimarron. fair Hotel – charges high – Sup. bed & bk. 2.50

[Saturday, 16 July 1887.] 9 am. Started – Gorge directly below Cimarron [Figure 41] – gneiss – winding with rocks pinnacles &c. in fine picturesque forms – firs, pines, &c. At Sapinero emerge 15 miles of gorge. Fine loc. for botanising 2 intermed. stations. Another formation ? volcanic Summit stratified base – Then gneiss again by river. wider valley with sloping table topped mountains.

Figure 41: Black Canyon, Gunnison River, Colorado.

During stoppage gathered Ipomopsis, Lupinus, (sm bl.) & Krynitzkia sp. wh.

Gunnison at 11.5 in a bare open plain with rath. bare rounded hills around – not inviting. [[pg. 197]] After leaving Gunnison many bright flowers in the river meadows, pa. [pale] & dark yel. pink, blue white many species – pink, calm col. – The richest & most flowery valley I have seen. Heavy showers – Gt. patches of Dodecatheon. Ranches, low log huts. Masses of Lupinus. Thick beds of river gravel in this valley. both firs & pines before reaching Sarjent [Sargents] (8400 ft.) Good Station for subalpine botany –

Marshall Pass – fine – up many winding & branching valleys. on summit fine flowers – vinous purp. Pentstemon gathered by passenger on Summit, mtns. mostly covered with deep drift makes R^{y}. easy. going down in one place 3 lines are seen below each other.

Salida Dinner in flat valley 3.30 Ent^{d}. upper valley of Arkansaw [*sic*], hill & mt. conical or pyramidal forms, smooth or jagged [[pg. 198]] Granite rocks, & tors strange & fantastic forms – blocks peaks balanced rocks like hundreds of Tors, combined.

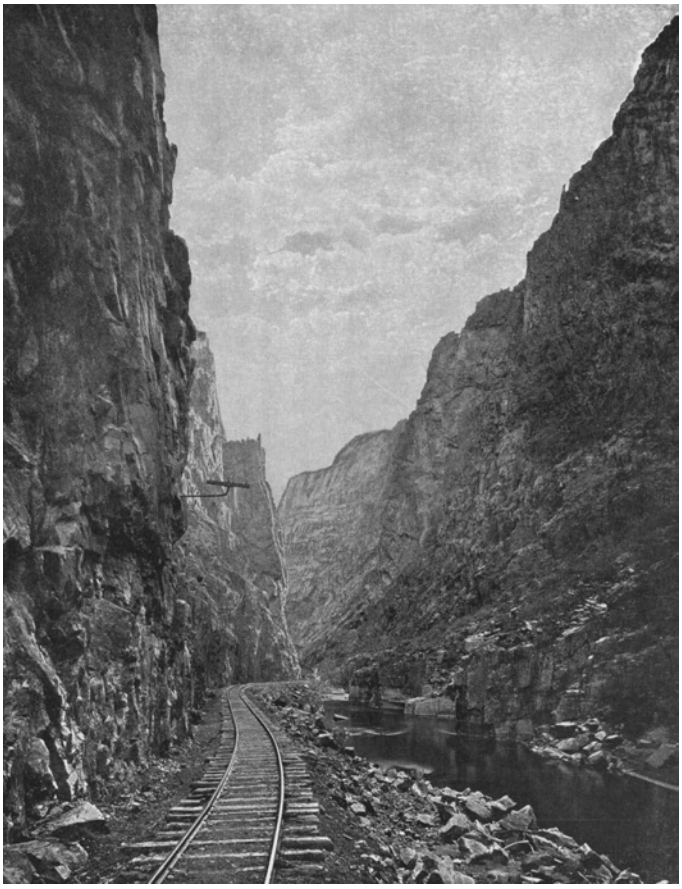


Figure 42: Royal Gorge of the Arkansas River.

Then a good deal of open rocky valley – and then we entered the "Royal Gorge" [Figure 42] – fine towering rocks (gneiss) of fantastic form & colouring closing in upon river & leaving hardly room for R^{y}. Often vertical prec. 1000 feet high? side canons narrow slits or winding majestic gulleys – vertical walls

of quartz dykes standing up – all very fine! River roaring & raging close alongside. [*It was a fine example of the cañons of the Rocky Mountains, and of the skill and enterprise required to build a railway through such a country. But there are many other lines which penetrate still wilder gorges, and which have overcome much greater difficulties, and I greatly regret I could not afford the time and cost of visiting these. As compared with Switzerland, the Rocky Mountains are very poor in snow-clad peaks and high alpine scenery, but are quite equal, and perhaps even superior, in the number, extent, and grandeur of its cañons or deep valley-gorges.*]

Reached Col. Springs [Figure 43] at 10.30 – to Antler's Hotel[1]

Figure 43: Colorado Springs: Pikes Peak Avenue, showing Antlers Hotel and Pikes Peak in the distance.

[Sunday, 17 July 1887.] Bag checked but not got. Morning got it at near 10 o'clock. 10.30 [*by the branch railway*] to Manitou [*Springs (6360 feet) – the "Soda Springs" of the old-time trappers, mentioned in some of Mayne Reid's inimitable stories.* [Figures 44 and 45] – letter from Miss Eastwood* will go to Gray's Peak with. [[pg. 199]] [*I spent the morning walking up some of the curious little valleys that open at once into the mountains.*] Walked up Williams

[1] The Antlers Hotel (see Figure 43) was built in the early 1880s by General William Palmer, who would later found the Denver & Rio Grande Railroad on one route of which Wallace had just ridden. The hotel burned down in 1898, but was immediately rebuilt.

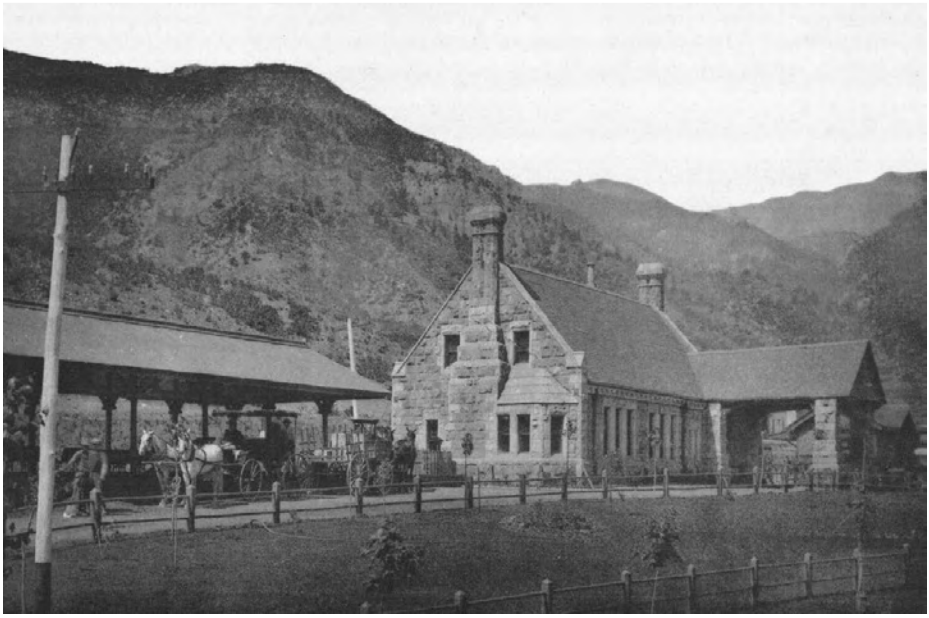


Figure 44: Denver and Rio Grande railway station at Manitou Springs.

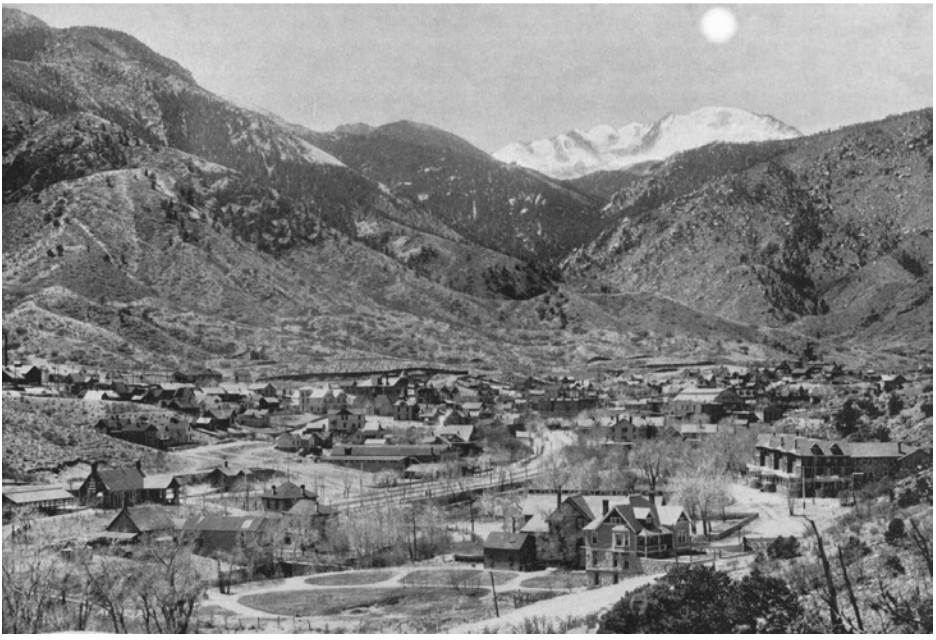


Figure 45: Manitou Springs, Colorado.

Cañon – small but picturesque – granite base limestone over precipices & caverns – very little moss, one hepatic! Monarda fistulosa didyma? very brilliant lilac – 2 bluebells C. [Campanula] rotundifolia small and C. _____. Met gentleman walking up from New York – had been twice to Europe wife from Pembrokeshire, now first visit to Rockies. Good dinner, afterwards to Manitou Hotel saw Mr. Pangborn's wife ill could not come for a drive – [*After dinner, it being too hot to walk,*] Got a buggy for $3. to drive to Garden of Gods & Glen Eyrie – The former very grand, picturesque, fantastic, & beautiful. Rocks degraded into all sorts of curious forms [Figure 46] – Stratified

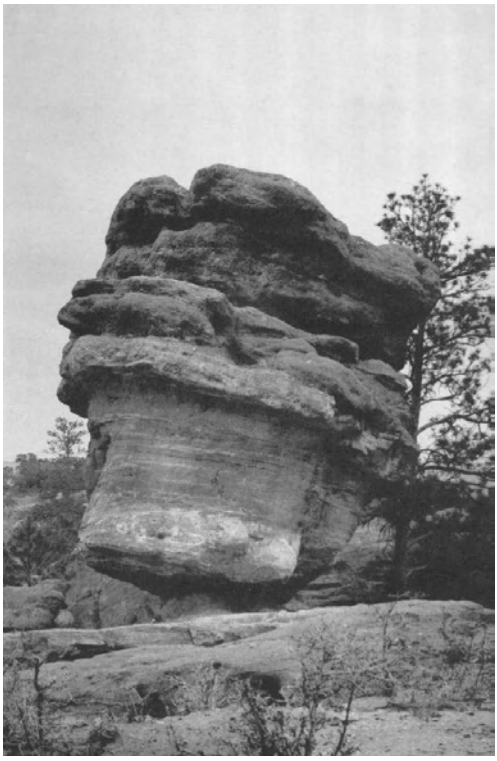


Figure 46: Balanced rock, Garden of the Gods.

Sandstone of various hardness. Overhanging pillars, forms of animals & men, a most perfect old Irish peasant, a Scotchman with cap [[pg. 200]] the "lady of the garden". Rock at entrance of Garden hor. mushroom forms – then oblique human &c., then animals of many kinds – but the finest of all are the grand gateways [Figures 47 and 48] – of vertical strata of bright red sandstone 300 feet high, some split into narrow separate plates, all very narrow – many smaller erect walls parallel to these, and behind them a somewhat similar wall of white

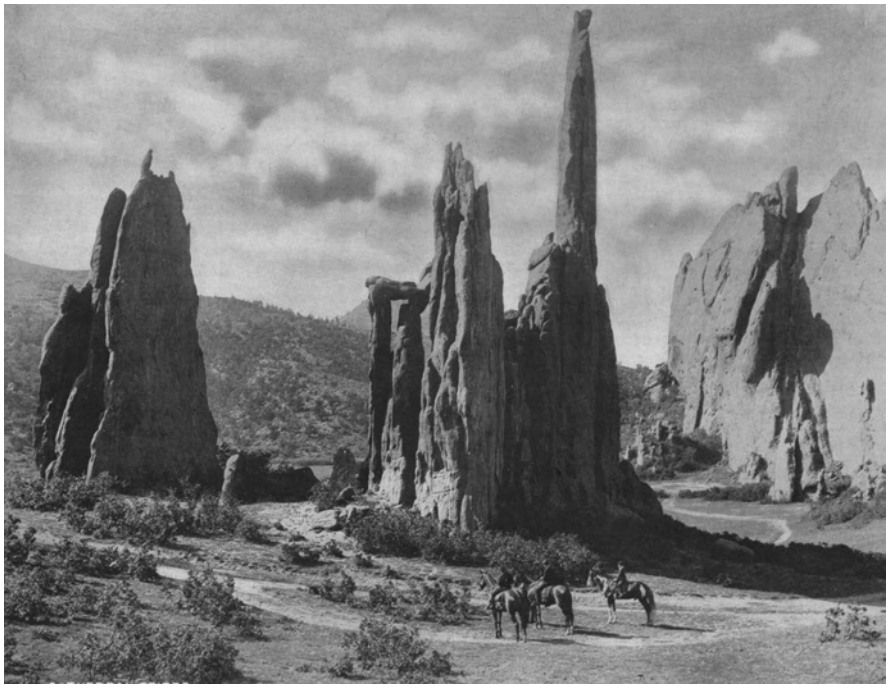


Figure 47: Cathedral Spires, Garden of the Gods.

Figure 48: Gateway at the Garden of the Gods.

limestone. Through the gateway a most splendid view of the mountains. altogether one of the grandest and most uniquely beautiful views I have ever seen – not even excepting the Yosemite.

Glen Eyrie is a picturesque valley & gorge, with somewhat similar rocks but more columnar standing up isolated to a great height – but not to compare with the Garden of the Gods. Vegetation preserved & very pretty with [[pg. 201]] lots of wild flowers.

Afterwards up Ute pass to Rainbow Falls – a wild & picturesque Canon & fine small fall through a granite gorge ... The "boiling" springs effervescing and tasting like good soda water very interesting. [*Here, where the mountains rise abruptly from the great plains, which are themselves more than six thousand feet above the sea, are a group of springs situated near together on a small plateau, yet each of different character and composition. The most interesting is the "boiling spring" or "soda spring," which is so full of gas that it* looks *as if boiling, but is really effervescing. It is as clear as crystal, and tastes just like good aerated water. The springs are surrounded by several pretty hotels, and a small number of shops, boarding houses, and private residences.*] Bought photos. of G. of G. [Garden of Gods] (3 for 50c) & brooch of Pike's Peak Amethyst for Violet – $2.

[Monday, 18 July 1887.] To Denver. Letters – wrote to Prof. Cook* – Mr. Lees*, Cleveland, O. & John. Bought 2 prs. Moccassins $2. & $1½.

[Tuesday, 19 July 1887.] By rail 8 am. to Graymount [Graymont] 1.30 pm. Loop to ascend 2 moraines which cause abrupt rise in valley. [*At Graymount we found a tolerable hotel, where we stayed a few days to explore. There were two valleys from here, the most northerly and larger, called Grizzly Gulch, penetrated further into the mountains to the north of Gray's Peak; the smaller and steeper leading to a small collection of miners' huts called Kelso's Cabin, and then along a wide, upland valley just above timber-line up to the very foot of Gray's Peak, whence a winding mule-track led to its summit.*] After dinner out (with Miss Eastwood* [Figure 49]) found Pyrola rotundifolia v. uliginosa (Red) & Linnæa borealis, red var. (to Miss Jekyll*). fine view of Grays peak.

[[pg. 202]]

[Wednesday, 20 July 1887.] Walked to Kelso's Cabin & Steven's Mine. 3 miles – 11,000 ft. fine upland valley just at Timber line – no accommodation. showers. fine view of Grays Peak – found Geranium richardsonii, Pentstemon glaucus , var. stenosepalus – wine colours, & white, Castilleja integra! fine, and Primula Parryi, (11,500)! Parnassia fimbriata! (These 4 to Miss Jekyll) Also Campanula rotundifolia, large – Phacelia sericea, lovely – Zygadenus ~~glaucus~~ elegans <illeg.> – Arnica cordifolia, – Mertensia siberica [sibirica] – abundant

Figure 49: Alice Eastwood, *ca.* 1883.

fine Aquilegia cœrulea! splendid grand! Up to 11,500 ft. Polemonium humile, a gem! Polyg. [Polygonum] bistorta var. oblongifolium, Adoxa moschatellina, Silene acaulis – not very fine. Claytonia arctica – 11,000–14,000 ft. Arenaria alpina, Pedicularis grœnlandica, P. parryi (wh.) Eriogonum ovalifolium, Pentstemon [Penstemon] confertus v. cæruleo purp., Senecio fremontii broad yel. rays, S. Bigelovii – nodding rayless heads but bright yel., Erigeron [[pg. 203]] grandiflorum [grandiflorus] v. elatior hairy involucre, – E. macranthum [macranthus] fine colour – E. glandulosum – dwarf ... Potentilla fruticosa, fine. Lloydia serotina, 11,000 ft. Swertia perennis, in bogs 10,000 ft. 11,500 ft. ...

[Thursday, 21 July 1887.] Walk up Grizzly Gulch about 3 miles to miner's house – met 2 men. asked us to dinner, – staid good soup, pork & peas with Coffee ... Told us about fine places for flowers higher up – went with us – ledges along rocks snow just disappearing, perfect flower gardens! about 11,500 feet. [x]Mertensia alpina, [x]Ranunculus adoneus, [x]Trollius albiflorus, [x]Parnassia fimbriata, [x]Phacelia sericea, [x]Aster fremontii (These six packed in 2 Parcels for Miss Jekyll.) also Anemone narcissiflora, Ranunculus nivalis [E.], Delphinium occidentale, Aconitum columbianum, Cardamine cordifolia, Silene acaulis [B.], Arenaria Fendleri, Trifolium Parryi?, Astragalus alpinus [E.], Dryas octopetala [B]

(abundant at 11000 ft.) Sibbaldia procumbens [B.] [[pg. 204]] Saxifraga punctata, 10,000 ft. – Sedum rhodiola [B.], Sedum rhodanthum, Ligusticum montanum, (10,000.) Valeriana edulis, V. sylvatica, Actinella grandiflora [<illeg.>], Hieracium sp. (orange) Primula angustifolia! Androsace septentrionalis [E.], Chionophila Jamesii [<illeg.>] (11,500 ft.) Mimulus luteus v. alpinus, Veronica alpina [B.], Pedicularis racemosa like our Eng. sp., P. scopulorum (11,500 ft.) Oxyria digyna [E.], Salix arctica [E.] var. petræa ... Zygadenus elegans. (35 sp.) ... Polygonum[1]

[Friday, 22 July 1887.] Paid Bill at Jenning's Hotel Graymount [Graymont] $9 – 3 days – Walk to Kelso's. Mr. West, English Mining Engineer overtook us with young Virginian we saw yesterday at Grizzly Gulch. Mr. W. asked us to come to his hut high up the valley to sleep before going to Gray's Peak. Had dinner at a miner's house. [*I was greatly pleased with the little chipmunks – a very small ground-squirrel – which came round the door to pick up crumbs, and after a little time entered the house and ate whatever we gave them without any fear. The miners are fond of these little creatures as we are of robins, and thus they become quite pets about houses in the wilds where they abound.*] Afterwards walked up the valley to the hut by [[pg. 205]] some small lakes – in high valleys – about 12,300 ft. A miner in charge of Cabin went down to bring up our baggage, returned without it, it not having been sent as promised from Hotel. Arranged to have it sent to Grizzly Gulch where we are asked to go tomorrow. Went up to a ridge among bare rocks to see view over mountains, fine. – Found Aquilegia? n.s. & Omphalodes nana v. aretioides Gray. Chænactis douglasii v. alpina, Senecio Soldanella (purp. leaves). Arenaria alpina? (minute) Pentstemon [Penstemon] glaber v. alpinus.

[Saturday, 23 July 1887.] Slept in clothes in dirty miner's bedding, slept pretty well. Up at 5, fine lighting, breakfast – putting away yesterday's plants. At 7 am started for Grays peak. made short cuts up pretty flowery grass banks & along the ridge reached summit at 9.30 [*On this side the ascent was very easy, over grassy slopes interspersed with streams of loose stone fragments, everywhere dotted with interesting alpine plants. The summit was a nearly level plateau, with precipices on the northwest, and with a magnificent view all round, only limited by the yellow haze which cuts off the horizon.*] Magnificent day no clouds saw Holy Cross Mt[n]. [Figure 50] Back slowly – plant-collecting. Cabin at 12.

[[pg. 206]] Found many nice plants – Omphalodes nana in abundance, also Polemonium humile, Saxifraga nivalis, Potentilla Plattensis, P. dissecta – high yel. Camp. [Campanula] uniflora Gentiana frigida, (large wh. spotted fl.), G.

[1] We have been unable to determine what the "x", "E", and "B" notations represent. Possibly the "E" and "B" items were going to other collectors back in England.

Figure 50: Mountain of the Holy Cross, Colorado.

tenella, (minute) G. prostrata, Silene acaulis, Erigeron uniflorus, Androsace, Oxyria _____, Chionophila Jamesii, Sedum rhodiola, Saxifraga cernua. (minute ivy leaved) Arenaria biflora v. obtusa (minute) Trifolium dasyphyllum, & T. nanum, Castilleja ~~alpina~~ pallida v. septentrionalis, Mertensia alpina, Thlaspi alpestre, Papaver alpinum? ! Synthyris alpina, (high) Eriogonum cæspitosum (12,000 ft.) Chænactis douglasii, var alpina, Senecio aureus, v. croceus, Saxifraga chrysantha. Actinella grandiflora, Swertia perennis. (fine col.)

Afternoon over pass through fine alpine valleys with abundance of flowers, & down through woods with innumerable fallen trees & no path to Grizzly Gulch to Mr. West's – quantities of Primula Parryi in woods – descent of ab^{t}. 2000 ft. – tired.

[[pg. 207]] Parcels to Miss Jekyll*.
Gentiana frigida – Aquilegia cærulea (1)
Pentstemon Harbourii, Aquilegia brevistyla, Senecio aureus var croceus (2)
Trollius laxus v. albiflorus – Mertensia alpina (3)
Polemonium confertum (two packets) (4)
Anemone narcissiflora. Cast. [Castilleja] integra! Bryanthus empetriformis (5)
Gentiana frigida. (2 parcels) (6)

In Box for Mr. Backhouse* of York. Omphalodes nana v. aretioides, Primula angustifolia.

[Sunday, 24 July 1887.] Morning walked up over rocks grassy slopes, & rock

streams to mine on side of Torreys Peak – dinner in miner's Cabin. To mine frost on sides of tunnel thick crystals. goes in about 500 ft. then subterranea warmth begins. [*After going in a few feet the whole surface of the tunnel becomes a mass of ice-crystals as white as snow, showing that the mean temperature of the earth at a few feet deep is below the freezing-point. This continues for a distance of about five hundred feet, when the increase of temperature with depth becomes just sufficient to prevent freezing, and with every twenty or thirty yards further an increase of warmth is felt.*]

Walk down & up main valley of Grizzly Gulch along wonderfully flowery slopes. Aq. [Aquilegia] cærulea & the red Castilleia [Castilleja] being the chief masses of colour. Sides of stream in main valley Bryanthus empetriformis [[pg. 208]] new to Flora of Colorado. then up rocks & slopes to an upland with small moraine lakes – flowers everywhere – Prim. [Primula] Parryi on all damp banks & swamps – Then down through banks, rock-ledges, groves, shrubs & woods everywhere crowded with flowers. Columbine superb! Arnica cordifolia – in yellow sheets in woods.

[Monday, 25 July 1887.] Up at 6. am. Walk to rocks again. Got a few plants Gentiana affinis, Mertensia alpina, Pedic. [Pedicularis] grœnlandica & Parnassia fimbriata. (2 parcels Miss Jekyll*) – 13 parcels in all (20 sp.)

Walk to Graymount [Graymont]. Train to Denver, saw fine plants of Mentzelia. Clear Creek Canon grand – Rocks twisted & tortured in indescribable forms. Letters at Hotel & papers – warm. Mr. & Mrs Eastwood called evening. Packing – Letters to Postmaster, Trucker, letter to Ag. Coll. & to Mr. [Joseph A.] Allen* about proposed visit. Packing –

[[pg. 209]]

[Tuesday, 26 July 1887.] Bought 3 photos. of Manitou & Man^{t}. Park. To Depot at 8 – started 8.30 – alone in Sleeper! Grand view of Rockies – Long's Peak – Peaches bought at Denver Station poor & dry! Imported unripe – Typical! Sleeper ft. 3. 4½ berths & 2' 2" gangway = 8 ft. 11 in. inside 80 feet long – on two six wheeled trucks

At Julesberg (197 m. from Denver) stopped for Californian Train, walked out on Prairie. boundless expanse undulating slightly, short wiry grass with a few patches of weeds here & there – a purple & a yellow Cleome a pretty entire leaved dwarf Solidago, a small purp. Hosackia, a yellow flow^{d}. prickly Solanum and a small wh. flow^{d}. Asclepiad A. [Asclepias] verticillata with linear crowded leaves like an Hippuris, and several terminal umbels of 7 fl. each. The soil consisted largely of gravel composed of small quartz & crystalline pebbles not much rounded. Ants gathered the smaller of these into Hills of [[pg. 210]] uniform size of small peas, and a foot or two high.

Near N. Platte saw fine purp. Iris in marshes by R^{y}. Fine grass here, plenty of cattle – a large muddy shallow river full of mud banks ab^{t}. 1 m. wide – Euphorbia with wh. fl. & white edged bracts & up^{t}. leaves comn. & showy.

[Final Stops: Chicago, Michigan, Ontario, and Quebec]

[Wednesday, 27 July 1887.] Morning in country near Omaha fine undulating prairies, with occasionally hedges! meadows, haystacks, & horses & cattle looking generally more English like than usual.

[*After crossing the Missouri*] At Council Bluffs walked out on waste ground. Abundance of Cleome, purp. Composites like Centaurea but with no ray fl., Sunflowers, & pretty purp. fl. growing from dense heads like a Plantago, a weedy Verbena & some others not in flower –

More undulating country – fields of I. [Iowa?] Corn – More flowers. Yel. Œnotheras, Rudbæckia [Rudbeckia], [[pg. 211]] Rhus with red fl. clusters – or. [orange] marygolds – The wh. leav^{d}. Euphorbia often the most showy flower.

Towns laid out sq. – but look picturesque from inequality of ground & of buildings. School or Council House on elevation.

Further on no flowers – & at every place we stop none at all. Grass & weeds closely cropped off.

Every engine that has passed us, poured forth a column of smoke of intense blackness & density. This is almost universal. It <illeg.> the carelessness of stoking & of peoples comfort.

Country all cultivated and nearly level, grass & wheat &c. all cut – I. corn growing vigorously in great fields – (Passed Mississippi R. after midnight)

[Thursday, 28 July 1887.] 6.00 7. am. suburbs of Chicago – open fields scattered houses, streets laid out, grass grown miles away from city boom! [*indications of a land "boom," such as are continually got up by speculators.*]

[[pg. 212]] Through pt. of Chicago in Bus, & walked ½ hour up State Street & to Lake Shore – Cloudy, misty, smoke – endless vistas of long par. streets ending in a haze worthy of London. Like all new American Cities great irregularity & incongruity of buildings – small 2 storey wood building will join a handsome shop & this again a palatial Warehouse 7 stories high – This excessive irregularity is distressing – Massive buildings of granite – hovels of wood – On lake shore a space about 100 yards wide devoted to park & promenade but spoilt by shore itself being occupied by 8 parallel lines of railroad fenced off by ugly wire fencing & to cross which the public is informed is at its own peril. ~~These~~ Continual~~ly~~ trains continually belch out black smoke. [*There is here a great area of black dust or mud ...*] The grass is now burnt up The trees are scraggy & black as in London. [[pg. 213]] Dearborn Ry. Station a magnificent building but the Restaurant attached "on Europ. plan" is not worthy of it – holey tablecloth bare table & a general air of shabbiness pervade it. [*I did not regret having no business to keep me in Chicago.*]

On to Valparaiso, 55 m. level or undulating country cultivated, or in

Figure 51: Chicago: State Street, looking north near Madison.

Figure 52: Chicago: Marshall, Field & Co., State and Washington Streets.

original prairie & wood, mowed for hay – in parts now brown & burnt up.

5.30 at Trowbridge [, East Lansing]. Mr. Cook* [*with whom I was to stay*] met me ... Supper at 6.30 tea & fruit. Evening tried Stereopticon poor – no gas – offered to give Darwin lecture, & "Colour" on Monday if good lamp can be used.

[Friday, 29 July 1887.] Sent for Diagrams & trunk ... Writing letters to Spruce, Miss Jekyll*, Mr. Backhouse*. Evening Lecture on Darwinism – good & attentive audience ... Prof. Beal* and Bailey* offered to take me botanising tomorrow ...

[[pg. 214]] A writer in "The Century" for June 1887, well says – "A whole huge continent has been so touched by human hands that over a large part of its surface it has been reduced to a state of unkempt, sordid ugliness; and it can be brought back into a state of beauty only by further touches of the same hands more intelligently applied" ...

[Saturday, 30 July 1887.] Morning with Prof. Beal* to a fine swampy wood or virgin forest of spruce & fir with a few other trees, the ground densely covered with sphagnum a foot or two thick in wh. grew abundance of Sarracenias and of the fine yellow Habenaria ciliaris, – also Coptis trifoliata [trifolia], all growing in the loose moist sphagnum, with Woodwardia and many ferns – Also Vaccinium corymbosum ? 6, 8 ft. high covered with ripe berries and the beautiful red-berried Nemopanthes canadensis. Of ferns Woodwardia virginica, Aspidium cristatum, A. thelypteris, Onoclea sensibilis, Osmunda regalis, O. cinnamomea.

In dryer woods are found Botrychium virginicum, [[pg. 215]] Aralia quinquefolia, Sanguinaria canadensis, Aspidium cristatum, Osmunda Claytoniana, A. [Aspidium] spinulosum, Asplenium filix-fœmina [-femina], A. thelypteroides, Adiantum pedatum, and on side of a lake – Viola pedata on a quite dry bank, and Utricularia minor ?vulgaris in a marsh. [*Throughout my wanderings in the Sierra and the Rockies I had never met with any sphagnum moss, which I should often have been glad of to pack my plants in. In this bit of forest, however, there were acres of such sphagnum as I had never seen before, forming a continuous carpet more than a foot thick, and in this congenial rooting medium there were numbers of very interesting plants.*]

[Sunday, 31 July 1887.] Letters to Annie,[1] Mitten, Lees*, D[r]. Bushnell*, L.

[1] "I had to come here to give a lecture that was fixed before I went to California, and I was asked to give lectures on Spiritualism in Chicago, Boston, &c. but they cannot have them till the middle of September on account of the heat, and as I can do nothing profitable till then & should spend the greater part of what I earned, & get home too late to have any nice weather, and perhaps a

Colby*, & Albert Morton* ... With Prof. Beal* to Bot. Garden[1] & his office seeing many trees &c. offered to send me seeds of any plants I want ... [*On Sunday I saw the botanical garden attached to the college, the library, and the insect collections, which latter were very fine as compared with our English species. Of moths of the genus Catocala, instead of our four species there were about twenty, many of them much larger and more gorgeously coloured, while the Satumias and other groups were in equal proportion.*]

[Monday, 1 August 1887.] Repairing ~~Box~~ Trunk – Packing ferns &c. to Miss Jekyll* & Mitten – Letter to Miss J. – rather cooler. Lecture evening Colour. After to train. Sleeper full below – upper berth shaking & jolting.

[Tuesday, 2 August 1887.] At 2.20 Kingston to Mr. [Joseph A.] Allen's* 2 miles out. My letter not arrived ... [[pg. 216]] ~~To town seeing about baggage passage &c.~~ Arrive at Mr. Allen's*, 2.30 [*I had been invited to spend a few days in a delightful old country house on the shores of Lake Ontario, in the refined and very congenial society of Mr. and Mrs. Allen, and their two daughters. I much enjoyed this visit, and my genuine admiration of the writings of their only son, Grant Allen, was a bond of sympathy. The house is a roomy old-world mansion, situated in a small park with grand old trees, and fruit, flower, and kitchen garden sloping down to the water. Mr. Allen himself worked at his flowers, and had a magnificent collection of gladioli now in full bloom. But what interested me even more was to see rows of vines in the open ground laden with as fine fruit as we grow in a vinery, though the winters are far longer and more severe than ours. But the higher temperature due to the more southern latitude, combined with a clearer atmosphere and greater amount of sunshine, are far more favourable to all fruit and flowers which are uninjured by low winter temperatures.*]

[Wednesday, 3 August 1887.] To Town about passage in S.S. Vancouver. Invitation to Gananoque – went 4 pm. fine dell ravine, trees, rocks, ferns &c. [*One afternoon I went to visit a relative of the Allens at Gananoque, where they have a small cottage on the rocky bank of the St. Lawrence, looking on to the celebrated Thousand Islands. There is an acre of wild ground, with a little woody ravine bounded by granite rocks, where interesting wild plants are found. The next morning I was taken among the nearer islands in a small yacht, landing on some to collect ferns. They are all ice-ground, often mere bosses*

---

stormy passage, I have decided to come home at once, & perhaps go again next year." (from a 7/31 letter to Annie, NHM WP1/5/41)

[1] Now known as the W. J. Beal Botanical Garden, this is possibly the oldest continously-operated botanical garden of its type in the United States (Beal established it in 1872). It is the site of a famous, still-active, seed viability study begun in 1879.

rising a few feet above the water, some of the larger ones having pretty villas and gardens on them.]

[Thursday, 4 August 1887.] About Islands in small yacht – windy – collecting ferns.

[Friday, 5 August 1887.] To Sir Rich[d]. Cartright's [Cartwright*] to tea & look for Trilliums – Talk about Ireland &c. &c. [*One evening Mr. Allen took me to tea at Sir Richard Cartright's, one of the Canadian ministers, at his fine country house in a spacious park, a few miles in the country. One of the sons took me to a wood where trilliums were in flower; afterwards we had tea in a spacious hall. There were several visitors ...*]

[Saturday, 6 August 1887.] Packing &c. ... Afternoon to town with Mr. Allen*. bought Ladies' dust brush for Annie $0.50, & Hammock $1.75. Evening received letter from Boston with checque for Bal. in Trust Co. Wrote them, & to Prof. Beal for seeds &c. & for Prof. Cook to send letters to Quebec. Trillium roots from D[r]. Milman.

[Sunday, 7 August 1887.] Left at 8(7?).00 am for Wharf – boat late. Left Wharf at 11 am. fine passage among islands – cold fine – ice ground g<illeg.> character <illeg.> bits [[pg. 217]] At 2.30 reached Alexandria Bay on American shore. Many beautiful islands occupied by pretty or elegant villas – lawns, flowers & yachts indications of superior wealth & taste of Americans. View from Thousand Is. Hotel very fine – perhaps unequalled for pure river scenery. Wrote to John. Dinner at 3 pm. good. After walk ab[t]. 2 m in country – alternate fields & rock bosses or ridges. completely rounded & furrowed by ice – on some rocks of fine quartzose sandstone the striæ furrows & scoopings perfect

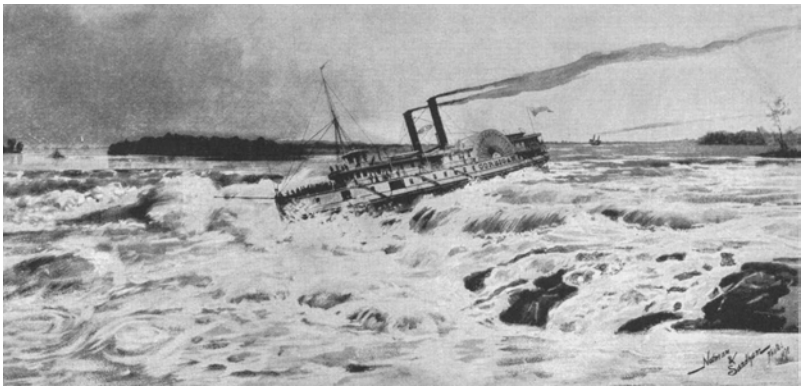


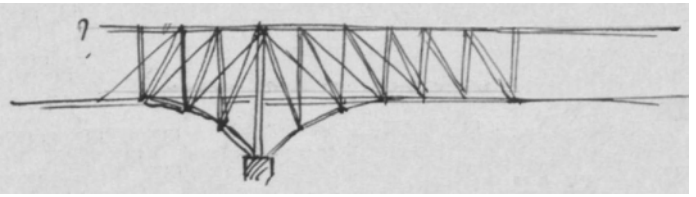
Figure 53: Steamer running the Lachine Rapids.

all trending in general direction of St. L. valley. This the proof of glacial action. direction of boss or rock mound matters not.

[Monday, 8 August 1887.] Morning at 7 am. by steamer to Montreal. passed many picturesque islands [*with occasional distant views of the Adirondacks*] & the whole series of rapids. the two best the Coteau & Lachine [Figure 53] – These rush & [[pg. 218]] boil & form waves like the ocean in a chopping sea with eddies & whirls – & in the latter the vessel passed between reefs & rock ledges requiring good steering – but there is nowhere a perceptible fall of the water as in the rapids of the Rio Negro & many others.

Scenery of St. L. on whole monotonous.

Iron girder bridge of Can. Pac. R^{y}. fine centre spans two girder arches thus



Victoria Bridge 26 tubular spans[1] –

Montreal spoilt by smoke & factory chimneys but handsome city & fine public buildings –

[[pg. 219]] At Windsor Hotel[2] – very fine building. D room mag – parlours & fine corridors. Mr. Iles* the manager met me took me to a room with bath &c. put me at his own table at dinner, & gave me every attention & assistance. [*I had been kindly invited by Mr. Iles ... to stay there a day or two as his guest.*]

Baggage not come from Williams. Sent telegram ... Packing ...

[Tuesday, 9 August 1887.] After breakfast Mr. Iles* with me to drive got Bill on England. found baggage arrived ... passed Customs & took on board. Cabin dirty place ... better below – to S.-S. office got it changed Then drive round Mt. Royal – grand view of City immediately below on sloping plain – abundance of trees penetrating from the outskirts in all directions – abundance of Churches. In city all public notices in French & English. Names largely French. Bought novel. Mocassin slippers $1.25 – Socks .7s – Cotton string 10.c. At Hotel read

[1] Victoria Bridge, opened in 1859 as the first bridge to span the St. Lawrence River, remains an important transportation structure. It now carries both automobile and rail traffic.

[2] The Windsor Hotel (see Figure 54), which opened in 1878 and closed in stages in the next century, for many years ranked among the finest operations of its type in North America. Initially unsuccessful, by the time of Wallace's visit it was just starting to come into its own.

articles by [[pg. 220]] Mr. Iles (the Manager) on Mathematics & Evolution – good. combinations & permutation as illustrating multiplication of effects – in social life, & in nature – on Hotel Keeping – on Poetry as illuminating problems of human life & futurity. Dined with him – admirer of Emerson, H. Spencer, Darwin &c. intelligent & acute –

At 9.30 [*in the evening*] on board ship – hot – slept fairly. At P.O. card from Swinton* letter from Annie.

Figure 54: The Windsor Hotel, Montreal.

[Wednesday, 10 August 1887.] Up on deck at 6 – flat country. dull morning, river often very wide with great flat islands – banks get higher as we near Quebec, arrive at 3.30 – at coal wharves out of town – walk with bag a long way to the town – ~~Scotch~~ Irish Gardener recommends me to private Hotel – "other hotels too noisy & too dear" – walk round Dyffryn [Dufferin] Terrace. monument to Wolfe & Montcalm. pretty garden – fine views – then up to ramparts of citadel grand [[pg. 221]] view of river & country round – very strong. To dinner great pastry & beef steak pie quite English! first decent domestic pie I have eaten – walk into town half deserted. very dull – most of the people talking French. Into Jeweller's shop – native silver-work – snow-shoe scarf pins – bought one $2. Electric light – pretty in gardens & terraces.

[Thursday, 11 August 1887.] Up at 7 walk – saw Irish Gardener – asked way

to best part of town. Offered to show me – went along St. Louis St. & the Grande Allée by new Parliament Buildings very large & handsome – new Drill Hall, fantastic Mooresque – & large wooden buildings for Exhibition, on to open down towards Plains of Abraham. Gardener said there were many Irish & Scotch in Quebec, but far more French than any other. Thought they could not become independent because they c^{d}. not [[pg. 222]] pay their share of Canadian Debt. Suggested that France might help pay it to secure a new French Colony – admitted the[y] might. Gardener has been in Quebec 46 years. winters not nearly so cold as they used to be – is sure of it – noses & ears were frequently frozen off then, now one never hears of such a thing – Fine streets, but being built on & spoilt by the inevitable spec. builders. Corporation sells the land instead of leasing it under conditions – the ruin of all our cities.

Back at 8.10 to breakfast – fairly good. Bill $1.50 – rainy – walk to elevator which conducts to lower town & wharf. Then to wharf & tender to go on board "Vancouver" – not much wet. Much pleased to find no one in my cabin – Started at 10 am. in a small driving rain. Got the last weeks of Weekly Times to post up news.

[[pg. 223]] Evening wrote letter to Mr. [Joseph A.] Allen* – wet. To go off with Agent at midnight.

[Friday, 12 August 1887.] [*Leaving Quebec early in the morning*] Cold & oppression of chest during night got up & soaked pocket hand. [handkerchief] & put on neck & chest with flannel over. morning much better. Dry but cloudy & windy.

During more than ten months in America, taking every opportunity of exploring woods & forests, plains & mountains between the Atlantic & Pacific coasts I have not seen one single humming bird, or one rattlesnake, or even any living snake?

[[pg. 224]]

[Saturday, 13 August 1887.] Somewhat finer, misty – afternoon passed 3 good sized icebergs & several small ones between us & the coast of Labrador – in Straits of Belleisle – cold & rather strong wind S.E.

[Sunday, 14 August 1887.] Dull. strong wind – sea – ship uneasy – breakfasted fairly well then motion much more violent pitching & rolling – sick all day – a little tea & toast evening & to bed. Slept a little.

[Monday, 15 August 1887.] Somewhat smoother – porridge & tea in cabin – about 10 on deck a little cloudy, cold. – down again. – Scotch broth in ~~berth~~ cabin for lunch at l – fish & tapioca pud. for dinner – bad night noise of Engine & pumps very oppressive –

[[pg. 225]] No study of convenience of passengers as in R.R. cars. My cabin, intended for two or three, has not a single shelf on which to lay anything besides one for a comb or brush over washstand – when there might easily be three or four. Then no little hinged table by the sofa wh. would be so useful when a sick passenger is obliged to eat in his berth. The sofa is too narrow to lay & turn comfortably on.

In this ship the Stewards rooms, kitchens, &c. &c. are all opposite the cabins, so that the gangway is often blocked up by them & often plate clearing &c. going on on the floor –

A most interesting thing in every passenger ship would be a chart fixed up in some conspicuous place, on which the Ships place at noon each day should be marked by a red headed pin. This little triflle would be a boon to hundreds of anxious passengers on every voyage, would cost the minimum of expense & trouble yet is never done. Spray guard to allow ports to be open (much wanted.) [[pg. 226]] Canadian gentleman stated that while Eng. farmers in Canada all have their farms mortgaged & are doing badly, the French own their's unincumbered & are saving money.

[Tuesday, 16 August 1887.] Giddy – lit. porridge for bkst. in cabin – Lunch at table – soup – tea Dinner at table. Tea.

[Wednesday, 17 August 1887.] Still gloomy a little less wind & sea. giddy in morning – chest oppression at night. little breakfast – good lunch – soup & stew. afternoon headache & giddy – calmer but cold & a swell on. Bad night little sleep much oppression of chest diff. of breathing & cough –

[[pg. 227]]

[Thursday, 18 August 1887.] Could eat no breakfast sent for doctor. bottle of medicine – little asthma. Mrs Macpherson sent me grapes last night – rats eat these – sent me more this morning. came to me in saloon & received my thanks. Lives in Quebec, has nephews? at Charterhouse, has been there.

Took medicine at 1 and 5 little lunch – pretty good dinner – still dull & cold – a gleam of Sun in the morning stopped in Cabin & saloon all day.

[Friday, 19 August 1887.] Anchored at 6 [*off Portrush, on the north coast of Ireland*]. passengers off for Londonderry. [*Here and all along this coast I gazed upon the intensely vivid green of the grassy slopes, and for the first time understood the appropriateness of "Emerald Isle" as a name for Ireland; for the colour is altogether unique, and such as I have never seen elsewhere.*] At 8 passed G. [Giant's] Causeway & 8.30 grand range of Basalt Cliffs – green patches & slopes – pretty country beyond. [[pg. 228]] Saw coast of Scotland Ailsa Craig to east & Islay island to N.W. – much milder & a little sun – sat on

deck, warm. Passed I. of Man in the Afternoon. In to Liverpool late at night.

[Saturday, 20 August 1887.] Up at 6. breakfast at 7 – to Wharf to pass bags &c. in Custom House. Then to Lawrence's Hotel, letter for Annie – Then to Custom House Wharf see heavy baggage examined & sent off by Goods Train – Back to R. Station with trunk, got ticket, wired to Annie at Godalming. Breakfast at Hotel off to Station off by 11.5 express – London at 3.30 – Cab to Waterloo. Caught 4.10 train – Godalming at 5.10. Home [[pg. 229]] at 5.30. Fly from station – driver caught fire behind – coat in flames! called to him to put it out – beat it with hand – after a few minutes smoking again. called again – over coat & trousers in flames & cushion – took off over coat trampled on it & beat out rest – A third time it burst out. passer by & self called to him – finally extinguished conflagration. [*It originated, no doubt, from his having put a lighted pipe in his pocket, or perhaps from a loose phosphorous match. But he did not seem to mind it much, even when in a blaze.*] No more curious circumstance happened during my 6000 miles of American travel!!!

N.B. On my journey by Rail from London to Godalming, I greatly increased a slight inflammation of the eye by a draught from a window opened by a lady. I sitting [[pg. 230]] facing the Engine (other seats occupied). Such a thing never happened during some 6000 miles Railway travel in America – ventilation without dangerous draughts is impossible in Eng. R. carriage.

[Notes on Front Inside Cover]

[[Notes, left side front inside cover]]

"Shoppell's Modern Houses" – New York. in Parts <illeg.> contains pretty designs for wooden & stone Houses with Estimates ... $1 a Part. 5 parts out to April/87.

Whitney's Yosemite Guide Book – account of Big Tree.

In Bot. of California. Highest tree – Calaveras Grove said to be 325 ft. high. Age of cut tree 1300 years

Slate writing – Washington Feb. 25th. S. Francisco. May. 27th.

Romanes* to Darwin on Sp^{sm}. ... March 9th.

[[label reading "J. L. Fairbanks & Co., Stationers, 288 Washington St. Boston"]]

Notes of Plants.
April 19th. 20th.
May 1st. – Sioux City. May 3rd
" 6th.
" 10th.
" 12th & 13th
" 21st. & 22 Salt Lake
June 10th. 13th. Yosemite
" 16th. Big Trees – Plants.

July 30th. American on ugliness of the Country.

[[Notes, right side front inside cover]]

In Prussia Railway worked by State – convey passengers & goods cheaper than the Lines worked by Companies in prop. of 4.06 to 4.42 for passengers – 0.26 to 0.31 for goods ... while still giving a considerable profit to State. (Ward's Dynamic Sociology II. p. 581)

Feb. 25. Slate séance with Keeler*.

Permanence of Oceans & Oceanic Islands Am. Geog. Soc. N. York.

[Notes Following the Main Journal]

[[Notes, first page following main journal]]

Sept. Sent "Teeth" back by G. Silk with letter ...

Oct[r]. 6th. received do. unfinished
" 9th. sent back "registered" with letter asking that lower jaw be raised fresh with smooth material.

Nov. 24. Wrote to Mr. Armstrong & Gen. Lippitt*

[[Notes, second page following main journal]]

$148.80 = £30 in Boston
$4.96 to the pound

449 $2168 = £449 in England
1796
3720
3592 $4.83 to the pound
1280
898
382

4.825 / 20000 4.2 [or 4.1?]
19200
08000
12
9600
4825
4775

[[Notes, third page following main journal]]

Ward, "Social Dynamics" vol. II p. 263. says belief in Spiritual Beings arises or has been supposed to arise from three causes:–
(1) An intuitive belief, supernaturally implanted.
(2) The manifestation of powers in the phenomena of nature, implying invisible beings capable of exerting power, like ourselves.
(3) The Phenomena of shadows, water-reflection, echoes – dreams, epilepsy, mania &c. &c. The two last (Spencer's & Tylor's theories) & considered adequate.

No word of the possibility, even, of spiritual beings being realities, who do manifest themselves occasionally to man! No reference to the vast mass of evidence in favour of such a belief, and to the thousands of educated and intelligent men who have been forced to the belief by evidence against all their preposessions ...

Quotation from D[r]. Geo. M. Beard in Pop. Sci. Monthly – 1878. "The world's greatest follies and darkest untruths, especially while in the process of dissolution, have always found some justly honoured authority in theology in literature, in philosophy, in law, and in science itself – a Matthew Hale, a Lord Bacon, a Wesley, a Cotton Mather, an Elliotson, a Hare, a Gregory, a Wallace, an Emerson, an Agassiz, a Zollner, committees of learned academies, professors in great colleges – to stand by their bedside, armed with syllogisms, trusting their senses, and conscienciously striving to nurse them back to vigorous life." Ward Social Dynamics II. p. 73.

[[Notes, fourth page following main journal]]

Expenses & Profits of Journey to America.

Expenses	£.	s.	d.
Outfit Slides &c.	55.	0.	0.
Cash	42.	0.	0.
Passage	20.	0.	0.
	117.	0.	0.
Extras	3.	0.	0.
Expenditure up to Arrival in America	£120.	0.	0.
Less value of articles brt. Back	20.	0.	0.
	£100.	0.	0.

[[Notes, fifth page following main journal]]

Travelling & Living Expenses ...

Hotel at Boston $3 a day
D. at Baltimore " "
Baltimore to Boston 187 + 233 miles in Sleeping Car $14.50 – 420 miles ...

On return from Baltimore to Boston –

Cash in hand Notes ... $25 + Silver $1.
Checks – Peabody $400
" Williams ... $65 Balance of his fees out of $115 in Vassar.

Dec[r]. 28th Drew $100 from Bank.
New England Trust Comp[y]. 85, Devonshire St., Boston

Balance left $1600. + 220 in March. = $1820 – 0.25 = 1819.75
(March 18th. Paid in $175 + 80 = 255 less checque Williams $35. = 220)
Bill in favour of Mr. Gilson Hamilton House $20.00
Checque favour of Mr. Cha[s]. Dury $100.00 he gave me cash.
Bal. in April 16th. $1700
May 10th. Williams $37.

[[Notes, sixth page following main journal]]

Receipts in America.

	$.	
(1) Cambridge (net)	90.	
(1) Williamstown (net)	90.	
(1) Meriden (net)	90.	
(8) Lowell (net)	1000.	
(1) Vassar (net)	90.	
(4) Baltimore Peabody (net)	350.	
(1) " Johns Hopkins University	50.	
(1) Geog. Soc. New York net	90.	(Jan. 10)
(1) Kingston Canada (March 10	65.	65 p.c. of gross receipts
(2) Toronto (2 lects) (net)	155.	
(1) " Vet. Coll. " Private	50.	
Art. on Cope in "The Nation" –	25.	
Do. " in "The Independent" –	25.	

(1) Cincinnati $50 produce net of lecture $50. ... private ...
(1) College Hill $50–15 Stereop. ... = $35. = 35.
(1) Bloomington $60 (checque) less 6 $54.
(3) Sioux City ... 215 cheque – 21.5 Co[m?]. = $193.
(1) Lawrence. notes ... $75. Private ...
(1) Manhattan 100 – 10 $90.

2667.

[[Notes, seventh page following main journal]]

New England Trust Co.

Balance in April (correct by Pass Book)	$ 1702.52
Paid in May 10	$ 275.
	1977.52
Drew Checque for Williams	37.
Bal. May 10 (By book)	$ 1940.52

June 24th. Sent Bill on Wells Fargo & Co. N. Y.	$ 100
" " Checque on Laidlaw & Co N.Y.	$ 100
	$ 2140
Checque for Bank	$ 2168

Produced Bill on England (at 75 days after date)	£ 449
Less outfit & passage	99
Net profit.	£ 350

Paid $8. for Diagram by Express from Stockton to Michigan
" $3 for Case & books from Boston to Montreal

[[Notes, eighth page following main journal]]

Salina – Darwinism	$ 26.00
S. Francisco – Darwinism & Colour (2)	192.00
Stockton, Darwinism & Islands	36.00
S. Francisco – Spiritualism	146.00
Stockton Sp. (Thursday)	loss $1.50
Michigan Ag. Coll. private	100.00
	3167.00
Deposited	2140
leaves	927
Cash in hand £18 =	87
	840
Passage Money	60
	$780

Cost of travel & living in America from Oct 23rd. 1886 to August 11th. 1887 = 10 months & 10 days

Across Continent & back ...

= 310 days = $2.20 a day
– 70 days entertained
240 = $3.25 a day.

Appendix 1. Comments from *My Life*

Near the end of the chapters on Wallace's North American tour he included in his autobiography *My Life*, he spent several pages (Vol. 2, pp. 191-199) relaying his thoughts on the United States:

. . . Having now left North America, I may say just a few words of my general impressions as to the country and the people . . . The general impression left upon my mind as to the country itself is the almost total absence of that simple rural beauty which has resulted, in our own country and in some other parts of Europe, from the very gradual occupation of the land as it was required to supply food for the inhabitants, together with our mild winters allowing of continuous cultivation, and the use in building of local materials adapted to the purposes required by handwork, instead of those fashioned by machinery. This slow development of agriculture and of settlement has produced almost every feature which renders our country picturesque or beautiful: the narrow winding lanes, following the contours of the ground; the ever-varying size of the enclosures, and their naturally curved boundaries; the ditch and bank and the surmounting hedgerow, with its rows of elm, ash, or oak, giving variety and sylvan beauty to the surroundings of almost every village or hamlet, most of which go back to Saxon times; the farms or cottages built of brick, or stone, or clay, or of rude but strong oak framework filled in with clay or lath and roughcast, and with thatched or tiled roofs, varying according to the natural conditions, and in all showing the slight curves and irregularities due to the materials used and the hand of the worker; – the whole, worn and coloured by age and surrounded by nature's grandest adornment of self-sown trees in hedgerow or pasture, combine together to produce that charming and indescribable effect we term picturesque. And when we add to these the numerous footpaths which enable us to escape the dust of high-roads and to enjoy the glory of wild flowers which the innumerable hedgerows and moist ditches have preserved for us, the breezy downs, the gorse-clad commons and the heath-clad moors still unenclosed, we are, in some favoured districts at least, still able thoroughly to enjoy all the varied aspects of beauty which our country affords us, but which are, alas! under the combined influences of capitalism and landlordism, fast disappearing.

But in America, except in a few parts of the north-eastern States, none of these favourable conditions have prevailed. Over by far the greater part of the country there has been no natural development of lanes and tracks and roads as they were needed for communication between villages and towns that had grown up in places best adapted for early settlement; but the whole country has been marked out into sections and quarter-sections (of a mile, and a quarter of a mile square), with a right of way of a certain width along each section-line to give access to every quarter-section of one hundred and sixty acres, to one of which, under the homestead law, every citizen had, or was supposed to have, a right of cultivation and possession. Hence, in all the newer States there are no roads or paths whatever beyond the limits of the townships, and the only lines of communication for foot or horsemen or vehicles of any kind are along these rectangular

section-lines, often going up and down hill, over bog or stream, and almost always compelling the traveller to go a much greater distance than the form of the surface rendered necessary.

Then again, owing to the necessity for rapidly and securely fencing in these quarter-sections, and to the fact that the greater part of the States first settled were largely forest-clad, it became the custom to build rough, strong fences of split-trees, which utilized the timber as it was cut and involved no expenditure of cash by the settler. Again, to avoid the labour of putting posts in the ground the fence was at first usually built of rails or logs laid zigzag on each other to the height required, so as to be self-supporting, the upper pairs only being fastened together by a spike through them, the waste of material in such a fence being compensated by the reduction of the labour, since the timber itself was often looked upon as a nuisance to be got rid of before cultivation was possible. And yet again, this fact of timber being in the way of cultivation and of no use till cut down, led to the very general clearing away of all the trees from about the house, so that it is a comparatively rare thing, except in the eastern towns and villages, to find any old trees that have been left standing for shade or for beauty.

For these and for similar causes acting through the greater part of North America, there results a monotonous and unnatural ruggedness, a want of harmony between man and nature, the absence of all those softening effects of human labour and human occupation carried on for generation after generation in the same simple way, and in its slow and gradual utilization of natural forces allowing the renovating agency of vegetable and animal life to conceal all harshness of colour or form, and clothe the whole landscape in a garment of perennial beauty.

Over the larger part of America everything is raw and bare and ugly, with the same kind of ugliness with which we also are defacing our land and destroying its rural beauty. The ugliness of new rows of cottages built to let to the poor, the ugliness of the mean streets of our towns, the ugliness of our "black countries" and our polluted streams. Both countries are creating ugliness, both are destroying beauty; but in America it is done on a larger scale and with a more hideous monotony. The more refined among the Americans see this themselves as clearly as we see it. One of them has said, "A whole huge continent has been so touched by human hands that, over a large part of its surface it has been reduced to a state of unkempt, sordid ugliness; and it can be brought back into a state of beauty only by further touches of the same hands more intelligently applied."[1]

Turning now from the land to the people, what can we say of our American cousins as a race and as a nation? The great thing to keep in mind is, that they are, largely and primarily, of the same blood and of the same nature as ourselves, with characters and habits formed in part by the evil traditions inherited from us, in part by the influence of the new environment to which they have been exposed. Just as we owe our good and bad qualities to the intermixture and struggle of somewhat dissimilar peoples, so do they. Briton and Roman, Saxon and Dane, Norsemen and Norman-French, Scotch and

[1] *The Century*, June, 1887.

Irish Celts – all have intermingled in various proportions, and helped to create that energetic amalgam known the world over as Englishmen. So North America has been largely settled by the English, partly by Dutch, French, and Spanish, whose territories were soon absorbed by conquest or purchase; while, during the last century, a continuous stream of immigrants – Germans, Irish, Highland and Lowland Scotch, Scandinavians, Italians, Russians – has flowed in, and is slowly but surely becoming amalgamated into one great Anglo-American people.

Most of the evil influences under which the United States have grown to their present condition of leaders in civilization, and a great power among the nations of the world, they received from us. We gave them the example of religious intolerance and priestly rule, which they have now happily thrown off more completely than we have done. We gave them slavery, both white and black – a curse from the effects of which they still suffer, and out of which a wholly satisfactory escape seems as remote as ever. But even more insidious and more widespread in its evil results than both of these, we gave them our bad and iniquitous feudal land system; first by enormous grants from the Crown to individuals or to companies, but also – what has produced even worse effects – the ingrained belief that *land* – the first essential of life, the source of all things necessary or useful to mankind, by labour upon which all wealth arises – may yet, justly and equitably, be owned by individuals, be monopolized by capitalists or by companies, leaving the great bulk of the people as absolutely dependent on these monopolists for permission to work and to live as ever were the negro slaves of the south before emancipation.

The result of acting upon this false conception is, that the Government has already parted with the whole of the accessible and cultivable land, and though large areas still remain for any citizen who will settle upon it by the mere payment of very moderate fees, this privilege is absolutely worthless to those who most want it – the very poor. And throughout the western half of the Union one sees everywhere the strange anomaly of building lots in small remote towns, surrounded by thousands of uncultivated acres (and perhaps ten years before sold for eight or ten shillings an acre), now selling at the rate of from £1000 to £20,000 an acre! It is not an uncommon thing for town lots in new places to double their value in a month, while a fourfold increase in a year is quite common. Hence land speculation has become a vast organized business over all the Western States, and is considered to be a proper and natural mode of getting rich. It is what the Stock Exchange is to the great cities. And this wealth, thus gained by individuals, initiates that process which culminates in railroad and mining kings, in oil and beef trusts, and in the thousand millionaires and multi-millionaires whose vast accumulated incomes are, every penny of them, paid by the toiling workers, including the five million of farmers whose lives of constant toil only result for the most part in a bare livelihood, while the railroad magnates and corn speculators absorb the larger portion of the produce of their labour.

What a terrible object-lesson is this as to the fundamental wrong in modern societies which leads to such a result! Here is a country more than twenty-five times the area of the British Islands, with a vast extent of fertile soil, grand navigable waterways,

enormous forests, a superabounding wealth of minerals – everything necessary for the support of a population twenty-five times that of ours – about fifteen hundred millions – which has yet, in little more than a century, destroyed nearly all its forests, is rapidly exhausting its marvellous stores of natural oil and gas, as well as those of the precious metals; and as the result of all this reckless exploiting of nature's accumulated treasures has brought about overcrowded cities reeking with disease and vice, and a population which, though only one-half greater than our own, exhibits all the pitiable phenomena of women and children working long hours in factories and workshops, garrets and cellars, for a wage which will not give them the essentials of mere healthy animal existence; while about the same proportion of its workers, as with us, endure lives of excessive labour for a bare livelihood, or constitute that crying disgrace of modern civilization – willing men seeking in vain for honest work, and forming a great army of the unemployed.

What a demonstration is this of the utter folly and stupidity of those blind leaders of the blind who impute all the evils of *our* social system, all *our* poverty and starvation, to over-population! Ireland, with half the population of fifty years ago, is still poor to the verge of famine, and is therefore still overpeopled. And for England and Scotland as well, the cry is still, "Emigrate! Emigrate! We are over-peopled!" But what of America, with twenty-five times as much land as we have, with even greater natural resources, and with a population even more ingenious, more energetic, and more hard-working than ours? Are they over-populated with only twenty people to the square mile? There is only one rational solution of this terrible problem. The system that allows the land and the minerals, the means of communication, and all other public services, to be monopolized for the aggrandisement of the few – for the creation of millionaires – necessarily leads to the poverty, the degradation, the misery of the many.

There never has been, in the whole history of the human race, a people with such grand opportunities for establishing a society and a nation in which the products of the general labour should be so distributed as to produce general well-being. It wanted but a recognition of the fundamental principle of "equality of opportunity," tacitly implied in the Declaration of Independence. It wanted but such social arrangements as would ensure to every child the best nurture, the best training of all its faculties, and the fullest opportunity for utilizing those faculties for its own happiness and for the common benefit. Not only equality before the law, but equality of opportunity, is the great fundamental principle of social justice. This is the teaching of Herbert Spencer, but he did not carry it out to its logical consequence – the inequity, and therefore the social immorality of wealth-inheritance. To secure equality of opportunity there must be no inequality of initial wealth. To allow one child to be born a millionaire and another a pauper is a crime against humanity, and, for those who believe in a deity, a crime against God. [1]

It is universally admitted that very great individual wealth, whether inherited or acquired, is beneficial neither to the individual nor to society. In the former case it is injurious, and often morally ruinous to the possessor; in the latter it confers little or no

[1] I have discussed this subject in my "Studies," vol. ii. chap. xxviii.

happiness to the acquirer of it, and is a positive injury to his heirs and a danger to the State. Yet its fascinations are so great that, under conditions of society in which the yawning gulf of poverty is ever open beside us, the amassing of wealth at first seems a duty, then becomes a habit, and, ultimately, the gambler's excitement without which he cannot live. The struggle for wealth and power is always exciting, and to many is irresistible. But it is essentially a degrading struggle, because the few only can succeed while the many must fail; and where *all* are doing their best in their several ways, with their special capacities and their unequal opportunities, the result is very much of a lottery, and there is usually no real merit, no specially high intellectual or moral quality in those that succeed.

It is the misfortune of the Americans that they had such a vast continent to occupy. Had it ended at the line of the Mississippi, agricultural development might have gone on more slowly and naturally, from east to west, as increase of population required. So again, if they had had another century for development before railways were invented, expansion would necessarily have gone on more slowly, the need for good roads would have shown that the rectangular system of dividing up new lands was a mistake, and some of that charm of rural scenery which we possess would probably have arisen.

But with the conditions that actually existed we can hardly wonder at the result. A nation formed by emigrants from several of the most energetic and intellectual nations of the old world, for the most part driven from their homes by religious persecution or political oppression, including from the very first all ranks and conditions of life – farmers and mechanics, traders and manufacturers, students and teachers, rich and poor – the very circumstances which drove them to emigrate led to a natural selection of the *most* energetic, the *most* independent, in many respects the *best* of their several nations. Such a people, further tried and hardened by two centuries of struggle against the forces of nature and a savage population, and finally by a war of emancipation from the tyranny of the mother country, would almost necessarily develop both the virtues, the prejudices, and even the vices of the parent stock in an exceptionally high degree. Hence, when the march of invention and of science (to which they contributed their share) gave them the steamship and the railroad; when California gave them gold and Nevada silver, with the prospect of wealth to the lucky beyond the dreams of avarice; when the great prairies of the West gave them illimitable acres of marvellously fertile soil; – it is not surprising that these conditions with such a people should have resulted in that mad race for wealth in which they have beaten the record, and have produced a greater number of multi-millionaires than all the rest of the world combined, with the disastrous results already briefly indicated.

But this is only one side of the American character. Everywhere there are indications of a deep love of nature, a devotion to science and to literature fully proportionate to that of the older countries; while in inventiveness and in the applications of science to human needs they have long been in the first rank. But what is more important, there is also rapidly developing among them a full recognition of the failings of our common social system, and a determination to remedy it. As in Germany, in France, and in England, the socialists are becoming a power in America. They already influence public

opinion, and will soon influence the legislatures. The glaring fact is now being widely recognized that with them, as with all the old nations of Europe, an increase in wealth and in command over the powers of nature such as the world has never before seen, has *not* added to the true well-being of any part of society. It is also indisputable that, as regards the enormous masses of the labouring and industrial population, it has greatly increased the numbers of those whose lives are "below the margin of poverty," while, as John Stuart Mill declared many years ago, it has not reduced the labour of any human being.

An American (Mr. Bellamy) gave us the books that first opened the eyes of great numbers of educated readers to the practicability, the simplicity, and the beauty of Socialism. It is to America that the world looks to lead the way towards a just and peaceful modification of the social organism, based upon a recognition of the principle of Equality of Opportunity, and by means of the Organization of the Labour of all for the Equal Good of all.

Appendix 2. Lectures Given

1 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "The Darwinian Theory, What It Is, and How It Has Been Demonstrated" (first Lowell lecture).

4 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "The Permanence of Oceans, and the Relations of Islands and Continents" (second Lowell lecture).

8 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "Oceanic Islands and Their Biological History" (third Lowell lecture).

11 November 1886, Boston MA (National Academy of Sciences meeting, Rogers Building, MIT). "On Wind as a Seed-Carrier in Relation to One of the Most Difficult Problems in Geographical Distribution."

15 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "The Physical and Biological Relations of New Zealand and Australia" (fourth Lowell lecture).

16 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "Continental Islands: Their Past History and Biological Relations" (fifth Lowell lecture).

18 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "The Origin and Uses of the Colours of Animals" (sixth Lowell lecture).

19 November 1886, Williamstown MA (Goodrich Hall, Williams College). "The Colours of Animals."

22 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "Mimicry, and Other Exceptional Modes of Animal Coloration" (seventh Lowell lecture).

23 November 1886, Meriden CT (probably in the Meriden Town Hall). "The Darwinian Theory." For the Meriden Scientific Association.

24 November 1886, Boston MA (Huntington Hall, Rogers Building, MIT). "The Colours of Plants and Flowers, Their Relation to the Protection of the Species, and the Various Methods of Fertilization of Plants" (eighth Lowell lecture).

29 November 1886, Poughkeepsie NY (Vassar College). "Oceanic Islands."

30 November 1886, Baltimore MD (Peabody Hall, Peabody Institute). "Darwinism."

2 December 1886, Baltimore MD (Peabody Hall, Peabody Institute). "Colour."

6 December 1886, Baltimore MD (Hopkins Hall, Johns Hopkins University). "Island Life."

7 December 1886, Baltimore MD (Peabody Hall, Peabody Institute). "Mimicry."

9 December 1886, Baltimore MD (Peabody Hall, Peabody Institute). "The Colours of Plants."

11 January 1887, New York NY (Chickering Hall, 437 Fifth Avenue at 18th Street). "Oceanic Islands: Their Physical and Biological Relations." For the American Geographical Society.

12 February 1887, Washington, D.C. ("reception-room of the university building" of the Columbian University). "The Great Problems of Anthropology." For the Women's Anthropological Society of America.

15 February 1887, Washington, D.C. (Law Lecture Room of the Columbian University). "Social Economy *Versus* Political Economy." For the Anthropological Society of Washington.

8 March 1887, Kingston ON (Convocation Hall, Queen's University). "The Darwinian Theory; What It Is and How It Is Demonstrated."

10 March 1887, Toronto ON (University College, University of Toronto). "The Darwinian Theory." For the Literary and Scientific Society, and the Canadian Institute.

11 March 1887, Toronto ON (University College, University of Toronto). "Origin and Use of Colour in Nature." For the Literary and Scientific Society, and the Canadian Institute.

12 March 1887, Toronto ON (Ontario Veterinary College, Temperance Street). "The Darwinian Theory."

22 April 1887, Cincinnati OH (Smith & Nixon's Hall, Fourth Street). "The Origin and Uses of the Colours of Animals and on Mimicry." For the Cincinnati Society of Natural History.

23 April 1887, College Hill, Cincinnati OH (Town Hall, Belmont and Larch Avenues). "The Origin and Uses of the Colours of Animals and on Mimicry." For Belmont College.

26 April 1887, Bloomington IN (University Chapel, Indiana University). "The Darwinian Theory."

2 May 1887, Sioux City IA (Academy of Music building, Fourth Street). "The Darwinian Theory." For the Sioux City Scientific Association.

3 May 1887, Sioux City IA (Academy of Music building, Fourth Street). "Origin, Uses and Mimicry of Colors of Animals." For the Sioux City Scientific Association.

4 May 1887, Sioux City IA (Academy of Music building, Fourth Street). "Oceanic Islands." For the Sioux City Scientific Association.

6 May 1887, Lawrence KS (University Chapel, University of Kansas). "The Origin and Uses of Colours of Animals and on Mimicry."

9 May 1887, Manhattan KS (College Chapel, State Agricultural College of Kansas). "Darwinism: What It Is and How Far It Is Demonstrated."

16 May 1887, Salina KS (Salina Opera House, Seventh Street and Iron Avenue). "The Origin and Uses of the Colours of Animals."

25 May 1887, San Francisco CA (Pioneer Hall). "The Darwinian Theory, What It Is and How It Is Demonstrated."

27 May 1887, San Francisco CA (Pioneer Hall). "The Origin and Uses of Colours in Animals, in Relation to Their Habits and Surroundings, Mimicry and Exceptional Modes of Colour."

1 June 1887, Stockton CA (Avon Theater). "The Darwinian Theory, What It Is and How It Is Demonstrated."

3 June 1887, Stockton CA (Avon Theater). "Islands; Their Origin, Nature and Teachings."

5 June 1887, San Francisco CA (Metropolitan Temple, Fifth Street). "If a Man Die, Shall He Live Again?" At the annual camp meeting organized by the California Spiritualists' Association.

23 June 1887, Stockton CA (Avon Theater). "Spiritualism."

29 July 1887, Agricultural College (= East Lansing) MI (Chapel, State Agricultural College). "Darwinism."

1 August 1887, Agricultural College (= East Lansing) MI (Chapel, State Agricultural College). "Colour" (though the student newspaper there said it was on mimicry).

Appendix 3. Some Writings Wallace Published On His North American Experience

Letter from Dr. Alfred R. Wallace, In Re Mrs. Ross

A letter dated 23 February 1887 that was printed in the 5 March 1887 issue of the Boston spiritualist newspaper The Banner of Light. *In it Wallace discusses two séances he attended with William James.*

To the Editor of the *Banner of Light*:

In Prof. James's letter, published by you last week, he refers to myself as having been present with him at two séances at Mrs. Ross's when he believes there was "certainly roguery." In order that my silence may not be interpreted as implying that I accept this view, I ask leave to make a few remarks.

Prof. James adduces a certain number of circumstances which seemed to him suspicious. My own experience of materializations extends to about twenty séances with five different mediums, under the most varied conditions and tests, and I am satisfied that such suspicions as Prof. James adduces are absolutely worthless as evidence. When from such "suspicions" – which are very different from proofs – he arrives at the conclusion that there "*certainly* was roguery," he seems to me to exhibit such an unphilosophical frame of mind as to deprive his opinion of the value it might otherwise possess.

With respect to the two séances at which I was present with Prof. James, I will adduce a few *facts* as opposed to his *suspicions*. The usual, and I believe almost universal practice at Mrs. Ross's séances, is to have the sliding doors between the front and back rooms closed, and, if desired, sealed. If, therefore, confederates get into the room, they *must* enter by some secret opening into the cabinet. At our first séance the doors were left open, *at Prof. James's special request,* in order to render it impossible for confederates to enter from the back room, and I was invited to sit in the opening. This departure from the usual course, *at request of a visitor*, after the rooms had been well searched by a party of sixteen persons, and just before the séance began, would alone satisfy most persons that confederates were not employed, since, their supposed ordinary mode of ingress being rendered useless, they could not take part in the performance. Prof. James thinks, however, that they could have entered the back room noiselessly, and could have slipped close past me into the cabinet, unperceived by myself or by any other person. I myself am positive this could not have been done; and I am also sure that the female figure in white, which, as Prof. James says, came out to me "the moment the séance began," was not Mrs. Ross (unless completely transformed in size and figure), as I held her hand and looked closely into her face. But, on Prof. James's theory, it must have been Mrs. Ross, since no other person was at that time in the cabinet.

At the second séance the doors were shut and sealed, and the confederates, if any, must have entered the cabinet itself by some secret opening. Seven distinct figures appeared, varying in size from a tall man down to a baby. Now, in order to account for

the presence of these figures, Prof. James makes two statements, which I invite him to prove experimentally. First, he says "good carpentry can make a secret door in any wall." Many persons, thinking of secret doors in cabinets and in wainscotted rooms, will hastily assent to this proposition; but the wall in question is papered down to the mopboard eight inches above the carpet, and on the opposite side it is smoothly plastered down to a four-inch board. I ask Prof. James to produce anywhere a secret door *in such a wall* which some one of six intelligent men, having access to both sides of the wall, shall not discover in five minutes, and I submit that unless he has *seen* such a secret door that cannot be detected, his statement is unfounded and misleading, and ought not to have been made.

His second statement is, that such secret door can be unmade in forty-eight hours – of course so that the unmaking cannot be detected. Here again I invite him to produce new woodwork, new paint, new putty over nailholes, and new plaster and paper, which cannot be detected as being new work by some one of six men of average intelligence after five minutes' examination.

It is by such thoughtless statements as these that most of the accusations against mediums are supported; but when they are made by an investigator, who claims to be both unprejudiced and scientific, they should be either upheld by an appeal to facts, or unreservedly withdrawn.

These remarks apply equally to the mythical mopboard door, the only means of ingress and egress for confederates alleged by the exposers. Even if it were not demonstrated by the careful examination of Dr. Moore and others, as given in your paper of the 19th inst., that there has not recently been any secret opening in the place referred to, no person of common sense could believe that a slit eight inches wide on one side, and four inches on the other, could allow of the noiseless and rapid ingress and egress of full-grown men and women, besides children, night after night, without hitch or detection.

I am, myself, as anxious as Prof. James to have the whole truth of this matter brought to light; but I am not, as he seems to be, satisfied with evidence which would be valueless in a court of justice. Of course, if the whole thing is held to be incredible, *because impossible*, there is no need for any evidence or for any exposure. But this is not Prof. James's point of view. He claims to be an unprejudiced investigator, who, by the very fact of being an investigator, admits the *possibility* that the phenomena of materialization may be produced otherwise than by imposture. What, then, is the evidence on which he founds his accusation against the Ross family of being a "gang" whose fraud *has been exposed*?

Twelve gentlemen go together on purpose to expose, and by their superior force are able to do what they please; yet, up to this date, we have no statement by them, or on their behalf, which is not either disproved by facts or quite consistent with the forms seized being what they profess to be. None of the alleged confederates were secured, or any steps taken to identify them. They have all vanished into space, and the "ghostly muslin" with which they were said to be draped has vanished likewise. The "frightened children" said to have been found in the cabinet were not asked for their names, or the addresses of their parents, so as to secure their appearance in a court of justice, if required. The tall Indian, the two young men and the two children, are all as if they had

no existence! If it is asserted that they *must* have been human beings from the mere fact of their visible and tangible appearance, then no other evidence was needed; but if imposture is to be *proved* – not merely *asserted* – then we have a right to ask for some material and producible evidence of the existence to-day of the five alleged confederates; and not a particle of such evidence is given us! Again, we are entitled to ask, Was the mopboard story an observed fact or a mere inference? Will any one of the twelve gentlemen give us the exact particulars of this marvelous secret door, which twenty-one other gentlemen declare, after careful examination, to have left no traces of its existence? Will they tell us how wide and how long it was? Did it open with a hinge or by sliding? and if the latter, did it slide up, or down, or sideways? What was the character and size of the corresponding secret door into the cupboard in the back room, of which there in now no trace? Did any one of the twelve exposers themselves pass through this opening, or even put their heads or their arms through it, so as to prove that it really existed? – that it was, in theatrical language, "a practicable passage" for men, women and children? All this is of the essence of the question, whether the forms seized temporarily, but none of them retained or identified, were actual human confederates, since it is admitted that only by some such opening could confederates have entered the room. Yet up to the present time we have no single fact of this kind clearly alleged by eyewitnesses; and we are accordingly forced to conclude that these twelve gentlemen, who went specially to expose an imposture, came away without any careful examination of the one thing which would confirm their story!

Under these circumstances, I wait for fuller and more precise statements of what occurred at this now celebrated séance, before I can accept Prof. James's *dictum* that Mr. and Mrs. Ross, with at least five confederates, form a gang of unconvicted impostors.

* * * * *

American Museums. The Museum of Comparative Zoology, Harvard University.

A paper published in the Fortnightly Review *issue of 1 September 1887.*

The immense energy of the American people in all that relates to business, locomotion, and pleasure, is to some extent manifested also in their educational institutions, and in approaching this great and all-important subject they possess some special advantages over ourselves. They are comparatively free from those old-world establishments and customs whose obstructiveness so often paralyses the efforts of the educational reformer, and their originality of thought and action has thus freer scope; they are not afraid of experiments, and do not hastily condemn a thing because it is new; while, in all they undertake they are determined to have the best or the biggest attainable. Hence it is that colleges and universities for women, schools where the two sexes study together, institutes for the most complete instruction in technology, and in all branches of experimental science, and the combination of manual with mental training as part of

the regular school course, are to be found in successful operation in various parts of America, though, with rare exceptions, only talked about by us; while in most of the higher schools and colleges science and modern literature take equal rank with those classical and mathematical studies which still hold the first places in Great Britain.

The same originality of conception, and the same desire to attain the best practical results are manifested in some of the great American museums, which now rival, in certain special departments, the long-established national museums of Europe; although there is, of course, as yet, no approach to the vast accumulation of treasures of old-world natural history which is to be found at South Kensington. Notwithstanding the deficiency of material, however, the Harvard Museum is far in advance of ours as an educational institution, whether as regards the general public, the private student, or the specialist; and as it is probably equally in advance of every European museum, some general account of it may be both interesting and instructive, especially to those who have felt themselves bewildered by the countless masses of unorganized specimens exhibited in the gloomy halls and galleries of our national institution. Let us first consider, briefly, what are the usual defects of great museums, and we shall then be better able to appreciate both what has been aimed at, and what has been effected at Harvard.

Our British Museum, which may be taken as a type of the more extensive institutions of the kind, originated in the bequest of a private collector more than a century ago, and has since aggregated to itself most of the collections made by Government expeditions and explorations, while it has received extensive donations of entire collections made at great expense by wealthy amateurs, and has also of late years made large purchases from professional collectors. Such a museum began, of course, by exhibiting everything it possessed to the public, and with some exceptions this plan has been continued for the larger and more popular groups of animals. Large glazed wall-cases for stuffed quadrupeds and birds, with table cases for shells, starfish, insects, and minerals, were early in use; and while these were gradually improved in quality, size and workmanship, they have continued, till quite recently, to be almost the sole mode of arranging the collection. During the latter half of the present century the accession of fresh specimens has been so extensive that the task of naming, classifying, and cataloguing them has been beyond the power of the curators and their assistants. During the same period, while new species have been so rapidly added to the collections, the labours of anatomists and embryologists have led to constant and important changes in classification, and as it is quite impossible to be continually re-arranging scores of thousands of specimens, it necessarily follows that the museum cases have presented to the public an old and long-exploded arrangement, often quite at variance with the knowledge of the day as to the affinities of the different groups. A still further difficulty has been the over-crowding of the cases, because it was long the custom to exhibit to the public at least one specimen of every new species acquired by the museum; and the difficulty of finding room for the ever-increasing stores has rendered nugatory all attempts to group the specimens in varied ways, so as to convey the maximum of instruction and pleasure to the visitor.

Although the evils of this method of arranging a museum had been pointed out by many writers, notably by Sir Joseph Hooker, in his address as President of the British Association, at Norwich; by myself, in an article in *Macmillan's Magazine*, and by the

late Dr. J. E. Gray, keeper of the zoological department of the British Museum, very little radical improvement has been effected in the new building at South Kensington. It is true that many of the large mammalia are more effectually exhibited in costly glazed floor-cases, and there is a great extension of the interesting series illustrating the habits and nesting of British birds; but the great bulk of the collection still consists of the old specimens exhibited in the old way, in an interminable series of over-crowded wall-cases, while all attempt at any effective presentation of the various aspects and problems of natural history, as now understood, is as far off as ever. What may be done in this direction, and how a museum should be constructed and arranged, so as to combine the maximum of utility with economy of space and of money, will be best shown by an account of the Museum of Comparative Zoology at Harvard.

This museum originated in 1858, by a bequest of fifty thousand dollars from Mr. Francis C. Gray of Boston to Harvard University, for the purpose of establishing a museum of comparative zoology; while the collections it contains were begun by Professor Louis Agassiz, who had been for many years professor of zoology and geology. Owing to the exertions and influence of Professor Agassiz, the legislature of Massachusetts was induced to make a grant of one hundred thousand dollars, while over seventy thousand dollars were subscribed by citizens of Boston "for the purpose of erecting a fire-proof building in Cambridge suitable to receive, to protect, and to exhibit advantageously and freely to all comers, the collection of objects in natural science brought together by Professor Louis Agassiz, with such additions as may hereafter be made thereto."

The general plan of the building and the arrangement of the contents were carried out in accordance with Professor Agassiz's views, while the collections have been greatly increased by the results of the great Thayer expedition to Brazil, by numerous gifts from private collectors, and especially by the many dredging expeditions carried out by Professor Alexander Agassiz, at his own cost, and by extensive purchases of specimens by the same gentleman, who, since his father's death, has occupied the post of curator of the museum, and has devoted his time and large private means to the development of the institution, so as to render it a worthy monument to his father's memory.

The portion of the building already erected is about 280 feet long by 60 feet wide, inside dimensions. This forms the northern wing of the proposed museum, which, when completed, will consist of two such wings, connected by a front of 400 feet. A central partition wall runs lengthways through the building, dividing it into rooms, each 30 feet wide and 40 feet long, except in the centre of the wing, where a projection increases the width to about 70 feet, and this is left open on one floor, forming a room 70 feet by 40 feet for the exhibition of the larger mammalia. The angles connecting the wings with the front of the building are also somewhat larger, and are occupied by laboratories, professors' rooms, staircases, &c. The museum thus consists essentially of rooms of the uniform size of 40 feet by 30 feet, and from 10 to 12 feet high, each being well lighted by a row of windows on one of its sides, forming a building of five floors above the basement. In some of the public rooms the upper floor consists of a gallery, leaving the centre of the room open for the height of two floors.

This it will be seen is very different from what is usually considered the proper style of building for a great museum, which is characterized by lofty halls, magnificent

staircases, and enormous galleries; but however grand and effective architecturally these may be, they are quite unsuited to the essential purposes for which a museum is constructed. Let us consider in the first place the waste of well-lighted space on which the efficiency of a museum so much depends. A large gallery, such as is often seen in great museums, may be 200 feet long and 50 feet wide, giving 500 feet of wall. But if this is divided into five rooms, each 40 feet wide by 50 feet long, we shall have 900 feet of wall, the greater part of which, being opposite the windows and comparatively near to them, will be far better lighted. But the vast gallery must be proportionately lofty and would suffice for two floors of moderately sized rooms, so that, after allowing for the greater number of doors and windows in the smaller rooms we have an economy of space of at least three to one in favour of the small-room plan, with an even greater proportionate saving of expense, owing to the smaller scale of all the ornaments and fittings.

But the chief advantage of this style of building consists in the facilities which it offers for subdivision and isolation of special groups of objects, and their arrangement so as to illustrate many of the most interesting and instructive problems of natural history. The galleries of a large museum, crowded with specimens arranged in a single series throughout the whole animal kingdom, confuse and distract the observer. As Professor Alexander Agassiz well says in one of his admirable reports as curator, "The great defect of museums in general is the immense number of articles exhibited compared with the small space taken to explain what is shown. The visitor stands before a case which may be exquisitely arranged and the specimens carefully labelled, yet he does not know, and has no means of finding out, why that case is filled as it is; nothing tells him the purpose for which it is there. The use of general labels and a small number of specimens properly selected to illustrate the labels, would go far towards making a museum intelligible, not only to the average visitor, but often to the professional naturalist." . . . "The advantage therefore, of comparatively small rooms, intended for a special purpose and for that purpose alone, will overcome at once the objections to be made to large halls where the visitor is lost in the maze of the cases, which, to him, seem placed without purpose and filled only for the sake of not leaving them empty." Let us now see how these ideas have been carried out at the Harvard Museum.

The first thing to be noticed is the small proportion of the whole building open to the general public, as compared with that devoted to the preservation and study of the bulk of the collections. The existing portion of the building comprises seventy-four rooms, which are apportioned thus: – Ten rooms in the basement are filled with the vast collection of specimens preserved in alcohol, four rooms being occupied by the fishes, and the remainder by reptiles, mammals, birds, crustacea, mollusca, and other invertebrata. Four rooms are devoted to the entomological department. Seventeen rooms are devoted to storage and workrooms for the various departments. Four rooms are occupied by the libraries, and there are also seven laboratories for the students, an aquarium and vivarium, together with a large lecture-room. The remaining rooms are occupied by the curator and the professors in the several departments, except the seventeen exhibition rooms, which alone are open to the public. Before proceeding to describe these it will be well to notice the admirable manner in which space is economised and work facilitated throughout the building.

In all the storage and work rooms the side next the windows is occupied only by rows of tables, while the collections are preserved in cases running across the room in parallel rows, from front to back, and reaching from the floor to near the ceiling, with just space enough between them to get at the specimens conveniently. These cases are quite plainly constructed to hold series of drawers or trays of a uniform size and depth, but which will admit drawers of two or three times the depth where the size of the specimens require it. The drawers run loosely in open frames so as to be freely interchangeable, and the whole case is enclosed by well-fitting glass doors. Every drawer or tray is distinctly labelled to show its contents, while a part of the room (or of an adjacent one) is devoted to a library of books specially treating of the groups stored in it. In such a room the student or specialist finds, close at hand, all that he requires, with ample light and table-room on which to arrange and compare the specimens he may be studying. The general library is arranged on a similar plan, on tiers of shelves running across the room, with just space to walk between them, the cases being enclosed by open wire-work doors; and it is a striking proof of the purity of the atmosphere in this suburb of Boston, that there was not the least visible accumulation of dust on books which had not been removed or dusted for many years. The fine trees which surround the museum for some distance no doubt greatly assist in preserving a dust-free atmosphere. The vast number of specimens thus conveniently stored can only be realised by seeing the tiers of cases in room after room, the collection being especially rich in fishes, radiate animals, and marine organisms generally. The advantages of the uniform interchangeable drawers are enormous, as they admit of the growth of the collection in any department and the rearrangement of the several groups with the least possible amount of labour. To admit of this growth and rearrangement, a case is here and there left empty; while even the transference of a large part of the collection from one room to another would be effected with ease and rapidity.

Having thus seen the general character of the arrangements for students and specialists, let us proceed to examine the rooms devoted to the instruction and amusement of the general public. On entering the building the visitor finds opposite to him an open room, over which is painted in large letters, "Synoptic Room – Zoology," and, when inside he finds, on several blank spaces of wall, an intimation that this room contains a Synopsis, by means of typical examples, of the whole animal kingdom. Two large wall-cases are devoted to the Mammalia; each Order being represented by three or four of its most characteristic forms, from the monotremes and marsupials up to the apes and monkeys. The rodents, for example, are illustrated by means of stuffed specimens and skeletons of an agouti, a porcupine, a rabbit, a squirrel, and a jerboa; the ungulates by a small tapir and a young hippopotamus, always accompanied by their skulls or skeletons. The birds are similarly represented in one wall-case by stuffed specimens and skeletons of all the chief types. Another case is filled with reptiles – fine examples of lizards and snakes in spirits, tortoises, alligators, toads, &c., while the fossil forms are shown by a small but very perfect oolitic crocodile, a Plesiosaurus, a beautiful slender lizard of Jurassic age, and a cast of the Pterodactyle with its wings. Another case contains some striking specimens of fishes, both in spirits and stuffed, with their skeletons, as well as some beautifully-preserved fossil fishes. The worms, sponges, and insects are exhibited in three more wall-cases, while the crustacea, radiata, and mollusca occupy two cases in

the centre of the room, and over these is suspended a model of a gigantic cuttle-fish twenty feet in diameter.

The special features to be noted in this room are, that its contents and purpose are clearly indicated to every visitor, each group and each specimen being also well and descriptively labelled; that every specimen is good and perfect, well mounted, and beautiful or interesting in itself; that skeletons exhibiting the differences of structure, and fossils exhibiting some of the strange forms of earlier ages of the world, are placed along with the stuffed specimens; and, lastly, that the specimens are comparatively few in number, not crowded together, and so arranged and grouped as to show at the same time the wonderfully varied forms of animal life, as well as the unity of type that prevails in each of the great primary groups under very different external forms. We here see that a room of very moderate dimensions is capable of exhibiting all the chief types of form and structure that prevail in the animal kingdom, and of thus teaching some of the most important lessons to be derived from the study of nature. It constitutes of itself a typical museum of animal life, and is more really instructive, as well as more interesting, than many museums which contain ten times the number of specimens and occupy far greater space. It may serve as a model of the kind of room which should form part of every local museum of Natural History, leaving all the remaining available space for the purpose of giving a complete representation of the local fauna and flora.

The visitor now ascends to the third floor, which is wholly devoted to exhibition rooms. He first enters the largest room in the building (about seventy feet by forty), in which is arranged a systematic collection of mammalia, of sufficient extent to exhibit all the chief modifications of form and structure without confusing the spectator by a vast array of closely allied species or badly preserved specimens. A large gallery surrounds this room, devoted to the systematic collection of reptiles, and on a level with this gallery is suspended a very fine skeleton of the Finback whale, about sixty feet long, in a position to be thoroughly inspected both from below and above. The other prominent objects are fine specimens, with skeletons, of the American bison, the giraffe, and the camel; skeletons of each of the five great races of man, and of the three chief types of anthropoid apes; and some casts of the large extinct Australian marsupials in the same cases with the skeletons of their comparatively small modern representatives. Four other rooms, each of the standard size – forty feet by thirty – are devoted to a similar representative collection of birds, fishes, mollusca, and polyps, respectively; while in galleries over these rooms are the collections of crustacea, insects and worms, echinoderms, acalephs, polyps, and sponges. The most striking objects here are, perhaps, in the bird room, a grand skeleton of the *Dinornis maximus*, as compared with that of an ostrich; in the molluscan room, a model of the giant squid of Newfoundland, about twenty feet long, with two arms thirty feet in length, their dilated ends armed with powerful suckers; and among the lower forms the beautiful glass models of the sea-anemones and polyps.

This systematic collection differs from the usual collections exhibited in public museums in the following important points. It is strictly limited to a series of typical species, which may be from time to time improved by the substitution of better or more representative specimens, by alterations of arrangement, &c., but which are never to be extended, because they are already quite as numerous as the average intelligence even

of well-educated persons can properly understand. The skeletons and fossil types are all exhibited in juxtaposition with the stuffed specimens. Each class of animals is exhibited by itself, with ample explanatory labels to teach the spectator what he is examining, and what are the main peculiarities of the different groups. Of course, in a comparatively new institution, the best and most illustrative species have not always been obtained, or the best and most instructive methods of exhibiting them hit upon. In all these matters improvements will be constantly made, while the space devoted to each class and the number of specimens exhibited will undergo no material alteration.

We will now pass on to the special feature of the museum, and that which is most to be commended, the presentation to the public of the main facts of the geographical distribution of animals. This is done by means of seven rooms, each one devoted to the characteristic animals of one great division of the earth or ocean, which we will now proceed to describe.

Beginning with a room devoted to the North American fauna, we at once note its general characteristics in its wolves, foxes, bears, and seals; its numerous deer and squirrels, its noble bison now approaching extinction, while a grand skeleton of the mastodon exhibits its most prominent mammal of the immediately preceding age. A closer examination shows us its more special peculiarities, its pronghorn antelope, its raccoon, skunk, and prehensile-tailed porcupine, with its numerous small carnivora and rodents. Among its birds we notice the wild turkey, the black vulture or "turkey-buzzard," the fine ruffed grouse and crested quail, as characteristic features; while among the smaller birds its numerous woodpeckers, its tyrants, and its prettily coloured thrushes, warblers, and finches are most prominent. Its reptiles and amphibia are characterized by numerous fresh-water tortoises, many curious lizards, the rattlesnakes, and other striking forms; many varieties of frogs, some of large size; and its very curious and interesting salamanders and other tailed batrachia. Its fishes are rich in fine and characteristic forms, and we notice specimens of the siluroid cat-fish, the garpike, and the mud-fish, belonging to the extremely ancient type of the ganoids, the huge devil-fish of South Carolina, one of the most gigantic of the rays, with many others. Among its shells, the fresh-water Uniodæ are prominent; and, in the insect collection, the number of large and brilliantly-coloured butterflies is very striking as compared with those of Europe.

The next room takes us into South America, and here we are at once struck with many remarkable contrasts. First, there is the comparative scarcity of large mammalia, the higher groups being represented by the lama, the tapir, a few small deer, and the jaguar, which is common to North America; while such low and ancient types as the sloths, ant-eaters, and armadillos abound, together with an unusual number and variety of large rodents, and many peculiar forms of monkeys. The extinct mammals are well represented by a fine skeleton of the Megatherium or giant sloth of the Pampas. The birds exhibit a wonderful richness and variety, with a similar preponderance of low types of organization. The blue and claret-coloured chatterers, the many-coloured little manikins, the strange white bell-birds, the wonderfully-crested umbrella-bird of the Upper Amazonian islands, the brilliant crested cock-of-the-rock, and the innumerable tyrants, bush-shrikes, and ant-thrushes, all belong to a type of perching birds in which the peculiar singing-muscles of the larynx have not been developed, and which are but

scantily represented in any other part of the world. The metallic trogons, with yellow or rosy breasts; the ungainly but strongly-coloured toucans, with their huge but exquisitely-tinted bills; the green and gold jacamars, as well as the hundreds of species of those winged gems, the humming-birds, represent a yet lower and more archaic type of bird life nowhere so strongly developed as in this marvellous continent. The beautiful crested curassows are also a low form perhaps allied to the Australian mound-makers. Reptile life is abundantly represented, but except, perhaps, the iguanas, there are none to strike the ordinary observer as being especially characteristic. The insects, however, at once attract attention; the grand blue morpho butterflies; the exquisite catagrammas, with their fantastic markings beneath; the immense variety of the Heliconoid butterflies, with their elongated wings and antennæ and striking colouration, and the wonderful variety and beauty of the little Erycinidæ, a family almost confined to South America. Among other insects we notice the strangely-formed and fantastically-coloured harlequin-beetle, the huge rhinoceros-beetle, the large lanthorn-fly, and many others, as being equally peculiar.

Crossing now to the opposite continent of Africa, we are presented with a contrast in the forms of life at once marvellous and interesting. From the poorest continent in mammals we pass to the richest, our eyes being at once greeted by the elephant, rhinoceros, and hippopotamus, the buffalo, the giraffe, and the zebra, with a vast array of antelopes, the lion, and the great man-like apes. The most cursory inspection of these two rooms will teach the visitors a lesson in natural history that he will not learn by a dozen visits to our great national storehouse at South Kensington – the lesson that each continent has its peculiar forms of life, and that the greatest similarity in geographical position and climate may be accompanied by a complete diversity in the animal inhabitants.

Passing on to the birds, the difference between the two continents is almost equally great, although not so conspicuous to any one but an ornithologist. The great bulk of the South American groups have no representatives whatever in Africa. Instead of toucans we have hornbills and turacos; instead of humming-birds we have the totally different group of sunbirds; instead of the tyrants, hangnests, and chatterers, we have flycatchers, starlings, and orioles; instead of bushshrikes and ant-thrushes we have true shrikes and caterpillar-catchers – in almost every case a high grade of organization in Africa in place of the low grade in South America. Passing over the reptiles and fishes, as not presenting forms sufficiently well known or whose external characteristics are sufficiently distinctive, we find in the insects equally marked differences. The African butterflies have a peculiar style of form and colouring distinguishing them from those of most other parts of the world, sober greens and blues or rich orange browns being common. The Heliconidæ of America are here replaced by the allied but distinct subfamily of the Acræidæ, while among beetles the huge goliaths and the monstrous tiger-bulls are altogether peculiar.

The next room we enter is the Indian, or Indo-Malayan; and here the scene again changes, though not so radically as we found to be the case in passing from South America to Africa. There are still many great mammalia, but of distinct characteristic forms; the tiger replaces the lion, deer and bears are abundant groups, which are entirely unknown in Africa, the orangs and the long-armed apes replace the gorilla and the chimpanzee, true wild cattle are found as well as buffaloes, while the musk-deer, the

strange flying lemur, and the gigantic fox-bats are characteristic forms unknown elsewhere. Among birds, the most typical group is that of the pheasants, which reach their highest development in the peacock and many-eyed argus; the hornbills are of a different type and more varied forms than those of Africa; the cuckoo family is abundant and varied, while the gorgeously-coloured broadbills and ground-thrushes belong to the low type of perchers so abundant in South America. Among the insect tribes we especially notice the glorious yellow and green-winged ornithopteræ, the princes of the butterfly world; the huge atlas moth, the largest of lepidoptera and probably the largest-winged of all insects, the three-horned atlas beetle; the grand buprestidæ, and the strange leaf-insects of Java and Ceylon.

We now enter the room devoted to the Europe-Siberian fauna, the chief object in it being a fine skeleton of the great Irish Elk, while its most representative living mammals are deer, wolves, wild boars, bears, wild oxen, wild sheep and goats, the chamois, and some peculiar forms of antelopes. Its most prominent birds are its partridges, grouse, bustards and pheasants, but it is deficient in gay-coloured perching-birds as compared with all other regions. Its reptiles are few and insignificant, as are its fresh-water fishes. In insects its chief characteristics is the abundance of beetles of the genus Carabus, its dung-feeding lamelliscorus and its fritillary butterflies.

Lastly, the Australian room brings us into an altogether distinct world of life. All the conspicuous mammals are of the marsupial type, from the giant kangaroos down to the diminutive kangaroo-rats and flying-opossums; and these comprise representatives of all the chief types of the higher mammalia in the form of herbivorous, carnivorous, rodent, and insectivorous marsupials. Among the birds we have such peculiar forms as the emu, the recently extinct dinornis, the mound-making brush-turkeys, the lyre-birds and bower-birds, the birds of paradise, the cockatoos and lories, the brush-tongued honey-suckers, and the varied and beautiful forms of the kingfishers and fruit-pigeons – an assemblage of peculiar and beautiful developments of bird life hardly to be equalled except in South America. The recently extinct forms – the colossal kangaroos and wombats of Australia, and the huge dinornis of New Zealand – were equally remarkable.

The six rooms now briefly described complete the exposition of the geographical distribution of land animals, and the visitor who makes himself thoroughly acquainted with their contents by repeated inspection and comparison, will obtain a conception of the general aspects of animal life in each of the great divisions of the globe which hardly any amount of reading or of visits to ordinary museums would give him. It is a remarkable thing that so interesting and instructive a mode of arranging a museum, and one so eminently calculated to impress and educate the general public, has never been adopted in any of the great collections of Europe, in all of which ample materials exist for the purpose. It is a striking proof of the want of any clear perception of the true uses and functions of museums that pervade the governing bodies of such institutions, and also perhaps, of the deadening influence of routine and red-tapeism in rendering any such radical change as this almost impossible. But we have yet to see some further applications of the same principle at the Harvard Museum.

Two rooms not yet opened to the public are being prepared to illustrate the fauna of the Atlantic and Pacific Oceans respectively. Here will be exhibited specimens of the

peculiar forms of whales and porpoises, seals, walruses, and sea-lions, the oceanic birds, the fishes and mollusca characteristic of each ocean, while separate cases will illustrate the land fauna of the more remarkable of its oceanic islands. On my suggesting to Professor Agassiz that the northern and southern portions of these faunas were usually distinct, he thought that these might be perhaps exhibited at opposite ends of each room.

Four other rooms are also being prepared to exhibit the geological succession of animal life. In the first room the visitor will find illustrations of the mollusca, the trilobites, and the strange and often gigantic fishes of the palæozoic era down to the Devonian age. The next will contain the same groups as exhibited in the carboniferous period, with the earliest forms of amphibia and reptiles, and their later developments in the Jurassic period when the first small mammals made their appearance. Here will be exhibited models of the huge reptile (Atlantosaurus) discovered by Professor Marsh, by far the largest of all terrestrial animals. Then will come a room devoted to the Cretaceous deposits, the wonderful giant Ammonites and the abundant reptilian and bird forms which have been discovered in America. The last room of the series will be devoted to the Tertiary deposits, and will show the many curious lines of modification by which our most highly-specialised animals have been developed. If some of the preceding rooms contain the most marvellous products of remote ages, here assuredly will be the culminating point of interest in seeing the curious changes by which our existing cattle and horses, sheep, deer, and pigs, our wolves, bears, and lions, have been gradually modified from fewer and more generalised ancestral types.

Of all the great improvements in public museum arrangement which we owe to the late Professor Agassiz and his son, there is none so valuable as this. Let any one walk along the vast palæontological gallery at South Kensington, and note the crowded heaps of detached bones and jaws and teeth of fossil elephants and other animals, all set up in costly, mahogany and glass cases for the public to stare at, with here and there a more complete specimen or a restoration; but all crowded together in one vast confusing series from which no clear ideas can possibly be obtained, except that numbers of strange animals, which are now extinct, did once live upon the globe, and he will certainly admit the imperfections of this mode of exhibition, as profitless and puzzling to the general public as it is wasteful of valuable space and inconvenient to the student or the specialist. In a proper system of arrangement all these fragments would be treated as material for study, not as specimens to be exhibited to the public. Casts and models of bones and other fossils can now be cheaply and easily made of paper, which when carefully coloured are to the ordinary eye indistinguishable from the specimen itself; and the materials already existing in the museums of Europe and America are so vast that nearly complete skeletons can be obtained of a great number of the more interesting extinct animals. What ought to be exhibited to the public, then, is a typical series of such skeletons or models, so arranged as to show the progression of forms and the evolution of the more specialised types as we advance from the earlier to the later geological periods. Instead of one huge gallery, a series of moderate-sized rooms should be constructed, each to illustrate one geological epoch, with subsidiary rooms where necessary to show the successive modifications which each class or order of animals has undergone. Where only fragments of an important type have been obtained, these might be exhibited with an explanation of *why* they are important, and an outline drawing showing the

probable form and size of the entire animal. A museum of this kind, utilising the palæontological treasures of the whole world, would be of surpassing interest, and would exceed in attractiveness and popularity all existing museums. It would offer scope for a variety of groupings of extinct and living animals calculated, as Professor Agassiz intended his museum to do, "to illustrate the history of creation, as far as the present state of scientific knowledge reveals that history." It is surely an anomaly that the naturalist who was most opposed to the theory of evolution should be the first to arrange his museum in such a way as best to illustrate that theory, while in the land of Darwin no step has been taken to escape from the monotonous routine of one great systematic series of crowded specimens arranged in lofty halls and palatial galleries, which may excite wonder but which are calculated to teach no definite lesson.

A grand opportunity is now afforded for a man of great wealth, who wishes to do something for the intellectual advancement of the masses. Let him build and endow a "Museum of Comparative Palæontology," for the purpose of carrying out Agassiz's idea on a scale worthy of it. Such a museum, built on the plan of that at Harvard, but perhaps with rooms of a larger average size, would easily accommodate the far larger number of spectators that would certainly visit it, and would tend more than anything else could do to raise the sciences of palæontology and zoology in popular estimation, and to clear away the clouds of misunderstanding which still enshroud the grand theory of evolution. It would enable the general public to appreciate for the first time the marvellous story presented by the sequence of animal life upon the globe, and would at once instruct and elevate the mind by exhibiting the comparative insignificance of existing animals, in variety and often in size, to those which have preceded them, and by demonstrating the innumerable and startling changes of the forms of life upon the globe during the long series of ages which preceded the advent of man. Such a museum would certainly become the most popular, as it would be the most instructive, of all the great scientific exhibitions yet established, while its founder would secure to himself an amount of honourable fame rarely accorded to those who devote money to public purposes.

* * * * *

American Museums. Museums of American Pre-historic Archæology.

Published in the 1 November 1887 issue of the Fortnightly Review.

Few Englishmen have any adequate idea of the present condition of the study of prehistoric archæology in America, or are at all aware of the vast extent and interesting character of the collections which illustrate the early history of that continent. The recognition of the antiquity of man in Europe, and the establishment of the successive periods characterised by the palæolithic and neolithic implements, are events within the memory of many of us; while even at the present day the existence of man before the glacial period is vehemently denied by some geologists, and all the evidence brought

forward to establish the fact is sought to be explained away with as much misspent ingenuity as was exerted in the case of the early finds of McEnery and Boucher de Perthes. Notwithstanding that almost every fact of the early discoveries has now been proved to have been a reality, every new fact which goes to show that man is only a little older than we have hitherto supposed, is still received with incredulity or neglect, although it is universally admitted that not only is there no antecedent improbability in these new discoveries, but that the theory of evolution, if it is worth anything, demands that the origin of man be placed very far back in the tertiary period.

While such has been the frame of mind with which each new discovery in Europe has been met, it was natural that comparative ignorance should prevail as to the course of discovery across the Atlantic; more especially as there was a common notion that America was really a new world as regards man, and that except a few puzzling facts, like the ruined cities of Central America, Mexico, and Peru, its native races were comparatively recent immigrants from Asia by the northwestern route, and that their prehistoric history was brief, simple, and altogether unimportant as compared with that of early Europe. The facts, however, point to an exactly opposite conclusion, the prehistoric remains of North America being really far more abundant, equally varied, and offering as numerous and as interesting problems for solution as are met with in the European continent. In no other part of the world has the use of stone for all the purposes of savage and barbarous life been so extensive and so highly elaborated; nowhere else has a race which has many features in common, and which was long held to be perfectly homogeneous, been found to present more diversities in customs, in arts, in language, and in physical characteristics.

The study of prehistoric archæology and of man's antiquity has run almost a parallel course in America and in Europe. The early discoveries of Schmerling and Godwin-Austen compare with those of the Natchez human bones in the Mississippi loess, and of arrow-heads, pottery, and burnt wood in close connection with skeletons of the mastodon. The kitchen-middens of Denmark are far less extensive than the shell-heaps of New England, Florida, and Alaska; while the discoveries in the lake-dwellings, peat-bogs, and tumuli may be compared with the still more extensive finds in the "mounds" of the great valley of the Mississippi. Even the mysterious structures at Stonehenge, on Dartmoor, and in Brittany, are not more mysterious than some of the animal mounds or extensive systems of earthworks, nor offer more difficult problems than the sculptures and hieroglyphics of Central American and Mexican temples.

Before giving a brief sketch of the varied specimens which illustrate the history of early man in America, it may be well to state the character of the museums in which they may be best studied – the Peabody Museum of American Archæology and Ethnology at Cambridge, Massachusetts, and the Museum of Prehistoric Archæology at the Smithsonian Institution in Washington. These two museums illustrate very distinct methods of arrangement, each of which has its advantages. At Cambridge the collections are arranged according to localities or areas. Everything found in one mound, or group of mounds, is kept together, so as to illustrate, as far as possible, the life history of the constructors. Surface finds are grouped according to states or districts; the instruments, bones, shells, &c., of the shell-heaps are similarly arranged; the same is done with objects found in caves, in stone-graves, in the old Pueblo villages, &c. In the

words of the curator, Mr. F. W. Putnam, "A natural classification has been attempted, grouping together objects belonging to each people. By this method is brought out the ethnological value of every object in the museum, so that in the mind of the student each is put into the great mosaic of human history. Thus it is that throughout the arrangement of the museum the chip of stone and the polished instrument are side by side. There is no forcing into line, no selection of material, in order to illustrate a theory. Every object falls into its place with its own associates, and tells its part of the story of the efforts of man and the results which he has reached at different times and in different places. By this method of arrangement nothing is forced, and misconception is impossible. Separate the objects and classify them by their kind, independently of their source, and the result is simply a series of collections illustrating the development of the *arts* of man; and although such collections will find appropriate places in a museum like this, they should be secondary to the main collection, and be formed of duplicate material. Upon these principles and methods the arrangement of the collections in the present building has been carried on."[1]

The great collection in the National Museum at Washington, on the other hand, is arranged to illustrate the development of prehistoric industry and arts. First we have cases filled with the rudest chipped implements, many quite as rude as the palæolithic flints of Europe, and closely resembling them in form. These are of the most varied materials – calcite, chalcedony, obsidian, quartzite, slate, sandstone, or trap. Many are scrapers, rude knives, spears, &c., and come from every part of the continent. In other cases we find leaf-shaped, arrow-shaped, and spear-shaped stones; passing on successively to all the varied uses to which stone has been applied, through a long gallery containing probably a hundred large floor-cases. Besides this progressive series there are some special cases containing the whole of the contents of certain mounds or graves, or the weapons and implements from some specially interesting locality or island. This method of arrangement has the advantage of enabling a visitor more easily to appreciate the endless variety in the forms of each class of articles, and to compare the development of the stone age in America with that of Europe. As in the case of zoological collections, a great national museum should combine both methods of arrangement; and it is therefore fortunate that in the present progressive condition of the study the two great museums of American prehistoric archæology should have adopted different systems.

The first thing that strikes the visitor is the immense number and variety of forms of stone weapons, implements, and ornaments, far exceeding anything known in Europe. The arrow and spear heads vary in the most curious and fantastic manner, some having very deep basal notches, others with the lower points greatly lengthened out, while others again are deeply and symmetrically notched along their edges in a variety of curious patterns. Many of these are chipped as finely and regularly as the beautiful Danish neolithic flints. Some fine quartzite spear-heads from Louisiana are nine inches long by three wide, while from California and Oregon there are some curious weapons with parallel sides, and over a foot long; others pointed at both ends and narrower in the middle, from fourteen inches up to two feet long. Among the curious forms of arrow and spear-heads are some which have one strongly bevelled edge on opposite sides of

[1] *Nineteenth Annual Report of the Trustees of the Peabody Museum*, vol. iii. p. 481.

the weapon, having to some extent the effect of a spiral twist. These are from the mounds of Ohio and Wisconsin, and may possibly have been designed to produce a revolution of the arrow about its axis during flight.

Scrapers are innumerable, some resembling our common European types, while others are most fantastically shaped, offering five or six hollows of different curvature; while borers are equally numerous and strange in form. Numbers of round or oval pebbles have a shallow groove cut round them, evidently to fasten them firmly to a handle or to a cord, and these were probably used either as hammers or as bolas for catching game. Other elongate irregular pebbles have a groove round one end, probably to serve as sinkers, or as weights for spinning.

Great numbers of stone knives are found, many spear-shaped implements being thus used by modern Indians and by the Esquimaux; while there are also many large semi-circular or semi-oval knives, which were fixed in a wooden handle by the straight back, the curved edge forming the knife, thus admitting of the full power of the hand being exerted in the act of cutting. Some very large nearly circular stones seem to have been hoes, occasionally having a projection at the back to fasten to the handle with a hole to secure it by a cord or thong, while others are elongate, sometimes fifteen inches long, and seem to have been used as spades or diggers. Both these classes have frequently an exquisite glossy polish on the edge for an inch or more, gradually diminishing upwards, just as might be supposed to be produced by long use in a fine loamy alluvial soil. As connected with agricultural work, may be mentioned the numerous heavy rudely globular stones, pierced through the middle with a round hole an inch or more in diameter. These were at first thought to have been used as war-clubs, but it has now been found that digging or planting-sticks are used by some Indian tribes, with similar stones on their lower ends as weights to assist their entrance into the earth.

The extensive use of roots, nuts, acorns, maize, &c. as food required facilities for cracking, crushing, or grinding; and hence some of the most common implements, both of modern Indian tribes and throughout all prehistoric ages, are hammers, grinders, pestles, and mortars, of varied sizes, forms, and workmanship. The pounding, crushing, and grinding stones are of very varied forms, from the unworked pebble up to the most elaborate grinder with a broad handle, something like a tailor's iron, but carved out of solid stone. Corresponding to these are the grinding-stones and mortars, of equally varied forms and sizes. Some are flat, some slightly hollowed; some have numerous small pits or cups in them, probably to hold nuts of various kinds, so as to prevent them from flying away when being cracked. From these we pass on gradually to shallow basins and large deep mortars, some of the latter found in California being a foot or eighteen inches wide, and having corresponding stone pestles, some of which are two and a half feet long. In California also, we find many bowls and dishes of stone, some shallow, some deeper, either round or oval or boat-shaped, some with pointed and some with flat broad handles.

In many parts of the country there are found, in mounds and elsewhere, curious flat stones cut to definite forms, usually more or less elongate and symmetrical, and bored with either one or two holes. These were first regarded as gorgets or other ornaments, but have since been supposed to have been used in twisting or spinning thread or string to make the textile fabrics which have been found in some of the mounds. Some of

these stones are said to be used by modern Indians as guards to protect the wrist against the rebound of the bowstring, but this is probably a mere chance application, since a leather guard would be more useful and more easily made. Another set of stones, even more puzzling, are somewhat boat-shaped, hollowed above and curved or sometimes triangular, below, and usually with a hole near each end. Some few are very elongate and pointed with the hollow in the centre only, very like the decked canoes used on our rivers, and having a small hole at each end of the hollow portion. These look very like shuttles, and may have been used as such, or the whole set may only be other forms of thread-twisters.

Genuine tools for various purposes are exceedingly abundant – celts and axes, from the rudest to the finest workmanship; long, beautifully-formed chisels, adzes, and even gouges, deeply hollowed out on one side and with a cutting edge of great perfection. Many of the tools are formed out of the hardest fine-grained rocks, such as syenite or hæmatite, and are sometimes highly polished.

Besides these varied implements and weapons, whose uses are known from observation of modern savages, or may be fairly conjectured, there are many others which appear to be either personal ornaments or objects used in favourite games, or for ceremonial purposes. Of the former class are small stones of various forms, and more or less decorated with pits or incised lines, some of which were probably ear ornaments, others gorgets. Great numbers of stone discs have been found, of various sizes, from two or three up to eight inches in diameter, some of which are worked beautifully true and smooth. They are usually hollowed on one or both surfaces, and many have a central perforation. Some are formed of hard quartzite, three or four inches diameter, and must have required an enormous amount of labour to cut and polish them without a lathe or any of the appliances of the modern lapidary. These were probably used in a game called chungke, practised among some Indian tribes, and resembling a combination of bowls and spear-throwing; and the Creek Indians had chungke yards kept smooth and level on purpose for the game. The supposed ceremonial stones have been found from Connecticut to Florida, mostly in mounds, and are of very varied symmetrical forms, and all have a central hole sufficiently large to admit a small stick. One has a form closely resembling the "key" of the maple, others are cylindrical, but slightly curved; some are like triangles joined by a narrow connecting bar at the centre of their opposite bases; others, again, like the longitudinal section of a dice-box, with many more which could only be understood by means of figures.

Sculptured objects are numerous, and some have considerable artistic merit. Among the modern Indians the Sioux carve animal and human figures on pipes of catlinite or red pipe stone, some of which are well executed and of fanciful design. The Haida Indians, of Queen Charlotte Island, are celebrated for their skilful carving in wood and slate, the latter being very elaborate, highly polished, and having the appearance of black marble. These are grotesquely idealised into more or less symmetrical designs, and bear a considerable resemblance to some of the Mexican sculptures, while in language and physiognomy these tribes differ from all the Indians of the adjacent regions. It is, however, in the mounds that the greatest variety of sculptures have been found, and among them are some of a very remarkable character.

The pipes from the mounds of Ohio and Illinois are often carved into the form of

human heads, some of which have Indian characteristics, while others seem quite distinct. Animal forms are also abundant, and among them are seen the dog, bear, otter, prairie-dog, beaver, tortoise, frog, serpent, hawk, heron, coot, duck, woodpecker, owl, &c. The supposed tropical animals carved by the mound builders, such as the manatee and the parrot, are errors of identification. There is, however, a curious carving representing some form of llama or camel found on the site of a mound in Ohio.[1] Many carvings of animals, not on pipes, some rude, others more delicate, have been found in New York and other States. In Iowa two pipes, with rude carvings of an elephant or mastodon, but with neither tusks nor tail, have been found by two separate individuals; but suspicion has been thrown on their genuineness because they both passed through the hands of the same person, and because they resemble in general form the well-known elephant mound of Wisconsin. It is, however, absolutely demonstrated, by bones pierced with stone arrows and others burnt with fire, that the mastodon was coeval with man in America, and there is therefore no antecedent improbability in its being represented both in mounds and carvings.

Very strange are the stone collars, or "sacrificial yokes," found in great abundance in the island of Porto Rica, and more rarely in Mexico. These are in shape and size like small horse-collars, but carved out of single blocks of hard volcanic rock. They all have a curious ornamental projection on one side, as if to represent the junction of the material out of which the type collar was formed. Some are slender and comparatively light, while others are so massive that they would be a heavy load for a man. They are said to be found in surface deposits, and along with them are many finely worked and polished

[1] The history of this remarkable piece of sculpture is as follows. Mr. J. F. Snyder, M.D., purchased it along with a few other prehistoric relics, flint arrow-prints, stone axes, &c., of a typical backwoodsman, who was migrating from Marion Co., Ohio, to the west, with his family and household goods. The man was rough and uneducated, and profoundly ignorant of archæology, but attached some value to the specimens, partly because others did, but chiefly because he had himself found them. He stated that he had ploughed up the llama, together with many Indian bones, and two of the stone axes, and some of the flints, from a low flat mound in his field, while preparing the ground for corn-planting. He sold the specimens because he needed money to prosecute his journey. These facts were communicated in a letter to myself from Dr. Snyder, in answer to an enquiry as to the history of the "llama." There can, I think, be no reasonable doubt of the genuineness of the find. A number of similar objects have been found in Peru, and several of them are figured in "The U.S. Naval Astronomical Expedition to the Southern Hemisphere during the Years 1845 – 52," but none of these *exactly* correspond with the Ohio specimen. It has been suggested that this relic was brought to Florida by one of De L[S]oto's men, who had obtained it in Peru while engaged there under Pizarro, and that it reached Ohio from Florida by Indian conquest or by trade and barter. This purely hypothetical explanation seems highly improbable and quite unnecessary. There are many proofs of widespread intercommunication among most savages, and there can be no doubt that it existed among such ancient and comparatively advanced peoples as the inhabitants of Peru and Mexico and the mound builders. In an interesting paper published in the "Proceedings of the American Antiquarian Society," in 1886, Mr. F. W. Putnam shows that jade ornaments have been found in a mound in Michigan, and also in burial mounds in many localities in Central America, which have evidently been formed by cutting up jade celts; and further, that the same material is nowhere found *in situ* in America, while it exactly corresponds with Asiatic jade, some of the specimens exactly matching the material of the jade celts of New Zealand. These specimens, as well as the carved llama, may therefore be considered to prove the widespread intercommunication between distant peoples at a very remote epoch.

celts and axes.

The long-continued use of stone in America for the most varied purposes, and the occupation of the country by Indian tribes down to comparatively recent times, is the obvious cause of the extreme abundance of stone weapons and implements all over the country. As indications of this abundance, the case of Dr. Abbott's farm at Trenton, New Jersey, may be mentioned. This gentleman has obtained on a very limited area, about twenty thousand stone implements and several hundreds of associated objects made of bone, clay, and copper, besides numerous pipes and carved stone ornaments. In a small field on the banks of the Potomac, near Washington, arrow-heads of quartz and quartzite have been collected for many years, and are sometimes still so abundant that hundreds may be collected in a few days. This is on the site of an Indian settlement abandoned about two hundred years ago. In California, the large stone mortars used for pounding the acorns, which seem always to have formed the food of the indigenes, are scattered over the country by thousands; while the beautiful little arrow-heads of jasper and chalcedony found abundantly in some districts, are systematically collected to be set in gold and used as ornamental jewellery.

Next in interest and extent to the stone weapons and implements are the articles of pottery found abundantly in the various classes of mounds and sites of villages. These consist chiefly of cooking vessels, water jars, drinking cups, and mortuary urns, extremely varied in form, size, and ornamentation, and often exhibiting a considerable amount of artistic skill. In a group of mounds in New Madrid, in Missouri, over a hundred such vessels were found, exhibiting about thirty distinct types of form, from flat dishes to long-necked jars, vessels with or without handles or feet, and with the handles greatly varied in number, form, and position. Many of these are moulded above into the form of human heads or busts, and some of them are in strange attitudes, recalling the fantastic Peruvian pottery. Similar pottery has been found in the mounds of Tennessee, Kentucky, and Ohio, as well as in the curious stone graves found extensively in the Southern States; but their various peculiarities can only be understood by examining the specimens or a good series of figures. Very numerous tools and utensils of shell have also been found in the mounds, a moderate quantity in copper, with many ornaments of mica and some of silver and of gold.

The general character of the mounds and earthworks of various parts of the United States, and which are more especially abundant in the great valley of the Mississippi and its tributaries, is sufficiently known, though their vast numbers and the great variety of form and structure which they present is hardly understood in England. A voluminous memoir will shortly be published by the Bureau of Ethnology, which will give most important information on the entire subject. In some parts of Indiana and Kentucky a hundred mounds have been found in a hundred acres. The enclosed area of the ancient earthworks at Aztalan, Wisconsin, is more than fourteen hundred feet long and near seven hundred wide. The great mound of Cahokia, St. Louis, was ninety feet high, and covered an area of seven hundred feet by five hundred feet, with an inclined road up one side to reach the flat platform on the top. Another almost equally large mound exists at Seltzertown, Mississippi. In Louisiana are some curious platform mounds, in the form of squares or parallelograms, connected by terraces. Besides the wonderful Fort Ancient in Ohio, containing five miles of embankment, now, sad to relate, being gradu-

ally destroyed by cultivation, there are in Georgia and other southern states several fortified mountain-tops, recalling, in their inaccessibility, the hill-forts of India.

Another curious class of works are the ash-pits, discovered a few years since near Madisonville, Ohio. M. Putnam, curator of the Peabody Museum, has opened no less than one thousand of these pits, and has obtained from them a large amount of implements, ornaments, pottery, and other articles. They are found on a plateau which is covered with a remnant of the virgin forest. There is a surface deposit of twelve to eighteen inches of leaf-mould, below which is hard clay. These pits are found to be circular in form, from three to four feet in diameter, and from four to seven feet deep. At the bottom there is often a small circular excavation, either in the centre or at one side. They are usually filled with ashes, in more or less defined layers, the bottom portion being very fine grey ashes, while the upper part may be more or less mixed with gravel or sand, with occasional layers of charcoal. Throughout the whole mass of ashes and sand, from the top of the pit to the bottom, are bones of fishes, reptiles, birds, and mammals. Those of the larger species of mammalia, such as the elk, deer, and bear, are generally broken, and appear to have been those of animals used for food. Half a bushel of such bones are sometimes taken out of one pit. Shells of many species of Unio are also found. There is also much broken pottery, but rarely any entire vessels. Numbers of implements of bone or horn are found, some of large size and apparently used for digging, as well as awls, beads, harpoon-points, and small whistles. Arrow-points, drills, scrapers, and other stone instruments are common, with some polished celts and rough hammer-heads. Stone pipes and copper beads and finger-rings are also found. In some of the pits a considerable quantity of charred corn has been found, together with nuts and other articles of food, and in one case only a human skeleton was found at the bottom of a pit. A considerable area, including that occupied by the pits, seems to have been used as a cemetery, both before and since they were constructed. A great number of skeletons are found buried just beneath the layer of leaf mould, and in some cases these skeletons lie across a pit, while in others skeletons already buried have been evidently disturbed by digging the pit.

In the same district, but at a little higher elevation, are a number of earth-circles, from forty-three to fifty-eight feet in diameter, which prove to be sites of houses, with a central fire-place of clay, and with implements and utensils agreeing with those found in the pits. After an extensive and most laborious investigation of this locality, the only explanation of the peculiar feature of the pits is, that at certain times or on certain special occasions the whole contents of a house were burned, and the remains and all the ashes buried in a pit, while the quantity of bones found indicates that the ceremony was accompanied by feasting. The thick layer of leaf-mould covering the pits, graves, and house-sites would indicate an antiquity much greater than that of the large forest-trees which grow on the present surface, while the enormous number of the pits and the extent of the cemetery, covering over fifteen acres of ground, and from which over five hundred skeletons have been obtained, indicates that the place was permanently occupied by a large population.

Another class of remains, the shell-banks, are far more numerous and extensive than the kitchen-middens of Europe. They are found from Nova Scotia to the Gulf of Mexico, and on the west coast they have been discovered in Alaska and in California,

while similar mounds, composed entirely of fresh-water shells, occur in the valleys of the Mississippi, Ohio, and other rivers. These accumulations are often of great extent. One on the coast of Georgia covers ten acres to a depth of from five to ten feet. In Florida, on Amelia Island, a shell-heap extends a quarter of a mile inland by a hundred and fifty yards along the shore; and many others are found thickly scattered over a district a hundred and fifty miles long. An immense number of works of art and animal and human remains have been found in them, some of which indicate a considerable antiquity.

America also has its cave dwellings, with characteristic remains of their human inhabitants; its cliff-houses, forts, and towns, partly excavated and partly built up with good stone walls, so as to resemble mediæval castles or eastern rock-cities; and its ruined towns of the Zuni and Pueblo Indians scattered over the vast desert-regions of Arizona and New Mexico. Some of these are highly interesting and remarkable. The ruined pueblo of Penasca Blanca in the Chaga Cañon, New Mexico, forms a regular oval of about five hundred by four hundred feet, the houses being symmetrically placed around the outside so as to enclose an open area, which contains a depression, probably a pond for storing water. The walls of the houses are regularly and solidly built of stone. Equally remarkable is a large round tower about forty feet in diameter with double walls, the space between which is divided into numerous small rooms. This is in ruins, but was evidently well constructed of good stone masonry. Accurate models of these and many other structures exist in the National and Smithsonian Museums.

The preceding brief outline of the materials which exist in American Museums for the study of prehistoric man are sufficient to show that they are not inferior in extent, variety, and interest to those of Europe; while if we extend our survey to the marvellous prehistoric remains of Mexico, Central America, Peru, and Bolivia, their pyramids and temples, their ruined cities, their cemeteries, their highways and aqueducts, their highly characteristic sculpture, their fantastic pottery, and their still undeciphered hieroglyphics, we may claim for the American continent a position, as regards the early history and development of the human race, hardly inferior to that of the whole of the Eastern hemisphere. A body of earnest and painstaking students are now engaged in the collection, preservation, and study of these various classes of remains; and at the same time a vast mass of most valuable material is being brought together relating to the manners and customs, the tools, weapons, and ornaments, the tribal relations, the migrations, the folk-lore, the religions, and the languages of the aboriginal inhabitants. Already much light has been thrown on the prehistoric remains by their comparison with objects still in use in some parts of the continent; and this study has resulted in the formation of two schools of American anthropologists. The one school, impressed by the very numerous resemblances to be found between existing Indians and the mound-builders, maintain the practical identity of race and continuity of habitation from the epoch of the earliest prehistoric remains down to the date of the European discovery. The other school, laying more stress on the differences between the remains left by the mound-builders and other prehistoric races and the works of modern Indians, and being convinced, further, that there are indications of great antiquity and successive occupation in many areas, believe that there has been a long series of changes in America as in the old world, that each group of remains and each area has its characteristic features, that there have been higher grades of civilisation succeeded by lower as well as lower by higher, and that the

facts, no less than the probabilities, are all in favour of successive displacements of tribes or races, of which the displacement of the mound-builders by the ancestors of the historic "red men" was perhaps the latest.

This divergence of opinion is probably the very best security for the ultimate discovery of the truth, since it assures us that no important evidence on either side will be neglected. The whole inquiry is in good hands; fresh material is continually being obtained and elaborated; and we may look forward with some confidence to a final consensus of opinion which shall disperse, by the light of accurate knowledge, some portion at least of the obscurity which has hitherto overshadowed the early history of the American continent.

* * * * *

The Antiquity of Man in North America

Published in the November 1887 issue of The Nineteenth Century.

Over a considerable portion of the northern hemisphere the remains of man, or his works, have been found in association with bones of the extinct mammalia which characterised the Glacial epoch, and no evidence has been obtained that man at that time differed more from modern savages than they do among themselves. The facts which prove this antiquity were, when first put forth, doubted, neglected, or violently opposed, and it is now admitted that such opposition was due to prejudice alone, and in every case led to the rejection of important scientific truths. Yet after nearly thirty years' experience we find that an exactly similar prejudice prevails, even among geologists, against all evidence which carries man one little step further back into pre-Glacial or Pliocene times, although if there is any truth whatever in the doctrine of evolution as applied to man, and if we are not to adopt the exploded idea that the Palæolithic men were specially created just when the flood of ice was passing away, they *must* have had ancestors who *must* have existed in the Pliocene period, if not earlier. Is it then so improbable that some trace of man should be discovered at this period that each particle of evidence as it arises must be attacked with all the weapons of doubt, accusation and ridicule, which for so many years crushed down the truth with regard to Palæolithic man? One would think, as Jeremy Bentham said of another matter, that it was 'wicked or else unwise' to accept any evidence for facts which are yet so inherently probable that the entire absence of evidence for their existence ought to be felt to be the greatest stumbling-block.

No better illustration of this curious prejudice can be given than the way in which some recent discoveries of stone implements in deposits of considerable antiquity in India are dealt with. These implements are of quartzite, and are of undoubtedly human workmanship. They were found in the Lower Laterite formation, which is said to have undergone great denudation and to be undoubtedly very ancient. Old stone circles of a great but unknown antiquity are formed of it. It is also stated that the distinction between the Tertiary and post-Tertiary is very difficult in India, and the age of these Laterite beds cannot be determined either by fossils, which are absent, or by superposition.

Yet we are informed, 'The presence of Palæolithic implements *proves* that the rock is of post-Tertiary origin.'[1] Here we have the origin of man taken as fixed and certain, so certain that his remains may be used to *prove* the age of a doubtful deposit! Nor do these indications of great antiquity stand alone, for in the Nerbudda fluviatile deposits Mr. Hackel has found stone weapons *in situ* along with eleven species of *extinct* fossil mammalia.

Believing myself that the existence of man in the Tertiary epoch is a *certainty*, and the discovery of his remains or works in deposits of that age to be decidedly *probable*, I hold it to be both wise and scientific to accept all evidence of his existence before the Glacial epoch which would be held satisfactory for a later period, and when there is any little doubt, to give the benefit of the doubt in favour of the find rather than against it. I hold further that it is equally sound doctrine to give some weight to cumulative evidence; since, when a thing is not improbable in itself, it surely adds much to the argument in its favour that facts which tend to prove it come from many different and independent sources, from those who are quite ignorant of the interest that attaches to their discovery, as well as from trained observers who are fully aware of the importance of every additional fact and the weight of each fresh scrap of evidence. Having by the kindness of Major Powell, the able Director of the United States Geological Survey, been able to look into the evidence recently obtained bearing on this question in the North American continent, I believe that a condensed account of it will certainly prove of interest to English readers.

The most certain tests of great antiquity, even though they afford us no accurate scale of measurement, are furnished by such natural changes as we know occur very slowly. Changes in the distribution of animals or plants, modifications of the earth's surface, the extinction of some species and the introduction of others, are of this nature, and they are the more valuable because during the entire historical period changes of this character are either totally unknown or of very small amount. Let us then see what changes of this kind have occurred since man inhabited the North American continent.

The shell heaps of the Damariscotta River, in Maine, are remarkable for their number and extent. The largest of these stretches for about half a mile along the shore, and is often six or seven feet, and in one place twenty-five feet, in thickness. They consist almost exclusively of oyster shells of remarkable size, frequently having a length of eight or ten inches, and sometimes reaching twelve or fourteen inches. They contain fragments of bones of edible animals, charcoal, bone implements, and some fragments of pottery. The surface is covered to a depth of several inches with vegetable mould, and large trees grow on them, some more than a century old. The special feature to which we now call attention is 'that at the present time oysters are only found in very small numbers, too small to make it an object to gather them; and we were credibly informed that they have not been found in larger quantities since the settlement in the neighbourhood. It cannot be supposed that the immense accumulations now seen on the shores of Salt Bay could have been made unless oysters had existed in very large numbers in the adjoining waters.'[2] Here we have evidence of an important change in the

[1] *Manual of the Geology of India*, p. 370.
[2] *Second Annual Report of Trustees of Peabody Museum*, p. 18.

distribution of a species of mollusc since the banks were formed.

On the St. John's River, Florida, are enormous heaps largely composed of two freshwater shells, *Ampullaria depressa* and *Paludina multilineata*, which cover acres of ground and are often six or eight feet thick. Professor Wyman, who explored these heaps, remarks, 'It seems incredible to one who searches the waters of the St. John's and its lakes at the present time, that the two small species of shells above mentioned could have been obtained in such vast quantities as are seen brought together in these mounds, unless at the times of their formation the shells existed more abundantly than now, or the collection of them extended through very long periods of time. When it is borne in mind that the shell-heaps afford the only suitable surface for dwellings, being most commonly built in swamps, or on lands liable to be annually overflowed by the rise of the river, they appear to be necessarily the result of the labours of a few living on a limited area at one time. At present it would be a very difficult matter to bring together in a single day enough of these shells for the daily meals of an ordinary family.'[1]

On the Lower Mississippi, at Grand Lake, are shell banks of great extent which are now fifteen miles inland; while Nott and Gliddon describe similar banks on the Alabama River fifty miles inland, and they believe that Mobile Bay must have extended so far at the time the shells were collected. These beds are often covered with vegetable mould from one to two feet thick, and on this grow large forest trees. Equally indicative of long occupation and great antiquity is the enormous shell mound at San Pablo, on the bay of San Francisco, which is nearly a mile long and half a mile wide, and more than twenty feet thick. Numerous Indian skeletons and mummies have been found in it, showing that it had been subsequently used as a place of burial. Some mounds in Florida have growing on them enormous live oaks from thirteen to twenty-six feet in circumference at five feet from the ground, some of which are estimated to be about six hundred years old, indicating the minimum age possible for the heaps, but not necessarily approaching to their real age.

The extensive shell heaps of the Aleutian Islands have been carefully examined and reported on by Mr. Dall, and are found to exhibit some remarkable and probably unique peculiarities. Complete sections were made across several of these, and they were found to consist of a series of distinct layers, each marked by some well-defined characteristics. In the upper layers only are there any mammalian remains, and these may be divided into three subdivisions. In the upper bed there are found seals, walruses, &c., aquatic and land birds, the arctic fox and dog, with well-made weapons and implements, awls, whetstones, needles, and lamps. In the next layer the dog and fox are absent, as are remains of large whales; and in the lower mammalian layer there are seals and small cetacea only, but no birds or land animals, and the weapons found are ruder. We then come to a considerable layer in which there are no mammalian remains whatever, but only fish-bones and molluscan shells, with rude knives, lance heads, &c. Below this is a bottom deposit consisting entirely of the shells of echini, and containing no weapons, tools, or implements of any kind, except towards the surface of the layer, where a few hammer stones are found, round pebbles with an indentation on each side for the finger and thumb. Echinus' eggs are now eaten raw by the Aleuts, and it is the only eatable

[1] *Fifth Annual Report of Peabody Museum*, p. 22.

part of the animal. It takes forty or fifty full-sized echini for a meal. Some of the heaps cover five acres, and from a careful estimate founded on experiments, and taking the probable numbers of a colony which could have lived on such a spot, Mr. Dall calculates that it would take about 2,200 years to form such an accumulation. A similar estimate applied to the upper layers brings the time required for the accumulation of the entire series to 3,000 years, but that is on the supposition that they were formed continuously. This, however, was evidently not the case. Each layer indicates a change of inhabitants with different habits and in a somewhat different phase of civilisation, and each such change may imply the lapse of a long period during which the site was abandoned and no accumulation went on. These shell heaps may, therefore, carry us back to a very remote antiquity.

We next come to remains of man or his works found in association with the bones of extinct mammalia. The great mastodon skeleton in the British Museum found by Dr. Koch in the Osage Valley, Missouri, had stone arrow heads and charcoal found near it, but the fact was at the time received with the same incredulity as all other evidences of the antiquity of man. This animal was found at a depth of twenty feet, under seven alternate layers of loam, gravel, clay, and peat, with a forest of old trees on the surface, and one of the arrow heads lay under the thigh-bone of the mastodon and in contact with it. About the same date (1859) Dr. Holmes communicated to the Philadelphia Academy of Natural Sciences his discovery of fragments of pottery in connection with bones of the mastodon and megatherium on the Ashley River of South Carolina.

Such cases as these remove all improbability from the celebrated Natchez man, a portion of a human pelvis from the loess of the Mississippi, which contains bones of the mastodon, megalonyx, horse, bison, and other extinct animals. This bone was stated by Sir Charles Lyell 'to be quite in the same state of preservation and of the same black colour as the other fossils.' Dr. Joseph Leidy agrees with this statement, yet he and Professor C. G. Forshey maintain that it is 'more probable' that the human bone fell down the cliff from some Indian grave near the surface. Sir Charles Lyell well remarks that 'had the bone belonged to any other recent mammal such a theory would never have been resorted to.' The admitted identity of the state of preservation and appearance of the human and animal bones is certainly not consistent with the view that the one is recent, the other ancient, the one artificially buried near the surface, the other in a natural deposit thirty feet below the surface.

Of a similar character to the above is the basket-work mat found in a rock-salt deposit fifteen to twenty feet below the surface in Petit Anse Island, Louisiana, two feet above which were fragments of tusks and bones of an elephant. The salt is said to be very pure, extending over an area of 5,000 acres, and the formation of such a deposit requires a considerable change of physical conditions from those now existing, and thus of itself implies great antiquity.[1]

These indications of the great antiquity of American man are now supported by such a mass of evidence of the same character that all the improbability supposed at first to attach to them has been altogether removed. As an illustration of this evidence I need only refer here to the Report on the Loess of Nebraska, by an experienced geologist, Dr.

[1] Foster's *Prehistoric Races of the United States*, p. 56.

Samuel Aughey, who states that this deposit, which is now believed by the best American geologists to be of Glacial origin, and which covers enormous areas, contains throughout its entire extent many remains of mastodons and elephants, and that he himself had found an arrow and a spear head of flint at depths of fifteen and twenty feet in the deposit. One of these was thirteen feet below a lumbar vertebra of *Elephas americanus*.

We now take a decided step backwards in time, to relics of human industry within or at the close of the Glacial period itself. About twenty years ago a well was sunk through the drift at Games, a few miles south of Lake Ontario, and at a depth of seventeen feet there were found lying on the solid rock three large stones enclosing a space within which were about a dozen charred sticks, thus closely resembling the cooking fires usually made by savages. Mr. G. K. Gilbert, of the U.S. Geological Survey, obtained the information from the intelligent farmer who himself found it, and after a close examination of the locality and the drift deposit in its relation to the adjacent lakes, comes to the conclusion that the hearth must have been used 'near the end of the second Glacial period,' and at the time of the separation of Lake Ontario from Lake Erie.' When Mr. Gilbert gave an account of his researches on this matter at the meeting of the Washington Anthropological Society, November 16, 1886, two other gentlemen reported finds of similar character. Mr. Murdock, of the Point Barrow Station, near the extreme north-west corner of the continent, in making an excavation for an earth thermometer, found an Eskimo snow-goggle beneath more than twenty feet of frozen gravel and earth capped by a foot of turf. This being near the shores of the Arctic Sea may be a comparatively recent beach-formation and of no very great antiquity; but the remaining discovery was more important. Mr. W. J. McGee, a gentleman who has specially studied the Glacial and post-Glacial formations for the U.S. Geological Survey, described the finding by himself of a spear head in the quaternary deposits of the Walker River Cañon, Nevada. These beds consist of several feet of silt and loose material at the top, then a layer of calcareous tufa lying upon twenty to thirty feet of white marl, containing remains of extinct mammalia, and resting unconformably upon somewhat similar beds of earlier date. The spear head was found with its point just projecting from the face of the marl about twenty-six feet below the surface. Before removing the implement, he carefully studied the whole surroundings, and finally came to the conclusion that it had been embedded in the marl during its formation. The beds were deposited by the ancient Lake Lahonton. They have been thoroughly investigated by able geologists, and have been referred to the close of the Glacial period, or about the same time as the hearth described by Mr. Gilbert. The spear head is three and a half inches in length, finely made, and well preserved.

About a hundred miles north-west of St. Paul, in Central Minnesota, a thin deposit has been discovered containing numerous worked quartzite implements. They occur at a depth of from twelve to fifteen feet in an old river terrace of modified drift, and the deposit marks an ancient land surface on which the implements are found, and which must have been deposited at about the close of the last Glacial epoch.[1] Mr. N. H. Winchell, State geologist of Minnesota, has found similar chips and implements in the

[1] 'Vestiges of Glacial Man in Minnesota,' by F. E. Babbitt, *Proc. of Am. Assoc.* vol. xxxii. 1883.

upper part of the same deposit; and also human bones in the eastern terrace bluffs at Minneapolis, in a formation of about the same age as the above.

The same writer reports a still more remarkable discovery of a fragment of a human lower jaw in the red clay and boulder drift, but resting immediately on the limestone rock. This red clay belongs to the first or oldest Glacial period, and we thus have the proofs of man's existence carried back not only to the end of the Glacial epoch, but perhaps to its very commencement.[1]

We now come to the very interesting discoveries of Dr. Charles C. Abbott, of Trenton, New Jersey. In the extensive deposits of gravel in the valley of the Delaware, fresh surfaces of which are continually exposed in the cliffs on the river's banks, he has found large numbers of rude stone implements, almost identical in size and general form with the well-known palæolithic implements of the valley of the Somme. These have been found at depths of from five to over twenty feet from the surface, in perfectly undisturbed soil, and that they are characteristic of this particular deposit is shown by the fact that they are found nowhere else in the same district. Large boulders, some of very great size, are found throughout the deposit, and in one case Dr. Abbott found a well-chipped spear-shaped implement immediately beneath a stone weighing at least half a ton. Professor N. S. Shaler, of Cambridge, Massachusetts, after examining the locality and himself obtaining some implements *in situ*, says, 'I am disposed to consider these deposits as formed in the sea near the foot of the retreating ice-sheet when the sub-Glacial rivers were pouring out the vast quantity of water and waste that clearly were released during the breaking up of the great ice-time.' Dr. Abbott, however, adduces facts which seem to prove that some part of the deposit at all events was sub-aërial, for he states that the very large boulders often have immediately under them a foot or more of soil between the lower surface of the stone and the gravel, and that this layer often extends some distance laterally, showing that it formed a land surface on which the boulders rested, and which was subsequently removed by water action, except where thus protected. At any rate we may accept Professor Shaler's conclusion: – 'If these remains are really those of man, they prove the existence of inter-Glacial man on this part of our shore.' That the implements *are* of human workmanship is quite certain, and the fact stated by Professor Shaler himself that 'they are made of a curious granular argillite, the like of which I do not know in the place,' is an additional proof of it. The further fact that the remains of man himself have been discovered in the same deposit completes the demonstration. First a human cranium was found of peculiar characteristics, being small, long, and very thick; then a tooth; and, lastly, a portion of a human under jaw, found at a depth of sixteen feet from the surface, near where a fragment of mastodon tusk had been found some years before. In recording this last discovery the curator of the Peabody Museum remarks: 'To Dr. Abbott alone belongs the credit of having worked out the problem of the antiquity of man on the Atlantic coast,' so that this gentleman appears to stand in a somewhat similar relation to this great question in America as did Boucher de Perthes in Europe. His researches are recorded in the first, second, and third volumes of the Reports of the Peabody Museum.

The interesting series of researches now briefly recorded has led us on step by step

[1] *Annual Report of the State Geologist of Minnesota*, 1877, p. 60.

through the several stages of the quaternary at least as far back as the first great Glacial period, thus corresponding to the various epochs of Neolithic and Palæolithic man in Europe, terminating in the Suffolk flints, claimed to be pre-Glacial by Mr. Skertchley, or the earliest traces of human occupancy in Kent's Cavern, of which Mr. Pengelly states that 'he is compelled to believe that the earliest men of Kent's Hole were inter-Glacial if not pre-Glacial.' It now remains to adduce the evidence which carries us much further back, and demonstrates the existence of man in Pliocene times. This evidence is derived from the works of art and human crania found in the auriferous gravels of California, and in order to appreciate duly its weight and importance, it is necessary to understand something of the physical characteristics of the country and the nature of the gravels themselves, with their included fossils, since both these factors combine to determine their geological age.

The great lateral valleys of the Sierra Nevada are characterised by enormous beds of gravel, sometimes in thick deposits on the sides or filling up the whole bed of the valley, at other times forming detached hills or even mountains of considerable size. These gravel deposits are often covered with a bed of hard basalt or lava, having a general level but very rugged surface, and hence possessing, when isolated, a very peculiar form, to which the name 'table mountain' is often given. These tabular hills are sometimes a thousand or even fifteen hundred feet high, and the basaltic capping varies from fifty to two hundred feet thick. The gravels themselves are frequently interstratified with a fine white clay and sometimes with layers of basalt.

Geological exploration of the district clearly exhibits the origin of this peculiar conformation of the surface. At some remote period the lower lateral valleys of the Sierra Nevada became gradually filled with deposits of gravel brought down from the higher and steeper valleys. During the time this was going on there were numerous volcanic eruptions in the higher parts of the range, sending out great showers of ashes, which formed the beds now consolidated into pipe-clay or cement, while occasional lava streams produced intercalating layers of basalt. After this had gone on for a long period, and the valleys had in many places been filled up with débris to the depth of many hundred feet, there was a final and very violent eruption, causing outflows of lava which flowed down many of the valleys, filled the river beds, and covered up a considerable portion of the gravel deposits. These lava streams, some of which may be now traced for a length of twenty miles, of course flowed down the lower or middle portion of each valley, so that any part of the gravel remaining uncovered would be that most remote from the river bed towards one or other side of the valley. This gravel, being now the lowest ground as well as that most easily denuded, would of course be eaten away by the torrents and mark the commencement of new river beds, which thenceforth went on deepening their channels and forming new valleys which undermined and carried away some of the gravel, but always left steep slopes and cliffs wherever the lava flow protected the surface from the action of the rains. Hence it happens that the existing rivers are often in very different directions from the old ones, and sometimes cut across them, and thus isolated table mountains have been left rising up out of the surrounding plain or valley. What was once a single lava stream now forms several detached hills, the tops of which can be seen to form parts of one gently inclined plane, the surface of the original lava flow, now a thousand feet or more above the adjacent val-

leys. The American and Yuba valleys have been lowered from eight hundred to fifteen hundred feet, while the Stanislaus river gorge has cut through one of these basalt, covered hills to the depth of fifteen hundred feet.

While travelling by stage, last summer, from Stockton to the Yosemite Valley, I passed through this very district, and was greatly impressed by the indications of vast change in the surface of the country since the streams of lava flowed down the valleys. In the Stanislaus Valley the numerous 'table mountains' were very picturesque, often running out into castellated headlands or exhibiting long ranges of rugged black cliffs. At one spot the road passed through the ancient river bed, clearly marked by its gravel, pebbles, and sand, but now about three or four hundred feet above the present river. We also often saw rock surfaces of metamorphic slates far above the present river bed, thus proving that the original bed-rocks of the valley, as well as the lava and gravels, have been cut away to a considerable depth since the epoch of the lava flows. The ranges of 'table mountains' now separated by deep valleys more than a thousand feet below them, could easily be seen, by their perfect agreement of slope and level, to have once formed part of an enormous lava stream spread over a continuous surface of gravel and rock.

These great changes in the physical conditions and in the surface features of the country alone imply a great lapse of time, but they are enforced and rendered even more apparent by the proofs of change in the flora and fauna afforded by the fossils, which occur in some abundance both in the gravels and volcanic clays. The animal remains found beneath the basaltic cap are very numerous, and are all of extinct species. They belong to the genera rhinocerous, elotherium, felis, canis, bos, tapirus, hipparion, equus, elephas, mastodon, and auchenia, and form an assemblage entirely distinct from those that now inhabit any part of the North American continent. Besides these we have a tolerably abundant series of vegetable remains, well preserved in the white clays formed from the volcanic ash. These comprise forty-nine species of deciduous trees and shrubs, all distinct from those now living, while not a single coniferous leaf or fruit has been found, although pines and firs are now the prevalent trees all over the sierra. Professor Lesquereaux, who has described these plants, considers them to be of Pliocene age with some affinities to Miocene; while Professor Whitney, the State Geologist of California, considers that the animal remains indicate at least a similar antiquity.

These abundant animal and vegetable remains have mostly been discovered in the process of gold-mining, the gravel and sand of the old river beds preserved under the various flows of basalt being especially rich in gold. Numerous shafts have been sunk and underground tunnels excavated in the auriferous gravels and clays, and the result has been the discovery not only of extinct animals and plants, but of works of art and human remains. The former have been found in nine different counties in the same gravels in which the extinct animals occur, while in no less than five widely separate localities, underneath the ancient lava flows, remains of man himself have been discovered. In order to show the amount of this evidence, and to enable us to appreciate the force or weakness of the objections with which, as usual, it has been received, a brief enumeration of these discoveries will be made. We will begin with the works of art as being the most numerous.

In Tuolumne County from 1862 to 1865 stone mortars and platters were found in the auriferous gravel along with bones and teeth of mastodon ninety feet below the sur-

face, and a stone muller was obtained in a tunnel driven under Table Mountain. In 1870 a stone mortar was found at a depth of sixty feet in gravel under clay and 'cement,' as the hard clay with vegetable remains (the old volcanic ash) is called by the miners. In Calaveras County from 1860 to 1869 many mortars and other stone implements were found in the gravels under lava beds, and in other auriferous gravels and clays at a depth of 150 feet. In Amador County stone mortars have been found in similar gravel at a depth of forty feet. In Placer County stone platters and dishes have been found in auriferous gravels from ten to twenty feet below the surface. In Nevada County stone mortars and ground discs have been found from fifteen to thirty feet deep in the gravel. In Butte County similar mortars and pestles have been found in the lower gravel beneath lava beds and auriferous gravel; and many other similar finds have been recorded. It must be noted that the objects found are almost characteristic of California, where they are very abundant in graves or on the sites of old settlements, having been used to pound up acorns, which formed an important part of the food of the Indians. They occur literally by hundreds, and are so common that they have little value. It seems therefore absurd to suppose that in scores of cases, over a wide area of country and over a long series of years, gold-miners should have taken the trouble to carry down into their mines or mix with their refuse gravel these articles, of whose special scientific interest in the places where found they have no knowledge whatever. It is further noted that many of these utensils found in the old gravels are coarse and rudely finished as compared with those of more recent manufacture found on the surface. The further objection has been made that there is too great a similarity between these objects and those made in comparatively recent times. But the same may be said of the most ancient arrow and spear heads and those made by modern Indians. The use of the articles has in both cases been continuous, and the objects themselves are so necessary and so comparatively simple, that there is no room for any great modification of form.

We will now pass on to the remains of man himself. In the year 1857 a fragment of a human skull with mastodon débris was brought up from a shaft in Table Mountain, Tuolumne County, from a depth of 180 feet below the surface. The matter was investigated by Professor Whitney, the State geologist, who was satisfied that the specimen had been found in the 'pay gravel,' beneath a bed three feet thick of cement with fossil leaves and branches, over which was seventy feet of clay and gravel. The most remarkable discovery, however, is that known as the Calaveras skull. In the year 1866 some miners found in the cement, in close proximity to a petrified oak, a curious rounded mass of earthy and stony material containing bones, which they put on one side, thinking it was a curiosity of some kind. Professor Wyman, to whom it was given, had great difficulty in removing the cemented gravel and discovering that it was really a human skull nearly entire. Its base was embedded in a conglomerate mass of ferruginous earth, water-worn volcanic pebbles, calcareous tufa, and fragments of bones, and several bones of the human foot and other parts of the skeleton were found wedged into the internal cavity of the skull. Chemical examination showed the bones to be in a fossilised condition, the organic matter and phosphate of lime being replaced by carbonate. It was found beneath four beds of lava, and in the fourth bed of gravel from the surface; and Professor Whitney, who afterwards secured the specimen for the State Geological Museum, has no doubt whatever of its having been found as described.

In Professor Whitney's elaborate Report on the Auriferous Gravels of the Sierra Nevada, from which most of the preceding sketch is taken, he arrives at the conclusion that the whole evidence distinctly proves 'that man existed in California previous to the cessation of volcanic activity in the Sierra Nevada, to the epoch of greatest extension of the glaciers in that region, and to the erosion of the present river cañons and valleys, at a time when the animal and vegetable creations differed entirely from what they are now, and when the topographical features of the State were extremely unlike those exhibited by the present surface.' He elsewhere states that the animal and vegetable remains of these deposits prove them to be of 'at least as ancient a date as the European Pliocene.'

Professor Whitney enumerates two other cases in which human bones have been discovered in the auriferous gravel, and in one of them the bones were found by an educated observer, Dr. Boyce, M.D., under a bed of basaltic lava eight feet thick; but these are of but little importance when compared with the preceding cases, as to which we have such full and precise details. The reason why these remarkable discoveries should have been made in California rather than in any other part of America is sufficiently apparent if we consider the enormous amount of excavation of the Pliocene gravels in the long-continued prosecution of gold-mining, and also the probability that the region was formerly, as now, characterised by a milder climate, and a more luxuriant perennial vegetation, and was thus able to support a comparatively dense population even in those remote times. Admitting that man did inhabit the Pacific slope at the time indicated, the remains appear to be of such a character as might be anticipated and present all the characteristics of genuine discoveries.

Even these Californian remains do not exhaust the proofs of man's great antiquity in America, since we have the record of another discovery which indicates that he may, possibly, have existed at an even more remote epoch. Mr. E. L. Berthoud has described the finding of stone implements of a rude type in the Tertiary gravels of the Crow Creek, Colorado. Some shells were obtained from the same gravels, which were determined by Mr. T. A. Conrad to be species which are 'certainly not later than Older Pliocene, or possibly Miocene.' The account of this remarkable discovery, published in the *Proceedings of the Academy of Natural Sciences of Philadelphia*, 1872, is not very clear or precise, and it is much to be wished that some competent geologist would examine the locality. But the series of proofs of the existence of man by the discovery of his remains or his works going back step by step to the Pliocene period, which have been now briefly enumerated, takes away from this alleged discovery the extreme improbability which would be held to attach to it at the time when it was made.

It is surely now time that this extreme scepticism as to any extension of the human period beyond that reached by Boucher de Perthes, half a century ago, should give way to the ever-increasing body of facts on the other side of the question. Geologists and anthropologists must alike feel that there is a great, and at present inexplicable, chasm intervening between the earliest remains of man and those of his animal predecessors – that the entire absence of the 'missing link' is a reproach to the doctrine of evolution; yet with strange inconsistency they refuse to accept evidence which in the case of any extinct or living animal, other than man, would be at least provisionally held to be sufficient, but follow in the very footsteps of those who blindly refused even to examine into the evidence adduced by the earlier discoverers of the antiquity of man, and thus play

into the hands of those who can adduce his recent origin and unchangeability as an argument against the descent of man from the lower animals. Believing that the whole bearing of the comparative anatomy of man and of the anthropoid apes, together with the absence of indications of any essential change in his structure during the quaternary period, lead to the conclusion that he *must* have existed, as man, in Pliocene times, and that the intermediate forms connecting him with the higher apes probably lived during the early Pliocene or the Miocene period, it is urged that all such discoveries as those described in the present article are in themselves probable and such as we have a right to expect. If this be the case, the proper way to treat evidence as to man's antiquity is to place it on record, and admit it provisionally wherever it would be held adequate in the case of other animals; not, as is too often now the case, ignore it as unworthy of acceptance or subject its discoverers to indiscriminate accusations of being either impostors themselves or the victims of impostors. Error is sure to be soon detected, and its very detection is often a valuable lesson. But facts, once rejected, are apt to remain long buried in obscurity, and their non-recognition may often act as a check to further progress. It is in the hope of inducing a more healthy public opinion on this interesting and scientifically important question that this brief record of the evidences of man's antiquity in North America has been compiled.

* * * * *

English and American Flowers

A long essay published in the 1 October and 1 December 1891 issues of Fortnightly Review*, several years after Wallace's return to Britain.*

The numerous English writers who have described their impressions of North America tell us all about the people, their manners and customs, their hotels and churches, the mode of travelling and the scenery, the rivers and waterfalls, the mountains and forests, the prairies and deserts; but hardly ever do they give us any information as to the kind of vegetation that covers the surface of the soil, or the flowers that adorn the roadsides, the forests, or the mountains. Hence it comes to pass that the majority of English readers, even those who delight in the wild flowers of their own country or the more varied beauties of the Alpine flora, have usually the vaguest and most erroneous ideas as to what flowers are to be found in the United States and Canada, and to what extent they resemble or differ from those of our own country.

There are many circumstances which render it difficult, even for the native who is not a botanist, to learn much about American wild flowers. Confining ourselves at present to the North-Eastern States, we may say that three hundred years ago the whole country was covered with forest, and, with few exceptions, the herbaceous flowering plants were such as grew in the shade of trees or in the few open glades, in bogs, or on the banks of streams. Now, these forests have been so completely cleared away that comparatively little remains in its primitive condition, and often over extensive areas hardly a patch of original woodland is to be found. In other districts there is plenty of land covered with trees, but these are usually new growths, the timber having been

felled again and again, as required for firewood, for fencing, or for other purposes. This wholesale clearing of the original forest-covering of the soil has led, no doubt, to the destruction of many lowly plants, some of which have become exterminated altogether, while others have been able to survive only in the few spots that still offer suitable conditions for their existence. Such places are comparatively rare, and often difficult of access; and hence the country, for a considerable distance round the larger cities and towns, affords but few of the really native plants, while common European weeds often abound. The old hedgerows, the shady banks and moist ditches, the deep-cut lanes, and the numerous footpaths of our own country, which afford abundant stations where wild flowers have been preserved to us from prehistoric times, are almost wholly wanting in America. There the seeker after wild flowers must usually be prepared to walk long distances over rough and pathless fields or hills in order to reach the places where alone he has any chance of finding the rarer or the more beautiful species. Owing to this absence of pleasant rural pathways the inhabitants of the towns rarely walk far into the country for exercise or pleasure unless they have some special pursuit of sport or natural history, and that want of interest in the natural productions of the district which is sufficiently common in England is still more prevalent in America.

The relations of the entire flora of temperate North America to that of Europe and Northern Asia have been the subject of much discussion among botanists. The late Professor Asa Gray made known, and, to some extent, popularised, the curious anomalies which these relations present, especially as regards the close affinity of the plants (more especially of the trees and shrubs) of the Eastern United States with those of Eastern Asia and Japan. Some account of Asa Gray's researches was given in this Review, in 1878, in an article on "Epping Forest," and they are only now referred to because they have been used to uphold the theory that, as regards the distribution of plants, the north temperate zone of the eastern and western hemispheres cannot be separated, but must be considered to form one botanical region. Recently, however, Sir Joseph Hooker has stated his opinion that if we go beyond the two fundamental botanical divisions – the tropical and temperate floras, which, for purposes of geographical distribution, are of little interest, we must consider that the temperate floras of the Old and New Worlds are as distinct as are the tropical floras of the same areas; and he adds that, although the resemblances as regards certain genera and species of plants between Eastern America and Eastern Asia, is very remarkable, yet the temperate floras of Asia and America are in other respects totally dissimilar.[1] In the present article I shall endeavour to show, in a popular manner, what is the nature and extent of the dissimilarity between America and Europe as regards what are commonly known as wild flowers.

In order to restrict the inquiry within moderate limits, it is proposed to consider, first and mainly, the relations between the wild flowers of Great Britain as representing those of Western Europe, and those of Eastern North America as given in Asa Gray's *Botany of the Northern United States*, which includes the country from New England to Wisconsin, and southward to Ohio and Pennsylvania. This area may be fairly compared with that of England, France, and Germany, and will serve as a foundation for the wider comparison between North America east of the Mississippi with Europe, or of the

[1] See *Biologia Centrali-Americana, Botany*, vol. i., pp. lxvi.–lxvii.

whole of temperate North America with temperate Europe and Asia, to which occasional reference will have to be made. It must be understood that as our comparison regards only the native plants of the two countries, those numerous British or European species which have been introduced into America by human agency and have often become common weeds, will be left out of consideration altogether. We have to do only with the condition of the vegetation brought about by nature, undisturbed by the effects which have recently been produced by man.

There are two separate phenomena by which we may estimate the relations of the floras of two countries, both of which are important factors in the comparison – the absence from one country of whole groups of plants which are both common and widespread in the other, and the presence of new types entirely unknown in the other. It is usual to lay much more stress on the latter phenomenon, because the former occurs when there is no essential difference between the floras, the one having been recently derived from the other. Thus, many species, and even genera, of West European plants are absent from Britain, but this does not lead us to consider the British flora as being essentially different from that of Europe, the deficiencies being plainly attributable to the smaller area, the limited range of climate, the recent glacial epoch, and other such causes. But, when the country in which the deficiency occurs is fairly comparable with the other in all these respects, the cause of the phenomenon is evidently a deep-seated one, and must be held to show a fundamental diversity in their floras.

There are, of course, in every extensive flora such as that of North America a considerable number of almost cosmopolitan groups or species, and many others which are found in all temperate regions. Thus, no less than 115 European genera and 58 European species are found at the antipodes in New Zealand, and many others in Australia and South temperate America. Among these are such familiar plants as buttercups, anemones, poppies, violets, St. John's worts, gentians, forget-me-nots, many genera of cresses and other crucifers, mint, scull-cap, loose-strife, sea-lavender, and many others; and there are also in the same remote countries such common English species as the lady's-smock (*Cardamine pratensis*), chickweed (*Stellaria media*), the cut-leaved geranium (*Geranium dissectum*), the silver-weed (*Potentilla anserina*), the common bind-weed (*Calystegia sepium*), and scores of others, all considered to be indigenous and not introduced by man. It is evident, therefore, that we must expect to find a considerable number of English species in North America and a still larger number of English genera, because this is a feature which occurs in all temperate regions, and cannot be held to prove any *special* relationship between these two countries. Among these familiar English flowers we find a tolerable number of violets, anemones, St. John's worts, vetches, potentillas, willow-herbs, gentians, and some others; while wild geraniums, saxifrages, stonecrops, campanulas, forget-me-nots, and true orchises are far less frequently met with than with us.

But what most strikes the English botanist (next to the altogether unfamiliar types that everywhere abound) is the total absence or extreme rarity of many plants and groups of plants which are the most abundant and familiar of our native flowers, and which are almost equally common throughout Europe, and often throughout northern Asia. There are, for instance, no true poppies like those so abundant in our corn-fields, no common or musk-mallows of the genus Malva, or gorse or broom or rest-harrow, no

teasel or scabious, no true heaths, no bugloss or comfrey, no ivy to adorn the old trees and walls with its glossy foliage, no mullein, toad-flax, snap-dragon, or foxglove, no scented thyme, basil or marjoram, no bright blue ground-ivy or bugle, no white or yellow or purple dead-nettles, no scarlet pimpernel, not even a primrose or a cowslip in all the land. There are, it is true, two species of Primula in the North-Eastern States, one the bird's-eye primrose of our northern counties, and another still smaller peculiar species, but both are confined to limited districts near the great lakes, and are not to be found unless specially searched for; and no other primroses are to be met with till we reach the Rocky Mountains, where there are two or three high alpine species.

Coming now to the endogenous plants, we find even more remarkable deficiencies. No daffodil, snowdrop, or snowflake is to be found wild in all North America, neither is there any crocus, wild hyacinth, colchicum, or lily-of-the-valley. The beautiful genus Ophrys, containing our bee, fly, and spider orchises, is quite unknown; and such familiar plants as the black-briony of our hedges, the flowering-rush of our streams and ditches, and the curious butcher's broom of our dry woods, are nowhere to be met with.

Now the important thing to be noted is, that most of these plants are not only abundant and familiar in many parts of England but are widely spread throughout Europe, and the larger part of them belong to groups which extend into Northern Asia, and often reach the eastern extremity of that continent. If we take account of less important or less familiar plants this list might be doubled or trebled; and it might be still further extended if we took account of genera which range widely over Europe and Asia but happen to be rare or altogether wanting in England. Such, for example, are the following well-known garden flowers. The white and yellow asphodels, the red valerian (Centranthus), naturalised in many places on our chalk cliffs and old walls, the cinerarias, the gum-cistuses, the cyclamens, the daphnes, the true pinks (Dianthus), the numerous dwarf brooms (Genista), the corn-flags (Gladiolus), the candytufts (Iberis), the lavender and the rosemary, the ox-eye daisies, the stocks, the Star-of-Bethlehem, the pœonies, the mignonettes, the garden rue, the various soap-worts, the tulips, the periwinkles, and a hundred others.

It must always be remembered, that the British plants noticed above as being absent from the indigenous flora of the United States are abundant with us and form characteristic features of our flora, that the larger portion of them range widely over Europe and Western Asia, that more than half of them extend across Northern Asia to the Pacific and often to China and Japan, while several extend over the greater portion of the eastern hemisphere, and are found also in Australia or South Africa. The absence of such a number of the characteristic and dominant groups of plants of the temperate zone from so extensive and varied an area as the United States and Canada, is of itself a very remarkable phenomenon, and affords a *primâ facie* ground for treating the temperate regions of the New World as a distinct botanical region.

Another feature to which botanists attach much importance in the comparison of separate floras is the proportionate abundance of the various orders and tribes in the two countries, which, when very different, leads to the general vegetation having a distinctive aspect. In this respect, Europe and Eastern America differ greatly. Among the most abundant and characteristic groups, which everyone recognises in our own country and in Europe as common plants everywhere to be met with, are those of the cabbage

and cress tribe (Cruciferæ), the pink family (Caryophyllaceæ), the umbel-bearers (Umbelliferæ), the thistle-tribe of the Compositæ, the bluebells (Campanulaceæ), the primroses (Primulaceæ), and the orchises (Orchidacæ); but all these are much less frequent in North America, and are usually so scarce as to take little or no part in determining the special character of the vegetation. As an illustration of the difference, there are only twelve indigenous genera of Cruciferæ in the North-Eastern United States with about thirty-five indigenous species, while the comparatively poor British flora possesses twenty-four genera, and fifty-four species.

Instead of these characteristic European types we have in America some peculiar Rubiaceæ, among which is the pretty creeping Mitchella or partridge berry, and an enormous preponderance of Compositæ, including numbers of non-European genera and a great variety of eupatoriums, asters, golden-rods, and sun-flowers, together with some of our well-known garden flowers such as Liatris, Rudbeckia and Coreopsis. The milk-worts (Polygala) are rather numerous, and the milk-weeds (Asclepias) still more so, and these last are quite unlike any European plants. The beautiful phloxes are a very characteristic type almost exclusively confined to North America, and often affording brilliant patches of floral colours. Among the endogenous plants the numerous specie of Smilax, well called "green-briar," are highly characteristic and peculiar, though the genus is found in Southern Europe, while the beautiful wood-lilies of the genus Trillium (found again in Eastern Asia) have curious or ornamental flowers. Add to these the interesting spider-worts forming the genera Commelyna and Tradescantia, and having their allies in the tropics, and we have completed the enumeration of the more conspicuous groups of non-European herbaceous flowering plants which give a distinctive character to the flora.

There are, however, many other plants which, although belonging to small orders and not represented by more than one or a very few species, are yet so abundant in individuals, and so widely spread over the country, as to contribute largely to the general impression which the North American flora produces on an English botanist on his first visit to the country. This may be illustrated by a brief account of some of the present writer's rambles in search of American flowers.

My first walk was on the 13th February, in the woody country to the north-west of Washington. Here we found on dry banks the beautiful little May-flower (*Epigæa repens*), and the pretty spotted wintergreen (*Chimaphila maculata*), both members of the heath family, and both of genera almost peculiar to America, allied species of each being found in Japan, while some of the forest slopes were covered with the beautiful *Kalmia latifolia*, another peculiarly American genus of Ericaceæ. The curious parasitic "beech-drops," one of the Orobanche tribe, is also peculiar, while the "partridge-berry" (*Mitchella repens*) has its only ally in Japan. Other plants observed were the *Aralia spinosa* or Hercules' Club, a small tree of a non-European genus, a species of Smilax like a slender leafless rosebush, a hairy-leaved blackberry (*Rubus villosus*), a wild vine, a white hepatica in flower identical with the European species, the curious skunk-cabbage (*Symplocarpus fætidus*), belonging to the Arum family and also in flower, the "blazing-star" (*Chamælirium luteum*), one of the colchicum tribe and peculiar to North America, the rattle-snake plantain (*Goodyera pubescens*), really an orchis, of which there is one European species found also in Scotland, and a handsome sedge,

Carex platyphylla. Thus, out of fourteen plants distinguished at this wintry season, only three belonged to British, and four or five to European genera, while the large majority were either quite peculiar to America or only found elsewhere in Japan, Eastern Asia, or the Pacific Islands. During another excursion to the rich locality of High Island, five miles from Washington, on March 27th, several other interesting and characteristic plants were found. Such were the "spring beauty" (*Claytonia virginica*), a pretty little rosy white flower belonging to the Portulaceæ which often carpets the woods and takes the place of our wood-anemone, for though there are several wood-anemones in America they do not form so important a feature of the spring vegetation as with us. The rare and pretty "harbinger of spring" (*Erigenia bulbosa*), a minute umbelliferous plant quite peculiar to America, grew here abundantly, as did the pinnate-leaved Virginian water-leaf (*Hydrophyllum virginianum*). The may-apple (*Podophyllum peltatum*), and the twin-leaf (*Jeffersonia diphylla*), herbaceous plants of the Berberis family, were abundant, the former occurring elsewhere only in the Himalayas, while the latter is North American and East Asiatic. A yellow violet, a perennial chickweed, a tooth-wort (Dentaria), a stone-crop, and an unconspicuous saxifrage, alone showed any resemblance to our native vegetation.

About the middle of April, in the vicinity of Cincinnati, I was introduced to the spring flowers of the North-Eastern States, in their full development. The woods were here carpeted in places with the "spring beauty," while in other parts there were sheets of the curious "Dutchman's breeches" (*Dicentra cucullaria*), like a small yellow dielytra, to which it is allied. Then there were smaller patches of the *Thalictrum anemonoides*, resembling a very slender wood-anemone, the exquisite little "Blue-eyed Mary," sometimes called "Innocence," (*Collinsia verna*), the handsome celandine-poppy (*Stylophorum diphyllum*), like our "greater celandine," but with larger and more richly coloured flowers, the elegant lilac-coloured *Phlox divaricata*, and the "blood-root" (*Sanguinaria canadensis*), with its beautiful white star-shaped flowers.

Here, too, the buds of the handsome purple wood-lily (*Trillium erectum*) were just showing themselves, and there were large patches of the yellow and white American dog's-tooth violet (*Erythronium Americanum*), just coming into bloom. In a damp river-bottom, the exquisite blue *Mertensia virginica* was found. It is called here the "Virginian cowslip," its drooping porcelain-blue bells being somewhat of the size and form of those of the true cowslip, but the plant is really allied to our lungworts. More homely-looking plants were a creeping yellow buttercup, with blue, white, and yellow-flowered violets, but they were utterly insignificant as compared with the many new and strange forms that constituted the bulk of the vegetation.

At the end of July I had the opportunity of seeing the swampy forests of Michigan, with their abundance of ferns, their pitcher plants (Sarracenia), yellow-fringed orchises (*Habenaria ciliaris*), and the curious little gold-thread (*Coptis trifolia*), found also in Arctic Europe, and so named from its yellow thread-like roots, – all three growing in the dense carpet of sphagnum moss which covers the ground to the depth of one or two feet. In the cleared marshy ground, and along the margins of the streams and ditches, was a dense vegetation of asters, golden-rods, and other composites, many of which were of groups unknown in Britain or in Europe, while still lingering on the burnt-up road sides were the handsome flowering spurge (*Euphorbia corollata*), with its curious white

flowers, and the elegant foliage of the bird's-foot violet.

A few remarks on the general aspects of the country as regards native vegetation and flowers must conclude this very imperfect sketch. What most impresses the nature-loving Englishman while travelling in America is, the newness and rawness of the country, and the almost universal absence of that harmonious interblending of wild nature with human cultivation, which is so charming over a large part of England. In these North-Eastern States, the native forests have been so ruthlessly destroyed, that fine trees are comparatively rare, and such noble elms, beeches, oaks, and sycamores as are to be found arching over the lanes and shading the farmhouses and cottages in a thousand English villages, are only to be seen near a few of the towns in the older settled States, or as isolated specimens which are regarded as something remarkable. Instead of the old hedge-rows with tall elms, spreading oaks, and an occasional beech, hornbeam, birch, or holly, we see everywhere the ugly snake-fence of split rails, or the still more unsightly boundary of barbed wire. Owing to the country being mostly cut up into one-mile square sections, subdivided into quarters, along the outer boundaries of which only is there is any right-of-way for access to the different farms, the chief country roads or tracks zig-zag along these section-lines without any regard to the *contours* of the land. It is probably owing to the cost of labour and the necessity of bringing large areas under cultivation as quickly as possible, that our system of fencing by live hedges, growing on a bank, with a ditch on one side for drainage, seems to be absolutely unknown in America; and hence the constant references of English writers on rural scenery and customs to "the ditch," or "the hedge," are unintelligible to most Americans.

The extreme rapidity with which the land has been cleared of its original forest seems to have favoured the spread of imported weeds, many of which are specially adapted to seize upon and monopolise newly exposed or loosened soil; and this has prevented the native plants, which might have adapted themselves to the new conditions had the change gone on very slowly, from gaining a footing. Hence it is that the cultivated fields and the artificial pastures are less flowery than our hedge-bordered fields and old pastures, while the railway banks never exhibit such displays of floral beauty as they often do with us. An American writer in *The Century* for June, 1887, summarises the general result of these varied causes, with a severe truthfulness that would hardly be courteous in a stranger, in the following words: –

"A whole huge continent has been so touched by human hands, that over a large part of its surface it has been reduced to a state of unkempt, sordid ugliness; and it can be brought back into a state of beauty only by further touches of the same hands more intelligently applied."

Let us hope that intelligence of this kind will soon be cultivated as an essential part of education in all American schools. This alone will, however, have no effect so long as the fierce competition of great capitalists, farmers and manufacturers, reduces the actual cultivator of the soil, whether owner, tenant, or labourer, to a condition of sordid poverty, and a life of grinding labour which leaves neither leisure nor desire for the creation or preservation of natural beauty in his surroundings.[1]

[1] American periodicals are full of accounts and illustrations of the poverty and hard lives of the small farmers. See, in *The Arena* of July, the article by Hamlin Garland, *A Prairie Heroine*.

Although with the limited opportunities afforded by one spring and summer spent in America, it is impossible to speak with certainty, yet both from my own observation, and from information received from residents in various parts of the Eastern States, it seems to me, that in no part of America, east of the Mississippi, is there such a succession of floral beauty and display of exquisite colour as are to be found in many parts of England. Such, for instance, are the woods and fields of daffodils, "which come before the swallow dares, and take the winds of March with beauty"; the wild hyacinths, whose nodding bells, of exquisite form and colour individually, carpet our woods in April with sheets of the purest azure; the soft yellow of primroses in coppices or along sunny hedge banks; the rich golden yellow of the gorse-bushes which, when seen in perfection as in the Isle of Wight, Cornwall, or Ireland, is so superlatively glorious, that we cannot wonder at the enthusiasm of the great Linnæus, who, on beholding it, knelt down and thanked God for so much beauty; later on the clearer yellow of the broom is hardly less brilliant on our heaths and railway banks, while the red ragged-robin, and the purple or rosy orchises often adorn our marshes and meadows with masses of colour; then come the fields and dry slopes, gay with scarlet poppies, and the noble spikes of foxgloves in the copses and on rough banks, followed by, perhaps, the most exquisitely beautiful sight of all, the brilliant sheets and patches of purple heath, sometimes alternating with the tender green of the young bracken, as on some of the mountain slopes in Wales, sometimes intermingled with the rich golden clumps of the dwarf gorse, as on the wild heaths of Surrey or Dorset.

Truly, the Englishman has no need to go abroad to revel in the beauty of colour as produced by flowers. Although the number of species of plants which inhabit our islands is far less than in most continental areas of equal extent, although the gloom and grey of our skies is proverbial, and we want the bright sunshine of American or Eastern summers, yet these deficiencies do not appear to lessen the luxuriant display of bright colours in our native plants. The mountains of Switzerland, the arid plains of the Cape and of Australia, the forests and swamps of North America, provide us with thousands of beautiful flowers for the adornment of our gardens and greenhouses, yet, from the descriptions of these countries by travellers or by residents, it does not seem that any one of them produces a succession of floral pictures to surpass, or even to equal, those which the changing seasons display before us at our very doors. The absence of fierce, long-continued sunshine, which renders it difficult for us to grow many fruits and flowers which flourish even in the short Canadian summer, lengthens out our seasons favourable to vegetation, so that from the violets and daffodils of March, to the heaths and campanulas, the knapweeds, and the scabious of September or October, we are never without some added charm to our country walks if we choose to search out the appropriate spots where the flowers of each month add their bright colours to the landscape.

To the botanist, the poverty of our English flora contrasts unfavourably with the number of species and the strange or beautiful forms to be found in many other temperate regions, and to him it is a great delight to make the acquaintance, for the first time, in their native wilds, of the many curious plants which he has only known before in gardens or in herbaria. But the simple lover of flowers, both for their individual beauty and for the charm of colour they add to the landscape, may rest assured that, perhaps with the single exception of Switzerland, few temperate countries can equal, while none

can very much surpass his own.

II. – Flowers and Forests of the Far West.

Temperate North America, as regards its types of vegetation, consists of four well-marked subdivisions. The most important and the richest in species is the great forest region of the Eastern States, whose main peculiarities were indicated in the first part of this article. West of this area, and extending from a short distance beyond the Mississippi to the base of the Rocky Mountains is the region of the great plains, almost destitute of trees, except in the river bottoms, but with a fairly rich herbaceous flora; and a very similar vegetation is found in the half-desert valleys and plains between the Rocky Mountains and the Sierra Nevada. A third botanical district consists of the higher wooded portions of the Rocky Mountains, together with the peaks and high valleys above the timber-line, in which the vegetation is, in many respects, very distinct from that of any other part of temperate America. Lastly comes the Californian region, extending from the Pacific coast to the upper limit of trees in the Sierra Nevada, a country of surpassing interest to the botanist, and well-known to every lover of flowers for the great number of beautiful and peculiar forms it has furnished to our gardens. It is proposed to give a brief sketch of the more prominent features of the flora of the three western regions, derived partly from personal observation during a summer spent in the country, largely supplemented by the writings of the late Professor Asa Gray and other American and English botanists.

The first region to be considered, that of the prairies, the great plains, and the deserts of the inland basin, may be very briefly noticed, since, although of considerable interest to the botanist, it is only occasionally that plants, remarkable for beauty of flower or other conspicuous characteristics, are met with. The eastern portion of the district, where the rich prairie lands of Kansas and Nebraska are being rapidly cultivated, produces many fine flowering plants wherever some steep or rocky slope has escaped cultivation. Here we find abundance of yuccas intermingled with blue pink and white-flowered spider-worts, handsome large-flowered penstemons, baptisias with large pea-like flowers of blue, yellow or white, many species of astragalus, yellow and white evening-primroses and other allied forms, several cactuses of the genera opuntia and mammillaria, blue larkspurs, pink oxalises, the purple Phlox divaricata, mallows of the genera Malvastrum and Callirhoe, some of which are well-known garden plants, and a host of sunflowers, asters, cone-flowers, golden-rods, coreopsis, and many other showy composites. This is the region of the buffalo or bunch grasses which formed the chief subsistence of the American bison. They are fine-tufted bluish grasses, much resembling in appearance our fine-leaved bent grass (*Agrostis setacea*), which is common on the heaths about Bournemouth and in Dorsetshire. I was informed that since the bisons had been destroyed the buffalo grass was also disappearing, being replaced by various coarser growing plants and grasses. It is probable that the uniform hardening of the surface by the tread of the herds of bison, together with the equally regular manuring, favoured the growth of this particular form of grasses.

As we travel westwards, towards the Rocky Mountains, the plains become more arid, and in places the vegetation resembles that of the deserts of the great basin. Here

there are fewer conspicuous flowers, and a preponderance of dwarf creeping plants, with a few thorny bushes and some species of wormwood, forming the well-known "sage-brush" of the deserts. In the interior plains these thorny and grey-leaved shrubs prevail, with wide tracts of bare earth often covered with saline incrustations. Here and there are found some pretty flowers, such as phloxes, alliums, phacelias, gilias, cleomes, œnotheras, and other characteristic plants; but the general aspect is that of bare soil scantily covered with a dwarf vegetation, or of low, shrubby thickets of a grey or leafless aspect, consisting mostly of plants allied to the salt-wort, orache, and sea-blite of our salt marshes, or the goose-foot and wormwood of our waste places.

We will now leave these comparatively uninteresting plains and deserts and enter on the Rocky Mountains proper, their deep cañons, their wooded slopes and valleys, and their upland pastures, rocky streams and alpine heights. The forest trees consist mainly of a few species of pines, firs, and junipers, none of them very remarkable for size or beauty, with several poplars, and a few oaks, beeches, and maples; but these rarely form continuous forests, except where the soil and other conditions are especially favourable. Almost everywhere the conifers are most prominent, and give their peculiar character of dark ever-green spiriness to the forest vegetation. The present scantiness of timber trees is no doubt partly due to the agency of man, first by starting forest fires, which rapidly clear extensive areas, and more recently by the felling of timber for building and mining, a cause which has denuded most of the valleys of their original forest trees. There are a considerable number of shrubs of the usual American types, such as sumachs, snowberries, hazels, spiræas, brambles, and roses, mostly of species common to other parts of America and of no special interest from our present point of view.

It is when we enter among the mountains and explore the valleys, cañons, and lower slopes, that we meet with a variety of new and interesting plants. Among these are some which are specially characteristic of this part of North America. The phloxes, polemoniums, and gilias, some species of which are common in our gardens, are abundant, as are the penstemons and mimuluses, with the brilliant castilleias belonging to the same family (Scrophulariaceæ), whose crimson or scarlet bracts form one of the greatest ornaments of the higher woods and pastures. The elegant genus Phacelia is not uncommon, though its chief development is in California, and the moist valley-bottoms are often blue with the well-known flowers of the bulbous camassia. A curious genus of the Polygonum family (Eriogonum) is abundant, and the yellowish-white or rosy flowers of some of the species are very pleasing. Handsome composites abound, especially the genus Erigeron, with a number of peculiar forms, while the beautiful butterfly-tulips of California here make their first appearance. Lupines also are plentiful, though less so than further west, and the beautiful American cowslips (Dodecatheon) sometimes called "shooting-stars" are not unfrequent in boggy meadows.

But in addition to these more or less characteristic American types, the botanist is at once struck by the appearance of a number of European or even of British plants, and these not introduced weeds but forming an essential part of the flora. This is proved by the fact that the further we penetrate among the mountains and the higher we ascend, the more numerous become these familiar species or genera. Among the more abundant of these plants are the common yarrow (*Achillea millefolium*), our blue hare-bell (*Campanula rotundifolia*), the bistort (*Polyonum bistorta*), the common silver-weed of our

roadsides (*Potentilla anserina*), and the rarer shrubby cinquefoil (*P. fruticosa*). In the sub-alpine and alpine districts these plants of the old world become more frequent and occupy a larger space in the entire vegetation, and in order to show the importance of this interesting feature of the Rocky Mountain flora it may be well to give a brief account of a week's exploration of the vicinity of Gray's Peak, one of the highest mountains of Colorado.

Accompanied by a botanical friend from Denver I went first by rail up Clear Creek Cañon, passing by Georgetown, to Graymount, the terminus of the railway, where there is a hotel and where horses are obtained for the ascent of Gray's Peak, about nine miles distant by the road. Graymount is situated at the junction of two valleys and is about 9,500 feet above the sea level. During a short stroll on the afternoon of our arrival on some rocky slopes we found two of our rarer British plants, the winter green (*Pyrola rotundifolia*) and the elegant twin-flower (*Linnæa borealis*), but instead of having nearly white flowers the former was reddish and the latter was of a deeper colour than in our native plant. The next day we walked to Kelso's cabin, where are some miners' houses about 11,000 feet above sea-level, situated at the lower end of a fine upland valley, which is above the timber line. During the earlier part of our walk up a wooded valley we first noticed fine clumps of the Siberian lungwort with its lovely pale blue flowers, growing more compactly than in our gardens, and splendid masses of the shrubby cinquefoil covered with its handsome yellow flowers, as well as our common harebell, all in the greatest luxuriance and beauty. In damp shady places we found the little moschatel, and in bogs the curious Swertia perennis, a kind of gentian with slaty-blue flowers. These are all European or North Asian plants, but there were many others peculiar to the region though sometimes of European rather than American affinity. Such are the lovely columbine (*Aquilegia cærulea*), allied to the species of the European Alps, abundant and conspicuous with its large blue and white flowers, while mingled with it grew the gaudy Castilleia integra, whose leafy bracts of intense crimson are visible from a long distance. This is a true American type, as is the pretty liliaceous plant, Zygadenus glaucus; and there were also abundance of dark purple or bright blue penstemons, several showy groundsels and erigerons and the handsome yellow composite, Arnica cordifolia.

It was when we had passed the timber line at about 11,500 feet elevation, and had entered the bare rocky valley at the head of which rises the snow-flecked summit of Gray's Peak, that we discovered some of the chief gems of the alpine flora of the Rocky Mountains. Along the borders of the stream, fed by the still melting snows and with its roots in the water, were fine clumps of the handsomest American primrose (*Primula Parryi*), its whorled flowers of a crimson-purple colour with a yellow eye resembling in general appearance the well-known Japanese primrose of our gardens. Among the stony *débris* and loose boulders which bordered the stream the beautiful Phacelia sericea was abundant, its violet-blue flowers growing in dense clusters and producing a charming effect among its desert surroundings. This is a typical American plant, since not only is the genus a peculiar one but the natural order to which it belongs – the Hydrophyllaceæ – is almost confined to that continent. The beautiful nemophilas of our gardens belong to the same family. In boggy places the handsome Greenland lousewort, an Arctic species, was plentiful, and in rocky crevices we found the moss campion

(*Silene acaulis*), which is abundant on the Scotch and Welsh mountains.

The next morning we fortunately determined to explore a lateral valley called Grizzly Gulch, which diverged to the north a mile above the hotel and led into a fine upland valley on the north side of Gray's Peak. Here, just below the timber-line, we found a miner's house, and the two miners who had come home to dinner invited us to join them, and then offered to show us a fine place for flowers. They took us through the wood for half a mile, when we came upon a rocky and grassy slope with great snow-patches in the shady hollows, and the ground which the snow had left was literally starred with flowers. Leaving us to go to their work in a mine on the steep side of the mountain, we luxuriated in the finest Alpine flower-garden we had yet seen, although my friend had visited the mountains several times. What first attracted our notice were three plants of the crowsfoot family, which grew intermingled on a grassy slope almost surrounded by snow. These were, a nearly white globe-flower (*Trollius albifloras*), very dwarf and with spreading, not globular flowers; a buttercup, whose flowers were of the most perfect circular outline, and of a pure and rich yellow, both peculiar to the Rocky Mountains; and the narcissus-flowered anemone of the European Alps. Going a little further we found some of the more characteristic American forms, such as the beautiful blue-flowered Mertensia alpina, a dwarf Alpine form of Mertensia siberica and perhaps the most lovely plant of the genus; the pretty fringed grass of parnassus (*Parnassia fimbriata*); with peculiar species of the European genera, Aster, Cardamine, Astragalus, Delphinium, Trifolium, Saxifraga, Sedum, Valeriana, Veronica, and Pedicularis; with others of the American genera, Phacelia, Chionophila, Mimulus, and Zygadenus; and hidden among the rocks the minute purple-flowered Primula augustifolia. What more especially interested me, however, was the number of identical British or European species. Such were the moss-campion, the Dryas octopetala, Sibbaldia procumbens, the rosewort (*Sedum rhodiola*), the Alpine Veronica, and the Alpine chickweed, Lloydia serotina, a small liliaceous plant found on Snowdon, and two saxifrages, Saxifraga nivalis and S. cernua, all found also in our Welsh or Scotch mountains; and of European Alpines the pretty slaty-blue Swertia perennis which dotted the grassy slopes with its delicate flowers, the Alpine Astragalus, the Arctic willow, several saxifrages and gentians, and some other species characteristic of the flora of the Alps.

The next day, after sleeping at a miner's cabin situated at the head of the main valley at about 12,500 feet elevation, we ascended to the top of Gray's Peak, which is 14,250 feet high, and met with many other interesting plants. The little Eritrichium nanum, a minute but intensely blue forget-me-not, was found growing in the midst of clumps of the moss-campion; the Gentiana tenella and Campanula uniflora of the Arctic regions were also found at about 13,000 feet elevation; with the British Alpine penny-cress, the yellow Iceland poppy, the two-flowered sandwort, the Alpine arnica, the snowy buttercup, and other truly Arctic plants. Along with these were a few American alpine types, such as Eriogonums, Castilleias, and several composites. Near the summit of the mountain there were alternate upward-sloping bands of loose rock-débris and short turf, the latter gay with pretty yellow flowers. On examination these were found to consist of a potentilla and a saxifrage, whose flowers, resting close on the ground, were so much alike in form and colour that at a short distance they appeared identical. The intermixture of two very distinct species of flowers, coloured and shaped alike and

flowering at the same time, is very uncommon, because it would interfere with regular cross-fertilization by insects. In this high and exposed situation, however, where the flowering season is very short and insects very scarce, the combination of two species of flowers may lead to a more conspicuous display, and be more attractive to whatever insects may visit such great altitudes; while with plants of such distinct families, the intermixture of the pollen would lead to no evil result, since each would be totally inert on the stigma of a flower of the other kind. The two species appear to be Saxifraga chrysantha and Potentilla dissecta.

On a general summary of the plants noticed during this excursion to one of the richest districts in the Rocky Mountains, I find that they comprised no less than 20 British species, about 45 European, mostly high Alpine or Arctic, and about 30 species which, though distinct, were allied to European types. There were thus a total of 95 species, either identical with or allied to European plants, while those which belonged to American genera, or were most nearly allied to American species, were about 30 in number. It thus appears that the alpine flora of the Rocky Mountains is mainly identical with that of the Arctic regions, and it is this identity which leads to the occurrence of so many British species in this remote district. In the review of the entire alpine flora of the Rocky Mountains by Professor Asa Gray and Sir Joseph Hooker, the number of species identical with those of the Arctic regions is 102, and the distinct, though often allied, species 81, while those that belong to peculiar American genera are only 14 in number.

In considering how this curious similarity of the alpine species of the two continents has been brought about, we must go back to a time anterior to the glacial epoch, when a rather mild climate prevailed in much of what is now the Arctic regions. The present Arctic flora, or its immediate ancestors, was then probably confined to the highest latitudes around the North Pole, together with the higher mountains which were immediately contiguous – such as Greenland, then only partially or not at all ice-clad, Spitzbergen and Nova Zembla, and some of the mountain peaks of Alaska and North-Eastern Asia. At this time the Rocky Mountains, the European Alps, and even Scandinavia supported in all probability only alpine forms of the plants of the surrounding lowlands, such as are now everywhere intermingled with the widespread Arctic species. As the cold came on, and the ice sheet crept farther and farther over the two continents, the true Arctic plants were driven southward, displacing the indigenous flora, which could not withstand the increasing severity of the climate, and occupying all the great mountain ranges on the lower side of the ice-fields and glaciers, and also such of the peaks as rose permanently above the ice-sheet of the glacial epoch. As the cold period gradually passed away, these hardy plants kept close to the gradually retreating ice, and in this way mounted to the higher peaks of many mountains from which the ice and even perpetual snow wholly passed away. Thus it is that so many species are now common to the Rocky Mountains and the European Alps; and, what seems more extraordinary, that identical plants occur on the summits of the isolated Scotch and Welsh mountains, and also on the White Mountains of New Hampshire and some of the mountains to the south of them.

Before passing on to sketch the flora of the west coast of America, we may briefly notice the more prominent differences between the Rocky Mountain flora and that of

our European Alps, such differences as must strike every traveller who takes an interest in the floral beauties of the two regions. In the Alps the more striking and showy flowers of the Alpine pastures and higher rocks are the white, purple, and yellow anemones; the beautiful violas; the glorious blue gentians starring the short turf with azure and indigo, the numerous saxifrages, often with large and showy sprays of flowers; the many beautiful rosy and purple primulas and yellow auriculas; the handsome pinks; the delicate campanulas; the showy white and yellow buttercups, and the graceful meadow-rues. Now in almost all these groups the Rocky Mountain alpine and sub-alpine flora is deficient. Anemones are comparatively few in species and not abundant; violas are almost absent in the higher regions; gentians, though fairly abundant in species, make no brilliant display as they do in the Alps; saxifrages are few, and those of the crusted section with rigid leaves and large racemes of flowers are entirely wanting; primulas are represented by one handsome and two small and rather scarce species; campanulas are scarce, and pinks are entirely absent; while buttercups and meadow-rues are by no means abundant. Instead of these flowers so familiar to the Alpine tourist, the most showy and widespread plants are the fine long-spurred blue and white columbine, and the scarlet or crimson-bracted castilleias, which form sheets of beautifully contrasted colours, often covering wide mountain slopes either above or just below the timber-line; numerous purple or blue penstemons; fine blue polemoniums and lungworts of the genus Mertensia; some handsome purple or whitish louseworts, and a host of showy purple or yellow composites, which are far more numerous and varied than in the European Alps, and occupy a more prominent place in the alpine and especially in the sub-alpine Rocky Mountain flora. It is evident, therefore, that, notwithstanding the identity of so many of the species and genera of the two regions the proportions in which they occur are very different, and the aspect of the two floras is thus altogether distinct, and in some respects strikingly contrasted.

When we go westward to the Sierra Nevada of California, we meet with another alpine flora, generally similar to that of the Rocky Mountains, but with a smaller proportion of Arctic species and more which are characteristic of America. Here we find dwarf shrubby penstemons, curious prickly gilias, Mimulus and Eriogonum in more abundance, and a greater variety of ferns. But it is when we descend to the lower slopes and to the valleys and coast ranges of California itself that we find the greatest abundance of new plants altogether distinct from anything in the Eastern States, and it is to these that we must devote the remainder of our space.

Few countries have contributed to our gardens a larger number of showy and interesting plants than California. The rich orange yellow Eschscholtzias, the brilliant Calandrinias, the showy Godetias and Clarkias, the beautiful little Nemophilas and Phacelias, the gaudy Mimuluses and the handsome Collinsias, are known to every lover of garden flowers. Others familiar to every horticulturist are the curious pitcher-plant – Darlingtonia Californica, the handsome gigantic white poppy – Romneya coulteri, the elegant Dicentra formosa, the fine yellow-flowered shrub Fremontia Californica, the ornamental blue or white flowered evergreens of the genus Ceanothus, the fine shrubby lupines, the lovely flowering currants, including the fine Ribes speciosum with drooping fuchsia-like flowers, the scarlet-flowered Zauschneria Californica, the fine shrubby Diplacus glutinosus, and lastly, the many ornamental bulbous plants, such as the trite-

leias, brodiæas, lilies, and especially the lovely butterfly-tulips of the genus Calochortus, whose flowers are most exquisitely marked inside with delicately-coloured hairy fringes. But this by no means gives an idea of the great peculiarity of the Californian flora, which is best shown by the large number of its genera, probably more than a hundred, which are altogether unknown in the Eastern States. The flora is in fact related to that of Mexico, just as the flora of the Rocky Mountains is related to that of the Arctic regions, and the Eastern States flora to that of Japan and Eastern Asia.

But although the valleys and lowlands of California are specially characterised by hosts of brilliant annuals, monkey-flowers, lupines, and flowering shrubs, which make the country a veritable flower-garden in early spring, it is from its mountain forests of coniferæ that it derives its grandest and best-known characteristics. To a brief sketch of these, and of the accompanying shrubby and herbaceous vegetation, the remainder of this article will be devoted.

The Sierra Nevada of California, though rising to nearly the same altitudes as the Rocky Mountains, is by no means an imposing range, owing to the exceedingly gradual slope of the foothills which are continuous with it. From these low and arid hills, rising with a very moderate slope from the great central valley of California, there is a constant rise over an undulating or rugged country for nearly a hundred miles to the summits of the great range. The intervening tract is often cut into deep winding valleys, whose higher slopes are terminated by rugged volcanic precipices, where they have cut through the old lava-streams that once covered a large portion of the mountains; while nearer to the crest are enormously deep valleys, bounded with vertical walls and gigantic domes or splintered peaks of granitic rocks, of which the celebrated Yosemite Valley is the best known example. Owing to this formation the summits of the range can only be seen from great distances and from a few favourable points, as a somewhat jagged line on the far horizon, just rising above the dark forest-clad slopes, and here and there flecked with perpetual snows. A coach drive of three days from the railway terminus at Milton to the Yosemite Valley, and another to the Calaveras groves of "big trees," gave me an excellent opportunity of observing the main features of this remarkable forest region.

The lower portion of the foothills up to two or three thousand feet has been greatly defaced by gold-miners, who have dug over miles of ground and cleared away most of the fine timber. This lower portion is, however, naturally more arid, and the trees have never been so fine as at greater elevations. It is curious to notice how the pines and firs increase in beauty as well as in size as we ascend further towards the central ranges. For the first thousand feet there is a scanty vegetation of stunted shrubs, and the only conifer is the scrub-pine (*Pinus sabiniana*) which has a most singular appearance, being irregularly branched, with scanty foliage, and when well grown, looking at a distance more like a poplar than a pine. Higher up occurs the large white pine (*Pinus ponderosa*), which, except in very fine specimens, is a coarse, unornamental tree. Above two thousand feet we meet with the sugar pine (*Pinus lambertiana*), so called because its turpentine is sweet and sometimes almost like a mixture of sugar and turpentine. This is a handsomer species, and when full grown is of immense size and may be known at a distance by its clusters of large cones hanging down from the very extremities of its loftiest branches. Thus far the forests are poor, owing to the absence of the more ele-

gant firs and cedars which only appear above 2,500 feet, when we first meet with the noble Douglas fir and the beautiful Red cedar (*Libocedrus decurrens*). This last is usually known in our gardens as Thuja gigantea, characterised by its columnar mode of growth and here sometimes reaching a hundred and fifty feet in height. Higher still, at about 4,000 feet, we come upon the most beautiful of the Californian firs, *Abies concolor* and *A. nobilis*. Both are exquisitely symmetrical in growth, while the dense horizontal branches of the latter species are adorned with the most delicate blue-green tints. These beautiful trees are to be seen here in every stage of growth, from such small plants as we see on the lawn of a suburban villa up to noble specimens 150 or 200 feet in height. These two elegant firs, along with the stately cedar and Douglas fir, and the noble yellow pine and sugar-pine, constitute the main bulk of the forest from 4,000 to 7,000 feet elevation, the belt in which alone are found the true "big trees" (*Sequoia gigantea*), in this country commonly known as the Wellingtonia.

Throughout these magnificent forests there is hardly any admixture of exogenous trees, and those that do occur only form an undergrowth to the far loftier coniferæ. A few small oaks and maples are sometimes seen, but more generally there is only an undergrowth of beautiful shrubs, the most conspicuous being the fine Californian dogwood, whose flowers, formed of the white involucres, are six inches across; and the lovely white azalea, whose delicate blossoms are beautifully marked with yellow. Besides these are the handsome Californian laurel and the white or blue flowered Ceanothus, while the "madrono" and "manzanita" (species of Arbutus and Arctostaphylos), are found in the drier portions of the forest and at a lower elevation.

The ground under the pines and firs is usually rather bare, but in favourable places there are some curious or beautiful creeping or herbaceous plants. Some of the drier slopes are completely carpeted with a curious little rosaceous plant (*Chamæbatia foliolosa*), having white flowers like those of a bramble and the most minutely divided tripinnate foliage, each leaflet looking about the size of a pin's head. Perhaps the most remarkable herbaceous plant of these forests is the Sarcodes sauguinea, a leafless parasite allied to our native monotropa, but of an intense crimson colour and very large, being often more than a foot high and two or three inches diameter. It is called the "snow-plant" in California, because it appears before the snow has wholly melted and is most striking and beautiful when growing out of it. This plant is accurately represented in one of the pictures in the "North" gallery at Kew. On the sides of the rocky streams growing in fissures which are often under water, the large peltate saxifrage seems quite at home, although in our gardens it will grow and flower even in the driest situations. The fine shrubby Penstemon Newberryi also adorns the rocky margins of the streams, the beautiful Diplacus glutinosus of our greenhouses is a common wayside shrub, while the lovely blue Brodiæas and painted Calochorti or butterfly-tulips, are as common as our bluebells and poppies. The fine yellow Cypripedium montanum is occasionally found in the forest bogs, while in open ground near the "Big Tree" Hotel, exquisite little blue Nemophilas, yellow Mimulus, and a tall Echinospermum with flowers like a large forget-me-not, were very abundant. Among these and many other strange flowers one British species was found, often starring the ground under the giant trees with its delicate flowers. This was the little chickweed wintergreen (*Trientalis Europæa*), only differing from our native plant in the flowers being pale pink instead of white.

Even if we leave out of consideration the giant Sequoias, the forests of the Sierra Nevada would stand pre-eminent for the beauty and grandeur of their pines, firs, and cedars. Three of these, the white pine, the red cedar, and the sugar-pine are, not unfrequently, more than six feet in diameter at five or six feet above the ground, whence the giant trunks taper very gradually upwards. One sugar-pine near the big-tree Hotel was found to be seven feet two inches diameter at five feet above the ground. A red cedar measured at the same height was seven feet diameter, and one of the white pines five feet nine inches. The height of the above-named sugar-pine was measured approximately by means of its shadow, and found to be 225 feet, and I was assured that one which had been cut down near the hotel was 252 feet high. The Douglas fir in the forests of British Columbia is said to surpass these dimensions considerably, being often ten feet or even twelve feet diameter, and near 300 feet high. Probably in no other part of the world than the west coast of North America is there such a magnificent group of trees as these; yet they are all far exceeded by two others inhabiting the same country, the two Sequoias – S. gigantea and S. sempervirens.

In the popular accounts of these trees it is usual to dwell only on the dimensions of the very largest known specimens, and sometimes even to exaggerate these. Even the smaller full-grown trees, however, are of grand dimensions, varying from 14 to 18 feet in diameter at six feet above the ground, and keeping nearly the same thickness for perhaps a hundred feet. In the south Calaveras grove, where there are more than a thousand trees, the exquisite beauty of the trunks is well displayed by the numerous specimens in perfect health and vigour. The bark of these trees, seen at a little distance, is of a bright orange brown tint, delicately mottled with darker shades, and with a curious silky or plush-like gloss, which gives them a richness of colour far beyond that of any other conifer. The tree which was cut down soon after the first discovery of the species, the stump of which is now covered with a pavilion, is 25 feet in diameter at six feet above the ground, but this is without the thick bark, which would bring it to 27 feet when alive. A considerable portion of this tree still lies where it fell, and at 130 feet from the base I found it to be still 12 1/2 feet in diameter (or 14 feet with the bark), while at the extremity of the last piece remaining, 215 feet from its base, it is six feet in diameter, or at least seven feet with the bark. The height of this tree when it was cut down is not recorded, but as one of the living trees is more than 360 feet high, it is probable that this giant was not much short of 400 feet.

The huge decayed trunk called “Father of the Forest,” which has fallen perhaps a century or more, exhibits the grandest dimensions of any known tree. By measuring its remains, and allowing for the probable thickness of the bark, it seems to have been about 35 feet diameter near the ground, at 90 feet up 15 feet, and even at a height of 270 feet it was 9 feet diameter. It is within the hollow trunk of this tree that a man on horseback can ride – both man and horse being rather small; but the dimensions undoubtedly show that it was considerably larger than the “Pavilion tree,” and that it carried its huge dimensions to a greater altitude; and although this does not prove it to have been much taller, yet it was in all probability more than 400 feet in height.

Very absurd statements are made to visitors as to the antiquity of these trees, three or four thousand years being usually given as their age. This is founded on the fact that while many of the large Sequoias are greatly damaged by fire the large pines and firs

around them are quite uninjured. As many of these pines are assumed to be near a thousand years old, the epoch of the "great fire" is supposed to be earlier still, and as the Sequoias have not outgrown the fire-scars in all that time they are supposed to have then arrived at their full growth. But the simple explanation of these trees alone having suffered so much from fire is, that their bark is unusually thick, dry, soft, and fibrous, and it thus catches fire more easily and burns more readily and for a longer time than that of the other coniferæ. Forest fires occur continually, and the visible damage done to these trees has probably all occurred in the present century. Professor C. B. Bradley, of the University of California, has carefully counted the rings of annual growth on the stump of the "Pavilion tree," and found them to be 1,240; and after considering all that has been alleged as to the uncertainty of this mode of estimating the age of a tree, he believes that in the climate of California, in the zone of altitude where these trees grow, the seasons of growth and repose are so strongly marked that the number of annual rings gives an accurate result.

Other points that have been studied by Professor Bradley are, the reason why there are so few young trees in the groves, and what is the cause of the destruction of the old trees. To take the last point first, these noble trees seem to be singularly free from disease or from decay due to old age. All the trees that have been cut down are solid to the heart, and none of the standing trees show any indications of natural decay. The only apparent cause for their overthrow is the wind, and by noting the direction of a large number of fallen trees it is found that the great majority of them lie more or less towards the south. This is not the direction of the prevalent winds, but many of the tallest trees lean towards the south, owing to the increased growth of their topmost branches towards the sun. They are then acted upon by violent gales, which loosen their roots, and whatever the direction of the wind that finally overthrows them, they fall in the direction of the overbalancing top weight. The young trees grow spiry and perfectly upright, but so soon as they overtop the surrounding trees and get the full influence of the sun and wind, the highest branches grow out laterally, killing those beneath by their shade, and thus a dome-shaped top is produced. Taking into consideration the health and vigour of the largest trees, it seems probable that, under favourable conditions of shelter from violent winds and from a number of trees around them of nearly equal height, big trees might be produced far surpassing in height and bulk any that have yet been discovered. It is to be hoped that if any such are found to exist in the extensive groves of these trees to the south of those which are alone accessible to tourists, the Californian Government will take steps to reserve a considerable tract containing them, for the instruction and delight of future generations.

The scarcity of young sequoias strikes every visitor, the fact being that they are only to be found in certain favoured spots. These are, either where the loose *débris* of leaves and branches which covers the ground has been cleared away by fire, or on the spots where trees have been uprooted. Here the young trees grow in abundance and serve to replace those that fall. The explanation of this is, that during the long summer drought the loose surface *débris* is so dried up that the roots of the seedling sequoias perish before they can penetrate the earth beneath. They require to germinate on the soil itself, and this they are enabled to do when the earth is turned up by the fall of a tree, or where a fire has cleared off the *débris*. They also flourish under the shade of the

huge fallen trunks in hollow places where moisture is preserved throughout the summer. Most of the other conifers of these forests, especially the pines, have much larger seeds than the sequoias, and the store of nourishment in these more bulky seeds enables the young plants to tide over the first summer's drought. It is clear, therefore, that there are no indications of natural decay in these forest giants. In every stage of their growth they are vigorous and healthy, and they have nothing to fear except from the destroying hand of man.

Destruction from this cause is, however, rapidly diminishing both the giant Sequoia and its near ally the noble redwood (*Sequoia sempervirens*) a tree which is more beautiful in foliage and in some other respects more remarkable than its brother species, while there is reason to believe that under favourable conditions it reaches an equally phenomenal size. It once covered almost all the coast ranges of central and northern California, but has been long since cleared away in the vicinity of San Francisco, and greatly diminished elsewhere. A grove is preserved for the benefit of tourists near Santa Cruz, the largest tree being 296 feet high, 29 feet diameter at the ground and 15 feet at six feet above it. Much larger trees, however, exist in the great forests of this tree in the northern part of the State, but these are rapidly being destroyed for the timber, which is so good and durable as to be in great demand. Hence Californians have a saying that the redwood is too good a tree to live. On the mountains a few miles east of the Bay of San Francisco, there are numbers of patches of young redwoods indicating where large trees have been felled, it being a peculiarity of this tree that it sends up vigorous young plants from the roots of old ones immediately around the base. Hence in the forests these trees often stand in groups arranged nearly in a circle, thus marking out the size of the huge trunks of their parents. It is from this quality that the tree has been named "sempervirens," or ever flourishing. Dr. Gibbons, of Alameda, who has explored all the remains of the redwood forests in the neighbourhood of Oakland, kindly took me to see the old burnt-out stump of the largest tree he had discovered. It is situated about 1,500 feet above the sea and is 34 feet in diameter at the ground. This is as large as the very largest specimens of the Sequoia gigantea, but it may have spread out more at the base and have been somewhat smaller above, though this is not a special characteristic of the species. Many other stumps were seen which were 20 and 30 feet in diameter, and all were surrounded with young trees of various sizes. The large tree is said to have been cut down forty years ago. It is, therefore, probable that, in the forests to the northward, redwood trees may exist equalling, if not surpassing, the "big trees" themselves.

I have now concluded a very brief and imperfect sketch of the more prominent aspects of North American vegetation, as seen during a single summer's travel across the continent. Many grand and beautiful scenes remain vividly painted on my memory; but if I were asked what most powerfully impressed me, as at once the grandest and most interesting of the many wonders of the western world, I should answer, without hesitation, that it was the two majestic trees some account of which I have just given, together with the magnificent and beautiful forests in the heart of which they are found. Neither the thundering waters of Niagara, nor the sublime precipices and cascades of Yosemite, nor the vast expanse of the prairies, nor the exquisite delight of the alpine flora of the Rocky Mountains – none of these seem to me so unique in their grandeur, so impressive in their display of the organic forces of nature, as the two magnificent "big trees" of

California. Unfortunately these alone are within the power of man totally to destroy, as they have been already partially destroyed. Let us hope that the progress of true education will so develope the love and admiration of nature, that the possession of these altogether unequalled trees will be looked upon as a trust for all future generations, and that care will be taken, before it is too late, to preserve not only one or two small patches, but some more extensive tracts of forest, in which they may continue to flourish, in their fullest perfection and beauty, for thousands of years to come, as they have flourished in the past, in all probability for millions of years and over a far wider area.

* * * * *

Land Lessons from America

A couple of months after Wallace returned to England he made some observations regarding his American trip at a public meeting of the Land Nationalisation Society. The proceedings were recorded and published shortly thereafter as Land Nationalisation Tract No. 18, Land Lessons from America*.*

Dr. Alfred Russel Wallace (who, on rising to acknowledge the welcome accorded to him, was received with loud and long continued applause,) said: – Ladies and Gentlemen, I have to thank you very much for the kind manner in which you have received me this evening, although I think my friend, Mr. Volckman, has departed a little from the principles he laid down, in going rather too much in the line of personal eulogy. However, as he distinctly said the more the eulogy the less the merit, I can accept all his remarks without feeling I have been overpraised. (Laughter.) As this meeting has been called with some reference to my recent visit to the United States and Canada, I think I may perhaps best occupy your time for a few moments in giving you some short account of what I saw and observed in America, in relation to the land question. (Hear, hear.) To those of my friends, or those present, who are not acquainted with the object and purpose of my journey to America, I may say that I went there to lecture on Natural History and not with any reference whatever to political questions. In the course of my sojourn there, which lasted ten months, I visited and lived for some time in many of the chief cities of America. In Boston and Washington – which were my headquarters during a portion of my visit – I stayed between two and three months in each. In Baltimore, New York, Cincinnati, and San Francisco, I stayed from one to two weeks; in Toronto and Kingston I stayed a week each, and in several other large towns in different parts of the country I stayed a few days. During this time I met with several men of great eminence in connection with both political and social questions. First of all there was our honoured friend and chief in this land question, Henry George. (Cheers). He was one of the first distinguished persons whom I met in New York, and I had the pleasure of attending one of the meetings which were held for the purpose of advocating his candidature as Mayor of New York, and of supporting him by a short speech on that occasion. (Hear, hear.) During the course of my journey I was very much thrown amongst scientific men, and I met with several who were the advocates of very advanced views, not only on political and social questions, but also on the land question.

Although Henry George's supporters are mainly among the working classes, I found that there were a very considerable number of highly educated men in America who are his very warm supporters. (Hear, hear.) For instance, to name only one I found, one of the judges – Judge McGuire, of San Francisco, a man in the prime of life, of great activity – was a most earnest and powerful advocate of Mr. George's views; and Judge McGuire is a man who speaks out boldly on the subject and advocates his views in every way. And again I was surprised to find in Canada, Mr. Cartwright, the eldest son of Sir Richard Cartwright, one of the most eminent politicians – was, much to his father's disgust, a strong Georgite, and had got up a Georgite Society, and was one of the chief speakers and agitators on the subject. (Hear, hear.) There were many other earnest and advanced men whom I met in America. I may mention that I met in Washington Prof. Lester F. Ward – a gentleman who I think is perhaps the most intellectual man I met in America. He is well-known in the scientific world as an earnest and thorough botanist. But his special study is philosophical enquiries connected with social questions, and he has devoted himself for many years to the study of these subjects. A few years ago he published as the result of his many years hard work, two large volumes, entitled "Dynamic Sociology." In this work, which is in many respects one of the most remarkable which has appeared on this subject, he endeavours to lay down the true philosophical basis of sociological progress, to work out in some detail the principles that ought to guide men in their advance towards a more perfect social state. He does this, I must admit, in a rather generalised style, which is not exactly to my own taste. But there are many persons who avoid details and discuss principles only, and this is done in a most remarkable manner in this work. He is, as the result of his studies, practically a Socialist – (hear, hear) – a Socialist of a particular type. He believes – and in fact he adduces many examples from the American institutions to show – that the State or the community, if it is thoroughly organised and thoroughly instructed, can do an enormous deal for the advancement of the society over which it rules. He maintains that there is not the amount of danger that is generally supposed under state rule, if that state rule is thoroughly instructed and acts upon thoroughly sound principles, and that it is quite easy to find a sufficient number of educated, honest, and disinterested men to carry out the work when it is required to be done. Then again, another remarkable man whom I met was Prof. Eley, of the "Johns Hopkins" University of Baltimore, and Professor of Political Economy there, who has the reputation of being the most advanced political economist in America. He is a man of very advanced opinions, who approaches very nearly to our views on Land Nationalisation, although he has not perhaps quite reached them. Then again, I met another man, quite unknown here, but still a very remarkable man – Colonel Phillips – a gentleman who has been connected with the State of Kansas from its first foundation, and was for many years a special correspondent of the *New York Herald*. He has quite independently, as it were, worked out a land system of his own. He has published a very remarkable and interesting book, entitled "Labour, Land, and Law: A Search for the Missing Wealth of the Working Poor." This work, I think, can be obtained from the American publishers in London. It contains a vast mass of information, and is interesting not only in relation to the American land system but to the land systems of the whole world, and I can recommend it to any person wishing to increase his knowledge on this subject.

Now I will call your attention for a moment to the remarkably favourable conditions under which America exists with regard to the land question. It possesses, in fact, advantages such as no other country in the world possesses, and, moreover, it possesses all those advantages which all except the most advanced land reformers ask for, for ourselves. Of course you know Americans possess an almost inexhaustible extent of land, a very large part of which is of marvellous fertility. I never perfectly understood the meaning and cause of the great wave of western emigration until I reached the great prairies west of the Mississippi and saw there hundreds and thousands of square miles of land of the most marvellous fertility. I was amazed to find that it was not only in the valleys and bottoms that the alluvial lands were rich, but that the whole of the undulating and slightly elevated surface of the country was rich also – not quite so rich as that of the bottom lands, but still marvellously fertile, consisting of rich loam of one or two feet in depth. But in the valleys it is sometimes as much as twenty feet in depth. This land produces magnificent crops, and a great deal of this bottom land has been worked continuously with corn crops for twenty or thirty years in succession and is by no means exhausted – in fact it is but slightly deteriorated. When such land can be had for almost nothing, how can you wonder that people flow, not only from Europe, but also, for many years past, from the Eastern States, where it is comparatively barren and rocky, to these wonderfully rich and fertile lands of the West. Then again America – although she has fundamentally the same land laws as we have, and recognises the most absolute private property in land, yet has none of those special disadvantages which we desire to remove. There is no such thing in America as primogeniture or entail. (Hear, hear.) Moreover, they have, and I believe always have had that which we want more than anything else – that which those who are opposed to land nationalisation specially ask for – a cheap transfer of land. That is so universal and simple a thing to Americans that they can hardly believe or realize – at least those who have not studied the subject – the difficult and complex mode of transfer in force in this country. Again, they have a most important system of complete registration, both for sales and titles as well as for mortgages on land. This again seems to them such a simple and elementary thing, that they really could scarcely believe me, and opened their eyes when I told them there was no such thing as a general register of mortgages in this country; that, when a mortgage was proposed on land, it was with the greatest difficulty that you could find out whether or not a previous mortgage existed. Now these three things – the absence of primogeniture or entail; cheap and simple transfer of land; and the complete registration of sales and mortgages – comprise the whole of the reform which the Liberal party as a party have usually asked for, or I believe ask for now. Then there is another thing that those who are more advanced than the Liberal party as a whole ask for, and that is, that ground rents should be universally taxed. (Hear, hear.) Now this complete taxation of ground rents exists in America to a most thorough and complete extent. Every particle of land under private ownership is taxed on its full selling value and the American owner very often thinks it is taxed above its value. Whether it is built on or cultivated it does not matter – the land is taxed to its full value. And you must remember that the land and property taxes there are not, as they are here, a mere fragment of the taxation of the country, for there they practically comprise the whole taxation of the several States. (Hear, hear.) You must remember that the States in America are completely

independent – they are separate kingdoms (though without kings), they are self-governing Republics, and each one is as independent in its internal affairs as any country in Europe. But it is only the Federal, or central government that raises taxes by means of duties or other modes of fiscal taxation. The States themselves I believe without exception raise the whole of the taxation for their internal government by means of a tax on property, and in this tax on property, land and ground-rents of every kind is included along with personal property. Consequently ground-rents are taxed to their full value. Now having all this – which is all many of us here ask for – let us see what are the results. The results are very curious. To begin with. Land speculation, which we think is bad enough with us, is but a trifle here compared with what it is in America. In America land speculation is everywhere excessive. It is the great mode of making money, and it exists more or less all over the country wherever land is for sale and is not monopolised by great capitalists. This taxation on full values, however, usually causes very rapid changes of ownership. Men buy land on speculation for the purpose of selling it again quickly. They will not hold it long because if it is not used the taxes will eat it up. Then somebody else buys it and sells it again pretty quickly, and thus land is continually changing owners until it is used for occupation or cultivation or for building. But the result of this rapid change of ownership – of each person trying to make a profit, is, that land very rapidly acquires in America a price as high as in old settled countries like England and very often even higher. I was perfectly amazed to find the enormous prices which land brought in America, not only when in the centre of great cities, but even in the smaller places which are surrounded by a comparatively unpopulated country. I will give you a few examples of prices that land brings in America, which many of you may be able to compare with the prices obtained in this country in corresponding places. I have turned the prices from dollars into pounds. In Boston for instance, a considerable city of 360,000 inhabitants, in the best part of the suburbs, in the fashionable residential districts, land sells at £80,000 an acre, while in the central parts of the city it sells at double that – at £160,000 an acre. In small towns in Massachusetts the land sells at £300 or £400 an acre. When you get to the Far West, in the prairie states of Iowa and Kansas, you will find there – although the country is very scantily populated and the towns and cities are comparatively small – still the price of land runs up very rapidly. I stayed for some time in a growing city in Iowa called Sioux city, which has a population of 20,000. They were having what is called a land boom – every city tries its best to have one – we should call it a land fever; and the consequence was that land which sold at ten pounds an acre three years ago was selling at 150 pounds an acre. It was two miles from the City, and it was sold with the idea that the city would soon stretch out and reach it. In the residential suburbs the price obtained was £4,500 an acre, and in the centre of the city it was £40,000 an acre. In the town of Salina in Kansas, with a still smaller population of only 8,000, which was first settled by Colonel Phillips, about 30 years ago, in that little town, land in the suburbs is now selling at £4,500 an acre, and in the centre of the town at £30,000 an acre. Here also they had a boom and land had doubled in value in a few months. When this state of things prevails everybody with any money to spend or invest looks upon land speculation as the normal mode of making money, and you may easily imagine that anything like a system of land-nationalisation which would stop these speculations is not looked upon with fa-

vour. In fact it is this circumstance – that such an enormous proportion of the well-to-do people of the country either have made money by land speculation, or hope to do so – which is the great difficulty in the way of the spread of any true ideas in regard to land. (Cheers.) Then again the result of these speculations is that in the cities – in the suburbs of the cities, in the places where working men live, we find the land cut up into still smaller strips than in England, and the houses are built still more closely together. In the suburbs of the City of Washington I saw houses – what were called little villas – good mechanics' villas – which were built with a frontage of only 15 feet or two on a lot 30 feet wide; and even in the more populous and better parts of the city you find good houses built upon exceedingly narrow strips of 18 or 20 feet wide, running back in proportion a long distance, giving the idea of scarcity and dearness of land which is amazing to us in a country like America, where land is almost unlimited. Here you have private property making land the subject of speculation, producing all the evil effects, such as crowded cities and bad tenement houses, just as you have in our great cities at home. Then again, during the last 20 or 30 years there has been growing up in America a great system of landlord and tenant that is totally contrary to our old ideas of what America was. We were told that every farmer there was his own landlord; that every working man occupied his own house. This, however – since the war, at all events – has been changed; and now, there are nowhere in the world a greater number of great landlords than in America. There are scores of great landlords who own more than a million acres each. We read in American papers of the eviction of tenants wholesale, just as you read of them in Ireland; you have also there a condition of things which is beginning to stir up the Americans very much; there are about 20,000,000 acres of land held by foreign and non-resident landlords, and there are more than 1,000,000 tenant farmers in America; there are in fact far more tenant farmers in America than in this country. Here you have again another result, an inevitable result, of private property in land – a huge land monopoly, already producing such evil results as this in such a grand country as America. Notwithstanding all the great advantages they possess, we find houses crowded together, rents enormously high, and no gardens to the houses. One of the most disagreeable features of American houses to Englishmen is that there are no gardens; where there is a little plot of land, it is usually grass, with a few trees or shrubs, but no flowers or vegetables. It is thus clear, that as population goes on increasing, and as wealth goes on increasing in America, all the evils of landlordism which have arisen in Europe to so great and terrible an extent will necessarily arise in America. What I want particularly to call your attention to, and the purpose for which I have made these few remarks, is simply this, that the idea that the ordinary reforms asked for, such as the abolition of entail and primogeniture; simple transfer; complete registration; and even complete taxation of ground rents, will really do nothing whatever for us in regard to alleviating or abolishing the evils of landlordism. (Hear, hear.) Whatever we may do; whatever methods we propose for alleviating the troubles in which we find ourselves, it is quite evident that these methods will utterly fail: we have a proof that this will be so in what we see in America. That country has grown up with every advantage that is to be derived from the absence of those laws and customs which the ordinary land reformer wishes to get rid of, and yet, with all these advantages, we see the rapid growth of those very evils which some persons think they can abolish by introducing a system like

that which prevails in America. It appears to me that this is one of those admirable cases of a great experiment made for us, from which we ought to learn an important lesson. (Cheers.) It is utterly useless, therefore, to go on advocating these petty reforms and thinking that they will produce any beneficial result. (Hear, hear.) I do not know that I need occupy your time any longer, (cries of "Go on,") except to say that I have derived very great pleasure from my journey to and travels in America, not only from the interesting facts which I observed with regard to the land, but also as regards the marvellous and wonderful energy of the people. (Hear, hear.) Everywhere there is a most tremendous energy shown, not only in making money individually, but also in improving and advancing by each community its own town, city, or state. There seems to be to that extent a wonderful amount of public spirit in America – more than you see here. (Hear, hear.) All these towns and cities are as it were in rivalry with each other; whatever advantages or improvements one possesses the other is determined to have also, no matter what it may cost. And the result is very curious – that many of the conveniences of life – of city life – which we are only just beginning to have in our great cities in England are spread all over America, even to the small prairie cities and towns. There, for instance, the tramway system is carried out to an enormous extent. In America the smaller towns of a few thousand inhabitants have tramways in every main street running at cheap rates. Then again, in every one of these towns – I was never in a town, however small, that was not publicly lighted with electric light, and if you speak to them about the cost of it, they say, "Oh, we must have it because other towns have it." And then the manner in which the telephone has been utilised in America has been something marvellous. Every town, without exception, has the telephone system at work, and in business offices as well as in private houses it is used; and in suburban villas the residents have telephones connected and do a large part of their business and shopping by means of it. These things are very striking, because they illustrate the wonderful power and energy of the people, one cause of the very rapid creation of wealth. And this rapid creation of wealth has enabled them to get over the difficulties that are now oppressing them, owing to the increasing monopoly of land, and the corresponding monopoly of other advantages, such as railways, which lead to an enormous increase of millionaires. These millionaires the people are beginning to see are an evil and a curse to the country, and they are beginning to see that they must adopt measures to in some way check this enormous growth of great fortunes, and this enormous growth of great landlords. (Hear, hear.) They see that the great landlords in large cities and the unchecked monopolies of the great speculators and millionaires are the seeds which will bring forth trouble at no distant date to the Great Republic of the West. (Great cheering.)

Dr. Wallace then answered a number of questions asked by Mr. Durant, Mr. Briggs, Mr. Jameson, and others, and in so doing said: These questions enable me to supply an omission I made. Among the remarkable men I met in America, one of the most intelligent and advanced was Mr. Nordhof, of Washington, the author of the best book that has been written on American Communism, and the Washington correspondent of the *New York Herald*. He has personally visited all the Communistic Societies, has made friends with their chief men, and has sympathetically studied their social economy; and he has published the result in a very interesting volume, "The Communistic Societies of the United States." He is one of the few thorough land nationalisers in our sense that I

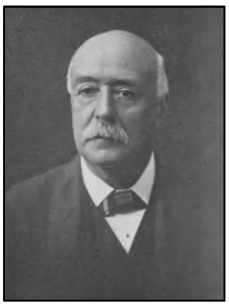
met in America. He gives a most interesting account of these societies, and draws most interesting conclusions as to the results obtained by their forms of communism. He shows in fact that every one of them, without exception, succeeds at all events in saving the whole of their members from anything like poverty, hunger, or want. They, at all events, live well, and have plenty of meat and drink. There are some complaints no doubt; chiefly that they do not pay sufficient attention to the refinements of life; but, as he says, that may bye and bye come. Yet this one result – the absolute abolition of poverty and hunger – is surely an important result to produce. The fear expressed by some writers that men would thus become idle seems to be utterly baseless, for they are the most industrious people possible. (Hear, hear.) Another great beneficial result he finds in these communities is that they seem to have developed universal honesty, for many of these communities are manufacturing societies as well as agricultural, and wherever their goods are known they have the reputation for being thoroughly good and honest articles. (Cheers.) In this respect, at all events, communism contrasts most favourably with the system of competition.

* * * * *

Appendix 4: Identifiable People Mentioned in Wallace's Journal

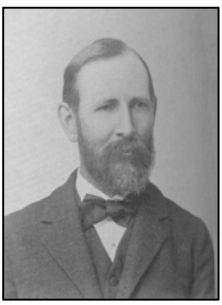
Wallace mentions well over a hundred persons he met during his tour whose reputations were significant enough to place them in major biographical reference sources. In the sketches to follow we have indicated some of these sources, where existing, as a list of two-letter codes following the individual's birth and death dates (when known). Key: AN (*American National Biography*), BN (*Oxford Dictionary of National Biography*), CN (*Dictionary of Canadian Biography*), ES (*International Encyclopedia of Social Science*), NC (*National Cyclopaedia of American Biography*), SB (*Dictionary of Scientific Biography*), WK (*Wikipedia*), WW (*Who Was Who*: U.S., U.K. or Canadian editions). All images are by permission, or in the public domain.

In addition to those figures noted below, Wallace mentions the following members of his family and immediate circle of friends fairly frequently in his journal: Richard Spruce (1817–1893, the Amazon botanist), George Silk (a lifelong friend), William Mitten (1819–1906, expert on mosses and Wallace's father-in-law), Annie (his wife 1846–1914, née Annie Mitten, daughter of William Mitten), John (1818–1895, prominent civil engineer, Wallace's brother), Fanny (1812–1893, Wallace's sister), Willie (1871–1951, Wallace's younger son), and Violet (1869–1945, Wallace's daughter).



Agassiz, Alexander Emanuel (1835–1910) AN NC SB WK WW. Agassiz succeeded his father (Louis Agassiz) as director of the Museum of Comparative Zoology at Harvard after the latter's death in 1873, and was the key figure in that institution's early growth. After taking degrees in zoology and engineering Agassiz made a fortune in mining, then devoted the rest of his life to natural history studies, especially in ichthyology and oceanography. **11/13 12/15**

Allan, George William (1822–1901) WK. Allan studied law in the early 1840s and before starting his practice traveled in Europe and the Near East. By the late 1840s he had begun a successful political career culminating in a term as Speaker of the Canadian Senate from 1888–1891. Urbane and widely experienced, he had strong ties to higher education (including serving as chancellor of Trinity College), the fine arts, science, church affairs, and the military. **3/11 3/13**



Allen, Joel Asaph (1838–1921) AN NC SB WK WW. Allen was among the most prominent American naturalists of his generation. Much of his work involved basic descriptive science in ornithology and mammalogy, but he was also interested in theory, and museum administration. He is especially remembered for his neo-Lamarckian perspective and influential studies on adaptive variation, especially as related to color and gross morphology (*e.g.*, his

espousal of what came to be known as "Allen's Rule"). **1/12**

Allen, Joseph Antisell (1814–1900). Revd. Allen was the father of the writer Grant Allen (who Wallace greatly admired). An Anglican minister originally from Dublin, Ireland, the senior Allen was himself the author of both prose and verse, on subjects of historical, biographical, and theological nature. **1/6 1/12 1/14–16 1/27–28 1/31 2/3 2/10 2/17 7/25 8/2–3 8/5–6 8/11**

Anderson, Charles Lewis (1827–1910). Physician Anderson was born in Virginia, but made his mark in Nevada, eventually becoming State Surgeon General there. In 1867 he moved on to Santa Cruz, California, where he lived out his days. 'Not quite the end of the story: Anderson had a strong side-interest in botany, and became one of the most important early collectors of plant specimens from his adopted states. **6/25**

Babcock, Louis M. Not much seems to be known about Babcock. He was editor and/or publisher of several minor publications in the 1860s and 70s, editor of the book *Our American Resorts* (1883), editor of the *Colorado Graphic* from 1886 to 1889, and author of *The Denver Annual* (1890). After 1890 he apparently worked as an editor in Washington, D.C. **5/19**

Backhouse, James (1825–1890) BN WK, or **Backhouse, James** (1861–1945) BN. The Backhouses came from a long line of naturalists and horticulturists. James Sr. and his son managed a successful nursery in York, taking a special interest in alpine plants. James Sr. was also an archeologist and geologist; he and his son eventually set up a museum featuring artifacts they collected from their explorations of caves in the Teesdale area. The younger Backhouse was also known for his work in ornithology, especially as author of the 1890 guide *Handbook of European Birds*. **7/23 7/29**

Bailey, Liberty Hyde, Jr. (1858–1954) AN NC SB WK WW. Bailey was a leader in the agrarian reform movements of the early twentieth century. A Wallace-influenced botanist by training, his own influence was felt through an enormous literary output, his founding of the College of Agriculture at Cornell, and important roles in rural development projects such as 4-H, agricultural extension, and rural electrification. **7/29**

Baird, Spencer Fullerton (1823–1887) AN NC SB WK WW. Baird made it to the top rank of American zoologists (especially vertebrate zoology), but he is most remembered for his long association with the Smithsonian Institution. He was assistant-secretary of the Smithsonian from 1850 to 1878 and secretary thereafter; throughout he had a strong influence on the people, programs, and expeditions associated with it. **2/6 3/28–29**

Baker, James Hutchins (1848–1925) AN NC WW. Baker received degrees from Bates College in Maine, taught locally for a couple of years, then in 1875 for health reasons moved to Denver, where he became principal of Denver High School East. The school became nationally recognized under his leadership, and in 1892 he was asked to become the president of the University of Colorado. This too greatly prospered under his guidance, which included innovative suggestions for standardization of admission requirements. **5/19**

Balmer, Robert. Balmer received his bachelor's degree from University College, Toronto, in 1883. By 1886 he was the English and modern language master at Kingston Collegiate & Vocational Institute. Later he became a successful businessman and sanitary engineer, spending much time in South America. He also developed into a strong Single Tax advocate, contributing writings to publications such as the magazine *Land Value* and the annual *Single Tax Year Book*. **3/9**

Beal, William James (1833–1924) AN NC WK WW. Michigan native Beal was professor of botany at the Michigan Agricultural College (now Michigan State) for nearly forty years, and founder of the W. J. Beal Botanical Garden there. Beal is remembered for his research on hybrid corn, and for a still-running experiment on seed longevity. **7/29–31 8/6**

(probably) **Bigelow, William Sturgis** (1850–1926) NC WK WW. Bigelow came from a line of Boston surgeons, and after studying at the best institutions in the U. S. and Europe was himself pressured into practice in 1879. His heart was not in it, however, and after 1882 he applied himself to the study of Japanese culture, even moving to Japan for six years. He was a life member of the Massachusetts Audubon Society, and as of 1890 was connected with the American Society for Psychical Research. Possibly, Wallace might instead be referring to his father, Henry Jacob Bigelow (1818–1890), a famous professor of surgery at Harvard.

Bland, Thomas Augustus (1830–1906?). Born in Indiana, Bland served as a surgeon during the Civil War. Afterwards, he entered into a series of literary and editorial projects, including co-founding and editing the *Council Fire*, a leading journal of the Indian reform movement. In 1885 he was a co-founder of the National Indian Defense Association. **2/24 2/28 3/3**

Boalt, John Henry (1837–1901) WK. Ohio-born to a prominent American family, Boalt studied law and mining in Europe and after the Civil War entered into a very profitable partnership in the mining and assaying business in Nevada. He soon turned to the law there, and served as a judge for a short time. In 1871 he moved to San Francisco, where he returned to law practice, becoming one of the region's best known attorneys. **5/26**

Bookwalter, Francis M. (1837–1926). Bookwalter was born in Indiana and in 1867 removed to Springfield, Ohio, where he soon found employment in a manufacturing firm. In 1876 he was made general manager and remained so until 1900, when he retired. He had a reputation as an inventor, securing patents on several mechanical devices. One of his interests was correct time measurement, and to aid him in this work he maintained a private astronomical observatory. **3/30**

Bowman, Robert (d. 1900). In 1864 Bowman partnered with E. B. Manning to create Manning-Bowman Company in Meriden, one of the first manufacturers of housewares in the U. S. The firm was successful well into the twentieth century. Bowman was curator and librarian of the Meriden Scientific Association from its inception in 1884 to at least 1898. **11/23 12/6**

Brackett, Edward Augustus (1818–1908) AN NC. Brackett is most remembered as a sculptor, but in middle age he accepted a position as a land fisheries commissioner, work at which he also excelled. He was born in Maine, spent time in Cincinnati and New York, and eventually settled permanently in Winchester MA. Brackett also did some literary work, including an 1886 book (*Materialized Apparitions: If Not Beings From Another Life, What Are They?*) on one of his main side-interests: spiritualism. **12/28**

Bradley, Cornelius Beach (1843–1936) WW. Bradley came from a long-standing Connecticut family, but he was born in Bangkok, Siam, where he was later a missionary in 1871–74. In 1882 he was made an English professor at the University of California, remaining until his retirement in 1911. Bradley was an accomplished outdoorsman, and a charter member of the Sierra Club (he was also editor of its *Bulletin* from 1895–98). **6/16**

Branner, John Casper (1850–1922) AN NC WK WW. Cornell-trained John Casper Branner was a leading American geologist of his period. Career highpoints included being made State Geologist of Arkansas in 1887, president of the Indiana Academy of Science in 1889, professor of geology at Stanford in 1891, and president of that same institution in 1913. **4/25–27**

Brooks, James J. (1824?–1895). England-born Brooks was director of the U.S. Secret Service from 1876 to 1888, the first of its leaders to rise from its own ranks. In those days the agency primarily concerned itself with fighting counterfeiting operations. On leaving government service he managed a detective bureau in Pittsburgh. **3/23**

Brooks, John Graham (1846–1938) AN NC WW. Brooks began his professional career as a Unitarian minister in Roxbury MA, but he gradually gave up the ministry in favor of reform-oriented involvements in the social questions of the day. He made a considerable name for himself as an on-site investigator of working conditions and labor unrest, writer, lecturer, and union advocate. **11/15**

Brooks, William Keith (1848–1908) AN NC SB WK WW. Originally from Ohio, Brooks gravitated to Harvard, from which he earned their third granted doctoral degree in 1875. By 1883 he had permanently settled in Baltimore, where he eventually became head of the biology department at Johns Hopkins University. Brooks specialized in invertebrate zoology, contributing to our knowledge of the embryology, morphology, evolution, and life histories of a range of groups. He was also involved in a number of early conservation efforts. **12/1 12/5 12/10**

Brown, George William (1812–1890) WK WW. A nearly lifelong resident of Baltimore, Brown became one of its leading nineteenth-century citizens. He opened a law firm there in 1839, and gradually immersed himself in politics. He was elected mayor of the city in 1859, and helped put down the Pratt Street riot there in 1861. After the war he was appointed as a municipal judge in 1872, serving until 1888. Judge Brown was a founder of the University of Maryland, and one of the original trustees of Johns Hopkins University. **12/6**

Browne, Albert Gallatin, Jr. (1835–1891) NC. Browne grew up in Boston and eventually obtained his Ph.D. (in Heidelberg, Germany) and studied law. In the following years he turned more and more to journalism, being associated as editor and/or reporter with the New York papers the *Tribune*, *Evening Post*, and *Herald*. Browne married Mattie Griffith, a noted Kentucky abolitionist, in 1867. **10/24 10/27 1/10**

Buchanan, Joseph Rodes (1814–1899) AN NC WK WW. Buchanan was attracted to phrenology and mesmerism at an early age, then trained as a physician. In 1845, he opened an institute in Cincinnati that projected innovative ideas on brain physiology and its possible connection to spiritual health. In 1849 he started the *Journal of Man*, which featured articles on the gamut of progressive ideas from Swedenborgianism and women's rights to abolitionism and metaphysics. After 1856 he lived in several parts of the U. S., throughout lecturing, teaching, and writing on various aspects of alternative medicine and spiritual healing. **11/6 11/17**

Burnett, Frances Hodgson (1849–1924) AN NC WK WW. Of humble origins in Manchester, England, Burnett and her family relocated to Tennessee when she was in her mid-teens. She was just nineteen when her first literary work was published, and through the 1870s she produced a string of popular stories in a "realist fiction" style. In the 1880s, now in Washington, D.C., she turned to children's literature; an early success (1886) was *Little Lord Fauntleroy*, but after many others she reached her peak in 1911 with *The Secret Garden*. **1/22 3/5**

Bushnell, Lewis (1826–1907). Born and raised in New York, Bushnell later settled in Chicago as a grocer. After the Civil War he took a medical degree and practiced there. For eighteen years Dr. Bushnell was president of

that city's First Society of Spiritualists.

Carpenter, Albert Emerson (1840–1915). Prof. Carpenter "of Boston" was an expert mesmerist who toured the country giving demonstrations. He was engaged in this kind of work for parts (or all?) of at least three decades, the 1870s, 80s, and 90s. He was the author of *Plain Instructions in Hypnotism and Mesmerism* (1900). **6/21**

Carter, Franklin (1837–1919) NC WK WW. After studies at Williams College and Yale Carter launched an academic career as a professor of Latin, French and German. In 1881 he became Williams' first scholar-president, leading the school for twenty years. **11/19–20**

Carter, Henry Alpheus Pierce (1837–1891) AN WW. Carter was born in the Kingdom of Hawaii and as a mere teen was hired as a clerk in one of that country's top mercantile firms. He advanced rapidly and in the 1860s assumed an important advocacy role in the development of Hawaii's sugar industry. In 1874 King Kalakaua appointed him to his privy council, and though he continued with his business interests thereafter, for the most part his remaining years were given over to various international-level diplomacy, civic, and advocacy efforts. **2/15**

Cartwright, Richard John (1835–1912) BN CN WK WW. Cartwright grew up in Kingston, Upper Canada (now Ontario), and after an abbreviated education went into business locally, eventually amassing a fortune from his involvements in banking and land speculation. In the 1860s he moved into politics, winning parliamentary seats several times (and for different locations), serving on two Cabinets, and in 1904 being appointed to the Senate. He was knighted in 1879. **8/5**

Clark, Edward Stephens (1856–1900). Clark was born and grew up in Kentucky, and as a teen and young adult pursued a startling variety of natural history, scientific, and engineering interests. In 1880 he finished his medical degree, and on moving to California in the mid-1880s became a well-known oculist and audiologist. But he also worked as a mining engineer and manufacturing chemist and before his premature death even rose to prominence as a genealogist. Clark was actively involved with a number of scientific and medical societies, including the California Academy of Sciences (as curator of geology and paleontology).

Clarke, James Freeman (1810–1888) AN NC WK WW. Educated in Boston and ordained a Unitarian minister there in 1833, Revd. Clarke's first pulpit was in Louisville KY, where he also started the *Western Messenger*, a magazine espousing liberal religious views (including abolitionism). He returned to the Boston area in 1840, where he founded the Church of Disciples a year later. Clarke's large literary output delivered a consistent and influential Transcendentalist message arguing for church reform, and increased comparative study of religions (*e.g.*, *Ten Great Religions*, 1871 & 1883). **12/29**

Clarke, Robert (1829–1899) NC WW. Clarke was born in Scotland but emigrated to Cincinnati in 1840, where he was educated at Woodward College. In 1858 he founded the Robert Clarke Co., publishers and booksellers, and rapidly developed a high reputation, especially for producing titles on historical, anthropological and archeological subjects. **4/22**

Clarke, Samuel Fessenden (1851–1928) NC WW. Clarke was made chair of natural history at Williams College in 1881. He was a fixture there until he retired in 1916. Clarke's research focused on hydroids and alligator embryology; he was the main force behind the founding of the American Society of Naturalists in 1883. **11/19–20**

Clement, Edward Henry (1843–1920) NC WW. Clement grew up in the Boston area and was educated at Tufts University. After associations with papers in Boston, Savannah, Newark and New York, he became assistant editor of the *Boston Transcript* in 1875 and in 1881 its editor, a post he held until 1906. During his tenure the paper prospered. Clement frequently editorialized on vivisection and later

was in fact president of the New England Anti-Vivisection Society (1911 to 1920). **10/29**

Cleveland, Grover (1837–1908) AN NC WK WW. 22nd / 24th President of the United States. **2/4 2/13 4/5**

Colby, Luther (1814–1894) AN NC WW. After a regular Massachusetts public school education, Colby entered the printing trade in 1836, moving to Boston to work for the *Boston Daily Post*. In 1856 he heeded a message obtained during a séance and became co-founder of *Banner of Light*; this became the leading spiritualist newspaper in the U. S. for some fifty years. Colby's success stemmed from his editorial skills, moderate but socially conscious political views, and decision to emphasize reports on spirit communications. His publishing firm Colby & Rich contributed to the movement by releasing a large number of spiritualism-related books and pamphlets. **7/4 7/31**

Cook, Albert John (1842–1916) WK WW. Michigan-born A. J. Cook taught zoology and entomology at the Michigan Agricultural College (now Michigan State) for many years, then moved to California in 1894 to teach at Pomona College. After 1911 he was California's Commissioner of Horticulture. **5/9 6/23 7/4 7/18 7/28 8/6**

Cope, Edward Drinker (1840–1897) AN NC SB WK WW. Cope was perhaps America's most illustrious nineteenth century vertebrate paleontologist. Independently wealthy and connected to the Academy of Natural Sciences, Philadelphia, Cope described hundreds of new fossil reptiles and mammals, garnering a considerable reputation despite lapses into unprofessional behavior, often in connection with competition for specimens with O. C. Marsh. Cope, though an evolutionist, adopted an influential will-related model of organic change that has been called "neo-Lamarckism." **1/17–18 1/23 1/27 2/5 3/4 3/2**

Cotting, Benjamin Eddy (1812–1897). Cotting was a prominent physician in the Boston area. In the early 1840s he befriended the Lowell family and was made curator of the Lowell Institute, for fifty-five years serving an important role in that body's organization of free public lectures. **12/22**

Coues, Elliott (1842–1899) AN NC SB WK WW. A central figure in late nineteenth century American ornithology, Coues spent a good portion of his career as a naturalist (he was also an M.D.) taking part in, organizing, and editing writings connected to, the exploration of the resources of the West. He was also a zealous supporter of spiritualism and, for a while, theosophy. **12/31 1/8–9 1/26 1/30 2/27 3/4 3/27 3/29 4/3**

Cox, Jacob Dolson (1828–1900) AN NC WK WW. "Judge Cox," as Wallace refers to him, lived an astonishingly productive life. After graduating from Oberlin College in 1851, he: became a local superintendent of schools, was elected to the Ohio Senate, advanced to the rank of major general during the Civil War, was elected governor of Ohio, served as Secretary of the Interior under U. S. Grant, served a term in Congress, was made president of an Ohio railroad company, was made dean of the law school and then president of the University of Cincinnati, won a gold medal for photomicroscopy (one of his hobbies) at the Antwerp Exposition of 1891, and spent his retirement years as a leading historian of the Civil War. **4/18**

Dall, William Healey (1845–1927) AN NC SB WK WW. Dall (for whom Dall's sheep is named), son of the Boston social reformer Caroline Wells Healey, was a leading American naturalist and specialist on mollusks. A well

known writer and professional society man, he was perhaps most celebrated for his extensive survey and field studies in Alaska. **2/5**

Daly, Charles Patrick (1816–1899) AN NC WK WW. Daly was largely self-educated; in 1839 he passed the New York bar examination and joined a law firm. In 1844 he was appointed to the Court of Common Pleas of New York, remaining with it until his retirement in 1885. Meanwhile, he also pursued side interests of a more literary nature, including geography. He was president of the American Geographical Society for thirty-five years, during that period organizing fund-raisers and other activities consistent with its mission. **1/10–11**

Dana, James Dwight (1813–1895) AN NC SB WK WW. Dana was the foremost American geologist of the nineteenth century. His influence was especially great in the fields of oceanography, mineralogy, and volcanology. His books *System of Mineralogy* (1837) and *Manual of Mineralogy* (1848) continue to be revised and reissued to the current day. **2/27**

Davidson, George (1825–1911) AN NC WK WW. Davidson grew up in Philadelphia and developed an interest in natural history and surveying. In 1850 he was hired to perform a survey of the West Coast, and ended up working with the Coast and Geodetic Survey until 1895. Much interested in astronomy, he was able to convince the wealthy recluse James Lick to donate a large sum of money to build the Lick Observatory. Davidson was president of the California Academy of Sciences from 1871 to 1887. **5/23 5/30 6/24**

Dawson, Sir John William (1820–1899) BN CN SB WK WW. Dawson is perhaps the single most important figure in the history of Canadian geology. He was professor of geology and principal of McGill University from 1855 to 1893. In 1884 he was knighted. His son, George Mercer (1849–1901), was also an important geologist and administrator (Dawson, Yukon, is named for him). **12/28–29**

Dawson, Thomas Fulton (1853–1923). Dawson moved west from Louisville to Denver in 1876, where his rise in the newspaper business was rapid. By 1881 he was an owner (and editor) of the *Denver Times*. But in 1885 he sold his share in the paper and for the next twenty-five years was personal secretary to Senator Henry Teller, spending most of his time in Washington D.C. (but also visiting Colorado regularly). After 1910 Dawson returned to reporting, then served as executive clerk of the Senate during the Wilson administration. He had a literary career as well, some of it based on his remarkable collection of newspaper clippings on Colorado history. **5/19**

Denton family NC. The Dentons included father William (1823–1883), a noted geologist and experimenter in psychometry, and his five children: Sherman Foote (1856–1937), Shelley Wright (1859–1938) (who did lithography work for Wallace's old friend William Henry Edwards), William Dixon (1865–1923), Robert Winsford (1866–1959), and Carrie (1869–1959). All of the children were involved in various aspects of natural history work–collecting, lithography, painting, lecturing, exhibiting, etc.–and Wallace might have met any or all of them during his time in Boston and visit to their Wellesley home. **11/4–5 11/7 3/30**

Dewey, Alfred T. Dewey took over *The Mining & Scientific Press* in San Francisco in 1864 under the name Dewey & Co.; the business also prospered as patent agents. Some years later they added wood engraving and photo engraving to their publishing services, which by the turn of the century had supported several serial titles and produced dozens of books. **6/5 6/20**

Dun, Walter Angus (1857–1887). Born and schooled in Madison County, Ohio, Dun graduated from the Ohio Agricultural and Mechanical College (now Ohio State) in 1878. He then took a medical degree from Miami Medical College in 1882, studied in Europe for a year, and on returning to the Cincinnati area began his medical career. He was interested and involved in other studies as well (especially archeology) and was made president of the Cincinnati Society of Natural History in 1886, the year before

an illness ended his life prematurely at age thirty. **4/15 4/23–24**

Dury, Charles (1847–1931) NC WW. Dury was born in Cincinnati and lived in the area his entire life. His "day job" was taxidermy, but he made his real mark as a field naturalist and collector, especially of Coleoptera. Dury did much scientific society work; he was a charter and life member of the Cincinnati Society of Natural History (and its president from 1914–1931), and a member of the Ohio Academy of Science from 1895 to 1919 (and its president in 1907). **4/4 4/14–15 4/18 4/20–21 4/23 notes**

Dutton, Clarence Edward (1841–1912) AN NC SB WK WW. After a distinguished military career Dutton joined the USGS in 1875, and quickly gained a reputation as an energetic field worker and astute observer. He carried out famous studies on the Colorado Plateau (including the Grand Canyon), Crater Lake, and the 1866 Charleston SC earthquake. On retiring from the USGS in 1891 he resumed his Army career for ten years, but then returned to geological researches. **1/3 1/9 3/21**

Eastwood, Alice (1859–1953) AN WK WW. After her time in Denver, Canadian-American Alice Eastwood moved to San Francisco, where she became associated with the California Academy of Sciences in 1890. By 1894 she was a department head, holding that position until 1949. Eastwood was a central figure in the building of the CAS's plant collection (both through fieldwork, and the trading of duplicate specimens), especially after it was largely destroyed by the 1906 earthquake. **5/19 7/17 7/19**

Edwards, William Henry (1822–1909) AN WK WW. Edwards' most famous publication was his *A Voyage Up the River Amazon* (1847), the work that helped Wallace decide to become a professional collector in the Amazon. When not running his coal mine in West Virginia, he kept up a scientific career as an important lepidopterist, publishing more than two hundred works, including his *The Butterflies of North America* (1868–1872). **1/16 4/4 4/6 4/8–13**

Ely, Richard Theodore (1854–1943) AN ES NC WK WW. Ely was a leader of the Progressive Movement in the U. S., a call for an increase in government intervention to stem social problems linked to the rise of capitalism. A Herbert Spencer-influenced economist, Ely worked for improvements in public education, labor laws, the treatment of children, and the application of Christian ethics. **12/6 12/8–9**

Emerson, Edward Waldo (1844–1930) AN NC WW. Poor health slowed Emerson down in his early years, but he eventually obtained a medical degree in 1874 and entered practice. His heart was not really in it, however, and in 1882 he inherited enough from his father's estate to resign. He now studied painting, becoming a proficient enough artist to teach the subject at the Museum of Fine Arts in Boston for twenty years. He is most remembered, however, for his edited collections of, and commentaries on, the writings of his father (the transcendentalist author) and Henry David Thoreau. **12/29**

Ernst, Carl Wilhelm (1845–1919) NC WW. Ernst was born in Germany, but emigrated to the Midwest where he completed degrees in theology and became a Lutheran minister. In 1872 he gave up the ministry and, now in Providence RI, went to work for a newspaper and took another degree (at Brown University). In 1879 he moved to Boston, some years later becoming editor of the *Beacon*. He later also worked for his father-in-law, who became mayor, and as an authority on the English language contributed to the development of the *Oxford English Dictionary*. **10/31 12/24–25**

Evans, Frederick P. (1862–1922+). Evans was born in England and at the age of thirteen became a sailor. In 1884 he came to San Francisco and developed his skills as a slate-writing spiritualist medium. Evans displayed other psychographic talents in addition and became quite well known; as late as 1922 he traveled to England and gave demonstrations there. **5/27**

Fairchild, Charles Stebbins (1842–1924) NC WK WW. C. S. Fairchild took a law degree in

1865 and by 1876 was Attorney General of New York. In 1877 he returned to private practice, but later served in the Grover Cleveland administration as Assistant Secretary, then Secretary, of the Treasury. After 1889 he pursued a lucrative business career. **3/26**

Fairchild, George Thompson (1838–1901) AN NC WK WW. G. T. Fairchild began his academic career as an instructor at the State Agricultural College of Michigan (now Michigan State); in 1879 he was made the third president of the Kansas State Agricultural College (now Kansas State). In 1897 he resigned over a university restructuring issue, and spent his remaining days as an English professor and vice president at Berea College in Kentucky. **5/7 5/9**

(probably) **Fletcher, Alice Cunningham** (1838–1913) AN ES NC WK WW. Fletcher was the most prominent American woman anthropologist of her time. Her specialty was the ethnology of Native Americans, her efforts extending to both field studies and social advocacy. At various points she was president of the Anthropological Society of Washington and the American Folklore Society, and vice-president of the American Association for the Advancement of Science. **1/13**

Flood, James Clair (1826–1888) NC WK. After emigrating from Staten Island NY to California in 1849, Flood went into business and ended up owning a major share in silver mining operations that in 1873 discovered the richest vein in the Comstock Lode at Virginia City, Nevada (which grew up around the find). Flood became fabulously wealthy, and soon turned most of his attention to finance and real estate. **6/20**

Forbes, John Murray (1813–1898) AN NC WK WW. Born in France and brought up in Massachusetts, Forbes received a full education in business when he became immersed in the China trade in the 1830s. In 1846 he entered the railroad business, and in the following decades, through conservative management techniques and productive entrepreneurship, expanded his sphere of influence westward. Wielding power well, he and his reform-oriented leanings and philanthropic activities attracted many admirers. **12/20 12/24 12/29**

Freeman, William F. (1830–1897). W. F. Freeman grew up in a Freethought family tradition in his native Massachusetts, and on moving to California in 1849 he continued down the same track. After financially successful forays into mining, manufacturing and stock-raising, Freeman increasingly involved himself in liberal causes, serving in related ways as a publisher, lecturer/orator, and civic and organization office-holder. **5/29 6/2**

Gallaudet, Edward Miner (1837–1917) AN NC WK WW. Gallaudet hailed from Hartford CT, where in 1817 his father, T. H. Gallaudet (1787–1851), had founded what became known as the American School for the Deaf. In 1857 the younger Gallaudet was offered the post of head administrator at a new school for the hearing-impaired. He stayed at the school (now known as Gallaudet University) for over fifty years in several capacities, throughout maintaining a reputation as a leading advocate for the use of sign language, and for education of the deaf in general. **3/24**

(probably) **Gardiner, Edward Gardiner** (1854–1907) NC. A protege of Alpheus Hyatt, Gardiner was educated at MIT and in Europe, and worked at MIT and the Marine Biological Laboratory at Woods Hole MA. Most of his research was on bird embryology or marine invertebrates. **12/17**

Garrison, Francis Jackson (1848–1916) WW. From 1871 Garrison was associated with the publisher Houghton Mifflin. He is probably best known for his publication (with his brother Wendell) of a four-volume biography of his father, William Lloyd Garrison. **11/10–11 11/14**

George, Henry (1839–1897) AN ES NC WK WW. George was born in Philadelphia, and for nearly thirty years had a rather difficult life; his fortunes changed when he started working for the *San Francisco Times*. In the late 1860s and early 1870s he began to develop his theory that private ownership of land was the root of many of society's evils. The success of *Progress and Poverty* in 1879 catapulted him to international fame, and though he never held political office or a secure institutional position, his writings and oratory prowess produced an influence felt to this day. **10/24–25 1/28 5/24**

Gibbons, William P. (1812–1897). Gibbons was born in Delaware and moved to California in late 1852. An M.D., he continued his medical practice there, and became a productive amateur naturalist especially interested in medical botany and ichthyology. James G. Cooper named the fish genus *Gibbonsia* for him. **5/24 5/28 6/23**

Gilman, Daniel Coit (1831–1908) AN NC WK WW. Gilman's early development as an educator included lengthy stints at Yale University as a student, librarian, and physical geographer. In 1872 he was made president of the University of California, Berkeley, and in 1874 moved on to the new Johns Hopkins University, where he remained in the top post until 1902. Gilman is generally regarded as a leading figure in the evolution of graduate education philosophy in the United States. **12/1 12/3 12/6 12/9**

Gould, Benjamin Apthorp (1824–1896) AN NC SB WK WW. After graduating from Harvard, Gould studied in Europe and received his doctorate in astronomy in Germany in 1848. His subsequent career was marked by many research-related successes, but also by a number of professional and personal setbacks. He is most remembered today for his work in astrometry for the United States Coast Survey, his founding of the *Astronomical Journal*, his establishment of a national observatory for Argentina in Córdoba, and as a pioneer in the use of photography in astronomy. **12/17**

Grant, George Munro (1835–1902) BN CN WK WW. Grant grew up in Nova Scotia but carried out his final studies for the ministry in Scotland, finishing in 1860. By 1877 he was principal and primarius professor of divinity at Queen's College, Kingston ON, remaining in the post to his death. Revd. Grant greatly strengthened Queen's as an institution during his tenure; he was also strongly involved with the evolution of the Presbyterian Church in Canada and an inspiring writer on subjects in comparative religion and Canadian national politics and education. In 1890–91 he was president of the Royal Society of Canada. **3/6 3/13**

Gray, Asa (1810–1888) AN NC SB WK WW. New York-born Asa Gray received his medical degree in 1831, but soon decided to make botany his profession. Starting out as a protégé of John Torrey, in 1842 he received a professorship at Harvard, a position he held the rest of his life. Gray's central importance to nineteenth century American botany as a systematist, pedagogue, and herbarium keeper is sometimes overshadowed by his long relationship with Charles Darwin, extending to his solid support for Darwin's ideas when they were finally published. **11/3 11/5 11/10–11 11/17 12/29**

Gray, Elisha (1835–1901) AN NC WK WW. After working for some years as a carpenter in his native Ohio, Gray turned to the field of electrical communication, where he soon distinguished himself as an inventor. He is remembered today almost entirely for his independent invention of the telephone, and for missing out on the patent for the device by a mere few hours. **12/31**

Greely, Adolphus Washington (1844–1935) AN NC WK WW. Greely chose a military career early on, but fame came in 1881 when he led an expedition to establish scientific stations in the arctic. Things went badly when resupply efforts failed, and most of the men died before six, including Greely, were finally rescued in June 1884. Greely then prospered; he became known as an authority on the arctic, supervised the laying of many thousands of miles of undersea cables and telegraph lines, collected important climatological data in the West, helped found the National Geographic Society, and became first president of the Explorers' Club. He was even awarded the Medal of Honor in 1935. **1/22 1/28 3/5**

Hagen, Hermann August (1817–1893) AN NC WK WW. Hagen was born in East Prussia and though he took a medical degree there in 1840, he was already publishing studies in entomology. After coming to the U. S. in 1867, he was made the first professor of entomology in this country when he accepted an employment offer from Harvard in 1870. **12/17**

Hale, Horatio Emmons (1817–1896) AN ES NC WK WW. On graduating from Harvard in 1837, Hale joined the Wilkes Expedition to the Pacific as an ethnologist and philologist. After returning to the U. S. in 1842 he wrote up the results of the expedition, but then turned to law. In 1856 he moved to Clinton, Ontario, as an estate administrator, and gradually involved himself in real estate development and other local affairs. In the late 1860s, his interest in linguistics was rekindled, and over the next three decades he published a large number of important studies, many on the languages of northeastern Native American tribes. **3/10 3/31**

Hall, Asaph III (1829–1907) AN NC SB WK WW. Determined to become an astronomer, Hall passed through a series of education episodes and employments before landing a job as aide at the U.S. Naval Observatory in Washington, D.C., in 1862. In 1877 he made his most important discovery, the two moons of Mars,

Phobos and Deimos. He also discovered many of the moons of Saturn, Uranus, and Neptune, and did important work on double star observation and mathematical astronomy. **2/9**

Harkness, Harvey Willson (1821–1901) WK WW. H. W. Harkness was a student of Pacific Coast fungi. He was born in Massachusetts and received his medical degree in that state in 1847, but emigrated to California in 1849, where he practiced for about twenty years. Having made a good deal of money from real estate investments, he spent the rest of his life engaged in various civic and natural history pursuits. From 1887 to 1896 he was president of the California Academy of Sciences. **5/23**

Harkness, William (1837–1903) AN NC SB WK WW. Harkness was born in Scotland but his family moved to New York when he was a baby. In his early twenties he earned his bachelors, masters, and medical degrees, then joined the U.S. Naval Observatory in Washington, D.C., as an aide. There he did important work on the Transit of Venus Commission, spectroscopy, and the development of astronomical instrumentation. He served as the institution's director from 1894 to 1899. **2/9**

Heighway: Dr. Sheridan C. Heighway, **Archibald E. Heighway Sr.** (1820–1888), and **Archibald E. Heighway Jr.** were all intimately connected with the Cincinnati Society of Natural History and interested in natural history and archeology, and Wallace may well have run into all of them during his stay in the Cincinnati area. **4/14–15**

Henry, Joseph (1813–1887). Information on Henry is sketchy, but his death was noticed in several botanical journals, and at least one referred to him as "one of the most diligent" of Kansan botanical workers. He died just months after Wallace met him, and just before a second

new moss species he discovered was named after him. **5/17**

Hilgard, Eugene Woldemar (1833–1916) AN NC WK WW. Hilgard was born in Germany but his family moved to Louisiana when he was two. He returned to Europe to complete his Ph.D. in Chemistry (at the age of twenty!) under Robert Bunsen, but in 1857 moved back to the U. S., where he worked as a geologist and biologist in Mississippi, Washington, D.C. and Michigan until 1875. From then to 1904 he was professor of agricultural chemistry at the University of California, Berkeley, and director of the California Agricultural Experiment Station. **5/23 5/26**

Hoffman, Walter James (1846–1899). Hoffman was a U.S. Army physician, but after 1879 he worked for the Bureau of American Ethnology. His specialty was American Indian art and languages and he lived among West Coast Indians in the early 1880s and North Central tribes in the late 1880s an early 1890s. His publications include *The Beginnings of Writing* (1895), *The Menomini Indians* (1896), and *The Graphic Art of the Eskimos* (1897). **2/14 2/17**

Hogg, Stuart James (1865–1947). In 1883 Sir Stuart Saunders Hogg (1833–1921) of London came to Kansas with his eighteen year old son to look after the affairs of the newly created British Land and Mortgage Company of America; on returning to England he left young Stuart to run a farm, study at the University at Manhattan, and tend the business. The younger Stuart married an Englishwoman in 1890 and the two remained in Manhattan until 1892, returning to England that year. During her twenty months in Kansas Mrs. Hogg kept a journal which was later published. **5/8**

Holden, Edward Singleton (1846–1914) AN NC SB WK WW. After graduating third in his class at West Point, Holden taught there for two years before accepting a position at the U. S. Naval Observatory in Washington, D.C. In 1881 he removed to the University of Wisconsin, then in 1886 accepted a temporary position as president of the University of California. Two years later he became director of the new Lick Observatory, but his career there was marred by his lack of rapport with the staff. He was forced to resign in 1897. **5/23 5/26**

Holder, Joseph Bassett (1824–1888) NC WW. Holder studied medicine at Harvard and for a while was city physician of Lynn, MA. In 1859 he began a seven-year study of corals in Florida, but also was engaged as a surgeon during the Civil War. In 1869 he became the first curator of invertebrates at the newly established American Museum of Natural History. He was a member of a number of scientific societies, including the American Society for Psychical Research. **1/12**

Holman, William Steele (1822–1897) AN NC WK WW. Holman was appointed a probate judge in his home state of Indiana while still in his early twenties; he then became in order a prosecuting attorney, state legislator, and judge of the court of common pleas for a total of about ten years. In 1856 he was elected a U. S. congressman, ultimately serving a total of sixteen terms. As a legislator he was described as a "Jeffersonian"; he developed a reputation as a watchdog over Congressional spending, resisted taxation schemes, and fought for war benefits for soldiers and protection of Indian lands from land speculation. **3/22 4/5–6**

Holmes, Oliver Wendell, Sr. (1809–1894) AN NC WK WW. Holmes Sr. had an illustrious career as a physician, teacher, novelist, essayist, and poet, and as a commanding force among the intellectual circle in Cambridge. The medical career came first, but he also started writing early on. In 1847 he was made dean of the Harvard Medical School; he stepped down in 1853 but continued on as a professor of anatomy until 1882. Meanwhile he was also pursuing a successful career in the literary world. **11/6 11/10 11/13 12/19 12/29**

Hooker, Isabella Beecher (1822–1907) AN NC WK WW. Isabella grew up among the Beecher family of Connecticut. After marrying John Hooker in 1841 she put her energies into

raising three children; this experience informed her entry into the developing women's rights movement in the late 1860s. She involved herself in many efforts to politically empower women in general, though she made her emphasis the improvement and expansion of women's domestic context. **1/31 2/2 2/4 2/10 6/18**

Hooker, John (1816–1901). Hooker, husband of Isabella Beecher, was a lawyer and for many years (1858–1894) reporter for the Supreme Court of Connecticut. **1/30 2/16**

Horton, Sarah W. (d. 1920). Miss Horton was an 1865 graduate of Mt. Holyoke College in Massachusetts. She founded and was headmistress of The Horton School in Oakland, established in 1884 as a private day school. She was still in charge at the time of her death. **7/12**

Hoskins, John C. C. (1820–1909). By the age of twenty-one Hoskins was a graduate of Dartmouth College in his native state of New Hampshire. For a few years he worked as a teacher, but then turned to civil engineering. He arrived in Sioux City in 1857, and over the years busied himself with a slew of business, technical, and civic involvements, including holding several town offices and serving as postmaster for seventeen years. He was a founder of the Sioux City Scientific Association, and at one point its honorary president. **4/30 5/1**

Houghton, Henry Oscar (1823–1895) AN NC WK WW. A difficult early life in rural Vermont did not prevent Houghton's eventual graduation from the State University. Moving to Boston and learning the printing trade, he persevered through a series of partnerships before forming Houghton Mifflin with George Mifflin in 1880. The business remains a major publisher today, most recently as Houghton Mifflin Harcourt. **11/6 11/8 11/10 11/13 12/22 12/26**

Howison, George Holmes (1834–1916) AN NC WK WW. After graduating from Marietta College in 1852 Howison completed a theology degree, then decided to embark on a career as a teacher of philosophy. He worked at universities in St. Louis, Boston, and Michigan before obtaining a professorship at the University of California Berkeley in 1884, where he remained until his retirement in 1909. Howison founded the Philosophical Union and helped establish the philosophy department at Berkeley. **5/24**

Hutchins, Stilson (1838–1912) NC WK WW. New Hampshire-born Hutchins drifted westward as a newspaperman, founding the *Saint Louis Times*. Some years later he also founded the *Washington Post*, and amassed a considerable fortune which he used in part to finance a political career. **2/2 2/16**

Hyatt, Alpheus II (1838–1902) AN NC SB WK WW. After the Civil War Hyatt settled in the Boston area, where he became connected with the Boston Society of Natural History, Boston University, MIT, Harvard, and the USGS. He was also a co-founder of the *American Naturalist*, and the Peabody Academy of Sciences in Salem. Hyatt's scientific work focused on both living and fossil marine invertebrates; he became one of the leading advocates (with Cope and Packard) of neo-Lamarckian views on evolutionary causality. **11/5 11/9 12/17**

Iles, George (1852–1942) WW. Iles was born in Gibraltar, but grew up in Montreal. After 1887 he lived in New York, publishing a long list of titles of mostly biographical, educational or encyclopedic nature. He is the author of the much-quoted line: "Whoever ceases to be a student has never been a student." **8/8–9**

James, Davis Lawler (1848–1933). James was the son of Uriah Pierson James (1811–1889), a noted paleontologist who also made a name as a publisher in Cincinnati. Both father and son (and the latter's brother Joseph) had ties to the Cincinnati Society of Natural History; the younger James published some work as a botanist and eventually took over the family business.

James, Joseph Francis (1857–1897). The younger brother of Davis, Joseph James was an

energetic botanist and geologist who taught those subjects at Miami University before a disagreement caused him to take a position as a vegetable pathologist with the U. S. Department of Agriculture in 1891. He completed a medical degree at Columbia University in 1895 and further studies in New York and London before beginning a medical practice in Massachusetts, where he died only a year later.

James, William (1842–1910) AN ES NC SB WK WW. The famous philosopher and brother of Henry James, the novelist. James's connection with Wallace extended all the way back to at least 1865, when one of his first publications was a review of Wallace's breakthrough essay "The Origin of Human Races and the Antiquity of Man" in the *North American Review*. **12/12 12/17 12/23 12/28–29 1/16 4/22 ?**

Jekyll, Gertrude (1843–1932) BN WK WW. Jekyll's upper-class lineage put her into contact with people like Felix Mendelssohn and Michael Faraday as she grew up. She developed an interest in painting, botanical drawing and gardening, and coupling these with a penchant for travel and plant breeding she became a great success as a garden designer. She was also a very effective writer, both of books and magazine articles designed to reach the general population. **3/28 4/11 5/5 6/18–19 6/26 7/8–11 7/19–21 7/23 7/25 7/29 8/1**

Keeler, Pierre L. O. (Ormand) A. (Augustus) (*ca.*1856–1930+). Keeler was one of his period's best known slate-writing mediums. Two years before Wallace sat with him in Washington, he had been examined by the Seybert Commission, who would neither condemn him as a fraud nor endorse his results as genuine. **1/8 1/19 2/23 2/25 notes**

Kennan, George (1845–1924) AN NC WK WW. Kennan became interested in Russia when he was asked to establish telegraph service with that country across the Bering Strait in the mid 1860s. Over the next twenty-five years he spent a fair amount of time in Russia. He became known as an expert on the area, and for drumming up support for a Russian freedom movement (which was ultimately thwarted by the power change that took place after the 1917 revolution). **1/22**

King, Clarence Rivers (1842–1901) AN NC SB WK WW. After finishing Yale in 1862 King immersed himself in geological survey work in the West. A series of successes led to his conceiving of and lobbying for a national geological survey organization, and when the USGS was finally established in 1879 he was made its first director. During his short tenure there (until 1881) he established lasting publication series and attracted a talented working staff, putting the new organization fully on its feet. **1/11**

Langdon, Frank Warren (1852?–1933) WW. Langdon grew up in Cincinnati, and after graduating from the Miami Medical College in 1881 started a practice there. Shortly afterward he joined the faculty of the Miami Medical College and diversified from general practice into surgery, psychiatry, and anatomy. Meanwhile, and even by the time Wallace met him, he had also developed a national reputation as an ornithologist. **4/14 4/17 4/23–24**

Langley, Samuel Pierpont (1834–1906) AN NC SB WK WW. The career of Massachusetts-born Langley really took off after 1867, when he accepted a position as professor of physics and astronomy in Pittsburgh. In 1886 he was offered a concurrent job as assistant secretary at the Smithsonian, and a year later he became its secretary, thereafter greatly expanding its research and service agendas. He is perhaps most remembered for his work on the characteristics of solar radiation, and as a pioneer in aviation research. **11/9 12/9 4/4**

LeConte, Joseph (1823–1901) AN NC SB WK WW. LeConte's academic career in South Carolina was interrupted by the Civil War; in

1869 he decided to take a position as professor of geology at the new University of California at Berkeley. There he developed into an outstanding researcher, especially on theoretical subjects; he additionally gained fame espousing Darwinian evolution while remaining a supporter of religious belief. LeConte was a friend of John Muir, and like him one of the founders of the Sierra Club. **5/23**

Lees, Thomas. Lees, an "Englishman by birth and ... an American by adoption" was secretary of the Cleveland Society of Spiritualists as of 1868 and seems not to have been a totally obscure figure within the movement. He was also known to British spiritualists as an occasional contributor to their publications. **6/23 7/18 7/31**

Leiter, Levi Ziegler (1834–1904) NC WK WW. Leiter entered the dry-goods business as a boy in Ohio, then worked as a bookkeeper for another such business in Chicago from 1853. In 1863 he became a partner but two years later started the firm that became Marshall Field. In 1867 he gave up control (selling his remaining assets in 1881), going into real estate and making a good deal of money. His later years were spent in travel, philanthropy, and civic involvements. Although remaining resident in Chicago, he also spent time in Washington D.C. and apparently knew the Nordhoffs and Hookers. **1/26 1/28**

Lennebacker, Helen (1845–1904). An independent private school teacher by trade and a distinguished marine algae collector by avocation, Miss Lennebacker was born in New York State. As of 1869 she had resigned from the Stockton public school system, and by 1872 she was running her own school there. Later she and her school were Santa Barbara-based from at least 1876 to about 1880, when she moved it to Santa Cruz. The brown algae species *Taonia lennebackerae* is named after her.

Lippitt, Francis James (1812–1902) WK WW. Providence native Lippitt was educated at Brown, and spent years overseas as a teacher, lawyer and liaison, working with luminaries such as Lafayette and De Toqueville. He fought in both the Mexican and Civil Wars, rising to the rank of brigadier general. After the war he served the U. S. government as an attorney, was a lecturer in law for Boston University and the Naval War College, and did a fair amount of writing on legal and military subjects. His *Reminiscences* is a short but readable account of an interesting life. **1/9 1/13 1/15 1/18–19 1/21 1/25 3/20 4/4 notes**

Low, Charles F. (1837–1891). Charles Low is best known for his archeological investigations of the Madisonville Indian mounds in the 1870s and 1880s. Born in Providence, he moved west to Ohio in 1856 and rose to positions of responsibility in the railroad business. Low became a member of the Cincinnati Society of Natural History in 1878, later serving on their executive board. **4/24**

Lowell, James Russell (1819–1891) AN NC WK WW. As a student Lowell got himself suspended from Harvard College, but he still managed to get his law degree there in 1840; within a couple of years, however, he had given up on the law and turned to literary pursuits. Here he had considerable success, both as a poet and essayist and as editor of the *Atlantic Monthly* and the *North American Review*. In 1856 he accepted a chair in modern literature at his alma mater, but in 1872 left to take a two-year leave to travel in Europe. From 1877 to 1885 he served as a U. S. minister, first in Spain, and then in Britain. **11/15 12/29**

Lyman, Darius (*aka* Daniel), Jr. (1821–1892). Lyman was born in Ravenna, Ohio, and attended Case Western Reserve College. He was admitted to the bar in 1843, but pursued a literary and teaching career until 1863, when he joined the U. S. Treasury Department. There he rose to the position of Chief of the Bureau of Navigation Division before retiring in 1887. His papers are held by the Western Reserve Historical Society Library. **3/23**

Mackenzie, Capt. George Henry (1837–1891) NC WK WW. Mackenzie was born in Scotland and educated there and on the Continent. He served in the military in India in the

late 1850s then returned to England and retired from the army in 1861. In 1863 he came to the U. S., and from 1865 to 1890 pursued a brilliant career as a chess master, both here and in Europe. **4/18**

Maguire, James George (1853–1920) WK WW. Maguire was born in Boston but he and his family moved to California when he was an infant. He was educated locally and after serving as a member of the California legislature from 1875 to 1877 took a law degree and started a practice. From 1882 to 1888 he served as a judge in San Francisco, then was elected to three terms as a U. S. congressman. Following this he returned to his law practice. Maguire was a friend of Henry George. **5/24**

Marlatt, Charles Lester (1863–1954) NC WK WW. Marlatt graduated from the Kansas State Agricultural College in 1884 and taught there until 1889, when he took an entry-level position at the Bureau of Entomology in Washington, D.C. He quickly was promoted to more responsible positions. Marlatt's work was primarily in the field of economic entomology; he was interested in the control of pest species, and was a main force behind the plant quarantine act of 1912. **5/7–8**

Marsh, Othniel Charles (1831–1899) AN NC SB WK WW. Marsh followed a somewhat circuitous route to enter Yale in 1856, but in the ensuing years he showed a devotion to vertebrate paleontology that eventually made him president of the National Academy of Sciences for twelve years. Working at Yale and for the USGS and well supported, he accumulated a magnificent collection of fossil mammals and reptiles for both institutions. Marsh was an early and continuing defender of Darwinian evolution principles, accumulating much data to support them. **11/9 11/26 1/16**

Martin, Henry Newell (1848–1896) AN NC SB WK WW. In 1876 Martin was made the first professor of biology at Johns Hopkins University on the advice of Thomas Huxley, his one-time supervisor. Under Martin's guidance, the teaching and research group in physiology and experimental biology at JHU rose to the first rank in just a few years. In the 1880s, however, his fortunes reversed; most of his senior staff left for leadership positions elsewhere, and anti-vivisectionists began staging objections to the treatment of animals in his lab. Martin's health broke, and he died at the relatively young age of forty-eight. **12/1**

Mason, Otis Tufton (1838–1908) AN NC WK WW. Mason studied at the Columbian College (now George Washington University) in Washington, D.C., where he also became professor of anthropology in 1884. But his more important association was with the Smithsonian, where in 1884 he was made curator of ethnology at its new United States National Museum. In this capacity he concentrated on ethnological investigations of Native American cultures. **1/8 3/25**

(probably) **Matthews, Washington** (1843–1905) NC WW. Matthews was born in Ireland and came to the Midwest at a very young age. In 1863 he received his medical degree and joined the U. S. Army. After the Civil War he was assigned to a succession of posts in the West, where he became interested in the ethnology of Native Americans. After he left active field service he worked at the Army Medical Museum from 1884 to 1890. His writings, especially those on the art, mythology and language of the Navajos, represent important early studies. **1/15 1/26**

McGee, "W J" (William John) (1853–1912) AN NC WK WW. McGee was born and grew up in Iowa. In 1878 he met John Wesley Powell, who in 1883 hired him to produce the first geologic map of the U. S. for the USGS. He went on to do important work for the agency, especially in the field of geomorphology. In 1893 he joined the Bureau of American Ethnology, and as its director from 1894–1903 oversaw the production of a series of reports on Native Americans. In 1904 he was made director of the St. Louis Public Museum, and a couple of years later began a concurrent appointment with the USDA. **1/3 3/5 3/18**

Metcalf, Lorettus Sutton (1837–1920) NC WW. Metcalf was born in Maine and was educated there and in Massachusetts. By the early 1870s he was doing editorial work in Boston for several different papers. He moved on to New York and was an editor of the *North American Review* from 1876 to 1885, then founded and edited his best known project, the *Forum*, from 1886 to 1891. Thereafter he traveled and worked in Florida, eventually returning to New York to work on further literary projects. **1/11**

Metz, Charles L. (1847–1926). Metz was educated in the Cincinnati area, and began a medical practice there after graduating from the Miami Medical College in 1871. Metz had a strong avocational interest in archeology, and became involved in excavations of structures created by the prehistoric mound-building cultures of the Miami River valley. In 1880 he was made a "special assistant" to Harvard anthropologist F. W. Putnam, and put in charge of the Peabody Museum explorations in the area. **4/24**

Mills, T. (Thomas) Wesley (1847–1915) CN WK WW. Mills pursued medical studies at McGill University, graduating with honors in 1878. Several years later he was hired to teach physiology at McGill, remaining there until his retirement in 1910. His specialties were animal physiology and psychology, the physiology of music, and veterinary medicine. He founded the Society for the Study of Comparative Physiology in 1885; in 1890 he was elected to the Royal Society of Canada. **3/11–12 3/17**

Minot, Charles Sedgwick (1852–1914) AN NC SB WK WW. Minot's parents were well off and he was able to pursue biology studies at an early age. He eventually spent three years in Europe at major universities, and when he returned made it an object to introduce German theories and teaching methods to American universities. He obtained a position at the Harvard Medical School in 1880, then became professor of embryology at Harvard in 1892. He was also an active member of the American Society for Psychical Research. **12/14 12/17**

(probably) **Mirrlees, James Buchanan** (1822–1903). Mirrlees was a wealthy marine engineer Wallace had met several years earlier at a scientific conference in Scotland. **11/11**

Mitchell, Maria (1818–1889) AN NC SB WK WW. Maria Mitchell was born and grew up on the island of Nantucket, the daughter of a Quaker who believed in equal education for women. She took to astronomy, first reaching public notice when she discovered a new comet in 1847. She became professor of astronomy at Vassar in 1865. Mitchell was one of America's first distinguished woman scientists; she was the first woman elected to the American Academy of Arts and Sciences, the Association for the Advancement of Science, and the American Philosophical Society. **11/29**

(probably) **Moore, Revd. Henry D.** (d. 1901). Moore was a Congregationalist minister attached for some years to the Vine Street Congregationalist Church in Cincinnati. In 1873 he was forced to resign because he refused to give up his membership in the Masons. Revd. Moore was a social activist; he was interested in penitentiary reform and as of 1885 was president both of the Cincinnati Board of Relief, and the Masonic Relief Association of Cincinnati. **4/15**

Morison, Nathaniel Holmes (1815–1890). Morison was an important figure in the evolution of the Peabody Institute in Baltimore, where he served as first provost from 1867 to his death. Morison was born in New Hampshire and educated at Philips Exeter Academy and then Harvard. Two years after graduating from the latter in 1839 he opened what turned out to be a very successful girls' school in Baltimore. **12/3 12/12**

Morse, Edward Sylvester (1838–1925) AN NC SB WK WW. Morse was a zoological assistant to Louis Agassiz from 1859–1862 and during the Civil War became associated with the Essex Institute in Salem. In 1868 he was a cofounder of the *American Naturalist*; he taught zoology and anatomy at Bowdoin College in his home state of Maine from 1871 to 1874, and

in 1877 took a position in Japan for three years. On returning he became director of the Peabody Museum in Salem. Morse's main work was in descriptive invertebrate zoology, but he also developed an interest in Japanese culture and accumulated a fine collection of ancient pottery from that country. **11/5 11/9 11/12**

Morse, James Johnson ("J. J.") (1848–1919). As a young man J. J. Morse established a reputation as one of the century's most remarkable trance speakers. He also reputedly exhibited physical effects such as body elongation. Later in life he was for periods editor of the spiritualist newspapers *Banner of Light* in Boston, and *The Two Worlds* in Manchester, England. **6/21**

Morton, Albert (b. 1832). Morton, about whom little information seems available, was known in his later years as a "veteran spiritualist" and in fact was elected corresponding secretary of the San Francisco Spiritualists' Union in 1877, according to newspaper accounts. Morton appears to have been some kind of bookings and real estate agent, and an occasional essayist and publisher. **5/26 6/5–6 6/22–23 7/31**

Muir, John (1838–1914) AN NC WK WW. Scottish by birth, Muir and his family emigrated to the U. S. in 1849. After taking some college classes in Wisconsin, he rambled about for a while, arriving in California in 1868. There he began to indulge his interest in nature, making a name for himself both in natural science (especially as a glaciologist) and as a conservation advocate. At the time Wallace met him he had not reached the height of his fame; by the turn of the century his impassioned writings and biocentric perspective had made him a national hero. **5/28**

Myers, Philip Van Ness (1846–1937) NC WW. Myers was born in New York and graduated from Williams College in 1871; he then spent two years traveling in Europe and Asia. On returning he took a law degree but practiced only until 1879, when he was offered the presidency of Farmer's (later Belmont) College, Cincinnati. In 1890 he moved over to the University of Cincinnati, teaching history and political economy well into the next century. He was widely known as a writer of texts on historical subjects. **4/12 4/23**

Newcomb, Anita (later Anita Newcomb McGee) (1864–1940) AN NC WW. The "Miss Newcomb" Wallace knew, daughter of Simon Newcomb, the astronomer, would marry W J McGee in 1888. She would also obtain a medical degree and open a practice in 1892, though by 1895 she had given it up to concentrate on organizational work for the DAR and other groups. In 1898 she was made assistant surgeon general, and in 1901 established the Army Nurse Corps; she would go on to make several other important contributions to the professionalization of military nursing. **11/9 11/12**

Newman, John Philip (1826–1899) NC WK WW. Revd. Dr. Newman was born in New York City and educated there, entering the Methodist ministry in 1849. After years of travels and missions, he was made the pastor of the Metropolitan M.E. Church in Washington in 1869; he was also chaplain of the U.S. Senate from 1869 to 1874. Afterwards he was involved in overseas diplomatic work and had ministries in New York and again in Washington. He was known as an unusually eloquent lecturer and orator. **1/17 1/22 1/26 2/27**

Nichols, James Robinson (1819–1888) NC WW. Nichols was born in Massachusetts and was largely self-educated. In 1843 he opened a pharmacy, but most of his attention was given over to original research in agricultural and pharmaceutical chemistry; he also became an inventor of some considerable note. In 1857 he established J. R. Nichols & Company, which manufactured chemical products. In 1866 he founded the *Boston Journal of Chemistry* (later known as the *Popular Science News and Boston Journal of Chemistry*) and remained its editor to his death; he also produced several books oriented toward a popular readership, and a large body of shorter writings. **11/2 12/13 12/16–17 12/24 12/28**

Noa, Jessie (1825–1907). Noa, wife of Leopold Noa and often referred to simply as "Mrs.

Noa," was a highly successful pastel portrait artist who received commissions from both Old World and New World notables. **11/9**

Noa, Leopold (b. 1827). In 1870 Noa and his wife emigrated from England to St. Louis, where he took a position as a professor of modern languages at Washington University. The family apparently moved to the Boston area in the mid- or late-1870s, perhaps so their son Frederic M. could attend MIT. **11/3**

Nordhoff, Charles (1830–1901) NC WK WW. Nordhoff was born in Prussia and emigrated to the U. S. in 1845. He was educated in Cincinnati, then spent nine years at sea. He was next employed by several newspapers and magazines, ultimately becoming the Washington correspondent for the *New York Herald*. He also published over a dozen books, mostly on travel, seafaring, and politics, his most famous one being *The Communistic Societies of the United States* (1875). **1/22 1/28 2/6 3/2 3/5 4/1**

Norton, Charles Eliot (1827–1908) AN NC WK WW. Progressive author and critic Norton was one of his period's most visible intellectuals. From a privileged background, he traveled broadly in Europe and soon assumed a leadership role among the Bostonian literary set. In 1874 he became the first professor of art history in the U. S., at Harvard; in the following years he became well known as a social critic, essayist, editor, and advocate for education in the fine arts. **12/29**

(possibly) **Ober, Frederick Albion** (1849–1913) NC WK WW. Ober was born in Beverly, Massachusetts. He had a rather difficult childhood, working as a shoemaker and in a drug store for a number of years. During that time, however, he also taught himself taxidermy and much natural history, attracting the attention of Alexander Agassiz. Beginning in 1872, he undertook a number of very productive ornithological expeditions to Florida, the West Indies, Mexico, and several other locations. He then established a successful writing career focusing on adventure, history and biography themes. **11/4**

Owen, James Jerome (1827–1895). Owen was born in upstate New York and entered the local printing trade in his early teens. By 1861 he had found his way to California, in that year taking over the *San Jose Telegraph*. From 1869 to 1884 he was publisher of the *San Jose Mercury*, then from 1885 to 1890 publisher of *Golden Gate*, a popular weekly spiritualist title out of San Francisco. **5/24 5/27 6/6 6/20–21**

Packard, Alpheus Spring, Jr. (1839–1905) AN NC SB WK WW. Packard was born in Maine and educated there, though more importantly he spent three years as an assistant to Louis Agassiz at Harvard. Early in his career (1867) he was a cofounder of the *American Naturalist*; meanwhile he was occupying himself with embryological studies of invertebrates, especially insects. He eventually became an evolutionist, but adopted a neo-Lamarckian perspective emerging in part from his studies on blind cave faunas. **1/23**

Phillips, Colonel William Addison (1824–1893) NC WK WW. Phillips came to the U. S. from Scotland at the age of fifteen. In his twenties he became involved in newspaper work and studied law, and in 1855 was admitted to the bar in Kansas. In 1858 he founded the town of Salina KS. During the Civil War he was commissioned a colonel and saw much action in the Southwest theatre. After the war he served in Congress from 1873 to 1879. Phillips became known as a Native American advocate, and also as an expert on land tenure systems. **2/16 2/24 3/1 3/3 3/30–31 4/3 5/9 5/11–13 5/17**

Phythian, Robert Lees (1835–1917) NC WW. Phythian was born in Pennsylvania, grew up there and in Kentucky, and graduated from the Naval Academy in 1856. He then served in the Navy, including during the Civil War, rising to the rank of commodore. After the war he served in a succession of executive administration positions in the New York Nautical School, United States Naval Observatory, and Naval Academy. **2/9**

Popenoe, Edwin Alonzo (1853–1913). Popenoe was born in Ohio and moved with his

parents first to Illinois in 1860, and nine years later to Topeka KS. He was educated there at Washburn Academy, and after teaching in county schools for a few years accepted a chair at the Kansas Agricultural College (now Kansas State) in 1879. There he supervised gardens and grounds, and taught zoology–especially entomology–classes. **5/8 5/10**

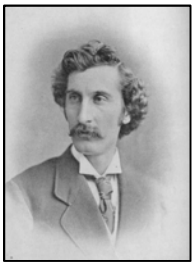
Powell, John Wesley (1834–1902) AN ES NC SB WK WW. Powell's side-interest in natural history was interrupted by the Civil War, during which he lost his lower right arm in battle. On being discharged in 1865 he taught college for a couple of years, then spent most of the next five years in geological and ethnological explorations in the Colorado Plateau region (including famous expeditions through the Grand Canyon). In 1872 he became an advisor on Indian affairs, and in 1881 was made director of both the USGS and the Bureau of Ethnology. Powell proved brilliant in both roles, emerging as one of most important science administrators in nineteenth century America. **1/3 1/7 1/21–22 1/31 2/4 2/6 2/15 3/5**

Putnam, Allen (1802–1887). Revd. Putnam was an 1830 graduate of the Harvard Divinity School and practiced as a Unitarian clergyman in Augusta ME for some years; he also served a term in the legislature of that state and edited the *New England Farmer* from 1843 to 1846. Putnam was most notable, however, for his sincere and persistent investigations into spiritualism. He published a goodly number of both short and long writings on mediumship, witchcraft, and spiritualistic "manifestations" over a period of some thirty-five years. **11/15 12/21**

(possibly) **Putnam, Frederic Ward** (1839–1915) AN ES NC SB WK WW. Putnam grew up in Massachusetts and studied at Harvard under the supervision of Louis Agassiz. At first interested in zoology, in 1864 he left Harvard to accept a job as a curator of vertebrates at the Essex Institute. This became the first step in an illustrious career as a museum director, most notably at the Peabody Museum of Archeology and Ethnology at Harvard from 1874 to 1909. His emphasis became archeology, and in his role as curator he became the organizer of archeological digs in dozens of states and foreign countries. **11/18**

Rattan, Volney (1840–1915). Rattan was born in Wisconsin and educated in the public school and university system there. In 1861 he moved to California, thereafter teaching secondary school in several San Francisco area locations, and finally at the California State Normal School in San Jose from 1889 to 1906. He was a botanical collector of note in the central California region, and the author of several popular botanical texts and guides. **7/7**

Rau, Charles (1826–1887) NC WW. Rau was born in Belgium and educated in Germany; he came to the U. S. in 1848 and supported himself for fifteen years as a teacher of foreign languages. During this period he developed an interest and research program in the anthropology and archeology of Native Americans. In 1863 he started his association with the Smithsonian, his highest appointment being curator of the archeology department there in 1881. Rau was considered a leading American archeologist of his time. **1/21**



Riley, Charles Valentine (1843–1895) AN NC WK WW. Born in England and educated there and on the Continent into his seventeenth year, Riley then emigrated to the U. S. (Kankakee IL). His AN biography succinctly summarizes his subsequent life: "Riley's career in the United States had seven chapters: farm laborer, reporter with the *Prairie Farmer*, soldier, Missouri state entomologist, chief of the U.S. Entomological Commission, entomologist with the U.S. Department of Agriculture, and honorary curator of the Smithsonian Institution." **12/26 12/31 1/1 1/4 1/9 1/19–20 1/23 2/20 3/1–2 3/4**

Romanes, George John (1848–1894) BN SB WK. George Romanes started out as something of a protege of Darwin's, eventually con-

tributing importantly to what he termed comparative psychology, an attempt to relate human cognition and related subjects to animal processes. He and Wallace could not see eye to eye on his theory of physiological selection, however, and this led to many back-and-forths in print, some of them a bit nasty. **1/29 3/9 notes**

Ropes, John Codman (1836–1899) NC WK WW. Ropes' father was a merchant and he was born overseas, returning to Boston in 1842. He was educated at Harvard, completing his law degree there in 1861. An early spinal injury kept Ropes out of the Civil War, but he developed a great interest in military history. Although he continued practicing law he ultimately became much better known as a historian, especially for his studies on the Civil War and the Napoleonic era. **12/29**

Ross, Mrs. Hannah V. Mrs. Ross, based in Boston, was one of the best known spiritualist mediums of her time. Some months after Wallace attended her séances she and her husband were charged with fraud and he went to trial. The jury returned a "not guilty" verdict, but this was not enough to save her reputation. **12/18 12/23 12/27 2/21**

Savage, Minot Judson (1841–1918) NC WK WW. After a difficult childhood in Maine, Savage graduated from seminary in 1864 and spent three years in California as a missionary. Subsequent appointments sent him to Massachusetts, to the Midwest (where he switched to the Unitarian Church), and back to Boston in 1874. Savage thereafter became known, through his writings and from the pulpit, for his defense of Darwinian evolution principles and, later, spiritualism. **1/11 11/14 12/23 12/28**

Schlesinger, Louis (1832–1921). Englishman Schlesinger, husband of Julia Schlesinger (editor of *The Carrier Dove* from 1884 to 1893), was a spiritualist and medium of uncertain talents and motives. He is perhaps best known for his 1878 founding of a cult called the Societas Fraterna in the Los Angeles area which promoted, among other things, vegetarianism and free love. By 1882 he had been driven from the group, relocating to San Francisco (where things apparently did not go a whole lot better!). **6/6**

Scudder, Samuel Hubbard (1837–1911) AN NC SB WK WW. The AN biographical entry for Scudder describes him as "the leading American entomological taxonomist of the nineteenth century," and that he "founded the field of American paleoentomology" and "produced reference works that are still essential to zoologists." A Boston native, he spent his professional career connected to several of that area's major institutions. Scudder especially concerned himself with butterflies, on which he was one of the leading experts of his time. **11/3 11/5 12/12 12/17**

Shepard, Benjamin Henry Jesse Francis (1848–1927) WK. Shepard, born in England, emigrated to Illinois at a very young age. Shepard lived an unusual life as a vagaband musician and writer. From 1869 to 1874 he toured Europe, performing piano music he claimed was "channeled" through him by the spirits of famous composers. In 1886–87 he lived in San Diego, rejecting spiritualism during this period. He then embarked on a not very lucrative literary career with writings often featuring mystical themes. Much of the second half of his life was spent in parlours performing for friends and acquaintances; he died at the piano at one such show. **6/24**

Skinner, J. (James) Ralston (1830–1893). Skinner, from Lockport NY, must have been a particularly brilliant man: after relocating to Cincinnati he was made, by the age of twenty-one, a law firm partner *and* the first professor of pathology at the new Cincinnati College of Medicine and Surgery. After the Civil War he developed a writing career on esoteric subjects, especially metrology, and was among the leaders of the new theosophical movement spearheaded by Helena Blavatsky. In 1870 he was a founder of the Cincinnati Society of Natural History. **4/14–16 4/24**

Smith, Andrew (1834–1910) CN. Born in Scotland and educated there as a veterinary

surgeon, Smith emigrated to Toronto in 1861. Within a year he had begun giving a series of lectures around which was built the Upper Canada Veterinary School (later known as the Ontario Veterinary College), the first in Canada. He led the institution for forty-six years. Smith's reign was a generally conservative one, but nevertheless he was an important force in raising standards for the profession in Canada. **3/11**

Smith, Goldwin (1823–1910) BN CN WK WW. Goldwin Smith, a Reading, England, native, was educated at Oxford. In 1858 he took a post there in "modern history" and used it to spread his political and religious views. The death of his father in 1867 caused him to come to the U. S., and two years later on to Toronto. The remainder of his life was spent in the literary furthering of a wide range of liberal points of view in politics, education, economics, religion, and sociology. **3/12**

Snow, Francis Huntington (1840–1908) NC WK WW. Snow graduated first in his class at Williams College in 1862, and though having seminary training he was made professor of natural sciences and mathematics at the newly created University of Kansas in 1866. His main field was entomology and he directed numerous collecting expeditions to the Southwest. Snow established the natural history museum on campus, and was a founder of the Kansas Academy of Science. He was also chancellor of the university from 1890 to 1901. **5/6**

Sperry, James L. (d. 1902). Sperry originally hailed from New Hampshire. He left the East in 1850 to try his hand at mining in California, but in 1856 ended up partnering with John Perry to open the Murphys Hotel in Murphys, Calaveras County. It became a renowned vacation destination. Sperry sold his interest in 1901 after forty-five years of ownership/management, and died the next year in Oakland. **6/16**

Stanford, Leland (1824–1893) AN NC WK WW. Stanford began a law practice in Wisconsin in 1848, but moved to California in 1852 to join his brothers in the mercantile business. He prospered, entered politics, and was eventually elected governor for a single term, in 1861-63. Meanwhile, he had become president of the newly created Central Pacific Railroad, whose development made him extremely wealthy. He served as U. S. Senator from 1885 to his death, but his late years were distinguished primarily by his establishment of the university that bears his name. **1/17 1/22 1/28 2/2 3/2–3 6/6–7 6/18 6/20 6/24–25**

Stebbins, Giles Badger (1817–1900). Stebbins, referred to in one obituary as "an old-time reformer, abolitionist, and spiritualist," became a spiritualist early in the movement, and was widely known as a writer, editor, and lecturer on social and religious subjects.

Stockton, Frank Richard (1834–1902) AN NC WK WW. Stockton first supported himself as a wood engraver, but in the 1870s he switched to literary editing. In 1878 he turned to original fiction, thereafter distinguishing himself as a writer on subjects ranging from science fiction to children's stories. By the late nineteenth century he was among America's most popular novelists, though in the longer term his reputation has not maintained itself. His most famous story is probably "The Lady, or the Tiger?". **4/1**

Stone, Edgar Heathcote (1854–1911). Stone was born in Ohio but when he was young his family moved to Sioux City, where his father built up a lucrative banking and real estate business. After taking a degree at Yale, Stone moved back to Sioux City and joined his father's business. Eventually he too took a leadership role, becoming very successful. Stone's father had had a long and close association with the Scientific Society in the city. **4/30**

Sutro, Adolph Heinrich Joseph (1830–1898) AN NC WK WW. After emigrating from Germany in 1850, Sutro settled in California and began a career in mining engineering. His successes (including the "Sutro Tunnel," which temporarily rescued the Virginia City silver mines) brought him great wealth and material possessions (including a fabulous personal li-

brary). Eventually (in 1894) he was made mayor of San Francisco, but his final years were unhappy ones, clouded by various political and health problems. **5/26–27**

Sweatman, Arthur (1834–1909) CN WK WW. Sweatman was born and educated (primarily in mathematics) in England, where he was ordained a priest in 1860. Much of his early work involved the education of young people, both in England and in Toronto. In 1879 he was elected bishop of the Toronto diocese and remained in the post for twenty-eight years, developing into an outstanding handler of factional complaints. **3/10**

Swinton, A. C. (d. 1905). Swinton was apparently a bit of an adventurer as a youth, spending time in the gold fields of South Africa and Australia, but by the mid-1850s he had become interested in the radical reform movement. He was one of the founders (along with Wallace) of the Land Nationalisation Society in 1881, and for the rest of his life devoted his available energies to this and related causes. For many years he served as the Society's treasurer. **1/3 2/15 3/19 3/20–21 3/30 4/22 8/9**

Sylvester, James Joseph (1814–1897) AN BN SB WK WW. Sylvester's career as a mathematician in England was complicated by his Jewish upbringing and testy personality, but even so he was made a member of the Royal Society as early as 1839, and in the 1850s did ground-breaking work on invariant theory. In 1876, his career fading, he was made the first chair of mathematics at the new Johns Hopkins University. His teaching career there was very successful; he stayed until 1883, after which he returned to England to take a post at Oxford University. **12/9**

Taber, Isaiah West (1830–1912) WK. Taber grew up in Massachusetts and in his late teens worked on a whaler. In 1850 he traveled to California but returned to the East in 1854, eventually settling in Syracuse NY and opening a dental practice. During this period he also opened up a photography studio, and in 1864 he returned to California, first working in the studio of two other men, then opening his own in the early 1870s. He became a famous portrait and landscape photographer, though in 1906 his operation in San Francisco was destroyed by the great earthquake. **6/6 6/20**

Talbot, Daniel Hector (1850–1911). Talbot was born and raised in Iowa City. In 1870 he moved to Sioux City, where he made a lot of money through land speculation. He used this to finance an experimental breeding farm and private zoological menagerie. He also collected field specimens and books. In the early 1890s he was crushed by a financial panic, but managed to donate his extensive collection of bird specimens and books to the University of Iowa first. His last twenty years were spent in dire poverty, though his former properties, at least, were eventually made into nature parks. **4/30 5/1 5/3–4**

Taylor, James Monroe (1848–1916) NC WW. Brooklyn-born Taylor was educated at the University of Rochester and in 1871 graduated from the Rochester Theological Seminary and was ordained a Baptist minister. Following a short period of travel he ran ministries in Connecticut and Rhode Island for fourteen years. In 1886 he assumed the presidency of Vassar College and was a striking success, remaining until 1914. **11/28**

Thaxter, Celia Laighton (1835–1894) NC WK WW. Thaxter was born in New Hampshire and grew up on coastal islands (her father was a lighthouse keeper for some years). She married early and moved to Massachusetts, but after ten years she moved to Appledore Island, Maine, engaged as a hostess in her father's hotel. There she became a friend to many of the great American writers and musicians of that generation, and began to publish the works that would make her one of the most successful poets of the period.

11/10–11 11/14

Trelease, William (1857–1945) AN NC SB WK WW. In 1884 Trelease obtained his doctorate from Harvard, where he had been one of Asa Gray's students. A year later he became the chief administrator, and later director, of the Missouri Botanical Garden. Under his leadership this became a major research and teaching institution. In 1913 he moved on to the University of Illinois in Urbana, where his time was consumed by a wide range of teaching, research, and administrative responsibilities. **4/28**

Ulke, Henry (1821–1910) WK WW. Ulke was born in Germany and emigrated to the U. S. with his two brothers in 1852. After periods in New York and Philadelphia they moved on to Washington, D.C., where they established a portrait studio. Their clientele included many of the most noteworthy individuals of the late nineteenth century. Henry Ulke was also interested in, and a contributor to, the worlds of entomology and music. **1/24 3/19**

Van der Smissen, William Henry (1844–1929) WW. Van der Smissen was born in Toronto and spent practically his entire life in that city. He was educated at the University of Toronto and from 1873 to 1890 was Librarian there; mainly, however, he was a German language scholar and translator and a teacher of German at the university, beginning in 1866 as a lecturer, with successive promotions up to professor in 1901. **3/11**

Wakefield, Bandusia (1844–1923). Before Wallace met her, Wakefield had taught mathematics and botany at high schools in Kansas and Illinois, and finally at the Illinois Normal University (now Illinois State). After six years at the latter as a department head she resigned in 1881 and returned to Sioux City to take care of her brother's motherless children. There she became interested in theosophy, and after the children were grown she moved on to Point Loma, California, to apply herself to related study and writing. **4/30 5/1 5/3**

Wakefield, George Washington (1839–1905). Brother of Bandusia Wakefield. After extensive military service during the Civil War Wakefield settled in Sioux City in 1868, opening a law office. In 1884 he was elected a judge of the Circuit Court, and then in 1886 a district judge. He presented many papers on natural history subjects to the Sioux City Scientific Association, and at the time of his death was the society's president. **5/1–2**

Walker, Francis Amasa (1840–1897) NC WK WW. Bostonian Walker was a prominent statistician and economist. The son of a congressman, Walker took a degree at Amherst College in 1860 and then joined the U.S. Army. He served in the Civil War, rising to the rank of brevet brigadier general (at the age of twenty-four!). After the war he worked for the *Springfield Republican* for several years, then was made Chief of the Bureau of Statistics in Washington in 1869. In 1872 he became a professor of political economy at Yale, and in 1881 president of MIT. **10/30 11/5 11/10 12/29**

Ward, Lester Frank (1841–1913) AN ES NC WK WW. Ward's *Dynamic Sociology* (1883) was the first of a series of books airing his progressive views on the interrelations among biological evolution, social processes, and education. Ward's social liberalist vision eventually proved prophetic; by the late twentieth century his argument that governments should be less laissez faire and use a more scientific management style was finally being heeded. Ward was a civil servant for most of his life, including working from 1881 as a paleobotanist for the USGS. Only as late as 1906 did he become a professor of sociology, at Brown University. **1/3 1/8 1/19 1/31 2/5 2/13 2/22 3/27 3/29–30 4/4 notes**

Warder, Reuben H. (d. 1907). Warder, the son of John A. Warder, an influential horticul-

turist, grew up in the family home at North Bend OH, near Cincinnati. He would eventually become superintendent of parks in Cincinnati, and by the turn of the century held a similar position in Chicago. **4/14–16**

Watkins, Carleton Emmons (1829–1916) WK. Watkins was born in New York, and followed the gold rush to California in 1851. By the 1860s he had developed an interest in landscape photography, and through the next two decades produced a series of stereoview and photograph sets of California and Oregon scenes that made him famous. Unfortunately, he was not as good a businessman as he was a photographer, later falling into poverty and, ultimately, insanity. **6/20**

West, Sir Lionel Sackville (1827–1908) BN WK WW. West was a career British Foreign Office officer and diplomat who was appointed British envoy to Washington in 1881, but who suffered a removal in 1888 over an embarrassing situation not wholly of his making. He retired from service the following year. **1/3 1/18 4/4**

Willard, Ammiel Jenkins (1822–1900). After the Civil War Judge Willard emigrated from New York to South Carolina and was made head of the Bureau of Civil Affairs there, and then a state supreme court judge. In his later years Willard was involved in the Indian reform movement. **2/27 3/4**

Williams, Benjamin Webb (1816?–1905). Williams was considered a pioneer in the business of lecture tour management. His company, the Williams Lecture and Musical Bureau, was established in 1869. **10/29 12/11 12/18 1/13 1/16 3/13 3/18–19 3/22 4/6 5/5 5/10 notes**

Wilson, Daniel (1816–1892) BN CN WK. Wilson was knighted in 1888 for a wide range of accomplishments. Before moving to Toronto in 1853 he had made a big name for himself as an antiquary and archeologist. Once in the New World, he became more interested in anthropology, both physical and ethnological, and English literature, but gradually his attention turned to issues in the philosophy of university-level education. His last twelve years were spent as president of University College (1880–1892), and finally as president of the entire University of Toronto (1890–1892). **3/10**

Wright, Robert Ramsay (1852–1933) CN WK WW. Wright was born and educated in Scotland, and at the young age of twenty-four was appointed professor of natural history at University College, Toronto. He would later be the university's first professor of biology, first dean of arts, and from 1902–1912, its vice-president. He worked in the areas of comparative anatomy, ichthyology, parasitology, etc., and was known as an outstanding and inspiring teacher. On retiring he returned to Scotland and studied classics. **3/9–10**

Appendix 5. Places Seen

United States

California (5/23–7/12)
Alameda
Baldwin Hotel, San Francisco
Beaver Creek, Tuolumne Co.
Big Oak Flat, Tuolumne Co.
Big Trees, Santa Cruz Co.
Blue Canyon, Placer Co.
Bridalveil Fall, Yosemite
Calaveras Big Trees, Calaveras Co.
Chinese Camp, Tuolumne Co.
Cisco, Placer Co.
Colfax, Placer Co.
Copperopolis, Calaveras Co.
Crockers, Tuolumne Co.
Dardanelles, Alpine Co.
Donner Lake, Nevada Co.
Donner Peak, Placer Co.
El Capitan, Yosemite
Gold Run, Placer Co.
Golden Gate Park, San Francisco
La Casa Nevada (Snow's Hotel), Yosemite
Lake Tahoe
Market Street, San Francisco
Menlo Park
Metropolitan Temple, San Francisco
Milton, Calaveras Co.
Mirror Lake, Yosemite
Murphys, Calaveras Co.
Murphys Hotel, Murphys
Nevada Fall, Yosemite
Oakland
Pajaro, Monterrey Co.
Palace Hotel, San Francisco
Palo Alto
Priest, Tuolumne Co.
Sacramento
San Francisco
San Jose
Santa Cruz
Sierra Nevada
South Grove, Tuolumne Co.
Stanislaus River (and Valley)
Stockton, San Joaquin Co.
Tamarack Flat, Mariposa Co.
Truckee, Nevada Co.
Truckee River
Tuolumne River
Upper Yosemite Falls, Yosemite
Vernal Falls, Yosemite
Yosemite Falls, Yosemite

Colorado (5/19, 7/15–7/26)
Antlers Hotel, Colorado Springs
Cedar Creek, Montrose Co.
Cerro Summit, Montrose Co.
Cimarron, Montrose Co.
Clear Creek Canyon, Jefferson Co.
Clear Creek Valley, Montrose Co.
Colorado Springs
Denver
Denver High School East
Garden of the Gods, Manitou Springs
Glen Eyrie, Manitou Springs
Grand Junction
Graymont, Clear Creek Co.
Gray's Peak, Clear Creek and Summit Cos.
Grizzly Gulch, Graymont
Gunnison, Gunnison Co.
Holy Cross Mountain, Eagle Co.
Jenning's Hotel, Graymont
Julesberg, Sedgwick Co.
Kelso's Cabin, Graymont
Long's Peak, Boulder Co.
Manitou Springs, El Paso Co.
Marshall Pass, Saguache Co.
Rainbow Falls, Manitou Springs
Royal Gorge of the Arkansas, Fremont Co.
Salida, Chaffee Co.
Sapinero, Gunnison Co.
Sargents, Saguache Co.
Steven's Mine, Graymont
Torreys Peak, Clear Creek and Summit Cos.
Upper Arkansas River, Chaffee and Fremont Cos.
Ute Pass, Manitou Springs
Williams Canyon, Manitou Springs

Connecticut (10/28, 11/23–11/24, 11/26–11/28, 12/11, 12/30)
Meriden
New Haven
Peabody Museum of Natural History, Yale University
Yale University, New Haven

District of Columbia (12/31–1/10, 1/13–3/6, 3/18–4/6)
Biological Society (meetings at the National Museum)
Capitol Building
Corcoran Art Gallery, 17th Street W and Pennsylvania Avenue
Cosmos Club, 1518 H Street NW
Dept. of Agriculture
Gallaudet University, Kendall Green
Government Printing Engraving Office, Bureau of Engraving, 14th and B Streets SW
Hamilton (House) Hotel, 14th and K Streets NW
Library of Congress, Capitol Building
National Museum, South Washington, near the Smithsonian Institution
Naval Observatory, 23rd and E Streets NW
Patent Museum, Patent Office
Patent Office, 8th and F Streets NW
Potomac River
Smithsonian Institution, South Washington, opposite 10th Street
Surgical Museum, Ford's Theatre, 10th and F Streets NW
Treasury Department
United States Botanic Garden, next to the Capitol
United States Geological Survey, 1330 F Street NW
Washington, D.C.
Washington Monument
White House
Woodley Park

Illinois (4/27, 7/28)
Chicago
Dearborn Station, Chicago
Lake Michigan
Lake Shore, Chicago
Mississippi River
State Street, Chicago

Indiana (4/25–4/27, 7/28)
Bloomington
Greencastle Junction, Putnam Co.
Indiana University, Bloomington
Valparaiso

Iowa (4/29–5/5, 7/27–7/28)
Big Sioux River
Council Bluffs
Mississippi River
Missouri Valley, Harrison Co.
Pacific Junction, Mills Co.
Sioux City

Kansas (4/29?, 5/6–5/19)
Arcola, Ellsworth Co.
Eldridge House, Lawrence
Iron Mound, Salina
Kansas City
Kansas State University, Manhattan
Kansas Wesleyan University, Salina
Lawrence
Manhattan
Natural History Museum, University of Kansas
Salina
Salina Normal University, Salina
Union Hotel, Kansas City
University of Kansas, Lawrence
Wittman Hotel, Salina

Kentucky (4/13)
Mt. Sterling, Montgomery Co.

Maryland (11/30–12/10, 12/31, 1/10, 1/13, 3/6, 3/18, 3/27)
Baltimore
Druid Hill Park, Baltimore
Enoch Pratt Free Library, Baltimore
Eutaw House, Baltimore
High Island, Potomac River at Brookmont, Montgomery Co.
Peabody Institute, Mount Vernon, Baltimore
Johns Hopkins University, Baltimore

Massachusetts (10/28–11/23, 11/24–11/26, 12/11–12/30)
Boston
Boston Common
Boston Public Library
Cambridge
Cambridgeport, Cambridge
The Cascades, off Marion Avenue, North Adams
Cupples & Co., 91 Boylston Street, Boston
Goodrich Hall, Williams College
Harvard College, Cambridge
Haverhill
Houghton, Mifflin & Co., 4 Park Street, Boston
Huntington Hall, Rogers Building, MIT

Massachusetts Institute of Technology, Boston
Museum of Comparative Zoology, Harvard University
Museum of the Boston Society of Natural History, 234 Berkeley Street, Boston
Peabody Museum of American Archeology and Ethnology, Harvard University
Quincy House, Brattle Street and Brattle Square, Boston
Revere House, Bowdoin Square, Boston
Roxbury
Salem
Studio Building, Tremont Street corner of Bromfield, Boston
Wellesley
Williams College, Williamstown
Williamstown
6 James Street, Franklin Square, Boston
96 West Concord Street, Boston
258 Washington Street, Boston
298 Commonwealth Avenue, Boston

Michigan (7/28–8/1)
Agricultural College (= East Lansing)
Michigan State University
Trowbridge, East Lansing
W. J. Beal Botanical Garden, Michigan State University

Missouri (4/27–4/29, 5/6)
Kansas City
Laclede Hotel, 518 Chestnut Street, St. Louis
Mississippi River
Missouri River
St. Louis
Shaw's Garden (Missouri Botanical Garden), St. Louis
Union Station, St. Louis

Nebraska (7/26–7/27)
North Platte, Lincoln Co.
Omaha

Nevada (5/21–5/22, 7/12–7/14)
Carlin, Elko Co.
Elko
Humboldt, Pershing Co.
Reno
Truckee River, Washoe Co.
Verdi, Washoe Co.

New Jersey (10/27?, 11/30, 12/10, 12/30, 1/10, 1/13)
The Palisades, Hudson River shore

New York (10/23–10/28, 11/28–11/30, 12/10, 1/10–1/13, 3/7–3/8, 3/14–3/18, 8/7–8/8)
Adirondack Mountains
Alexandria Bay, Jefferson Co.
American Falls, Niagara Falls
American Geographical Society, 11 West 29th Street, New York City
American Museum of Natural History, New York City
Brooklyn Bridge, New York City
Central Park, New York City
Chickering Hall, 437 Fifth Avenue at 18th Street, New York City
(Nineteenth) Century Club clubhouse, 111 East 15th Street, New York City
Elmira
Goat Island, Niagara River, Niagara Falls
Havana Glen, Montour Falls, Schuyler Co.
Hudson River
Luna Island, Niagara River, Niagara Falls
Niagara Falls
Niagara Falls Suspension Bridge
Niagara River
New York City
Poughkeepsie
Rochester
Saint Lawrence River
Seneca Lake
Three Sisters Islands, Niagara River, Niagara Falls
Thousand Islands, St. Lawrence River
Thousand Islands Hotel, Alexandria Bay
Vassar College, Poughkeepsie
Watkins Glen, Schuyler Co.
West Point, Orange Co.
142 East 19th Street, New York City

Ohio (4/13–4/25)
Art Museum, Eden Park, Cincinnati
Avondale, Cincinnati
Belmont College, College Hill, Cincinnati
Bloody Run (= Victory Parkway), North Avondale, Cincinnati
Cincinnati
Cincinnati Zoological Gardens
Clifton, Cincinnati
College Hill, Cincinnati

Cuvier Club, 30 Longworth Street, Cincinnati
Madisonville Cemeteries, Madisonville, Cincinnati
North Bend, Hamilton Co.
Public Library of Cincinnati
Turner Group (Turner Earthworks), Little Miami River, Hamilton Co.
Valley Junction, Hamilton Co.
Young Men's Mercantile Library Association Library, College Building, Walnut Street, Cincinnati

Pennsylvania (11/30, 12/10, 1/10, 1/13, 3/6, 3/18)
Philadelphia
Williamsport

Rhode Island (?)

Utah (5/20–5/21, 7/14–7/15)
Castle Gate, Carbon Co.
Clear Creek, Utah Co.
Continental Hotel, Salt Lake City
Devil's Slide, Morgan Co.
Echo Canyon, Summit Co.
Excelsior, Grand Co.?
Great Salt Lake
Mormon Tabernacle, Temple Square, Salt Lake City
Ogden
Pleasant Valley Junction (Colton), Utah Co.
Provo
Salt Lake City
Soldier Summit, Wasatch Co.
Thistle Creek, Utah Co.
Wasatch Mountains
Weber's Canyon, Morgan Co.

Virginia (4/3?, 4/6–4/9)
Backbone Station, Alleghany Co.
Clifton Forge, Alleghany Co.
Covington, Alleghany Co.
Jackson River branch, James River, Alleghany Co.
Lowmoor, Alleghany Co.
Luray, Page Co.
Luray Valley (= Page Valley)
"north side of Potomac" (near D.C.)
Waynesboro
Waynesboro Junction, Waynesboro

West Virginia (4/6, 4/9–4/13)
Charleston
Coalburg, Kanawha Co.
Greenbrier River
Harper's Ferry, Jefferson Co.
Hawk's Nest, Fayette Co.
Hinton, Summers Co.
Kanawha Falls, Fayette Co.
Kanawha River
New River
Shenandoah Junction, Jefferson Co.
White Sulphur Springs, Greenbrier Co.

Wyoming (5/19–5/20)
Ames Monument, Albany Co.
Cheyenne
Green River, Sweetwater Co.

Canada

Ontario (3/8–3/17, 8/2–8/8)
Cobourg
Gananoque
Horseshoe Falls, Niagara Falls
Kingston
Lake Ontario
Niagara Falls Suspension Bridge
Niagara River
Ontario Veterinary College, Toronto
Prospect House, Niagara Falls
Queen's University, Kingston
Saint Lawrence River
School of Science, University of Toronto
Thousand Islands
Toronto
Toronto Public Library, Mechanics' Institute Building
University College, University of Toronto

Québec (8/8–8/12)
Coteau Rapids, Saint Lawrence River
Drill Hall, Québec
Dufferin Terrace, Québec
Grande Allée, Québec
Lachine Rapids, Saint Lawrence River
Montreal
Mt. Royal, Montreal
Parliament Buildings, Québec
Plains of Abraham, Québec
Québec
Saint Lawrence River
St. Louis Street, Québec
Victoria Bridge, Montreal
Windsor Hotel, Rue Peel, Montreal

Appendix 6. List of Plants Observed/Collected

Following is a list of all the plants that Wallace mentions in his journal, followed by the date(s) of mention. Many of these are also discussed (sometimes only by common name) and contextualized, along with some further species he encountered, in his essay "English and American Flowers" (see Appendix 3).

Abies concolor? **6/9**
Abies douglasii **6/9**
Abies nobilis **6/9**
Acacia sp. **4/8 6/5**
acacias, Australian **5/27**
Aconitum columbianum **7/21**
Actinella grandiflora **7/21 7/23**
Adiantum pedatum **6/26 7/30**
Adiantum sp. **6/12**
Adoxa moschatellina **7/20**
Aesculus sp. **6/13**
Allium acuminatum **5/21**
Allium sp. **5/12**
Aloe sp. **6/5 6/20**
Amelanchier canadensis **4/26**
Androsace septentrionalis **7/21**
Androsace sp. **7/23**
Anemone narcissiflora **7/21 7/23**
Anemone patens nuttalliana **5/3**
Anemonella thalictroides **4/11 4/19 5/1**
Antirrhinum glandulosum **6/10**
Antirrhinum sp. **6/16**
Aquilegia brevistyla **7/23**
Aquilegia caerulea **7/20 7/23 7/24**
Aquilegia canadensis **5/3**
Aquilegia truncata **6/10**
Aquilegia? n.s. **7/22**
Aquilegia sp. **7/24**
Aralia quinquefolia **7/30**
Aralia spinosa **2/13**
Arenaria alpina **7/20**
Arenaria alpina? **7/22**
Arenaria biflora obtusa **7/23**
Arenaria fendleri **7/21**
Arnica cordifolia **7/20 7/24**
Artemisia spinescens **5/22**
Asarum canadense **4/20**
Asclepias verticillata **7/26**
Aspidium cristatum **7/30**
Aspidium munitum **6/26**
Aspidium spinulosum **7/30**
Aspidium thelypteris **7/30**
Asplenium filix-foemina [-femina] **7/30**
Asplenium montanum? **4/19**
Asplenium thelypteroides **7/30**
Aster fremontii **7/21**
Aster scopulorum **7/9**
Aster sericeus **5/10**
Astragalus alpinus **7/21**
Astragalus caryocarpus **5/1**
Azalea sp. **6/9**
Baptisia, new sp. near australis **5/10**
Baptisia sp. **5/10**
Baptisia sp. [australis?] **5/12 5/13**
Benzoin odiferum [i.e., Lindera benzoin] **4/8**
Bignonia (Tecoma) sp. **6/4**
birches, white **11/20**
Botrychium virginicum **7/30**
Bougainvillea sp. **6/5**
Brodiaea grandiflora **6/13**
Brodiaea volubilis **6/12**
Bryanthus breweri **7/8**
Bryanthus empetriformis **7/23 7/24**
Bryanthus sp. **7/8**
cactuses **6/4**
Calandrinia sp. **6/24**
Calla aethiopica **6/5**
Calochortus luteus **5/28**
Calochortus nuttallii **6/10 7/8**
Calochortus venustus **6/12**
Camassia esculenta **7/10**
Camassia sp. **5/20**
Campanula rotundifolia **7/17 7/20**
Campanula uniflora **7/23**
Campanula sp. **7/17**
Cardamine cordifolia **7/21**
Carex platyphylla **2/13**
Cassiope lycopodioides **7/8**
Castilleja integra **7/20 7/23**
Castilleja pallida septentrionalis **7/23**
Castilleja parviflora **6/10**
Castilleja sp. **7/14 7/24**
Ceanothus integerrimus **6/10 6/16**
Ceanothus sp. **6/13**
cedar trees **7/7 7/15**
cedar trees? **7/14**
Centaurea-like composite **7/27**
Cercis canadensis **4/16 4/19**
Chaenactis douglasii alpina **7/22 7/23**

Alfred Russel Wallace (1823–1913) is best known as the man who sent an essay on natural selection to Charles Darwin in 1858, prompting the older naturalist to drop plans for his multi-volume work on the subject and produce a shortened version – *On the Origin of Species* – only a little over a year later. Wallace, however, additionally had a long and expansive career extending to many natural and social science fields (and, it should be noted, he was one of his era's most vocal supporters of spiritualism). Among his other associations he is remembered as one of history's foremost naturalist-explorers for his twelve years of collecting activities in South America and the East Indies *circa* 1848 to 1852 and 1854 to 1862, but in the present volume the last of his wanderings is detailed: a transcontinental ten-month lecture tour to North America in 1886–1887. Wallace kept a journal for the entire length of his trip which is filled both with natural history observations, and impressions of the people he met along the way (including many of the most famous Americans from that period). Here, this journal is fully transcribed and annotated; also presented are some of his published writings from this period.

Charles H. Smith has been studying Wallace's work for thirty years and has several other books on him to his credit; he also maintains the research website *The Alfred Russel Wallace Page* at Western Kentucky University, Bowling Green, where he is Science Librarian and Professor of Library Public Services. Megan Derr has degrees in Broadcasting and Computer Science from the same institution, and is currently employed as a junior developer at Emergint Technologies in Louisville, Kentucky.

SSP
SIRI SCIENTIFIC PRESS