

THE FIRST ENGLISH EDITION, WITH  
ANNOTATIONS AND ILLUSTRATIONS

***A BOTANICAL EXCURSION  
TO COLORADO  
AND THE FAR WEST***

**MARCUS E. JONES**



A Project of the Departments of Archives & Special Collections and  
Herbarium of California Botanic Garden,  
*California's Native Garden*

*A Botanical Excursion to Colorado and the Far West*  
was originally published in Liège, Belgium, in 1880,  
in the French Language

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Cover photograph of Twin Lakes, Utah, by Marcus E. Jones, 1915

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California Botanic Garden  
Claremont, California

## Prologue

In 2017, staff members and volunteers at Rancho Santa Ana Botanic Garden [now California Botanic Garden] assembled a comprehensive exhibit on the life and accomplishments of American botanist Marcus E. Jones (1852-1934) based on RSABG's extensive collections of Jones' herbarium specimens and his personal archives. The exhibit documented Jones' nearly 50-year career of botanical collecting in the western United States and Mexico by highlighting the plant specimens he found, his nature photographs, his notes and analyses of his findings, and the copious writings he produced, both in manuscript and in published form.

Jones' contributions to our understanding of western botany have been cited by numerous authors who credit him with exploring often inaccessible parts of the West in his quest to collect and identify as many plants as possible in every region he studied. These authorities also pay tribute to Jones's prolific publishing career, which began while he was still a student at Iowa College in Grinnell, Iowa, and continued throughout his life, eventually totaling hundreds of articles in newspapers and journals, pamphlets, and books. Jones' detailed observations and his candid (some would say blunt, opinionated, or offensive) writing style have made him eminently quotable, and it is common for scholars to include excerpts from his works while discussing his career.

There is one striking omission in biographical and historical studies of Jones and of appraisals of his writing: the failure to quote from, or to do more than mention in passing, a medium-length pamphlet issued early in his career, a report, in fact, of his first exploring travels in the West. This is a booklet titled *Une Excursion Botanique au Colorado et dans le Far West*, published in 1880 in Liège, Belgium, which is a summary of Jones' botanical collecting trips in Colorado and Utah in the summers of 1878 and 1879.

Translated into French by a member of a Belgian horticultural society, the text presents Jones' first impressions of the West, his fascination with geological formations of the region, and his avid discoveries of countless plant species that were new to him. In the booklet we also see the first glimmerings of the attraction the West would hold for Jones and the motivation behind his decision to leave Iowa and spend the bulk of his life in Salt Lake City.

Realizing the contribution that *Une Excursion Botanique* can make to a more in-depth understanding of Marcus E. Jones, and because the French edition is the only version of the booklet ever published, scientists and volunteers at RSABG have undertaken this effort to present the text in its original English. The accompanying annotations are intended to help the reader place Jones' work into historical, botanical, and geographical context and to more fully experience the excitement he felt while exploring Colorado and "Le Far West" nearly a century and a half ago.

## About the Publication

As explained in the "Editor's Preface" and in Note 1, *A Botanical Excursion to Colorado and the Far West* appeared in print because of an Austrian-Belgian connection and out of European interest in the flora of the American West. The Belgian Federation of Horticultural Societies, an assemblage of nearly 30 regional groups scattered throughout the small kingdom, first published Jones' narrative in late 1879 in its *Bulletin*, and followed this with a stand-alone pamphlet the following year. The 64-page booklet was acknowledged by British and Dutch scientific periodicals, and received a positive, if bland review -- "an important publication" -- from the *Bulletin of the French Botanical Society*. On this side of the Atlantic several journals and newspapers also noted the publication of Jones' work, but the account was never translated or quoted from -- until now.

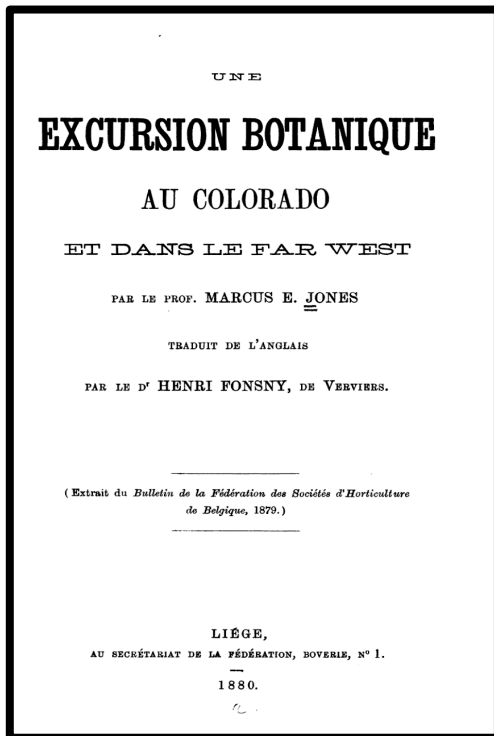
## Notes on Format and on the Translation

To improve the readability and visual appearance of the text we have inserted numerous paragraph breaks throughout the narrative. Similarly, the section headings that appear in the table of contents are found in the original but were not placed in the body of the publication; we have corrected that flaw, once again to enhance clarity. Because Jones was not always the most consistent speller we have corrected his [or the translator's] minor errors; for example, the text gives the name of a Colorado peak as "Mount Brass" when it is properly "Mount Bross." Working with Jones' handwritten manuscript must have presented

untold challenges for the translator, as any native English speaker who has worked with materials in his archive can attest.

An index including many of the plants Jones collected on his two western journeys was included in the original version of the booklet but does not appear in this translation. The index will be made available upon request.

A final note: In the years since Jones wrote botanists have reclassified and renamed some plants to more accurately describe them, with the result that many of the names he used have been supplanted by newer ones. For example, *Bouteloua oligostachya* is now known as *B. gracilis*, and *Bigelowia douglasii* has been renamed *Chrysothamnus viscidiflorus*.



1. Title page of the 1880 French edition.



2. Marcus E. Jones in the 1880s.

**A**  
**BOTANICAL EXCURSION**  
**TO COLORADO**  
**AND THE FAR WEST**

BY PROFESSOR MARCUS E. JONES

TRANSLATED FROM ENGLISH

BY DR. HENRI FONSNY, OF VERVIERS.

(AN EXTRACT FROM THE *BULLETIN OF THE BELGIAN FEDERATION OF*  
*HORTICULTURAL SOCIETIES*, 1879.)

LIÉGE,

BY THE SECRETARIAT OF THE FEDERATION, BOVERIE, No. 1.

1880.

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## EDITOR'S PREFACE

Here is how this publication originated: I was informed by Mr. Keck, of Aistersheim, Austria<sup>1</sup>, that Mr. Marcus E. Jones, who lives in Grinnell, in the state of Iowa, U.S.A., planned to go plant collecting in Colorado and the Far West, and offered to share his collections with botanists who might be interested in the project. I knew a little about these American territories from the accounts published about them by the U. S. government<sup>2</sup>, principally by the official reports on their geology, hydrography, topography, and in general all about their natural history, by Mr. F. V. Hayden, U. S. geologist<sup>3</sup>. All these works reveal a region that is strange and unlike any other. I thus associated myself with Mr. Jones' project, and, in sending him my subscription<sup>4</sup>, I expressed a desire to receive not only herbarium specimens he collected in these nearly unknown places, but also a written account of the journey with his descriptions of the flora he observed. Mr. Jones has been kind enough to comply with our request. The English manuscript he sent to us has been translated, at our request, by Mr. Henri Fonsny, who has a doctorate in natural sciences, and was one of the best students at the University of Liège. We are publishing this exact and literal translation here.

Liège [Belgium], June 9, 1880.

Ed. Morren<sup>5</sup>

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<sup>1</sup> *Mr. Keck*: Karl Keck (1825-1894) was a plant collector and dealer who purchased specimens from Jones, resold them in Europe, and encouraged him to continue his botanical studies. Jones credited Keck with suggesting the trip to Colorado described in this booklet.

<sup>2</sup> *accounts published about them*: In the 1860's Congress authorized several exploring trips in the West to examine the geological and natural resources of the region. Among these were the Geological Exploration of the Fortieth Parallel of 1867, the expedition of John Wesley Powell (1834-1902) down the Colorado River in 1869, and explorations led by George Wheeler (1842-1905) in Nevada and Arizona in 1871.

<sup>3</sup> *F. V. Hayden*: An explorer of the upper Missouri River region since the 1850's, Ferdinand V. Hayden (1829-1887) pushed on into Wyoming and Colorado in the years between 1868 and 1872. The success of Hayden's mapping work led to the creation of the Geological and Geographical Survey of the Territories. A member of Hayden's 1873 exploring team was botanist John M. Coulter (1851-1928), whose Synopsis of the Flora of Colorado, co-written with Thomas C. Porter (1822-1901) was published in 1874. This may be one of the "reports" cited by editor Morren.

<sup>4</sup> *sending him my subscription*: During and after his college years Jones earned income by selling plant specimens to collectors and institutions, such as universities and museums. He provided complete sets, at \$50 each, on subscription basis or individual specimens for as little as 10 cents apiece.

<sup>5</sup> *Edouard Morren*: Charles Jacques Édouard Morren (1833-1886) was a Belgian botanist, an expert on bromeliads, and a noted author and editor. He directed the botanic garden at the University of Liège [town name spelled Liège until 1946] and also taught at that institution.



## TRANSLATOR'S INTRODUCTION

Under this title we provide a translation of the original manuscript of two botanical explorations undertaken by the author in 1878 and 1879; we are promised the account of a third expedition<sup>6</sup> in 1880 in which Mr. Jones hopes to complete his previous narratives and to fill in any gaps that may still exist.

The region explored by the author includes Colorado and Utah, two of the new territories of the United States, located at 35 to 42° North and 104 to 123° West<sup>7</sup>. Its flora is exceptionally rich: this monumental, undulating land sprinkled with hills, crossed by gigantic mountain chains and innumerable water courses, presents to the rapt botanist species representative of all imaginable locations in the middle of the most picturesque and enchanting sites.

In addition, the author does not fob off on us a stale list of plants he encounters: he describes his journey in full detail; his expeditions around the major communities -- Colorado Springs, Denver, Salt Lake City -- the unfamiliar appearance of the mountains and their ascent, replete with their charms and perils and other splendid sites he encounters along the way.

En route, he provides information about topography and geography, interesting details about population, trade, climate, and the healthful conditions of towns<sup>8</sup> he visits; the botanist in him is not allowed to take over and forget to include observations of everyday life.

We have made a literal translation, only adding an alphabetical index of the plants he saw during the expeditions.

Dr. Henri Fonsny<sup>9</sup>

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<sup>6</sup> *The account of a third expedition*: Jones made a third "botanical excursion" in southwest Utah in 1880, but a description of this trip was not published by the Belgian Federation. See footnote 231.

<sup>7</sup> *two of the new territories*: Although "new" by European standards, Colorado and Utah had been part of the United States for some time by 1880. Eastern Colorado was included in the 1803 Louisiana Purchase, whose western border was the Rocky Mountains. Western Colorado and Utah were part of the land taken by the U. S. in 1848 after the Mexican-American War.

<sup>8</sup> *details about population, trade, climate*: *A Botanical Excursion* mentions many towns and cities that Jones passed through, but Jones includes only the most minimal details about them. It's possible that such information was included in the original manuscript but was deleted by editor Morren.

<sup>9</sup> *Dr. Henri Fonsny*: A trained chemist, Fonsny (1853-1936) was an amateur botanist who collaborated with Edouard Morren in translating articles from English, German, Spanish, and Italian for publication in Belgian horticultural periodicals and as individual pamphlets.

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## AN EXCURSION TO COLORADO

### Departure from Iowa; Description of the Journey as far as Las Animas

On the last day of April<sup>10</sup>, the day we leave our home base, the air is filled with the scent of flowers announcing the onset of Spring; the grass ripples in the soft wind; the atmosphere is replete with an indefinable charm that permeates all our senses and inspires the body to new vitality and awakens the latent faculties of our being. It is the moment when Nature pulls out all the stops, adorns every tree, every bush, with youthfulness and lets a myriad of living forms swarm onto the ground. Can it be possible that Colorado, the land of flowers that we will be exploring, exceeds in beauty and richness the attractive views we see in our native Iowa? But let us wait to see and judge for ourselves.

The bell rings, the train sets off . . . Grinnell disappears from view. Midnight finds us leaving Ottumwa, [Iowa] and dawn reveals the meadows and quarries of Moberly, [Missouri]<sup>11</sup>. Then we head west toward Kansas City. We cross plains of tufted and undulating grassland<sup>12</sup> and forests where the first leaves are rustling. But why do we care about the flowers of these plains and forests? Haven't we already seen phlox, geum, white trillium, narcissi, anemones, all these harbingers of early Spring while still at home? What do we care about these ornaments of Nature, these scents that fill the air? All this is familiar to us.

What we want is "Missouri"<sup>13</sup> with its unknown plants, its immense plains, its dry heaths, its bunchgrass prairie<sup>14</sup>, and its

(p. 2)

herds of buffalo and wild Indian hordes<sup>15</sup> whose strange tales fill the imagination of young minds. But the train, however fast it may be, cannot shrink the distance; so for the moment, we make do with the contemplation of lowland prairies, muddy swollen rivers, fertile fields of barley and half-submerged wheat whose yellowing

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<sup>10</sup> *last day of April*: Jones actually began his trip to Colorado on April 29, 1878, four days after his 26th birthday.

<sup>11</sup> *Ottumwa . . . Moberly*: Leaving Grinnell, Jones traveled south through the manufacturing city of Ottumwa, Iowa, on his way to the central Missouri city of Moberly, which was then only a decade old. Moberly housed extensive railroad repair and maintenance facilities.

<sup>12</sup> *plains of tufted and undulating grassland*: Although the terms "plains" and "prairies" are often used interchangeably, there are subtle differences between the two labels. A plain is a wide, flat, treeless expanse of land, and it may be dry or humid. A prairie is a more specific type of plain that is mostly grassland and may contain some trees.

<sup>13</sup> *Missouri*: Here Jones uses "Missouri" not in reference to the state but to the vast region of the United States lying west of the Missouri River.

<sup>14</sup> *bunchgrass prairie*: Also called tussock prairie, bunchgrass prairie denotes a region where grass grows in clumps or bunches rather than being spread out evenly to form carpet-like sod or lawn.

<sup>15</sup> *herds of buffalo and wild Indian hordes*: As Jones likely knew, the great American buffalo [more accurately "bison," scientific name *Bison bison*] herd that once numbered as many as 60 million animals was being slaughtered in the 1870s for the commercial value of bones and hides. Few of the animals remained on the plains of Kansas and Colorado along the route that Jones would be traveling. Native Americans on the southern plains were also losing their freedom in this era, with many forced by dubious "treaties" to relocate to confined reservations, often far from their original homelands. Episodes such as "Custer's Last Stand" of June, 1876, were sensational but comparatively rare.

and diseased stalks barely survive, despite the worried observations of an uncomfortable farmer sitting on a nearby fence and shivering with fever.

We pass quickly, first rolling along a vast plain, then plunging into the depths of a forest that flanks some river<sup>16</sup>. But the prairie diminishes, gets smaller, retreats, while forests get more common, grow larger, thicker, and eventually exist alone, casting their dense shadows onto a landscape that has left the plains behind. A few more miles and the train whistles, stops, then resumes its journey, and we cross a river at one of the most beautiful spots of the West: at last the Missouri River, this mysterious boundary between civilization and barbarism<sup>17</sup>, between cultivated land and immense plains inhabited by wild animals.

At Kansas City<sup>18</sup> we unload our luggage and take our seats in the slow cars of the Atchison, Topeka, and Santa Fe Railroad<sup>19</sup>. We continue for 150 miles through forests and prairies covered by luxuriant grassland and modest farms. The forests, so vast near the river<sup>20</sup>, gradually give way to increasingly wide plains, and near Emporia [Kansas]<sup>21</sup>, the eye fails to rest on anything but an immense expanse of flat land devoid of any tree or bush to relieve the monotony. So where are the wild and uncultivated regions of the West? Not here, that's for sure, because everything here exudes work and activity; not long ago -- barely a few hours -- we passed Topeka<sup>22</sup>, a large town endowed with schools, churches, other public institutions, and a hard-working, businesslike population. No savage or feral animal lurks in the fields -- despite the fact that we left the Missouri behind miles ago. The grassland, far from getting thicker, becomes poor and thin -- thinner than on the most arid dirt clods in Iowa. As we advance, we look on with curiosity, but nothing intervenes to relieve the uniformity of the landscape: it is

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always and everywhere the same flat country, limited only by the horizon.

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<sup>16</sup> *forest that flanks some river*: The normally exacting Jones could be surprisingly imprecise at times. "Some river" probably refers to the Chariton, a tributary of the Missouri, that flows 200 miles from its source in Iowa.

<sup>17</sup> *boundary between civilization and barbarism*: The Missouri River was popularly seen in Jones' day as a significant dividing line between cultures that were at different stages of social and technological evolution. Based on the work of anthropologist Lewis Henry Morgan (1818-1881), this theory held that societies grew from "savagery" to "barbarism" before developing into "civilization." In Morgan's thinking, Native American people were considered to be at the level of "barbarism."

<sup>18</sup> *Kansas City*: Rapidly becoming a major railroad hub, Kansas City, Missouri, was also a thriving center of the cattle and grain businesses and was experiencing phenomenal population growth. The city's sparkling new Union Depot railroad station was less than a month old when Jones passed through and must have been an impressive sight with its prominent 125-foot-tall clock tower. Jones had also marveled at the Hannibal Bridge over the wide Missouri River that led into the city.

<sup>19</sup> *Atchison, Topeka, and Santa Fe Railroad*: Founded in 1859, the AT&SF played a major role in developing Kansas as it carried loads of wheat and cattle to the East for processing. In the 1870s the line was expanding into the southwest and would eventually join with the Southern Pacific to complete the second transcontinental railroad. Because of its bright yellow passenger cars the Santa Fe was known as the "Banana Line."

<sup>20</sup> *the river*: Jones is probably referring to either the Kansas [also called "Kaw"] or the Cottonwood Rivers of eastern Kansas.

<sup>21</sup> *Emporia*: This small city in eastern Kansas was a prospering center for business, railroading, and education. Jones' description of the state as bleak and barren is at odds with the historical fact that Kansas had been attracting thousands of homesteaders in the years following the Civil War and was not as empty as Jones portrayed it.

<sup>22</sup> *Topeka*: The "other public institutions" Jones saw in Topeka included the Kansas state capitol building, then under construction. Its location at the juncture of the Kansas River and the AT&SF Railroad enabled Topeka to become a thriving hub of business.

The turf thinned out more and more; everywhere the brown color of the soil showed through, which made the few tufts of grass appear even more thinly scattered, insufficient to hide it. Little by little the darkness drowned and confused the shapes of objects. We settled in for sleep.

The first light of day woke us; we looked -- but still the bare soil, the same absence of trees. We had traveled all night at the speed of twenty miles an hour, and nevertheless, arriving in Dodge City, we found again the desolate and wild sight on which our eyes had closed the night before, and we learned, amazed and disappointed, that these bleak expanses are the plains, the Great Plains of the West<sup>23</sup>. And the buffalo, the antelope, the pure-blooded Indian, where are they? Not here, for the eye, as far as it can see, discovers not a living being; the ear hears only one sound -- the strokes of the machine's pistons; we pass by, and the plain once again becomes as silent as a tomb.

Dodge City!<sup>24</sup>. City in name only! -- A few rude dwellings half sunk into the ground, a few natives in rags, are all that we noticed as we passed through. Then we left again and traveled on for several hours without discovering the slightest indication of life. We reached a station -- a little one-storied house -- and during the train stop we got out, vasculum<sup>25</sup> on shoulder, to collect some plants from the area. Scattered on the soil, and pressed down against it were rounded patches of turf, one yard in diameter, with leaves that were two inches long and filled with sharp points, so narrowly folded and curled that one wondered how an herbivore could get to them. From the several flowering stems rising an inch or two above the foliage, we learned that we were dealing with the famous buffalo grass (*Buchloe dactyloides*). Right near it is a small grassy turf; it's the grama<sup>26</sup> (*Bouteloua oligostachya*)<sup>27</sup>. With *Lepturus paniculatus* these are the only grasses on the plain.

But departure hour sounds; the train leaves. We have left far behind the plants familiar to a botanist from Iowa, and at each stop we ardently search for flowers.

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<sup>23</sup> *Great Plains of the West*: Although its exact location is disputed, the eastern boundary of the Great Plains is today considered to begin at about the 97th degree of longitude, or the western borders of Iowa and Missouri. This grassy, mostly treeless region stretches from the Rio Grande into Canada and measures as much as 700 miles at its widest part. Old maps of the United States referred to the area as the Great American Desert, for it was considered to be inhospitable and of no value.

<sup>24</sup> *Dodge City*: Jones may have had a different opinion of Dodge City if he had passed through in early Autumn when cattle drives brought thousands of Texas longhorns along the Great Western Trail to the community. Arguably the most famous cattle town of the Old West, Dodge City was known for its saloons, gambling houses, and brothels, and for its colorful residents including Wyatt Earp, Doc Holliday and Bat Masterson.

<sup>25</sup> *vasculum*: A vasculum is a cylindrical metal container, shaped like an archer's quiver, that is used by botanists to hold specimens.

<sup>26</sup> *buffalo grass/grama*: The dominant grasses of the shortgrass prairie surrounding Dodge City are buffalo grass and blue grama. Homesteaders on the plains used the dense, thick sod of these grasses to build the famous sod houses that served as their first homes.

<sup>27</sup> *Bouteloua oligostachya*: *Bouteloua oligostachya*, blue grama grass, is now known as *B. gracilis*, and is merely one of many plant names in A Botanical Excursion that has been altered by botanists.

One time we collect some specimens of burdock (*Echinosperrum redowskii*)<sup>28</sup>, another time the pretty white flowers and silvery stems of the poisonous locoweed (*Oxytropis lambertii*)<sup>29</sup>, and by chance we spot a few stalks of a rare plant resembling an *Actinella*<sup>30</sup>. Further, the purple flowers of a cultivated verbena (*Verbena aubletia*) nestled in the middle of dense foliage on the ground, draw our attention and astonish us by making us recognize in these desolate plains a native habitat of this interesting plant.

So goes the morning. We have crossed the entire width of Kansas and are on the border of Colorado; nothing but plains, always the same plains<sup>31</sup>. At intervals we see the Arkansas River<sup>32</sup> flowing in a slight depression in the ground. We are getting closer: the river has banks, but its water spreads out over a quarter of a mile beyond them; only a thin stream of liquid continues to flow alone on the sandstone benches that form the bedrock. Here and there a lonely bush or a stunted tree rises from the water, drawing its miserable existence in the midst of nakedness and desolation all around. But then the river bends, and our eyes can barely find it again.

From time to time we cross the sandy bed of a narrow channel of a deep creek whose water has not wetted the surface for many years. These desiccated creeks are salient features of the last few miles that we have travelled, and they give the country a character of particular desolation. Everywhere are the remains of life that has become extinct; narrow trails coming from all directions, dug by the feet of diminishing buffalo herds, converge toward the river. Here and there a whitened skull serves as a pistol target for the young hunters of our group.

Once during the trip we are thrilled by the cry of “Antelopes!”<sup>33</sup> but there are only two of these animals visible far away on the horizon. As we go forward in Colorado we see a few herds of livestock wandering on the plains without a cowhand. Sometimes we see some small ponds carved into the low ground, covered with

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<sup>28</sup> *Burdock (Echinosperrum redowskii)*: Jones seems to have erroneously conflated burdock (*Arctium minus*), a member of the Asteraceae or Aster Family, with Redowski’s stickseed, now known as *Lappula redowskii* of the Boraginaceae or Forget-Me-Not Family.

<sup>29</sup> *poisonous locoweed*: Common names for this toxic plant that can be very harmful to cattle include “purple locoweed” and “Lambert crazyweed.”

<sup>30</sup> *Actinella*: Jones may have been referring to the genus of flowers now known as *Hymenoxys* which includes the bright yellow “Old Man of the Mountain,” (*H. grandiflora*.)

<sup>31</sup> *entire width of Kansas ... always the same plains*: Had he been more observant Jones would have noted on the 410-mile ride through Kansas that he was passing through distinct regions of tallgrass prairie, a transitional mixed-grass zone, and shortgrass prairie in the western part of the Sunflower State. Rains enable some plants in eastern Kansas to grow to six feet, while ten inches is a common height in the dryer shortgrass region.

<sup>32</sup> *Arkansas River*: The Arkansas is the sixth-longest river in the United States and is a major tributary of the Mississippi. From its source in the Rocky Mountains of Colorado the Arkansas flows eastward for 1,469 miles.

<sup>33</sup> *Antelopes*: The American pronghorn antelope (*Antilocapra americana*) is not actually an antelope but a member of a separate biological family. Standing 3 feet tall, pronghorns have distinctive white and black markings on their tan bodies; the white patches may have enabled Jones and his fellow passengers to spot them from such a great distance.

reeds (*Spartina*) and bordered by snow-white belts. This “snow” is made of soda, and its deadliness<sup>34</sup> is attested to by the bleached animal bones scattered nearby. The soil, so far compact and hard,

(p. 5)

like stone, becomes more loose and sandy, and several times we pass small sand hills with rounded summits; these are the first hills we have seen in 300 miles. Soon we see some stalks of prickly pear (*Opuntia missouriensis*); then bushes of greasewood (*Bigelowia graveolens*) and bouquets of Spanish bayonet (*Yucca angustifolia*) growing a foot or two above the ground at intervals and helping to relieve the monotony of the landscape -- their number increases as we progress. While making these observations we leave behind Las Animas, [Colorado]<sup>35</sup>, and it is with amazement that we hear our fellow traveler, a mountaineer and old hunter, say with a smile “And now, look at the mountains!”

## View of the Mountains

Is it possible that we can see those famous mountains more than a hundred miles away? We jump on the platform, suspend ourselves on the running boards<sup>36</sup>, and there in the midst of a shower of ashes thrown by the locomotive we open our eyes to try to see something of the distant peaks. But only little shreds of scattered clouds on the surface of the sky are condensing just where Pikes Peak<sup>37</sup> should appear. However, we continue to look ahead in the hope that the clouds floating on the horizon will rise for a moment and unveil the target of our search. But they do nothing more than become lower and more dense, rising a little only to fall back soon after, thus crushing the hope they have created in us. On both sides there are open skies, but where we especially want to see, nothing but compact clouds.

“Mountain!” such is the cry that suddenly resounds in our ears. “Where?” On the left, the Spanish Peaks<sup>38</sup>. Heads emerge from the doors, those who don't have a window run to the platform to try to see. Way,

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<sup>34</sup> *ponds ... reeds (Spartina) ... soda ... deadliness*: The small ponds that Jones saw in eastern Colorado may have been vernal pools, temporary basins that accumulate water in springtime. Other names for these ponds are playas and prairie potholes. A general term for a number of grasses and sedges, “reed” describes a tall plant growing in wet areas. *Spartina pectinata* is the specific name for prairie cordgrass of the family Poaceae, a wetland plant that may grow to be 10 feet tall. Jones may have been using “soda” as a generic description for the white powder he saw along the pond shores. The substance’s deadly effects could have been caused by selenium or arsenic in the residue.

<sup>35</sup> *Las Animas*: Las Animas is a small city in southeast Colorado located at the confluence of the Arkansas and Purgatory Rivers. It is the first town of any size Jones saw in Colorado.

<sup>36</sup> *platform . . . running boards*: In the 1870s passenger rail cars had open platforms at either end; a running board was a narrow step located under the side doors of a car. Riders could use the platforms to pass from one car to the next.

<sup>37</sup> *Pikes Peak*: On a clear day Pikes Peak would have been the first tall Colorado mountain visible to Jones and his traveling companions, for at 14,115 feet it towers over the plain at its base. Named in honor of explorer Zebulon Pike, the mountain has a prominent pink granite dome which beckoned gold prospectors who flocked to the area in the 1858 gold rush driven by the motto “Pikes Peak or Bust!” Grammarians should note that the apostrophes in many Colorado place names -- such as sites previously known as Pike’s, Long’s, and Gray’s Peaks -- were removed in 1890 by the U. S. Board of Geographic Names.

<sup>38</sup> *Spanish Peaks*: Visible from 100 miles away, the Spanish Peaks are a pair of prominent mountains of south-central Colorado.

way ahead on the horizon, in the distance, far to the left, is a dark object streaked with silver bands. The crown alone is visible: it rests on a dazzling white cloud. Soon it disappears, veiled, only to reappear with more decided contours. Our train leaps as if it feels the enthusiastic inspiration of the passengers: it runs straight to the west; the mountains rise, until two of the twin peaks, then all three<sup>39</sup>, appear in full view, with their summits crowned with ribbons of unmelted snow, dazzling with brightness and whiteness.

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“Ho! Pikes Peak!” We look to the northwest: there it stands, a hundred miles away, the old grizzled monarch of the plains, raising its summit draped with sparkling snow to the sky. We move forward, and the peaks take shape one after the other: sometimes their summits alone emerge from the pedestal of silvery clouds, then these disperse, revealing the dark hills of their bases or reluctantly move away while girdling their waists with garlands of snowflakes. Soon, in the west, as far as the eye can see, extends a long row of hills, while the snow-covered chain of the Sangre de Cristo Mountains<sup>40</sup> stands straight in front of us.

We travel in the middle of plains that rise imperceptibly, occasionally crossing through thickets of greasewood, or going around a modest hill; finally, late in the afternoon, the locomotive whistle announces the outskirts of Pueblo<sup>41</sup>. We make a halt, apparently at least, at the base of the hills. Someone tells us that they are forty miles away, but he also tells us that it’s easy to see that a journey of just half an hour separates us from them (we will return later to this paradox.) Soon we squeezed into cars of the Denver and Rio Grande Railroad, which is aptly named a “narrow-gauge” line<sup>42</sup>. We first rode on a slender roadway cut into the mountains, then grazing the base of the hills and following the course of the Fontaine qui Bouille<sup>43</sup>, up a slope rising 50 feet per mile, we head to Colorado Springs.

On our right, bare plains extend to the horizon; at our feet flows the stream with shores covered with cotton groves and willows; here and there a flowering bush of *Ribes aureum*<sup>44</sup> shakes her yellow bouquets as we passed through as if to show us that all is not desolation in this sad country. On our left stand numerous massive clusters of tree cactus (*Opuntia arborescens*), with their long spines, more piercing than porcupine

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<sup>39</sup> *two of the twin peaks, then all three*: Seeing them from such a great distance, Jones may have thought that one of the mountains in the nearby Sangre de Cristo Range was part of the twin Spanish Peaks formation.

<sup>40</sup> *Sangre de Cristo Mountains*: The most southerly subrange of the Rockies, the Sangre de Cristo (“Blood of Christ”) Mountains are located in Colorado and New Mexico. At times the mountains have a reddish tint, which may be the source of their name.

<sup>41</sup> *Pueblo*: When Jones passed through, Pueblo was on its way to becoming a major steel-making and railroading center amid an agricultural region of Colorado. It was designed to be a cleaner and healthier industrial city than similar sites in the East.

<sup>42</sup> *Denver and Rio Grande Railroad . . . narrow gauge line*: The Denver and Rio Grande followed a tortuous route through the mountains from Pueblo, through Colorado Springs, and on to Denver. Its principal owner, General William Jackson Palmer, became Jones’ patron in later years, steering mining and engineering consulting work his way. When the railroad began in 1870 it was constructed with rails only three feet apart instead of the standard gauge of 4’ 8 ½”, and was thus classed as a narrow-gauge line.

<sup>43</sup> *Fontaine qui Bouille*: Now known as Fountain Creek, this 75-mile-long tributary of the Arkansas River was known by its original French name when Jones first saw it. The creek features a remarkable 10,000-foot change in elevation over its short course.

<sup>44</sup> *Ribes aureum*: An appealing plant commonly known as golden currant, *Ribes aureum* produces fruits enjoyed by birds, and blossoms that attract hummingbirds and monarch butterflies.

quills, while round, short shoots of prickly pear (*Opuntia missouriensis*) emerge from the soil surface in all directions, making the most capricious arabesques.

We headed toward Pikes Peak, which in Pueblo appears to be no more than a few miles away; we approached it slowly; arriving at the little town of Fontaine we rounded a tall hill (Mount

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Cheyenne)<sup>45</sup>, and the peak disappeared from view. Finally we crossed the forty-five miles that separate Pueblo from Colorado Springs; our train stopped at the station, dropped us off, then left again for Denver, the “Metropolis of the Plains,” and soon vanished into the mists of the North.

## Arrival at Colorado Springs

Meanwhile we hastened to get rid of the dust from the trip, and we felt more relaxed, almost like we were at home. After supper, we went to take a short, peaceful walk. It was useless to try to conceal the profound disappointment that came upon us when we found, instead of luxuriant vegetation, the naked and devastated soil of the plains; rather, there were enormous mountains rising to the zenith, their peaks crowned with dazzling snow, sharply contrasted with the dark green of the forests at their bases, little hills with angular faces, dominated by the famous Pikes Peak that stands beneath its denuded and grayish summit.

Nowhere were vast forests or frothing torrents, but leading toward Colorado Springs<sup>46</sup> were rows of canals by which water from a huge irrigation basin flows to irrigate the courtyards and gardens of the town in an attempt to give life and existence to the sparse grass of the lawns and to the vegetable gardens.

## Local Excursions

We were surprised and disappointed when we directed our gaze to the alleged nearby “mountains.” A half-hour would be sufficient for us to get to them and make the climb to the top of the highest one. Between

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<sup>45</sup> *Mount Cheyenne*: Known today as Cheyenne Mountain, this “tall hill” southwest of Colorado Springs measures 9,570 feet. In the late 1860s homesteaders began to settle on the mountain, and entrepreneurs began to build camps and resorts there as travel to Colorado became increasingly popular in the 1880s. During the Cold War of the 20th Century military command and communications facilities were constructed deep within Cheyenne Mountain’s granite.

<sup>46</sup> *Colorado Springs*: Jones’ 1,000-mile journey to the west ended in the newly-created, carefully planned city of Colorado Springs. Sited to take advantage of high altitude (6,000 feet), fresh air, sunshine, and dryness, the city had a direct railroad link to Denver, boasted exclusive resort hotels, and was home to several sanatoria for tuberculosis patients. With groves of freshly-planted trees, several parks, and land set aside for schools and colleges, Colorado Springs was an attractive destination for tourists and new residents from the East alike.



these hills and us there was no more than a quarter of a mile, and about half a mile to Pikes Peak, it seemed. We questioned our friends<sup>47</sup> about the distance that separated us from the mountains. “What does it look like to you?” asked one of the two. But we did not rush to answer, as we remembered some strange accounts of the optical illusions of the West; we satisfied ourselves by declaring that we did not know anything about it. “Well! It is five miles from here to the foot of the closest of those hills, and twenty miles, by the shortest path, to the summit of Pikes Peak.” We did not believe a word of it, but being less well-versed with the country, we took their statement at their word, while still reserving the intention of verifying its accuracy at the first possibility.

There are, in this country, lots of things worthy of interest and admiration. The sun barely hides itself behind

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the hills to the west; on one of them a luminous band with decided contours shows an intense crimson color; farther away, on another, golden and faded colors dominate -- between them stretches a ravine from which the sun had just disappeared, leaving behind a black and somber abyss. Nevertheless, the daytime star descended more and more, and opaque shadows, following the progressive descent, run successively along the length of the flanks of each rise; for several moments it could still be seen between two frightful peaks that it flooded with a reddish glow<sup>48</sup>, then it faded and left.

The immense line of mountains is as silent as a tomb in the somber shroud that surrounds it. One could say that they were half-ruined ramparts of a gigantic fortress, lifting toward the skies its immense bald facade that feebly lights up, like as many warning fires and signals, with the last rays of the illuminating sun on the highest peaks. Their striking appearance faded little by little as the stars broke away from the celestial dome more brilliantly than ever; the moon appeared to lend to this pale, almost seductive, scene the radiance of its poetic light.

The mountains took on a fantastic appearance; the light mist that enveloped them softened the sharpness of their contours and made them retreat into the distance. A long wispy cloud lazily spread out halfway up the summits and seemed to rest in the shade of the forests on their slopes. The silence of these mountains and the majesty of their appearance filled us with feelings of awe and terror; and now, although we had explored their chasms, scaled their most severe peaks and run around in all directions on the chain of mountains of which they are but a segment, we still cannot escape the sense of reverence and fright that struck us as we gazed upon the luminous sepulchre of the night stars. And the memory of it came back to our minds

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<sup>47</sup> *questioned our friends*: Among the numerous Iowans living in the Colorado Springs area were former Grinnell residents Harriet and Frank Rouse. Years earlier Harriet had been Jones' Sunday School teacher, and apparently he had stayed in touch with the Rouses after their move to Colorado. [See note 80].

<sup>48</sup> *flooded with a reddish glow*: Jones was probably observing a phenomenon known as “alpenglow,” a condition that occurs when the sun is slightly below the horizon and its light reflects off airborne particles to produce a reddish color in the sky.

more than once when we contemplated the beauty of Argentine Gorge, the grandeur of Mount Lincoln, the majesty of Grays Peak, and the sublimity of the region.

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And now, allow us to anticipate a little and make more clear and intelligible the story of the excursion that followed our arrival in Colorado.

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## Geological and Topographic Structure of Colorado

The geological structure of Colorado presents unique peculiarities which are superbly highlighted by its imposing appearance. The Plains stretch eastward, from the Rocky Mountains<sup>49</sup>, over a space of 275 miles, cross the Kansas line, and almost come to drink at the waves of the Missouri. They rise gently over a distance of 700 miles from Kansas City<sup>50</sup>, whose altitude does not reach a thousand feet above the sea, as far as Pueblo, which is 5,000 feet above sea level. One would expect the plains to climb little by little as they converge towards the mountains; this is not the case, for they spread without changing their appearance toward the base of the hills which surround them as impassable ramparts, and form a dark wall which extends without interruption from north to south. Just at the base of the mountains, over a space of a few miles, rise slight mounds produced by the erosive action of glaciers.

These mounds are elongated and flattened at the top; hence their Spanish name, “mesas,” that is, “tables.” All of the plains of eastern Colorado, except for the extreme southeast region, belong to the White River group<sup>51</sup>. Farther down and reaching to the south, extend Cretaceous beds<sup>52</sup> visible along the base of the hills, along with Triassic, Jurassic, Carboniferous, and Metamorphic terrains<sup>53</sup>. The abruptness with which the

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<sup>49</sup> *Rocky Mountains*: The mountain ranges that make up the Rocky Mountain chain stretch from Alberta and British Columbia south for 3,000 miles to New Mexico; in places the chain is more than 300 miles wide. Colorado’s portion of the group is known as the Southern Rockies and contains the tallest peaks. Jones first caught sight of the Front Range, the easternmost division of the Southern Rockies, but before long he was exploring the high basins or “parks” that lie to its west.

<sup>50</sup> *275 . . . 700 miles*: Awkwardly stated, these sentences relate two facts: first, that the distance from the Rockies to the Colorado-Kansas border is 275 miles, and second, that the entire width of the Plains, from Kansas City to the mountains, is 700 miles.

<sup>51</sup> *White River group*: The White River Formation is the name of a geological region which includes parts of Colorado, Nebraska, South Dakota, and Wyoming; it is especially rich in vertebrate fossils.

<sup>52</sup> *Cretaceous beds*: Among the sciences, Jones’ love of botany was challenged only by his passion for geology, and on this trip to the West he was thrilled to see examples of formations he had previously encountered only in books. The Cretaceous period extended from 145 to 66 million years ago and was characterized by a warm climate, higher sea levels, many shallow inland seas, and substantial chalk formations.

<sup>53</sup> *Triassic . . . Metamorphic terrains*: Beginning with a major extinction event 251.9 million years ago, the *Triassic* period also ended with an extinction 201.3 million years ago. Triassic rocks are found throughout the Rocky Mountains, and during this hot and dry period the first true mammals evolved. The Triassic period was followed by the *Jurassic*, which is dated at 201.3 to 145 million years ago, and is in the middle of the “Age of Reptiles” when dinosaurs came to be dominant on Earth. Much older is the *Carboniferous* period of 358.9 to 298.9 million years ago, a time when many coal beds were formed around the globe. *Metamorphic* terrains are composed of rocks that have been transformed from their original forms by heat, pressure, or chemical changes deep within the Earth. Some typical metamorphic rocks of Colorado are gneiss, schist, and quartzite.

hills rise from the plain causes the Cretaceous and the older beds to frequently contact at a 50° angle, so that a walker, for a distance of about one mile, may observe in succession the various zones mentioned above. The soil of the plain consists of a compact sand, more or less clayey in places. This soil composition and the scarcity of rain, which would not cover these regions with a layer of water 15 inches deep in a year, make the soil a dry and hard mass like stone. This is how the road surfaces appear, hard and compacted like marble pavement. Hence, a marked feature of the vegetation is the immense growth the roots of perennial and annual plants must achieve in order to exist in such conditions.

Encircling the base of the mountains, and embracing the Cretaceous, Jurassic, Triassic, and Carboniferous systems, extends a band of earth varying in width from two to four

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meters; it alone represents the vast prairie region of Illinois, Iowa, etc.<sup>54</sup>. The surface appearance of the plains joins the dampness of the hills. Here and there we find *Psoralea argophylla* Pursh<sup>55</sup>, *Solidago speciosa* var. *angustata* Gray, *Helianthus rigidus* Desf., *Bouteloua curtipendula* Gray, *Panicum dichotomum* L., *Andropogon glaucus* M., *A. scoparius* M., and *Sorghum avenaceum* Chap.?

The hills rise abruptly from the surface of the plains until they reach the height of 2,000 to 3,000 feet; their dimensions are accentuated as they approach the main line of the mountains, which they eventually merge with. The approximate altitude from the base of the hills is 6,000 feet; the summit therefore reaches 8,000 to 9,000 feet. The name “Rocky Mountains” given to the whole system is derived from the bare rocks and their sparse vegetation, which contrasts strikingly with the Alleghany<sup>56</sup> chain at the east of the continent. These rocky hills and mountains are, in general, red metamorphic sandstones: they give the country its unique appearance and some of its most beautiful landscapes (see “Garden of the Gods” and “Glen Eyrie” [pp. 19-22]). Often on the main chain -- especially in the mining districts, there is an abundance of granite, porphyry<sup>57</sup>, etc. The soil of the hills -- wherever there is a trace -- is dense and sandy. Some of the deepest and most obscure gorges contain a thin layer of silt covered by abundant vegetation.

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<sup>54</sup> *the vast prairie region of Illinois, Iowa, etc.*: Jones may have been referring to the remains of tallgrass prairie communities that thrive in the foothills at the base of the Rockies and in wet areas along rivers of the region

<sup>55</sup> *Psoralea argophylla* Pursh ... From this point on in the narrative Jones begins to use more complete nomenclature by attaching the name of the “author,” the first person who described the plant, after the species name. In this sentence, “Pursh” refers to Frederick T. Pursh, “Desf.” is an abbreviation for René Desfontaines, and “L.” represents Carl Linnaeus. (“Gray” should be “A. Gray” for Asa Gray, the Harvard botanist; see note 67.) Other standard abbreviations Jones uses include “var.” for variety and “ssp.” for subspecies.

<sup>56</sup> *Alleghany Mountains*: Today “Alleghany,” which can also be spelled “Allegheny” or “Allegany,” refers to the portion of the Appalachian Mountains that extend from Pennsylvania to southwestern Virginia. However, at the time of Jones’ western journey “Allegheny” was frequently used to refer to the entire Appalachian chain.

<sup>57</sup> *Porphyry*: Porphyry is a very hard, dark, purplish-red rock, which contains crystals of feldspar and quartz.

The soil of the mountains is similar to that of the hills, although a little more crumbly and less dense. The average height of the mountain chain is about 12,000 feet. The most famous peaks, if not the highest, are Grays Peak and Pikes Peak. The highest peak, located far from the main massive mountains, is Mount Uncompahgre<sup>58</sup>; it measures 14,540 feet above sea level.

## Subdivision of the Colorado Flora

There are two ways to divide Colorado flora. Between Colorado Springs and Denver extends a large body of groundwater<sup>59</sup> 8,000 feet above the sea, separating the South Platte River<sup>60</sup> Basin from that of the Arkansas River. To the north of this natural limit, the flora is composed of species such as: *Astragalus caryocarpus* Ker., *A. bisulcatus* Gray, *A. drummondii* Dougl., *A. latiflorus* Hook., *A. pictus* var. *filifolius* Gray,

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*A. shortianus* Nutt., *A. missouriensis* Nutt., *Oxytropis campestris* L., *O. lambertii* Pursh (with a poisonous stem), *Opuntia missouriensis*, *O. rafinesquii* Eng., *Bahia oppositifolia* Trin., *Bigelovia graveolens* Gray var., *Artemisia frigida* Willd., *A. filifolia* Torrey, *A. ludoviciana* Nutt. var., *Grindelia squarrosa* Dunal., *Echinosperrum redowskii* Nutt., *Stipa spartea* Trin., *Eriocoma cuspidata* Torrey, *E. asperifolia* Nutt., *Sporobolus cryptandrus* Gray, *S. ramulosus* H.B.K., *Bouteloua oligostachya* Torrey, and *Buchloe dactyloides* Eng. Several of these genera are represented by a small number of individuals. Growths of *Salix cordata* Muhl., *S. nigra* var. *amygdaloides* And., *Populus angulata*, and *P. balsamifera* Lin. var. are scattered here and there on the banks of major rivers.

## Flora of the Plains and Prairies

The flora of the southern region [of Colorado], beside the large number of plants mentioned before, presents, especially south of the Arkansas River, an obviously New Mexican appearance, which is due above

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<sup>58</sup> *Mount Uncompahgre*: Now classified as only the sixth-highest mountain in the Rockies and measured at 14,321 feet, Uncompahgre Peak is located in southwestern Colorado. Topping the list of the state's tall mountains, at 14,440 feet, is Mount Elbert, near Leadville.

<sup>59</sup> *large body of groundwater*: Jones is describing Palmer Lake, near the western end of the Palmer Divide between Denver and Colorado Springs. See note 99.

<sup>60</sup> *South Platte River*: The South Platte, one of two main tributaries of the Platte River, is the main source of water for eastern Colorado. From its source in the Front Range in the Rockies, the South Platte flows for 439 miles to central Nebraska, bisecting Denver along the way. Jones, whose spelling was imprecise at times, should have been glad that the original Arapaho name for the river, Niininiiniicihéhe, had been abandoned by the time of his visit.

all to the great number of tree cactus (*Opuntia arborescens*) dispersed over the region and sometimes taking full possession of the arid, desolate soil which they dominate. Besides white cedar (*Juniperus occidentalis* Hooker) [most likely referable to *Juniperus monosperma* -- one-seed juniper], *Zinnia grandiflora* And. and piñon [pine] (*Pinus edulis* Eng.) grow on the mesas and extend as far as the flanks of the mountains: there are also *Alternanthera lanuginosa* Torrey, *Lowellia aurea* Torrey, *Euphorbia revoluta* Eng., *E. fendleri* Eng., *E. stictospora* Eng., *Obione confertifolia* Torrey, *O. argentea* Moq., *Tricuspis monstra*, *T. acuminata* Munro, *T. trinerviglumis*, and *Pleuraphis jamesii* Torrey.

## Flora of the Hills

Another division of the carpet of vegetation, one more true and accurate, distinguishes the flora of the *plains*, the flora of the *prairies* -- the narrow strip of land mentioned above-- the flora of the *hills*, then the *subalpine* flora and the *alpine* flora.<sup>61</sup> We have just detailed the first two. As for the flora of the hills, it extends from the plains, in the mountains, for a distance of 20 to 40 miles, up to an altitude of 5,000 feet, and gradually transitions to a subalpine flora. The forest element of this division is represented by trees scattered over the hills, sometimes crowded and condensed to form a sort of forest, sometimes dispersed over the terrain. Many of the eastern slopes have been made bare by fire; others

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are covered with forests of dead trees, presenting the saddest and most lamentable appearance. The trees growing in this region are mainly, along the rivers: *Pinus ponderosa* Dougl.<sup>62</sup>, *Pseudotsuga douglasii* Carr., and *Juniperus virginiana*, L.; at low altitude: *Populus balsamifera* L. and its varieties; at higher altitude: trembling aspen (*Populus tremuloides* Mx.), then various species such as: *Salix*, *Betula occidentalis* Hooker, *Alnus incana* Wild., *Acer glabrum* Torrey, *Quercus alba* L. var. *gunnisonii* Torrey, *Prunus americana* Marshall, *P. pensylvanica*, L., and *P. virginiana* L.

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<sup>61</sup> *Another division of the carpet of vegetation:* As Jones states, the major vegetation zones in Colorado are determined by the altitude of each region. The section Jones termed "plains" is now known as the Plains or Grassland zone and ranges from 3,315 feet to 5,600 feet. His "prairie" region is now placed in the Plains, while a new term, Foothills, is used for the transitional zone from 5,500 to 8,500 feet. Jones' label "hills" is now known as the Montane zone; it occurs from 8,000 to 10,500 feet. Higher still is the Subalpine zone, another transition region located at 10,000 to 11,500 feet, while at the apex of Colorado's mountains is the Alpine Zone which ranges from 11,500 to 14,431 feet.

<sup>62</sup> *Pinus ponderosa:* Colorado's Ponderosa pines can reach heights of 40 to 160 feet and they are dominant trees in the state with forests covering 2 million acres. They are commonly found growing at altitudes of 5,000 to 9,000 feet.

Here and there are few trunks belonging to two species of *Crataegus*<sup>63</sup> as well as *Abies nobilis* Eng., a magnificent conifer. Some bushes: *Rhus aromatica* var. *trilobata* Eng. and *Cercocarpus parvifolius* Nutt. exist in quantity. Of grasses, we note the following species which we rank in order of their abundance:

*Eriocoma cuspidata* Nutt., *Stipa spartea* Trin., various *Bromus*, *Elymus*, *Muhlenbergia*, *Vilfa*, *Sporobolus*, *Poa*, *Triticum*, *Glyceria*, *Oryzopsis*, *Panicum*, and *Koeleria cristata* Rees. *Juncus* and *Carex*<sup>64</sup> are also richly represented here, and there are many species of Cruciferae, Leguminosae [Fabaceae], Rosaceae, *Saxifraga*, Compositae, Lamiaceae, Tiliaceae (whole), *Penstemon*, *Eriogonum*, *Euphorbia* and many others too numerous to mention.

These species extend into the subalpine region, with some even penetrating into the Alpine area. Some examples are: *Anemone patens* var. *Nuttaliana* Gray, *Erigeron compositus* Pursh, *Juniperus communis* L. var. *humilis* Eng., *Arctostaphylos uva ursi* Spreng, *Fragaria virginiana* Ehrb., *F. vesca* L., *Eriogonum umbellatum* Torrey, and *Cystopteris fragilis* Ehr. (the last was found at Grays Peak at an altitude higher than the treeline.)

## Subalpine Flora

Species of subalpine flora rise to an altitude of 8,000 feet and extend almost to the treeline, where they meet the alpine flora. The forests of this region are dense, tight, becoming more and more compact as they rise to the timberline, where they stop short. It has been argued that trees, as the altitude increases, become smaller, contracted and

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stunted, to the point of being nothing more than mere bushes, but this is a mistake. Exact and precise measurements show that at 800 feet below their upper limit the forests are somewhat taller and denser than at the highest level, but the difference is insignificant, and the alleged degeneration in a bush is only an unfounded tale<sup>65</sup>. On the boundary of the treeline are numerous trees from 40 to 50 feet high, and the contour they make, though irregular on account of exposure, is marked with as much clarity as that of the rocks which surround them.

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<sup>63</sup> *Crataegus*: Colorado has several species of *Crataegus* trees such as the River hawthorn, Shiny-leaved hawthorn, or the Fleshy hawthorn, all of which reproduce quickly but grow slowly. Their inch-long thorns do not deter birds and animals from eating their reddish fruits.

<sup>64</sup> *Juncus* and *Carex*: Jones collected six species of *Juncus*, or rushes, in the hills of Colorado. More than 2,000 species comprise the genus *Carex*, the sedges.

<sup>65</sup> *alleged degeneration in a bush is only an unfounded tale*: Acknowledging that "exact and precise measurements" of trees demonstrated the effects of altitude on their sizes, Jones countered with his contrary impressions, providing little in the way of supporting detail. In fact, his report of seeing 40 to 50-foot trees at the timberline weakens his case, considering that Engelmann spruce (*Picea engelmannii*), the first species he mentions for the subalpine zone, can grow to 130 feet!

The subalpine forests are almost exclusively composed of *Picea engelmannii* Parry, and *Pinus aristata* Eng. is fairly common. Much more rarely seen are the *Pinus flexilis* James, *Picea pungens* Eng., and *Abies subalpina* Eng.. Grasses here are, in order of their abundance, *Aera caespitosa* L., *Poa* (various species), *Calamagrostis canadensis* L., other *Calamagrostis*, *Phleum alpinum* L., *Hieroclaea borealis* R. and S., *Trisetum spicatum*, *T. subspicatum* Beauv., various *Bromus*, *Agrostis*, and *Elymus* etc., commonly found at lower altitudes.

Then come *Aster adscendens* Lindl. var., *A. glaucus* J. and G., *Potentilla fruticosa* L., *P. gracilis* Dougl., *P. hippiana* Lehm., *P. humifusa* Nutt., *P. pensylvanica* L. var., *Sambucus racemosa* L. var. *pubens* Watson, *Ribes lacustre* Poir., *R. prostratum* L'Her., *Sisymbrium incisum* Eng., *Vaccinium myrtillus* L., *Pedicularis racemosa* Dougl., *Senecio triangularis* Hooker, *S. andinus* Nutt., *Epilobium origanifolium* Lam., *Geum triflorum* Pursh, *Archemora fendleri* Gray, *Linnaea borealis* Gronov., *Astragalus alpinus* L., *A. multiflorus* Gray, *A. kentrophyta* Gray, *Solidago virgaurea* L., *Castilleja pallida* Kth. var., *Pyrola*, *Mitella pentandra* Hooker, *Listera cordata* R. Br., *Valeriana sylvatica* Richards, *V. edulis* Nutt., *Ranunculus hyperboreus* var. *natans* Mey., *Circaea pacifica* Gray, *Cnicus drummondii* Gray, *Penstemon glaucus* Grah., and *Zigadenus glaucus* Nutt.

## Alpine Flora

I begin the Alpine flora of Colorado at the area of the timber trees, where it is most apparent, following its contours and descending or ascending with it at heights varying from 11,000 to 12,500 feet. From November to June this area is covered with snow, but it gradually melts, and by the end of August it is scarcely possible to find a trace of it, except in the

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deepest and most hidden gorges, where it seems to sleep numbly until the following winter. From this level up to a thousand feet above it lie plains or undulating prairies carpeted with luxuriant grass or covered with a thick mantle of willows (*Salix desertorum* And. and *Salix chlorophylla* And.) In this region are grasses, including: *Aira caespitosa* L., *Poa flexuosa* Muhl., *P. laxa* Haenke, *P. arctica* R. Br., and *P. alpina* L. Additionally, there are *Cyperaceae*, *Carex atrata* L. var., *C. nigra* Bott., *C. saxatilis* L., *C. alpina* L., *C. pyrenaica* Wahl., *C. nigricans* E. Meyer, and *Elyna spicata* Schk.

Then, in other families: *Mertensia alpina* Dougl., *Eritrichium villosum* DC., var. *arctoides* Hooker, *Arenaria*, various species, *Juncus*, various species, *Luzula spicata* Desf., *L. spadicea* DC. var.; *Artemisia norwegica* L., *Gentiana frigida* var. *algida* Pallas, *G. parryi* Eng., *G. tarbellata* Eng., *Pedicularis groenlandica* Retz., several species of *Senecio* and *Draba*, *Primula angustifolia* Torrey, *Lychnis apetala* L., *Trifolium*

*dasycarpum* J. and G., *T. parryi* Gray. *T. nanum* Torrey, *Trollius laxus* Salisb., *Caltha leptosepala* DC., *Salix reticulata* L., *Ranunculus adoneus* Gray, *Calandrinia pygmaea* Gray, *Solidago virgaurea* L. var. *alpina* Big., *Campanula uniflora* L., *Sedum rhodiola* DC, *S. rhodanthum* Gray, *Aster adscendens* Lindl. var. *parryi* Watson, *Swertia perennis* L., *Viola canina* L., and *Smelowskia calycina* Meyer.

In the Alpine Region the most beautiful flowers of the country are found, for example *Actinella grandiflora* J. & G., *A. acaulis* Nutt., *Primula parryi* Gray, *Phacelia sericea* Gray, *Eriogonum flavum* Nutt., *Aquilegia vulgaris* L. var. *brevistyla* Watson, *Dryas octopetala* L., *Erigeron uniflorus* L., *E. compositus* Pursh, *E. ursinus* Eaton, *Erysimum asperum* DC. var. *pumilum* Watson, *Aster salsuginosus* Rich., *A. coloradoensis* Gray, *A. glacialis* Nutt., *Lloydia serotina* Reich., *Pedicularis groenlandica* Retz., and *Potentilla mora* L.

At a height of 13,000 feet the number of individual plants decreases appreciably, but on the slopes and between the rocks, which have been split by frost and are piled in confused and disorderly clusters, are found some of the best species, such as: *Elyna spicata* Schk., *Poa abbreviata* R. Br., *Saxifraga tricuspidata* Gray, *S. debilis* Eng., *S. caespitosa* L., *S. flagellaris* Willd., *S. rivularis* L., *S. serpyllifolia* Pursh, *Agrostis varians* R. Br., and *Festuca brevifolia* Br. The summits of the peaks -- at an altitude of 14,000 feet<sup>66</sup> and above -- are generally bare; here and there

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small clumps of *Poa abbreviata* R. Br. and *Eritrichium villosum* DC. var. *arctoides* Hooker are interspersed.

As described by Professors Gray and Hooker<sup>67</sup>, the flora of Colorado is manifestly southern and is fundamentally different<sup>68</sup> from that of the prairies and the eastern part of the U.S.A., as well as from the vegetation of the basin of the Great Salt Lake that we will explore shortly.

## Ascent of the Mountains

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<sup>66</sup> *an altitude of 14,000 feet*: Mountains in the United States taller than 14,000 feet are known as “fourteeners,” and they are all located west of the Mississippi River. 53 of the 96 American fourteeners are found in Colorado, although, as Alaskans will point out, their state has the 22 highest ones.

<sup>67</sup> *Professors Gray and Hooker*: Asa Gray (1810-1888) was the dean of American botanists when Jones started collecting and studying plants. Professor of Botany at Harvard, Gray explored the Rocky Mountains in 1877 with pre-eminent British botanist Joseph Dalton Hooker (1817-1911), Charles Darwin’s closest friend and long-time director of the Royal Botanical Gardens at Kew. Gray’s and Hooker’s publication *The Vegetation of the Rocky Mountain Region and a Comparison with that of Other Parts of the World* appeared in 1880, in time for Jones to consult it while completing the text of his *Botanical Excursion*.

<sup>68</sup> *flora of Colorado is . . . fundamentally different*: Colorado’s plants, like those of the Rocky Mountains generally, are different from the vegetation found in other sections of the United States, including the East, the Mississippi Valley, and the Pacific Coast. They are also unlike many plants of the Southwest desert regions, so it is not clear why Jones referred to them as “manifestly southern.” There is great variety within the more than 3,300 taxa [botanical groupings] of plants in Colorado; this diversity can be associated with the different soil types found in the state, variances in climate, and the extreme differences in altitude [Colorado’s elevations range from 3,300 feet to over 14,300 feet.] Jones experienced some of these differences firsthand as he passed through the major vegetation zones described in pages 10 through 15.



On May 3rd -- two days after our arrival -- we decide to head for the mountains and to climb them as far as the snow level to judge for ourselves the basis of the wondrous tales concerning errors of distance; so around 9 in the morning, vasculum over the shoulder and plant press<sup>69</sup> in hand, without breakfast or supplementary clothing<sup>70</sup>, we set off for Cheyenne Canyon<sup>71</sup>, that seems to be about half a mile distant. A quarter of an hour of walking takes us to the Fontaine qui Bouille, a small but lively and turbulent watercourse that we are obliged to ford in the absence of a bridge. The water is icy cold and almost knocks us over; nevertheless we cross it without incident. Once arrived on the other bank we see a mesa, right at the foot of the mountain, it seems. A few moments of strenuous marching and we are there, and we immediately see a few sparse patches of *Quercus alba* L. var. *gunnisoni* Torrey, several stalks of *Cercocarpus parvifolius* Nutt., *Rhus aromatica* Ait. var. *trilobata* Gray, and right next to them splendid pasque flowers<sup>72</sup> (*Anemone patens* L. var. *nuttalliana* Gray) completely open, as well as specimens of *Cymopterus montanus* Nutt. and *Mertensia lanceolata* Gray, etc.; such are the plants that adorn the approach to the canyon.

We climb higher to encounter another mesa and then yet another -- and the mountain does not come any closer. In this way we cross, over the course of two hours, one "table" after another, stopping here and there to collect splendid *Oxytropis campestris* L. and *Erysimum asperum* DC. var. *arkansanum* Nutt. Finally -- after five miles of hiking -- we find ourselves in the shadow of the mountain. What appeared like a dwarf bush when seen from Colorado Springs is in fact the trunk of a gigantic

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Ponderosa Pine; the peaks, which we had assumed were hills, are immense mountains with deep gorges, covered in sheer and jagged rocks, whose summits reach into the sky. Some are bare, others are interspersed with black patches resembling islands of foam: these are the distant forests. We are at the entrance of Cheyenne Canyon. At our feet appear numerous poplars (*Populus balsamifera* L. var.), and pines (*Pinus ponderosa* Dougl., *P. pensylvanica* L., and *P. virginiana* L.)<sup>73</sup> etc., whereas in front of us, separated by a few slopes, rise

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<sup>69</sup> *plant press*: A field botanist carries a portable plant press to dry and flatten specimens. The frugal Jones created a homemade press using wood, light chains, and wire, and he used butcher paper to separate and absorb moisture from the items he collected.

<sup>70</sup> *without breakfast or supplementary clothing*: Although self-described as a "husky" person, at 145 pounds Jones was hardly a heavyweight, and he was apparently able to get by with minimal food supplies on his trips into the wilderness. His marksmanship enabled him to live off the land, providing him with occasional meals of prairie chicken (*Tympanuchus cupido* ["greater prairie chicken"] or *T. pallidicinctus* ["lesser prairie chicken"].) Jones also feasted on jack rabbit, which can be one of several species in genus *Lepus*, commenting that the first one he nabbed was "a little smaller than a jackass.

<sup>71</sup> *Cheyenne Canyon*: Acclaimed for its spectacular beauty, this ravine located 3 miles west of Colorado Springs actually has two sections, North and South Cheyenne Canyons. Today hiking trails lead visitors past magnificent waterfalls enabling them to enjoy the scenery without the difficulty Jones experienced.

<sup>72</sup> *pasque flower*: This showy member of the buttercup family [Ranunculaceae] can also be called *Pulsatilla patens*. Reaching a height of only 6 to 8 inches, the pasque flower's lavender blooms appear early in Spring.

<sup>73</sup> *Pinus ponderosa* Dougl., *P. pensylvanica* L. and *P. virginiana* L.: As written, this phrase suggests that Jones was referring to three pine species: Ponderosa pine, Pennsylvania pine, and Virginia pine. However, there is no "Pennsylvania pine" species, and the Virginia pine grows only east of the Mississippi.

the red, abrupt walls of the mighty mountains. In between, and scattered on the flanks of the mountains in the crevices that intersect them, extends the dark foliage of pines and firs (*Pseudotsuga douglasii* Carr.). Sometimes through clearings in the trees we see the foaming waterfall whose deafening roar never ceases to fill our ears.

The canyon provides many interesting features, but we pass them by to tackle the ascent of Cheyenne Mountain, which rises to the south. The flowers are everywhere; some are already in fruit, others a little higher up are in full bloom; even further up they have barely emerged from the ground. After an hour of climbing, the cold becomes very intense and forces us to keep moving. One moment we are climbing bare and jagged rocks, and the next we advance laboriously on slippery sand and coarse gravel. Occasionally we encounter scrawny cedar and stands of fir, whereas on the sand we see beautiful *Oxytropis multiceps* Nutt., *Thlaspi alpestre* L., *Draba aurea* Nutt., and bear's grape (*Arctostaphylos uva ursi* Spreng.)<sup>74</sup>.

After hours of climbing we reach the desired peak only to find another even higher one in the distance -- and quite late after the dinner hour a brief snow shower makes our eyes rejoice and extinguishes the thirst that torments us. We have reached our goal, but before descending we climb the side of one more escarpment to get a glimpse of the surroundings. To the west countless peaks rise up, and dark mountain gorges come into focus; to the east the plains expand massively as far as the horizon, where they merge with the sky; below us a silver ribbon bordered by green

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marks the tortuous course of the Fontaine qui Bouille. The town that we left behind comes into view with its suburbs and outskirts<sup>75</sup> several miles away. The entire panorama creates an unforgettable sight for someone who has been accustomed to the uniform and monotonous view of a limitless plain.

Upon our return, the slippery sand speeds our descent down the sharp slopes of the mountains, and we soon reach Cheyenne Creek<sup>76</sup>. There we see rapids enclosed by walls of red, jagged rocks similar to those that decorate the creek's mouth a mile or two downstream. To our great delight we encounter several fern specimens in the rock fissures, including *Cheilanthes lanuginosa* Nutt. and *Notholaena fendleri* Kunze<sup>77</sup>,

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<sup>74</sup> *Bear's grape*: *Arctostaphylos uva-ursi* is a dwarf shrub that has medicinal uses for humans and was a delicacy for western bears. Among its other common names are kinnikinnick and pinemat manzanita.

<sup>75</sup> *town we left behind ... suburbs and outskirts*: Jones had surprisingly little to say about the features of Colorado Springs considering the amount of time he spent there. The modern city had two newspapers and two libraries, numerous churches, and a variety of social and fraternal organizations. A safe and prosperous community, its residents tended to vote Republican, and they had recently endorsed temperance [abstinence from alcohol] while rejecting woman suffrage in local balloting.

<sup>76</sup> *Cheyenne Creek*: Jones followed Cheyenne Creek on his exploration of the canyons west of Colorado Springs.

<sup>77</sup> *Notholaena fendleri*: Fendler's false cloak fern, more usually called *Argyrochosma fendleri* (Kunze) Windham, is native to Wyoming, Colorado, and New Mexico where it grows at altitudes of 5,600 to 9,800 feet. Jones' keen interest in ferns led him to an intensive study of this plant group and resulted in his lengthy article "Ferns of the West," published in the Utah Review in 1881. A

which is one of the most beautiful fern species in the United States, with its delicate pinnules<sup>78</sup> rolled up in such a way as to show only the underside: with their white color they look like snowflakes delicately placed on the deep purple background of the stem.

After climbing many rocks and picking our way through pines and willows we unexpectedly find ourselves in front of a precipice where the river empties into two waterfalls<sup>79</sup>; one of them spills onto a slab of rock about 25 feet below its point of origin; this disperses the water and sends it into the air, from where it falls back down, turned to foam, into a vast basin 50 feet below. Nowhere do the water-eroded rocks allow a foot or hand to get a grip; there is no question of skirting the waterfall. To retrace our steps would involve a long and difficult ascent before finding a path out of the canyon, assuming that we don't meet other, equally difficult routes, and don't find ourselves in unknown terrain. We have no choice but to descend the precipice. One wrong step throws us against the rocks and we are forced to leave our belongings behind to save our lives. The knapsack slides off, bounces and rolls a long distance until it hits a stunted cedar that stops its fall. And the vasculum, shaken by somersaults, ends up opening and spreading our botanical harvest all over the path before plunging into the basin at the bottom.

We resume our descent, carefully digging fingers and nails into any crack or crevice we can find. No sooner have we

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covered half of the descent than the sky darkens and the clouds shed huge snowflakes thick and fast, eventually melting to leave the sides of the precipice slippery and slick. The path seems very long to a poor traveler suspended above an abyss. At last we have almost reached the bottom: a leap lands us in the middle of the rocks, *vowing, though a little late, that we will never return here!* [emphasis in the original]. The walls of the precipice, seen from where we are now, seem very high and jagged, and the shadows of night thicken around us. The tall black pines have a somber and spooky air, hidden behind white flakes that pile up between us and them. No trail, but the broken rocks that dot the riverbed offer us the best way of escape, and we advance, jumping from one to the other, until in the end, placing a foot on a stone right at the water surface, we slide on a rock that is smooth and slippery as an eel, and we are submerged up to our waist in cold water.

We manage to get out, clothes soaking and shoes covered in mud. But the impromptu bath does not dampen our spirits: a glance at the magnificent and grand vista of these gigantic rocks is enough to make us forget the little annoyances, and we congratulate ourselves for having seen, once in our life, such a majestic

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year later the piece was reprinted as a 32-page pamphlet, also titled "Ferns of the West," which described more than 100 species and varieties.

<sup>78</sup> *delicate pinnules*: Fern leaves, called fronds, are made up of smaller structures named pinnae. The pinnae, in turn, can be divided into tinier features known as pinnules.

<sup>79</sup> *two waterfalls*: There are several magnificent waterfalls in Cheyenne Canyon, including Helen Hunt Falls [named for writer Helen Hunt Jackson, author of *A Century of Dishonor* and *Ramona*] in the North Canyon and Seven Falls in the South. It is not possible to pinpoint with accuracy the one Jones struggled to descend.

sight, such tremendous pines and the savage beauty of a snow storm in the middle of this immense wilderness. We press on, sliding from time to time into the water until we reach the mouth of the canyon. Night has set in, snowflakes falling steadily through the growing mist. Now five miles of prairie lie between us and our base camp.

We leave the challenging canyon behind and make our way, guided by the vanishing outline of the mountains, until they are completely shrouded in mist. Now intense darkness surrounds us; without a glow to guide us, we proceed for better or worse, crossing several mesas. Suddenly, from the summit of one of them, we see in the distance the sparkle of numerous lights. We shout for joy: it is the town, and the mesa that we just crossed was the last one that lay between it and us. We ford back over

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the Fontaine qui Bouille and reach our lodgings<sup>80</sup> at 9 PM, just 12 hours after having set off to cross what had seemed at the beginning like a distance of half a mile.

Though frozen and famished, and wearing water-soaked clothes covered in mud and torn by sharp rocks, and despite aching bruises, we are happy to have made this trip because we have seen the mountains at their grandest and have learned, once and for all, that those descriptions of optical illusions were no exaggeration. We would not have reported this lesson if it had been merely personal for us, but it seemed to us that such a thing must happen to anyone, man or woman, capable of walking and of climbing, and wanting to test an axiom on the touchstone of experience. All those newly-arrived sense that the residents of the country must know distances better than they, but there is only one direct way to convince them of the real immensity of distances in the pure air of the West.

## Excursion to Manitou Springs, Glen Eyrie, Garden of the Gods, and Canyon City

A second excursion followed the first, to the alkaline and ferruginous Manitou Springs<sup>81</sup> that lies between the hills six miles from Colorado Springs. Other regions of Colorado -- along the tributaries of the

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<sup>80</sup> *our lodgings*: Jones stayed with the Rouse family mentioned previously. Frank, a hardware merchant in Grinnell, operated a livery stable in Colorado Springs. He may have been the seller of the horse and small wagon Jones purchased not long after his arrival in the West.

<sup>81</sup> *alkaline and ferruginous Manitou Springs*: Known as the "Saratoga of the West," the small city of Manitou Springs was founded in 1872 to be a health resort that would attract visitors to its complex of mineral springs. Here travelers could relax in mineral baths of varying temperatures or drink fresh water -- said to be an acquired taste -- from the springs. "Ferruginous" refers to the iron salt content found in varying degrees in the individual springs; a more common label for such springs is "chalybeate." Jones does not seem to be the type of person who would take the time to relax in a mineral bath, and if he downed a therapeutic glass of water it has gone unmentioned.

Arkansas River notably -- have springs of this type, but to none of these has Nature been as prodigious with its favors. Thus thousands of invalids<sup>82</sup> turn up here from all corners of the country -- and many go home relieved, cured even, by the healthy effects of these healing waters and the pure air. For our part, we found many new species here, such as *Astragalus aboriginum* Rich. (rare in Colorado), *Viola biflora* L., *Aralia nudicaulis* L., and *Pyrus sambucifolia* Ch. & Sch.

We also made a short trip on horseback over the famous Ute Pass<sup>83</sup> on the road that leads from Manitou Springs to the rich silver mines of Leadville and that extends quite far to the southwest, right to the San Juan mining district<sup>84</sup>.

A bit beyond Manitou Springs we come upon Glen Eyrie<sup>85</sup>, one of the most beautiful sites in the West. Here a deep natural fracture, which is almost perpendicular, divides the Triassic rocks from the Jurassic and forms a path by which one comes into a vast open space; nearby flows a pure and clear babbling stream, framed by immense columns of red metamorphic rocks which make the landscape of Colorado so alien and picturesque.

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Further on, these columns narrow and approach each other to form a long, straight valley shaded by the rich and abundant growth of giant pines and firs. At the end of the defile the water digs a straight bed through jumbled rock walls, and it drops, by a series of cascades, to a rocky basin called Devil's Punchbowl<sup>86</sup>. The straight passage is now completely obstructed, and it is impossible for us to go any further. But from there we can see a vast plain of pines, firs, mosses, and flowers. In the crevices of the rocks that surround us we discovered the rare *Cheilanthes fendleri* Hook, *C. lanuginosa* Nutt., *C. tomentosa* Lindl., *Notholaena fendleri* Kunze, and *Selaginella rupestris* Spring. At the base of the valley we found varied species of *Ribes*, *Neillia torreyi* Watson, *Rubus deliciosus* Torrey, *Rosa blanda* Ait., *Crataegus douglasii* Lindl., *Ampelopsis quinquefolia* Mx., *Penstemon barbatus* Torrey, and *Hedeoma drummondii* Beauv.

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<sup>82</sup> *thousands of invalids*: In the 1870s Colorado was being promoted throughout America for the health benefits it provided to sufferers from a variety of diseases and conditions, particularly tuberculosis. The "pure air," higher elevation, and even the scenic beauty of the state were thought to have curative powers. Manitou Springs, with its hotels, rooming houses, restaurants, and other facilities for tourists adjoining the baths and water dispensaries, was a leader in this industry.

<sup>83</sup> *Ute Pass*: When Jones traveled Ute Pass he followed a new road created six years previously that replaced the Native Americans' original, thousand-year old trail through the mountains. As he went west from Manitou Springs, Jones would have found slow going in the first five miles along the steepest and curviest portion of the Ute Pass Trail, but he could have relaxed as the climb became less steep near the 9,000 foot summit at Divide. [see Note 102.]

<sup>84</sup> *San Juan mining district*: A prominent early region for gold and silver mining in southwestern Colorado, the tall San Juan Mountains were home to numerous scattered mining camps. Jones cited, but did not visit, this rugged region.

<sup>85</sup> *Glen Eyrie*: Railroader and town founder William Jackson Palmer purchased a scenic 800-acre plot northwest of Colorado Springs which he named "Glen Eyrie" ("Valley of the Eagle's Nest.") As Jones passed by he would have seen Palmer's first home at the site, a 22-room mansion that was later replaced by a stone castle of more than 60 rooms

<sup>86</sup> *Devil's Punchbowl*: There are numerous formations named "Devil's Punchbowl" around the world, including those in Mississippi and Wisconsin, one in Los Angeles County, California, a site in Surrey, England and another near Hamilton, Ontario, Canada, and a spot near Aspen, Colorado. The one Jones visited consists of several natural pools in the granite of Queen's Canyon near Glen Eyrie. In Jones' day the modifier "Devil's" was used by some authors but not by others, and all of today's references omit it, calling the spot just "The Punchbowl."

A mile south of Glen Eyrie and five miles north of Manitou, a splendid site appears: the Garden of the Gods<sup>87</sup>. This place is almost exclusively made up of metamorphic rocks, and all of the landforms, from the Cretaceous to the Silurian<sup>88</sup>, are seen here at an incline of almost 90 degrees. We climbed to the summit of a white Cretaceous slope that forms the eastern boundary. At our feet, all round us, the soil is dotted with pebbles that seem tossed here and there, some thin tufts of dried-out grass, a *Cercocarpus*<sup>89</sup> bush in half leaf, and the naked branches and yellow buds of a “dwarf oak” (*Quercus alba* var. [*Q. gambelii*, “scrub oak”]) rises up among the dead debris of last year’s foliage. From time to time a *Clematis douglasii* Hooker wishes us welcome, softly shaking its big, beautiful purple flowers and its cottony filiform<sup>90</sup> leaves that are half-rolled on their lower surfaces. The whitish bouquets of *Artemisia*<sup>91</sup> give the scene a more woodsy appearance, and the dark green foliage of some scattered cedars (*Juniperus virginiana* L.) enhances the illusion.

Just opposite, to the west, the slope descends

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almost vertically to form an imposing precipice of about 100 feet, and next declines at a gentle, almost imperceptible drop to a space nearly a hundred acres in extent that is enclosed on all sides. It is scattered with brownish-gray *Cercocarpus* shrubs and with occasional small tufts of short grass, so as to give the ground a light brown color from the water to the crest where we stand. From this point until the middle of the valley there is a grayish coloration that further in the distance gives way to a dark red borrowed from the metamorphic rocks in the west and stretching to them. A path, entirely overgrown with plants, traverses the small valley, baring the deep red of the earth, while another trail unwinds its tortuous ribbon along the length of the northern hillside, half-red, half-brown, depending upon the soil it passes.

Perpendicularly to the northern peak, and crenellating<sup>92</sup> it, so to speak, arise straight calcareous<sup>93</sup> seams: these penetrate into the valley, paralleling the western and eastern “ribs” and do not take long to fade -

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<sup>87</sup> *Garden of the Gods*: Although Jones found few botanical specimens worthy of mention in the Garden of the Gods, the geologist in him was fascinated by the fabulous landscape he encountered on his exploration of this site near Colorado Springs. As the narrative relates, Jones was transfixed by the spectacular formations of sandstone and limestone, in an assortment of colors, caused by the uplifting and erosion of the original sedimentary beds. It must have been difficult for Jones to tear himself away from the Garden, which is now a popular public park.

<sup>88</sup> *Silurian*: In the Silurian period, which began 443.8 and ended 419.2 million years ago, temperatures were warmer and sea levels were higher than today. Earth’s first land plants appeared during this period.

<sup>89</sup> *Cercocarpus*: This member of the rose family is commonly known as mountain mahogany.

<sup>90</sup> *filiform leaves*: Jones meant that the leaves of this *Clematis douglasii* (*C. scottii*) were filament-like.

<sup>91</sup> *Artemisia*: There are hundreds of species in the genus *Artemisia*, a member of the family Asteraceae (Aster or Daisy), many of which taste bitter and have unpleasant odors. Among the species are plants commonly known as mugworts and sagebrush.

<sup>92</sup> *Crenellating*: Looking at the irregular mountain tops in the Garden of the Gods, Jones thought of the defensive features situated on towers and high ramparts of European castles. Also known as battlements, crenellations consisted of walls pierced by rectangular openings that archers could use to attack an approaching enemy.

<sup>93</sup> *Calcareous*: The calcareous seams Jones saw were formed of earth and rock having a high proportion of calcium carbonate. They could be described as chalky and containing much limestone.

- no doubt owing to erosion -- only to reappear on the other side, cutting into the western peak. The northern hillside is half white and half green, white owing to its own tint, green owing to the scattered *Cercocarpus* bushes that one would take, from where we are, to be tufts of grass. Between the peaks that surround it, the small valley features narrow grayish-green bluffs. To the west of the last gray band there was formerly a red one: time has so used it that today it is no more than a mound at the rounded summit, half covered with cedars.

Nearby, an extensive calcareous band -- pure and white -- emerges: one could call it the tombstone of some giant buried beneath the neighboring mound. Still farther west a mass of dark red rocks three hundred feet high and two hundred feet long arises vertically: it resembles the gigantic half-ruined walls of some ancient cathedral, raising its remains proudly into the air, folded and shredded by the powerful hand of time. In front, on the south side, rises a small similar mound: only a narrow passage separates them -- it is the only footpath.

On either side of these hills and in front of the crevice that divides them, the mountains have a somber and hazy appearance, and they form, with the entirety of this fantastic site, one of those grandiose contrasts that Nature displays only rarely to our marveling eyes. More to the south, but right against the mountains that we were just speaking of

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arise two other rocky masses whose gigantic sizes crush theirs of their neighbors, which seem to be true dwarfs moping at their feet. Their two enormous peaks<sup>94</sup>, 400 feet high and similar to Mount Ararat<sup>95</sup>, soar to the white clouds and the dark green mountains. These are not only the monarchs of the Garden of the Gods, but they reign over all the splendors of this amazing country.

Many winter snows have streaked the somber red of their ancient summits with gray tints and bright white stains similar to the hair of the old native chiefs who come from time to time<sup>96</sup> to prowl these solitudes. At the [mountains'] flanks masses of rocks have collapsed into a confused jumble, and their bases are half-covered with dark green bushes and grayish grass; while here and there stands the slender trunk of a gigantic cedar, a vigilant sentinel of the silent desert.

On the southern flank of the small valley calcareous peaks like those of the north are reduced to pyramidal hills that descend, little by little, in undulant and rippling lines to the gray seam in the extreme west. Just above that seam, to the south, rises the white snowy head of Pikes Peak, each slope gently descending to the hills of the vassal-like mountains, their dark and deep gorges forming a striking contrast to the silvery

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<sup>94</sup> *two enormous peaks*: The massive Gateway Rocks, North and South, formed from red sandstone, create a natural entrance to the Garden of the Gods. In spring and summer they are inhabited by flocks of white-throated swifts (*Aeronautes saxatalis*) which nest in high crevices of the peaks.

<sup>95</sup> *Mt. Ararat*: The two volcanic cones of Ararat in eastern Turkey are widely accepted in Christianity as being the resting place of Noah's Ark. It is not surprising that a religious man like Jones would use such a reference.

<sup>96</sup> *native chiefs ... time to time*: Archaeologists have found evidence, such as petroglyphs and broken pottery, of the presence of Native Americans in the Garden of the Gods, and in the historical era groups such as the Kiowa, Apache, Comanche, and Pawnee are known to have visited the site. In the 1860s and 1870s Mountain Utes camped in the region, which seems to have had special significance for them.

mantle of their master and lord. We contemplated this admirable scene, and the majestic silence of the mountains of the West that reigned around us, overwhelming us and dominating us; there was not an animal's call, no song of a bird, nor a sound of a living being. Nature, sublime in all of its frightening grandeur, seemed to have thrown a sentiment of terror and silent power around itself. We could not avert our eyes, and it was painful to tear ourselves away from this wonderful spectacle -- but already the rays of the setting sun seemed to play hide-and-seek with the neighboring mountains; these rays left only with regret, and their last kisses caressed the heights of the Garden of the Gods with tints of silver and gold.

We spent several weeks visiting these places, eventually culminating in some interesting discoveries which crowned our research. In May we took a short exploratory trip toward Cañon City<sup>97</sup>, on the way passing by innumerable mesas carpeted

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with Piñon Pine (*Pinus edulis* Eng.) The goal of the trip was to obtain flowers from cactus arborescens (*Opuntia arborescens* Eng.), but unfortunately the plant hadn't flowered yet. On the other hand, we found buffalo grass, *Arenaria fendleri* var. *subcongesta* Gray, the rare *Tricuspis acuminata* Munro<sup>98</sup>, and various interesting astragalus<sup>99</sup>, etc. -- we also enjoyed a splendid view of the Sangre de Cristo Mountains, their snowy peaks rising out of the surrounding pine forests.

## Journey to Denver -- Descriptions of the Town and its Environs -- Excursions

In early June we left Colorado Springs to head north, and we were able to reach in one day the vast body of groundwater which separates the Arkansas Basin from that of the South Platte. We climbed over 2,000 feet on a twenty-mile path, where we found ourselves in a pine forest (*Pinus ponderosa* Dougl.), a common

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<sup>97</sup> *Cañon City*: Cañon City is 45 miles southwest of Colorado Springs and is known today as "The Climate Capital of Colorado." It began in 1860 as a settlement along the Arkansas River and was intended to be a business center for miners in the region. Later, oil wells and ore smelters contributed to the city's economy.

<sup>98</sup> *Rare tricuspis acuminata*: Properly known as *Erioneuron pilosum*, this perennial grass has the common names of "Hairy erioneuron" or "Hairy wooly grass."

<sup>99</sup> *various interesting Astragalus*: A member of the Fabaceae or Legume family, the genus *Astragalus* consists of more than 3,000 species whose common names range from milkvetch and locoweed to goat's-thorn. To say that Jones would find *Astragalus* "interesting" throughout his botanical career would be quite an understatement, for he was an avid lifelong collector and student of this plant. He notated 13 species of the genus in A Botanical Excursion and continued to write about the plant for years, an effort which culminated in the publication of his masterwork Revision of the North-American Species of Astragalus, which appeared in 1923.



host of these vast plains. The area is somewhat high -- an altitude of 2,000 feet-- and it is still rather humid<sup>100</sup>, which enables the growth of these forests that cover an area of at least 20 square miles. We found there an interesting variety of species such as *Astragalus parryi* Gray, *Ranunculus affinis* var., *Arnica angustifolia*, *Callitriche verna* L., and *Isoetes*.

After dinner the clouds which had massed above Pikes Peak were moving over the plains and the hillsides. We saw them discharge their burden on the heights that we had left behind, seeming to smudge them with white spots. Soon the clouds approached us while making crashing sounds; the winds blew with violence, the rain fell in torrents<sup>101</sup> -- a moment later the sun reappeared as brilliant and as serene as before. The ground soon absorbed all the water without a trace. Not too far away we saw the mountains sparkling with these same spots, strange in their dazzling white. An hour or two later we crossed one of these spots, and we found that it had been formed by a bed of unmelted hailstones accumulated on the ground to a depth of 2-3 inches.

The next day was spent crossing a forest from The Divide<sup>102</sup> to Bijou Basin<sup>103</sup>. During the crossing we found the rare *Prunus chicasa* Mx.<sup>104</sup>, *Crepis acuminata* Nutt., *Cerastium nutans* Raf. var., *C. brachypodium* Eng., and *Senecio canus* Hooker. The appearance of these forests distinguishes them clearly from those of the East Coast; in Colorado you don't find any brushwood

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and trees growing between shoots of grass; it is as if the ground was as carefully mowed and maintained as a walkway or driveway.

Bijou Basin is an interesting place both for its unusual shape and also for the abundance of petrified wood there. It's a deep, round valley bordered on all sides by pine-covered hillsides except for one area where a stream feeds into it. Its diameter is five miles, and thick vegetation, unlike in the rest of the countryside, has developed on all sides. We found some interesting plants there, for example: *Peucedanum nudicaule* Nutt., *Penstemon albidus* Nutt., *P. glaucus* Gray, *Arenaria fendleri* Gray, a superb *Collomia aggregata* Porter (*Gilia [aggregata]* Spreng), *Collomia gracilis* Dougl., *Viola nuttallii* Pursh, *Gayophytum ramosissimum* T. and G., and a new *Penstemon*.

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<sup>100</sup> *rather humid*: This section of eastern Colorado is more humid than the lower elevation areas north and south of it, but it does not approach the 80% summer humidity of Jones' native Iowa.

<sup>101</sup> *the rain fell in torrents*: Intense summer thunderstorms like the one Jones experienced are common in Colorado's eastern region, with July and August being the months when they are most frequent. These severe storms often scatter dangerous hail in their paths.

<sup>102</sup> *The Divide*: Also known as Palmer Divide, this mountainous ridge is the highest feature between Colorado Springs and Denver and separates the Arkansas and South Platte River Basins. Named for railroader and town planner William Jackson Palmer, the Divide affects weather patterns and contributes to increased precipitation in adjacent areas. The trees of this region are known as the Black Forest.

<sup>103</sup> *Bijou Basin*: "Bijou Basin" was the name of both a valley and a small village [now a ghost town] located on The Divide about 40 miles east of Denver.

<sup>104</sup> *Prunus chicasa*: Now named *Prunus angustifolia*, this plant is a member of the genus *Prunus*, which includes cherries, apricots, and almonds. It has the common name of Chickasaw or sandhill plum and was cultivated by Native Americans before the arrival of Europeans.

On leaving Bijou Basin we went down the Kiowa Creek<sup>105</sup> and crossed some lightly wooded hills, reaching Cherry Creek<sup>106</sup>, then on to Denver, seventy miles from the Divide<sup>107</sup>. The characteristic flora of the plains hardly varies at all; we saw however two pretty plants and several others, which were: *Lupinus argenteus* Pursh var. *decumbens* Watson, *Lathyrus polymorphus* Nutt., a rare *Phlox Longifolia*, *Galium triflorum* Mx., *Machaeranthera tanacetifolia* Rees, *Gilia pungens* Benth., and near Denver was buffalo grass, among several other specimens, such as those whose discovery several years ago proved the error of Nuttall and Steudel<sup>108</sup> and led to the actual naming of *Buchloe dactyloides* Eng.

Denver<sup>109</sup> is the most important city west of Omaha and east of San Francisco; its population is [35,000]. It is situated at the junction of Cherry Creek and the South Platte River. With the exception of several occasional, scattered bushes along the banks of the South Platte this “city of the plains” has practically no natural vegetation<sup>110</sup>. Denver is located on the left bank of the South Platte, where the land slopes gently toward the river. Throughout the plain plant life is uneven and broken up, turbulent like the ocean. Fifteen miles away a dark line of hills looms in the distance. Farther along is one of the principal chains of mountains, which proudly display its white head of snow. To the north Longs Peak<sup>111</sup> borders the horizon; to the south is Pikes Peak, which disappears into the clouds.

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<sup>105</sup> *Kiowa Creek*: It is not clear from the text if Jones traveled a portion of the Kiowa Creek, a minor tributary of the South Platte river, in a small boat or canoe, or if he followed its course on horseback or in a horse-drawn vehicle.

<sup>106</sup> *Cherry Creek*: Jones would have followed Cherry Creek, another South Platte tributary, north toward Denver. The discovery of gold along Cherry Creek in 1858 contributed to the Pikes Peak gold rush.

<sup>107</sup> *seventy miles from the Divide*: In actuality, the entire distance from Colorado Springs to Denver is 70 miles; The Divide is 20 miles north of Colorado Springs, while Denver lies another 50 miles to the north.

<sup>108</sup> *error of Nuttall and Steudel*: English botanist Thomas Nuttall (1786-1859) was an intrepid collector of plants throughout the United States and was the author of the first book to describe all of the trees of North America. He gave the name *Sesleria dactyloides* to buffalo grass while the German Ernesto T. Steudel (active mid-1800's) described it as *Antephora axilliforas*. The noted American botanist George Engelmann (1809-1884) eventually determined that Nuttall had been working with a male plant while Steudel observations were based on a female specimen of the same grass, which is now known as *Buchloe dactyloides*.

<sup>109</sup> *Denver*: When Jones arrived in Denver the 20-year old city was growing rapidly because of its railroad connections, its role as the capital of the new state of Colorado, and its proximity to the rich silver mining areas nearby. Manufacturing was starting to develop in the city, and the tourism business was bringing many visitors, too. Rudimentary telephone service was available in the city, and theaters provided entertainment for the residents, while saloons and gambling halls also proliferated.

<sup>110</sup> *no natural vegetation*: Jones was not alone in his bleak appraisal of Denver's lack of plant life. His contemporary Isabella Bird wrote in her classic *A Lady's Life in the Rocky Mountains* (1879) that the city was “brown and treeless upon the brown and treeless plain.”

<sup>111</sup> *Longs Peak*: The Longs Peak rise of 9,000 feet above the Great Plains makes it one of Colorado's most prominent fourteeners. Now part of Rocky Mountain National Park, Longs Peak is located 50 miles from Denver while Pikes Peak sits 100 miles south of that city.

There is not a richer area than Denver for plants<sup>112</sup> growing at such a low altitude. In our vicinity there were several bodies of water: Cherry Creek, Bear Creek, Clear Creek<sup>113</sup> -- all flowing into the South Platte River. These creeks take with them nourishment from the hills, allowing for plant development in the plains. Plant collecting here took us one month. We found an abundance of: *Delphinium azureum* Mx, *Argemone hispida* Gr., *Malvastrum coccineum* Gray, *Psoralea floribunda* Nutt., *Astragalus missouriensis* Nutt., *Oenothera coronopifolia* T. and G., *Gaura coccinea* Nutt., *Iva axillaris* Pursh, *Thelesperma filifolium* Gr., *Helianthus petiolaris* Nutt., *Evolvulus argenteus* Pursh, *Collomia gracilis* Dougl, *C. longiflora* Gr., *Gilia aggregata* Spreng., *Stipa spartea* Trin., *Eriocoma cuspidata* Nutt., *Bouteloua oligostachya* Torrey, *Buchloe dactyloides* Eng., and *Lepturus paniculatus* Nutt.

Along the river and on its banks grew: *Rosa blanda* Ait., *Physaria didymocarpa* Gray, *Oenothera serrulata* Nutt., *Symphoricarpos occidentalis* R. Br., *Penstemon glaber* Pursh, *Abronia fragrans* Nutt., *Mimulus jamesii* Torrey var. *fremontii* Benth., *Veronica americana* L., *Populus candicans* L. var., *P. angulata* Ait., *Salix nigra* var. *amygdaloides* Ait., *S. cordata* Muhl., *Potamogeton rufescens* L. (in swampy valleys), *Juncus linnei* Willd., *J. longistylis* Torrey, and *Chara*.

For two weeks we didn't have one single storm; mornings are clear and calm, in the evenings there may be a rare shower. The dew is barely noticeable: several years ago it was unknown in these parts, but vast irrigation systems have profoundly changed the state of moisture in the air<sup>114</sup>. However, one can, without any inconvenience, sleep outdoors during the entire summer. The season is unusually humid and yet barely five days of rain darken our entire stay.

Upon leaving Denver we took a short walk towards Golden<sup>115</sup> while following the hillsides of the mountains and coming upon diverse interesting species near Clear Creek Falls<sup>116</sup>. We noted some of the most common: *Arabis hirsuta* Scop., *Sedum stenopetalum* Pursh, *Galium boreale* L., *Mentzelia albicaulis* Dougl.,

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<sup>112</sup> *not a richer area than Denver for plants*: This observation seems to contradict Jones' statement in the previous paragraph that Denver had "no natural vegetation," but his meaning becomes clear if we realize that the first description applies to the immediate limits of the city, while the "richer area" includes the land to the west where Jones would soon be botanizing.

<sup>113</sup> *Bear Creek, Clear Creek*: Bear Creek is a small tributary of the South Platte River known today for recreational opportunities such as fishing. Clear Creek runs for 66 miles from the Continental Divide [see Note 143] to its mouth at the South Platte River. This stream was the site of some of Colorado's most extensive early mining efforts during the 1859 Gold Rush. Its course through the rugged mountains provided the route for early railroads and highways.

<sup>114</sup> *irrigation systems ... state of moisture in the air*: Dry and dusty Denver depended upon a series of ditches which carried water from the mountains and foothills. The earliest water channels were dug by men using picks and shovels, while later oxen-pulled plows and scrapers were used. Jones' observation about an increase in dew may be a corollary to the now-rejected theory, commonly held in the 19th century, that "rain follows the plow." This was the concept that human activity, such as settlement, city-building, and agriculture, was changing the West's climate by making it more humid.

<sup>115</sup> *Golden*: Once the capital of Colorado Territory, Golden was a gold-rush town situated 17 miles west of Denver that became a business and industrial center for the region. Flour mills, smelters, brick works, and coal mines operated in Golden, which could also boast of an opera house, several churches, and the Colorado School of Mines by the time of Jones' visit.

<sup>116</sup> *Clear Creek Falls*: Jones may be referring to the spectacular rapids and rocky gorges of Clear Creek Canyon [see following note].

*Rubus strigosus* Mx., *Symphoricarpos oreophilus* Gray, *Oenothera caespitosa* Nutt., *Arnica cordifolia* Hooker, *Artemisia frigida* Willd., *Troximon glaucum* Nutt., *Aphyllon fasciculatum* T. and G., *Collinsia parviflora* Dougl., *Campanula rotundifolia* L., *Eriogonum umbellatum* Torrey, *Rumex longifolius* DC, *Solanum rostratum* Dunal, *Phacelia circinata* Jacq., and various *Cyperaceae*, grasses, etc.

## Georgetown and its Environs. Flora of the Plains and the Mountains

We return to Denver, then enter the mountains, following the hills that drain to Clear Creek. The roads are straight and steep, the journey tiring and painful. Each hill is followed by a higher one until we reach Floyd Hill above the great Clear Creek [Canyon]<sup>117</sup>. From here we follow the banks of rapids between the rocks at the peaks of gigantic mountains, and finally reach Georgetown, 52 miles from Golden<sup>118</sup> and 8,500 feet altitude; it is our headquarters, from where all our excursions in the surroundings radiate.

Georgetown<sup>119</sup> is a mining town of 5,000 inhabitants which the Colorado Central Railroad connects to the rest of the world. The ore of this district is almost exclusively silver, containing varying proportions of a very refractory galena<sup>120</sup>; it is processed only for the silver, and the wealth is often considerable. The mountains are riddled with mines in all directions, and explosions sound throughout the day. The rapid slope of the stream [Clear Creek] gives it a considerable driving force. Many ore processing mills were built on the stream's banks; but the complicated methods of extraction permit only a small number of them to prosper, and the greater part, representing an investment of at least \$100,000, are prey to ruin and degradation. Millions of dollars, whose intelligent use could have endowed the region with countless building projects and the whole world with valuable contributions, were wasted without profit by people who were unaware of the simplest

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<sup>117</sup> *Clear Creek Canyon*: With walls varying from 600 to 1,000 feet in depth, Clear Creek Canyon presents a striking sight along its 20-mile cut through the mountains as it runs from Idaho Springs [see note 130] to Golden. Because of differing amounts of sunlight, soil composition, and quantity of moisture in the ground the north and south sides of the canyon have quite different forms of vegetation.

<sup>118</sup> *52 miles from Golden*: Interstate 70 has shaved some distance off the route from Golden to Georgetown, making them only 37 miles apart today.

<sup>119</sup> *Georgetown*: 50 miles west of Denver, Georgetown was a prosperous city once nicknamed "Silver Queen" because of its wealth. The original mining town had acquired hotels, theaters, mining supply outlets, and hardware stores by the time of Jones' visit, along with such niceties as a bakery, a jewelry shop, and an ice cream parlor. Jones was in Georgetown on July 29th, when the town was in the prime viewing area for a total solar eclipse, a fact he does not mention in this account. [see note 129].

<sup>120</sup> *very refractory galena*: Galena is a natural form of lead sulfide and is also a source of silver. "Refractory" refers to its high melting point.

understanding of metallurgy<sup>121</sup> and who tried to exploit these minerals, and the whole mountain is strewn with the costly debris<sup>122</sup> of their unsuccessful attempts.

There is no place better endowed with botany than Georgetown. Clear Creek runs through the city, washing its

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pristine waters along the feet of the steep hills that enclose the town on all sides. Soon the creek forks: one of its branches goes toward Argentine Gorge<sup>123</sup>, and the other turns right toward Grays Peak. A mile below, a road crosses Empire Gorge, heading for the city of Empire<sup>124</sup> on another branch of the creek. The mountains rise on all sides to a height of 11,000 to 12,000 feet, and their tops look like skulls that were bared and bleached by the snow. The gigantic peaks descend no more than a few miles from Georgetown, in all directions except east, thus putting all of the alpine and subalpine flora of the place within reach.

We organize excursions in all directions. The banks of Clear Creek offer us many species common to a lower altitude, some alpine plants and many subalpines usually collected at higher heights. Common species are: *Claytonia chamissonis* Esch. and Lut., *Astragalus microlobus* Gr., *A. alpinus* L and others, *Oxytropis splendens* Dougl., *O. deflexa* DC, *O. lambertii* Pursh, various *Ribes*, *Valeriana dioica (sylvatica)* Richard), *V. edulis* Nutt., various *Potentilla*, *Alnus incana* Willd., *Betula glandulosa* Mx., *Populus radiocans var. angustata* Watson, *Salix cordata* Muhl., *S. desertorum* And., *Picea pungens* Eng., *Agrostis scabra* Willd., *Calamagrostis stricta* Trin., *C. canadensis* Beauv., *Hierochloe borealis* Rus., *Bouteloua oligostachya* Torrey, *Glyceria nervata* Trin., and several *Triticum*, *Elymus* and *Poa*.

The mountains produce a multitude of species, of which we can only mention the most common. The forests are composed almost exclusively of *Picea engelmannii* Eng.; then there are trees: *Juniperus virginiana* L. and *Pseudotsuga douglasii* Torr. The grasses are: *Poa andina* Nutt., *Eriocoma cuspidata* Nutt., *Festuca minuscula* Watson, *Bromus breviaristatus* Nutt., *B. ciliatus* L., *Elymus canadensis* L., *E. arenarius* L., *E. sitanion* Schult., and *E. triticoides* Nutt.

Herbaceous plants include *Aquilegia caerulea* Torrey, *Ribes lacustre* Poir., *Saxifraga bronchialis* L., *S. punctata* L., *Opuntia missouriensis* DC, various *Potentilla* species, *Sambucus racemosa* L. var. *pubens*

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<sup>121</sup> *understanding of metallurgy*: Jones is referring to the processing of ores to extract valuable metals, such as gold and silver, from them. He had never studied engineering as such, but Jones apparently educated himself on many aspects of mining, for in later life he found work as a mining consultant. The tone of the comment also reflects Jones' judgmental nature and his quickness to condemn those who did not meet his standards.

<sup>122</sup> *mountain strewn with debris*: Throughout his career Jones expressed an awareness of the negative impact that human activity, especially in the mining industry, was having on the environment.

<sup>123</sup> *Argentine Gorge*: The gap in the mountains known as Argentine Pass once provided access for a toll road and stagecoach route west of Georgetown. At more than 13,000 feet it is today the highest Colorado pass available to vehicle traffic. As Jones descended the gorge with his horse and wagon he narrowly avoided a disaster when the harness broke; some quick thinking and good fortune allowed him to calm the frightened horse and repair the damage.

<sup>124</sup> *Empire*: Named for the "Empire State" of New York, Empire was a mining settlement in the Clear Creek Valley.

Watson, *Erigeron macranthum* Nutt., *Rhus aromatica* L. var., *Actinella parryi* Gray, *Campanula rotundifolia* L., *C. Langsdorffiana* Fisen, *Vaccinium Myrtilus* L.,

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*Castilleja pallida* Kth., *Castilleja linariifolia* Benth., and *Frasera speciosa* Dougl., as well as many Composites<sup>125</sup>, and among the Cryptograms<sup>126</sup> there are various mosses such as *Wandsia scopula* Eaton, *Cystopteris fragilis* Ehr., and *Selaginella rupestris* Spring.

In Argentine Gorge, Mount Douglas<sup>127</sup>, Mount Lincoln<sup>128</sup>, and other places above the treeline we found many common species such as: *Silene acaulis* L., *Trifolium parryi* Gray, *Primula angustifolia* Torrey, *Phacelia sericea* Gray, *Polemonium confertum* Gray, *P. humile* Willd., *Eriogonum flavum* Nutt., *Polygonum bistorta* L., *Salix chlorophylla* And., *Carex nigra* L., *C. alpina* L., *Aera caespitosa* L., various *Poa*, and numerous additional species more or less rare.

At the end of July<sup>129</sup> we turn our steps toward the plains. This time we take another route, passing through Idaho Springs, Central City, Black Hawk<sup>130</sup>, and Golden. The Composites, so abundant in these parts, are in full bloom. Everywhere grow the following: *Senecio longilobus* Benth., *Grindelia squarrosa* Dunal, *Machaeranthera canescens* Gray, *Artemisia frigida* Willd., *A. dracunculoides* Pursh, *Artemisia ludoviciana* Ant., *Bigelovia douglasii* Gray, *Helianthus petiolaris* Nutt., *Senecio aureus* L., and *S. canus* Gray.

As we descend to the plains the soil becomes arid and dry; at Golden the vegetation is decidedly dried up and withered, and the countryside has a melancholy and desolate appearance; yet toward Denver we find some rare *Eriogonum*<sup>131</sup>, and the [South] Platte River enriches our collection with some late species, such as *Cycloloma platyphyllum* Moq., *Munroa squarrosa* Torrey, and *Helianthus lenticularis* Dougl. [now *H. annuus*], whose large yellow flowers spread out everywhere, accompanied by *Cleome integrifolia* T. and G.,

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<sup>125</sup> *Composites*: Composites are a large family of plants formally known as Asteraceae or Compositae. Among the family's 39,000 species are asters, marigolds, sagebrush, and goldenrod.

<sup>126</sup> *Cryptograms*: Plant-like organisms capable of reproducing without flowers or seeds, such as ferns, mosses, and lichens, are known as cryptograms.

<sup>127</sup> *Mount Douglas*: Over the years some places and features in Colorado have had their names changed. For example, Pikes Peak has been called Tava, El Capitán, Long Mountain, and Pike's Highest Peak before officially becoming Pikes Peak in 1890. The point called "Mount Douglas" by Jones, which he places near Georgetown, seems to have suffered the same fate. Two prominent mountains near Georgetown are Mount Evans and Mount Bierstadt; one of them may be Jones' missing mountain.

<sup>128</sup> *Mount Lincoln*: Mount Lincoln is Colorado's eighth-highest peak, and it was named in honor of President Abraham Lincoln in June, 1861, not long into his first term and only weeks after the beginning of the Civil War.

<sup>129</sup> *At the end of July*: In this account Jones fails to mention a significant event that affected central Colorado on July 29, 1878, while he was concluding his botanical work in Georgetown. At midday on that Monday the cloudless skies slowly darkened until they had achieved the blackness of a total solar eclipse. It is odd that Jones does not include at least a mention of this rare phenomenon that had attracted astronomers and enthusiastic laymen to the state and which helped give Colorado a reputation as a good location for scientific research.

<sup>130</sup> *Idaho Springs, Central City, Black Hawk*: The 1859 Gold Rush gave birth to the mining towns of Idaho Springs, Central City, and Black Hawk, which still survive today. Nearby steamy hot springs supplied the name for Idaho Springs, while Central City was once known as the "Richest Square Mile on Earth." Black Hawk was the site of the first successful ore smelter in Colorado, built in 1868, and because other smelters were soon built nearby, Black Hawk was called the "City of Mills."

<sup>131</sup> *Eriogonum*: The *Colorado Rare Plant Guide* of 2013 lists nine *Eriogonum* species, including those commonly known as Colorado wild buckwheat, Grand buckwheat, and clay-loving wild buckwheat.

*Euphorbia marginata* Pursh, *Potansia uniglandulosa* DC, *Eriogonum annuum* Nutt., *Helianthus nuttallii* Gray, *Montelia tamariscina* Gray, *Petalostemon macrostachyus* Torrey, *Iva xanthifolia* Gray, *Ipomoea leptophylla* Torrey, *Cuscuta decora* Eng., *Croton texensis* Mull., *Zannichellia palustris* L., *Potamogeton pauciflorus*, *P. rufescens* L., and a new variety of *Elymus virginicus* L.

A short hike up the hill to Morrison<sup>132</sup> takes us to that previously mentioned strip of land which resembles the immense meadows of Iowa,

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and we find there: *Sorghum avenaceum* Chap., *Andropogon scoparius* Mx., *A. glaucus* L., *Petalostemon violaceus* Mx., *Pteris aquilina* L., *Rudbeckia laciniata* L., *Dracocephalum parviflorum* L., *Liatris punctata* Hooker, and *Bouteloua curtipendula* Gray.

Shortly afterwards, thanks to the kindness of a friend, we make a short walk to the falls of the South Platte River, where we find the following specimens: *Cuscuta gronovii* Willd. var. *culta* Eng. (previously found only in Oregon), *Circaea pacifica* Fisch. and Ney., *Physalis pensylvanica* L., *Aster novae-angliae* L. (a novelty for Colorado), *Agrimonia eupatoria* L., *Rhus glabra* L., *Oryzopsis micrantha* Thurber, and *Lophanthus anisatus* Benth.

On August 15 we travel to the South Boulder waterfall<sup>133</sup>, 28 miles north of Denver. Here we find the same species as in Morrison, plus *Psoralea argophylla* Pursh, *Helianthus rigidus* Desf., *Panicum dichotomum* L., *Solidago missouriensis* Nutt., *Bidens frondosa* L., *Hedeoma hispida* Purs., and *Lythrum alatum* Pursh. At the falls itself we find three ferns that are rare in Colorado, the first two especially: *Asplenium septentrionale* L., *A. trichomanes* L., and *Aspidium filix mas* L. We return to Denver to examine the plants we have collected, then, on the 23rd of August we again journey toward the mountains. On the way we meet, near Golden, besides other less significant species, a truly rare plant, the *Suckleya petiolaris* Gray<sup>134</sup>. Arriving at Georgetown, we headed straight to Grays Peak, and on August 27, at night, we reached the treeline.

## Excursion to Grays Peak

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<sup>132</sup> *Morrison*: 15 miles southwest of Denver, Morrison developed because of productive sandstone, limestone, and gypsum quarries located there. As he passed through the town Jones may have come across paleontologists who were beginning to unearth the largest quantity of dinosaur fossils ever found in North America.

<sup>133</sup> *South Boulder waterfall*: Jones may have been referring to the picturesque, cascading Eldorado Falls adjoining today's Eldorado Canyon State Park, a popular hiking and camping destination south of Boulder.

<sup>134</sup> *truly rare Suckleya petiolaris*: Also known as *S. suckleyana* or *Obione suckleyana*, this toxic plant found in northeastern Colorado near water holes and lake edges is deadly to cattle. Because of its high hydrogen cyanide (also called prussic acid) content, the plant has been labeled "poison suckleya."

Those who have climbed the mountains of New England will get an idea of the height of Grays Peak<sup>135</sup> by calculating that Georgetown, the departure point for travelers who climb the mountain, has an altitude of more than 2,500 feet above the highest point of Mount Washington in the White Mountains [of New Hampshire]<sup>136</sup>. On leaving Georgetown we follow the superb high road which turns at the waterfall and climbs along the flanks of the mountains. After a few moments we see the neighboring dwellings vanishing under our feet, as in an immense funnel. Before us the foaming cataract of Clear Creek rolls from rock to rock, raising clouds of silver foam and making a dull roar like continual distant thunder.

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We move on, making ten miles, climbing higher and higher while overshadowed by the cloudy summits of the mountains, our ears filled with the crash of the cataract. We pass by Silver Plume, Brownsville, and Baker City<sup>137</sup>, all mining towns. We leave behind the sad and desolate forests of burned pines, we cross willow marshes and end up reaching the foot of the mountain that rises toward the peak -- we now have to climb three long miles of rugged terrain that is more steep than anything we have done so far. For half a day we've been making a painful advance, cutting a tortuous path through the immense forests of pines and firs which obscured our way. Finally, just as the sun sets behind the western peaks, we camp on the extreme limit of the timber area.

Now immense black clouds, which have hovered over our heads all day, are slowly dropping; they roll heavily on each other, bathing the lofty summits of the dark forests in floating waves. These storm clouds descend and constantly crowd each other, they pile up and accumulate, and the forests and the mountain slopes are lost in the midst of a vaporous whiteness. Our eyes get lost in this immense chaos and rest happily on the graying peaks emerging from the haze which has invaded the whole of nature and colored the gilded and crimson hues of day at its decline.

But the flash of lightning and the resounding noise of alpine thunder come to shake us out of our torpor. Slowly the gigantic clouds rise, the peaks vanish one after the other, while trees and rocks bend together, wrap themselves in their folds, drape themselves in their cloaks, and everything disappears before our eyes. The fog chills us, and water soaks us to the bone. We reach our lonely resting place without supper, and we mourn the end of daylight. The hours of night drag by painfully slowly; dawn should appear, but it is still late, and yet no cloud, no fog obscures the sky. But over there, on the right, the high, rounded mountain reflects the pink light that comes to bathe its summit.

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<sup>135</sup> *Grays Peak*: Grays Peak stretches to 14,278 feet and is the highest point on the Continental Divide. In 1861 botanist Charles C. Parry (1823-1890) named the mountain in honor of his colleague Asa Gray (1810-1888). Today Grays Peak is considered to be an easy climb, offering spectacular views from its summit.

<sup>136</sup> *Mount Washington*: At 6,288 feet, Mount Washington is the tallest mountain in the northeastern United States and one of the highest east of the Mississippi River. Jones includes it here as a reference point for readers to comprehend the impressive elevations of towns and peaks in Colorado. In a publication aimed at a European audience, however, it is odd that Jones makes no comparisons to the Alps or other features Belgians might have been more familiar with.

<sup>137</sup> *Silver Plume, Brownsville, Baker City*: Silver Plume [or Silver Dale], Brownsville, and Baker City, located in the Georgetown area, were among many small mining camps Jones came across in his travels in Colorado.



In the east Mount Leavenworth<sup>138</sup> makes a semicircular curve about five miles long until it reaches Grays Peak in the west. Leavenworth's flanks, half a mile high, rise vertically like the

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massive walls of a vast prison, uniting over our heads in the immensity of the blue sky. Slowly, slowly, daylight descends along the opposite slope, but it will take hours yet before it reaches us. The floating clouds which gird the sides of the mountains mount an unequal battle with the burning rays of the sun, and they soon melt into the clean and clear air. The frost also disappears. Shortly before this it spread its silvery cloak over the grass, bushes and trees in the vicinity, and no plant was sheltered from its attack. On the edge of the Alpine zone the gigantic red peaks, with their lacy, brilliant white carvings, seemed like immense, tumbled stones built on the tomb of the asters, gentians, and *Polemoniums*<sup>139</sup> dying at their feet. However, the sun appears victorious, and in an instant it destroys the fairy-like work hatched under the enchanted fingers of the night.

Well! At this altitude, twice as high as Mount Washington, Grays Peak is not yet visible. Beneath us are compact forests, beyond which vast prairies extend, where formerly purple and white gentians, which perfumed the air with their aroma, bloomed. Here are also scarlet columbines, tender *Polemonium* in countless shades, alpine wallflowers, and phlox with exquisite, penetrating scents, which line the ground like mosses whose names they sometimes bear. We also see robust *Aconites*<sup>140</sup> of purple and white, yellow seedlings, blue *Mertensias*<sup>141</sup>, grasses, carex, rushes, and mosses.

We pass through meadows where our foot gently caresses the sort carpet for a distance of two or three miles until we find ourselves at the base of the peak, well beyond the tree zone. Beneath us we see a white patch: it is the camp we have just left. High above, the gray old monarch of the Colorado mountains proudly raises his head, crowned with perpetual snow. Small rivulets escape, bubbling along, and the silvery ribbons they draw on its rocky sides are lost in the crystal of a lake stretched out at our feet.

We leave the verdant lawn to slowly climb the mountain slope on a path which makes endless zigzags. From time to time a

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<sup>138</sup> *Mount Leavenworth*: An 11,000 foot peak, Leavenworth Mountain is near Georgetown and known today as a fishing resort.

<sup>139</sup> *Polemoniums*: Jones numbered among his collection an example of *Polemonium confertum* (Rocky Mountain Jacob's ladder), a hardy plant with blue flowers that thrives in cooler temperatures.

<sup>140</sup> *Aconites*: Jones may have described these members of the genus *Aconitum* as "robust," but the attractive purplish blue flowers growing on five-foot tall stalks disguise the fact that "monkshood" is extremely poisonous. The plant is deadly to cattle, horses, goats, and humans.

<sup>141</sup> *Mertensias*: Often called "bluebells," *Mertensia* is a genus of plants, many of whose species are restricted to limited areas in the Rocky Mountains. On his travels in Colorado Jones collected examples of *M. alpina* (alpine bluebells) and *M. lanceolata* (prairie bluebells.) Although Asa Gray mentioned seven species of *Mertensia* in an 1886 study, contemporary botanists argue for the acceptance of 62. (Nazaire et. al., 2014)

little yellow Saxifrage<sup>142</sup> greets us from the rocks which line the trail, or looks at us curiously as we pass by its shelter in a hidden nook. Soon all vegetation ceases, and there is nothing around us but jumbled and awkward masses of rocks heaped together haphazardly. We walk for two hours, stopping occasionally to contemplate the countless peaks rising steeply above Mount Leavenworth's semicircular enclosure.

Finally we are at the summit, at an altitude of 14,342 feet, on a narrow ridge which separates the tributary waters of the Pacific Ocean from the tributaries of the Atlantic<sup>143</sup>. The vastness of the country, seen from this height, is really indescribable. The whole system of the Rocky Mountains of Colorado from one end to the other unfolds before us. To the north, fifty miles away, is the chain of Middle Park<sup>144</sup>, from Grand Lake to Gore Gorge<sup>145</sup>. Even further in that direction lie the mountains that enclose North Park<sup>146</sup>.

At our feet are several peaks which compose the main mountain chain, running in an irregular line 150 miles long. These include James Peak<sup>147</sup>, Longs Peak, and others, which end far away on the horizon in the mists of the north. To the east lie hills, one following another, for about 50 miles, then melting with the plains which unfurl like a boundless sea to the point where earth and sky merge into a vaporous mist. The eye travels the immense development of the plains over a space of 150 miles and ends by becoming lost in the distance.

From the dark contours of the hills rises the smoke of Caribou<sup>148</sup>, Georgetown, Central City, Black Hawk, Idaho Springs, Floyd Hill, and Golden, and on the plains, at an immense distance, a barely perceptible spot represents Denver. To the southeast, one hundred miles away, stands the menacing and fantastic Pikes Peak, like a powerful spirit watching over the treasures of South Park<sup>149</sup>. This splendid park offers our eyes a magnificent view. Its charming hills and inviting valleys are there in front of us, and we can distinguish the mountains which border it on the south along the Arkansas River. Also to the south, snow shines on the white peaks of the main chain under the first rays of the sun. Here Mount Lincoln, Mount Bross, and Whitehouse Mountain<sup>150</sup> form, as far as the eye can see,

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<sup>142</sup> *Saxifrage*: With tiny flowers sometimes less than one-quarter inch in diameter, members of the Saxifragaceae family are found in mountain areas, seemingly growing right out of the rocks. Jones found a specimen of *Saxifraga flagellaris*, also known as whiplash saxifrage, which today is considered very rare.

<sup>143</sup> *ridge which separates Pacific from Atlantic*: At the summit of Grays Peak, now listed at 14,278 feet, Jones arrived at the Continental Divide, the feature separating the watersheds that drain into the Pacific Ocean from those that flow into the Atlantic. It is the most prominent of several hydrological divides in North America: others include the Eastern and the Arctic.

<sup>144</sup> *Middle Park*: In Colorado, the three basins or valleys that lie west of the Front Range of the Rocky Mountains are known as "parks." Middle Park is the smallest and narrowest of these features.

<sup>145</sup> *Grand Lake to Gore Gorge*: Jones spied Grand Lake, the largest natural body of water in Colorado, from his perch atop Grays Peak. The three-mile long rugged Gore Canyon, the southern end of Middle Park, also lay in the distance.

<sup>146</sup> *North Park*: Finds of fossilized shark teeth in North Park, the most northerly of north central Colorado's three mountain valleys, indicate that a shallow lake once occupied the area.

<sup>147</sup> *James Peak*: James Peak sits on the Continental Divide 46 miles west of Denver. It was named in honor of Edwin James (1797-1861), an early botanical explorer of the area.

<sup>148</sup> *Caribou*: It is fortunate that Jones saw the silver-mining town of Caribou on his 1878 trip, for the town burned down the following year. Once boasting a population of 3,000 people, Caribou is now a ghost town.

<sup>149</sup> *South Park*: Almost exactly in the center of Colorado, South Park is the largest of the three basins formed by the Rockies. When prospectors discovered placer gold in its streams in 1859 miners rushed to the area, soon discovering silver ore there too.

<sup>150</sup> *South Park*: Almost exactly in the center of Colorado, South Park is the largest of the three basins formed by the Rockies. When prospectors discovered placer gold in its streams in 1859 miners rushed to the area, soon discovering silver ore there too.

a continuous web, their white heads and gray flanks rising nobly beneath the dark mantle of pines and fir trees which cover the gradients of their slopes. An aspen belt partially envelops their surfaces and spreads its foliage with a thousand shades of gold and crimson on the intense purple background of surrounding conifers

At our feet, towards the west, perhaps half a mile down, lie two tranquil lakes<sup>151</sup>, one gilded by the sun, the other asleep in the shade; one a brilliant green, the other a dark emerald color. Grayish rocks form a fantastic setting. Even lower, so low that its roar reaches us, the Snake River<sup>152</sup> traces its silver ribbon which ends up losing itself in the shadow of the forests. But we can follow its course to the Blue River<sup>153</sup>, which we can spot from its source to its mouth, thanks to the dark forests that line its banks. The mountain chains appear, one after the other, parallel to the one in which we find ourselves, until their forests, like moss-covered patches, are lost in the distance. They are out of sight except for their sparkling white peaks. And that is not all: far away on the horizon, a fissure separates the peaks, and, to the astonished eye appears a brightly lighted view of new mountain ranges which spread out and follow each other as far as the eye can see.

Though the first attacks of a severe winter have destroyed many plant species, we nevertheless collected a great number of truly interesting specimens. In addition to those found on other mountains, we find here: *Agrostis varians* R. Br., *Aplopappus pygmaeus* Gray, *A. fremontii* Gray, *Arenaria arctica* Stev. var. *obtusata*, *A. fremontii* Gray, *A. verna* L. var. *hirta*, *Arnica latifolia* Boug., *A. mollis* Hooker; *Artemisia glomerata* Gray; *A. norvegica* L.; *Aster glacialis* Nutt., *A. ascendens* Lindley var. *parryi* Eaton, *A. salsuginosus* Rich., *Castilleja pallida* Kth., *C. miniata* Gr., *C. breviflora* Gr., *Chrysopsis villosa* Nutt., *Cystopteris fragilis* Ehrh. (on the lumber zone), *Draba alpina* L.; *D. aurea* Vahl., *D. androsacea* Gr., *D. crassifolia* Grah., *D. nemorosa* var., *D. streptocarpa* Gr., *Elyna spicata* Schk., *Epilobium alpinum* L., *E. origanifolium* Lara., *Erigeron compositus* Pursh, *E. uniflorus* L., *E. ursinus* Eaton,

*Eriogonum flavum* Nutt., *Erysimum pumilum* Watson, *Festuca brevifolia* R. Br., *Gentiana parryi* Eng., *G. tarbellata* Eng., *G. frigida* Haenke, *Geum rossii* Sainge, *Hieracium triste* Willd., *Juncus alpinus* Vill., *J. drummondii* Mey., *J. triglumis* L., *J. mertensianus* Boug., *Lychnis apetala* M., *Mertensia sibirica* Dougl., *Poa*

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<sup>151</sup> *two tranquil lakes*: Jones was probably referring here to Lake Emma and Kite Lake.

<sup>152</sup> *Snake River*: As Jones indicates, the Snake River is a short -- 15 miles in length -- tributary of central Colorado's Blue River.

<sup>153</sup> *Blue River*: The Blue River's waters drop 5,000 feet as they flow northward from the western side of the Continental Divide for 65 miles before joining with the Colorado River. Jones' text suggests that he was able to see the Blue's entire length from his vantage point on Grays Peak.

*abbreviata* R. Br., *P. alpina* L., *P. arctica* R. Br., *P. laxa* Henke, *P. flexuosa* Mühl., *Atropis californica* Munro, *Salix arctica* Pall. var. *petraea* And., *Saxifraga caespitosa* L., *S. debilis* Eng., *S. flagellaris* Willd., *S. rivularis* L., *S. serpyllifolia* Pursh, *S. tricuspidata* Retg., *Scirpus pauciflorus* Lightf., *Sedum rhodanthum* Gray, *Senecio amplexans* Gray, *S. eremophilus* Rich., *S. fremontii* T. G., *S. lugens* Rich. var., *Stellaria borealis* Bigel., *S. umbellata* Torrey, *Swertia perennis* L., and *Trisetum alpestre* L.?

## Return to Iowa

Back at Georgetown, we collect various species of *Solidago*<sup>154</sup> and other late composites, when suddenly, starting on September 3rd, an unexpected series of frosts make the continuation of our research impossible. We head south, cross the Argentine Gorge at a height of 13,000 feet, and descend the western slope of the Rocky Mountains. We follow the course of the small Snake River to the point where it empties into the Blue River, then go back up the Blue to Breckenridge<sup>155</sup>. Here we collect the famous *Artemisia tridentata* Pursh<sup>156</sup>, *Catabrosa aquatica* Beauv., and some other species. Then we go back to Mount Lincoln at an altitude of 11,500 feet, where few species reward our searching; the cold has been almost the entire reason. From here we descend by Hamilton<sup>157</sup> into South Park, a vast expanse of rough ground surrounded by mountains and sterilized by sodium hydroxide<sup>158</sup>.

There we find a *Chara*<sup>159</sup> and a few composites, and we reach Fairplay<sup>160</sup> without finding any worthy species. Then we head toward Platteville<sup>161</sup>, when a violent snowstorm surprises us on the way. Blinded by

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<sup>154</sup> *Solidago*: *Solidago*, commonly known as goldenrod, is a species of about 100 plants in the aster (Asteraceae) family.

<sup>155</sup> *Breckenridge*: Another Colorado mining town, Breckenridge was 20 years old at the time of Jones' visit. Over the years, nearly 70,000 pounds of gold were produced in the mining district of Breckenridge.

<sup>156</sup> *famous Artemisia tridentata*: *Artemisia tridentata*, or "big sagebrush," is one of the most common plants found across major portions of the Great Basin [see note 200]. Growing from 2 to 4 feet tall, but occasionally reaching a height of 10 feet, big sagebrush is pale gray with yellow flowers, has a strong aroma and a bitter taste [to humans], provides food and cover for birds and animals, and can live for more than 100 years.

<sup>157</sup> *Hamilton*: The Hamilton Mining and Tunnel Company established this namesake settlement in Clear Creek Canyon near Leadville, but it was abandoned in 1905.

<sup>158</sup> *sodium hydroxide*: This compound is commonly known as lye, or caustic soda, a strong base. If occurring in soil it will raise the pH and will starve plants of needed nutrients.

<sup>159</sup> *Chara*: The freshwater genus *Chara* is a form of algae with an offensive odor, as noted by its common names of muskgrass or skunkweed.

<sup>160</sup> As its name suggests, Fairplay was established in 1872 by prospectors concerned about the unequal way mining claims were being issued and by the absence of law and order in South Park. Gold and silver mining continued near Fairplay, the largest community in South Park, until the mid-20th century.

<sup>161</sup> In Platteville Jones may have patronized the general store, which also housed a small hotel and the community's post office. Some of the town's early landowners were investors in New York and Chicago who bet that the Denver and Pacific Railroad would make Platteville thrive.

its violent gusts, we camp a few miles higher in Weston Pass<sup>162</sup> and experience the intensity of the cold which characterizes the winters of this country. We cross the gorge and climb up to the Upper Arkansas, fifty miles below Leadville<sup>163</sup>, Colorado's most famous mining town. Next we descend the course of the river and find various species of *Bigelovii* as well as the rare *Glyceria aeroides* Thurber<sup>164</sup>.

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Then, descending to an altitude of 5,000 feet, we come to the Twin Lakes<sup>165</sup>, whose tranquil waters sleep in the midst of the mountains at the entrance to a deep gorge, a few miles from the Arkansas River. Mountains surround three of their sides and raise their snow-white heads high above the tree zone; while up to the shores of the lakes the peaks display a dark green hue of a mantle of pine and fir trees. Halfway between the tree-zone and the tranquil surfaces of the lakes there is a belt of quaking aspen (*Populus tremuloides* Ait.), whose foliage has already displayed its golden and crimson warm tones, giving charm to this beautiful landscape. A narrow ridge separates the two lakes, which are each two miles long and a mile and a half wide. Their water is clear, transparent, and cold, and there are many trout<sup>166</sup> in them, while numerous species of *Hypnum*<sup>167</sup> and *Potamogeton* line the bottoms. While here we collect, among others, the rare *Potamogeton vaseyi* Robbins<sup>168</sup>.

To the northeast the mountains open to make way for hills completely covered with frightful bushes, among which a few occasional pines emerge. Here too frost has destroyed almost all of the plants. It is only by reaching Cottonwood<sup>169</sup>, many miles below, that we find some species spared by the cold, in particular: two new *Bigelovii*, arborescent cactus, other southern cactus, *Ximenesia encelioides* Cor., *Pericome caudata* Gray,

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<sup>162</sup> *Weston Pass*: Nearly 12,000 feet above sea level, Weston Pass is a mountain gap crossed by a road first built in 1860 for wagon and stagecoach traffic. Optimistic prospectors called the 26-mile route from Leadville to Fairplay over Weston Pass the "Road to Riches."

<sup>163</sup> *Leadville*: Miners flocked to the site of Leadville during the Pikes Peak Gold Rush but the boom was short-lived until someone discovered that the heavy black sand clogging the sluice boxes was made of the mineral cerussite, or lead carbonate. This cerussite had a high silver content, and soon Leadville was, as Jones noted, "Colorado's most famous mining town." He did not add that part of that fame was due to Leadville's notorious reputation as one of the most lawless and dangerous towns in the West.

<sup>164</sup> *rare Glyceria aeroides*: *Glyceria* is a genus of grasses commonly known as mannagrass or sweet-grass. Jones encountered *Glyceria* along the banks of the Arkansas river because the plant thrives in wet regions.

<sup>165</sup> *Twin Lakes*: Twin Lakes is the name of a pair of mountain lakes and of a small town near Leadville in central Colorado. Jones mis-stated the altitude of Twin Lakes, which is actually 9,200 feet.

<sup>166</sup> *trout*: Colorado's official state fish is the greenback subspecies of the cutthroat trout (*Oncorhynchus clarki*). This is the state's only indigenous fish and the only fish mentioned by Jones in his accounts of his western trips of 1878 and 1879.

<sup>167</sup> *Hypnum*: The genus *Hypnum* contains several species of moss that grow in Colorado, such as *H. cupressiforme*.

<sup>168</sup> *rare Potamogeton vaseyi*: Jones must have been mistaken in this designation, for "Vasey's pondweed" is not listed among the 15 species of *Potamogeton* found in Colorado.

<sup>169</sup> *Cottonwood*: Jones was probably referring to the community of Cottonwood Springs situated 90 miles west of Colorado Springs. In the late 19th century the village was promoted as a tourist destination for the healthful qualities of its waters and the beautiful scenery surrounding it.

*Astragalus triflorus* Gray, *Pectis angustifolia* Torrey, *Brickellia californica* Gray, *Franseria hookeriana* Nutt., *Eurotia lanata* Moq., a new *Townsendia*, *Aster fendleri* Gray, and *A. nuttallii* T. and G.

From Cottonwood we go down the river to Cañon City at the foot of the hills, 125 miles south of Leadville. We arrive there on September 25th and devote a few days to collecting species such as: *Muhlenbergia texana* Thurber, *Senecio filifolius* Nutt., *Tricuspis trinerviglumis* Hooker, *Fallugia paradoxa* Torrey, and *Juniperus occidentalis*. We set off again on October 1st, arriving on the plains and reaching Pueblo 40 miles later, having collected along the way: *Tricuspis monstra*, *Pleuraphis jamesii* Torrey, *Eriogonum corymbosum* Benth., *Zinnia grandiflora* Nutt., *Eriogonum microthecum* Nutt. var. *fendlerianum* Benth.,

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*Tricuspis acuminata* Munro, *Euphorbia stictospora* Eng., *Alternanthera lanuginosa* Torrey, *Lowellia aurea* Torrey, *Obione argentea* Moq., and *O. confertiflora* Torrey.

We then leave for Colorado Springs and finish this year's excursion by a walk to Cheyenne Canyon on October 5, 1878.

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## SECOND EXPLORATION IN THE FAR WEST

### Departure for Colorado Springs; Local Excursions

At the beginning of my second season of botanical exploration in the Far West I did not go directly to Utah as I had first planned to do, for I had accepted a temporary position at Colorado College<sup>170</sup> in Colorado Springs.

I left Iowa on the 15th of May [1879] by the same train as the first time; the Atchison, Topeka and Santa Fe, leaving from Kansas City (Missouri) and traversing the entire length of Kansas.

I did not find any interesting plants until Topeka where, taking a stop from the train, I collected the fruit of *Viola pubescens* Ait. var. *eriocarpa* Nutt.<sup>171</sup> It is a species that is said to be common in the West but that I had never collected before during any of my excursions, which gave me the right to doubt its abundance. Before arriving in Emporia I collected some good specimens of the rare *Aesculus arguta* Buckley<sup>172</sup> and of *Astragalus mollissimus* Torrey. The next morning we arrived in Dodge City in western Kansas. I collected everything that I found, but few species were interesting -- except *Argythamnia humilis*, a fitting reward for my labors -- until Pueblo, where I discovered in the middle of some clumps of *Astragalus bisulcatus* another *Astragalus* with an equally nauseating odor<sup>173</sup> but different in its pods and calyx<sup>174</sup>. This is a species very recently discovered and named *Astragalus pattersonii* by Dr. Gray.

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We reached Colorado Springs after dinner, and I started to prepare to teach and to collect without delay. As this town had served as my base of operations during the entire spring of 1878, I only need to mention some plants that I found in this area. Every day I made excursions on the immense expanse of plains that encircle Colorado Springs, following routes that led in every direction up the neighboring hills to the falls

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<sup>170</sup> *Colorado College*: Jones had become familiar with staff members at Colorado College during his first visit to Colorado Springs. The school, only four years old at the time, was affiliated with the Congregational Church as was Jones' alma mater, Iowa College. He was employed to teach a general botany class and a second titled "How Plants Grow" for the 1879 summer session. During non-teaching hours Jones scoured the region for plants, some of which he supplied to souvenir dealers.

<sup>171</sup> *Viola pubescens*: Smooth yellow violet, one of the first flowers of spring, is found in the eastern third of Kansas; it is not clear why Jones wrote that it is common in the West.

<sup>172</sup> *rare Aesculus arguta*: *Aesculus glabra*, the Ohio buckeye, is commonly found in the American midwest, while *A. glabra* var. *arguta* (Buckley) B. L. Rob., a smaller, shrub-like version of the tree, grows from Texas to Wyoming. This member of the Hippocastanaceae or horse-chestnut family is known as Texas buckeye.

<sup>173</sup> *Astragalus . . . nauseating odor*: Members of the Pea (Fabaceae) family, *A. bisulcatus* (two-grooved milkvetch) and *A. pattersonii* (Patterson's milkvetch) grow on soils rich in selenium, which they accumulate in their tissues. Emitting a foul odor like that of a disgruntled skunk, these species are usually avoided by animals. Sheep and cattle who do ingest these toxic plants can die soon after eating.

<sup>174</sup> *Pods and calyx*: Pods are the fruit of astragalus, while the calyx, also known as sepals, is the exterior structure of a flower that protects the flower bud that is developing within.

of the Bear River<sup>175</sup>, Cheyenne Canyon, Manitou, and Glen Eyrie. On the plains I collected many specimens of the beautiful *Lupinus argenteus* Pursh var. *decumbens* Watson, *Eritrichium leiocarpum* Watson (see Gray, Flora of North America)<sup>176</sup>, *Oxybaphus hirsutus* Sweet, *Medicago sativa* L., *Erigeron canus* Gray, *Thelesperma gracile* Gray, *Lygodesmia juncea* Dougl., *Aurates auriculatus* Eng., *Scirpus pungens* Vahl, *Carex jamesii* Torrey (2 varieties), *C. stricta* Lam. (see Gray's manual), *C. verticillata* Boott (an excellent specimen), *C. marcida* Boott, *Vilfa asperifolia* (*Sporobolus* Nees and M.), and good specimens of *Glyceria aeroides* Thurber.

Beside the Fontaine qui Bouille I found a *Poa* similar to *Poa trivialis* L. that seemed to be indigenous and could well be a new species<sup>177</sup>, and also *Oenothera breviflora* T. G., *Vicia micrantha* Nutt., *Potentilla arguta* Pursh, and *Hypericum scouleri* Hooker.

Along the city streets I found a rare *Psoralea hypogaea* Nutt.<sup>178</sup>, and on the mesas, among tufts of *Cercocarpus parvifolius*, I discovered *Stipa pennata* L. var. *americana* Vasey (ms.), a plant that until recently was only found in Arizona and New Mexico. Near Manitou, still on the plains, I collected abundant specimens of *Suaeda fruticosa* Forsk. var. (see King's report)<sup>179</sup>, *Muhlenbergia gracilis* Gray, and *M. glomerata*?, probably a new plant which appeared for the first time in last year's catalog. Somewhat far away there were many well-developed *Triticum repens* with glumes<sup>180</sup> more than twice the size of *Elymus condensatus* and with every transitional form of the species type<sup>181</sup>. I have actually found and collected similar specimens in Utah growing near *Cyperus filiculmis* Vahl (see Gray's manual.) At Glen Eyrie I discovered good examples of *Hedeoma drummondii* Gray and of *Pinus edulis* Eng., the piñon of the Mexicans with its healthy seeds<sup>182</sup>,

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<sup>175</sup> *Bear River*: Bear Creek is a small stream near Colorado Springs.

<sup>176</sup> *Flora of North America*: Asa Gray, the leading authority on American botany, was a prolific writer whose works were widely read. In this instance Jones may have been referring to A Flora of North America, a volume Gray co-authored in 1838, or a more current work Synoptical Flora of North America published in 1878.

<sup>177</sup> *Poa . . . a new species*: Jones writes that his find was similar to *Poa trivialis*, "rough bluegrass," but it apparently did not turn out to be an example of a new species. He did find six *Poa* species during his two summers in Colorado.

<sup>178</sup> *rare Psoralea hypogaea*: Commonly found on the Texas prairies and also known as *Pedimelum hypogaeum*, this purple-flowered herb is familiarly named "little Indian breadroot."

<sup>179</sup> *King's report*: Clarence King (1842-1901) was the leader of the Fortieth Parallel Survey, a scientific exploration of the American west conducted between 1867 and 1872. One of the eight published volumes describing the results of the survey dealt with the botany of the study area.

<sup>180</sup> *glumes*: Grasses like *Elymus*, which Jones identified as *Triticum*, have small modified leaves called bracts at the base of their flowers. Glumes are another pair of bracts at the base of the spikelet.

<sup>181</sup> *species type*: In botany a "type" is a specimen of a plant that is chosen to serve as a point of reference because it has all of the defining characteristics of a particular species. Jones is referring to finding examples that are similar to, but have some differences with, the type specimen of *Elymus*.

<sup>182</sup> *Piñon . . . healthy seeds*: Scholars believe that pinyon seeds, or "pine nuts," have been eaten by humans in the Southwest as far back as 12,000 years ago. High in fats and calories, indigenous people harvested seeds from either green or dried cones and could store them in underground pits for several years. *Pinus edulis* is the state tree of New Mexico.



to which we treated ourselves.

Near the Bear River waterfall I collected a new variety of *Smilax herbacea* L.<sup>183</sup>, that I christened with the name *inodora* because of the complete absence of odor in its flowers; its leaves had five noticeable ribs and nerves on the underside covered with sparse short hairs and bacciform<sup>184</sup> three-sided fruits. In the same spot I found *Anemone cylindrica* Gray (see Gray's manual), *Aquilegia chrysantha* Gray, probably a new variety of *Delphinium azureum* Michx.<sup>185</sup>, *Petalostemon candidum* Mx., *Glycyrrhiza lepidota* Nutt., and the caulescent<sup>186</sup> form of *Oenothera caespitosa* Nutt.

In Cheyenne Canyon I collected *Ampelopsis quinquefolia* Mx. var. -- with leaves different from the eastern form, *Neillia opulifolius* Benth. and Hooker, *Saxifraga jamesii* Torrey (a rare species), *Polygonum lapathifolium* Ait. var. *incanum* Koch (see Gray's manual), *Asclepias tuberosa* L., the rare *A. hallii* Gray, *Penstemon gracilis* Nutt., *Pedicularis procera* Gray, *Carex scoparia* Schk. (Gray's manual), *C. liddoni* Boott., *C. siccata* Dewry, *C. bromoides* Schk. (see Gray's manual), and *C. flava* L. var. *oederi* W. Boott ms. (*C. oederi*, Gray's manual.)

Among the most interesting plants I collected were fungi<sup>187</sup> [including the following]: In Cheyenne Canyon, [growing] on *Carex pensylvanica* I found *Sorosporium atrum* Peck, sp. nov. At Colorado Springs, I found *Aecidium gaurinum* Peck sp. nov. and *Trichobasis gaurina* Peck sp. nov. growing on *Gaura coccinea*. In pods of *Astragalus drummondii*, I found *Sorosporium astragali* Peck sp. nov. (only three species of this kind are known in the United States, and two were reported as new species in my collection.) On *Saphaea sericea* was *Uromyces hyalinus* Peck (V. Bot. Gaz. sp. nov.), on *Psoralea floribunda* was *Aecidium psoralea* Peck (V. Ann. Nat. Vol. III, fol. 215, sp. nov.), on *Astragalus bisulcatus* was *Sphaerella megastoma* Peck sp. nov., on *Lactuca pulchella* was *Aecidium hemisphaericum* Peck (v. Bot. Gazette, vol. III, p. 34, sp. nov.), and lastly, on *Physalis viscosa* was *Puccinia physalides* Peck sp. nov. -- as well as a host of other species.

## Ascent of Pikes Peak; Description of the Voyage from Colorado Springs to Utah

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<sup>183</sup> *new variety of Smilax herbacea*: Jones would probably be glad to know that his designation, "*Smilax herbacea* L. var. *inodora* M. E. Jones" is now an accepted synonym for *Smilax lasioneura* Hook. He must have been struck by the seeming paradox of finding a scent-less variety of a vine commonly known as "common [or hairy] carrion-flower" said to emit a very foul odor.

<sup>184</sup> *bacciform*: Bacciform fruits, such as those of *Smilax*, are shaped like berries.

<sup>185</sup> *new variety of Delphinium*: The azure flowers of this plant are the sources of its names "sky-blue larkspur" and "Carolina larkspur." Since Jones' day it has been re-classified as *Delphinium carolinianum*.

<sup>186</sup> *Caulescent*: A caulescent plant is one whose stem is clearly visible above ground.

<sup>187</sup> *fungi*: Henri Fonsny, the translator of *Botanical Excursion*, offers "champignons" or "mushrooms" for these organisms, but it is apparent that Jones was referring to fungi known as rusts or smuts, plant diseases which can infect wild plants as well as wheat, corn, and other farmed crops.

On June 27 I joined a group of mountain climbers who were undertaking

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an ascent of Pikes Peak<sup>188</sup> -- and found along the way: *Gilia congesta* Hooker var. *crebrifolia* Gray (see Flora of North America), and *Polemonium humile* Willd., var. *pulchellum* Gray.

I leave for Utah on July 15th and arrive at Cheyenne [Wyoming]<sup>189</sup> on the 17th, traveling on the Union Pacific Railroad<sup>190</sup>. We are going west on the almost limitless plains: apart from the compact tufts of *Andropogon scoparius* scattered on the ground, the vegetation is identical to that of Colorado. As the highest point of the railroad that unites the two oceans is [Sherman] Summit at [8,240] feet above sea level, the traveler who leaves Cheyenne to head west expects to meet a mountain range, to cross a narrow gorge, and to cross dark and compact forests framed by surly and menacing peaks; a profound error, because never has a place been more poorly named than Summit Pass<sup>191</sup>.

Everywhere, in all directions, the plains appear broken, rugged, scarred by ravines, without a single peak -- the only mountains appear to be a black line far away on the horizon, toward the southwest. The soil is strewn with rock fragments and is covered with short turf (*Bouteloua oligostachya* Torrey and *Aristida purpurea* var.); here and there stands the trunk of a pine (*Pinus ponderosa* Dougl.) We travel along the highest point in frequent snow squalls, and gradually descend to the middle of the fertile plains toward Laramie<sup>192</sup>. Here the grassland becomes more green, more abundant, but does not include species other than those seen in Cheyenne. Tufts of *Artemisia tridentata* Pursh are the first plants to announce the flora of the West. These splendid prairies stretch as far as the eye can see, and must have formerly constituted rich pastures for bison and antelope; because their former occupants have disappeared today, the prairies rest, sad and silent, waiting for innumerable herds of cattle which the approach of civilization will bring to them.

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<sup>188</sup> *ascent of Pikes Peak*: Considering the fact that this section's heading begins with "Ascent of Pikes Peak," the reader could expect more than the brief phrase found here. It is possible that Jones included a description of his journey up the mountain only to have it removed by the editor. Fortunately, there is a surviving account of the Pikes Peak excursion found in two articles Jones submitted to the *Iowa College News Letter* in 1879. This informative and highly-detailed text appears in Appendix A, and it enables us to compare Jones' original English prose with the translated and re-translated language of *A Botanical Excursion*.

<sup>189</sup> *Cheyenne*: 3,400 of Wyoming Territory's nearly 21,000 people lived in Cheyenne when Jones passed through the town that had been created by the Union Pacific Railroad a decade earlier. Gold strikes in the nearby Black Hills brought miners, merchants, saloon keepers, and others to the "Magic City of the Plains," where the cattle industry had already been thriving.

<sup>190</sup> *Union Pacific Railroad*: The Union Pacific was the eastern half of America's first transcontinental railroad. Starting from Omaha, Nebraska, in 1862, the Union Pacific built westward until meeting the rails of the Central Pacific at Promontory Summit, Utah in 1869, giving the country one continuous train route from coast to coast. Passing through Wyoming on the UP, Jones could see how the territory's towns, businesses, and agriculture were prospering because of the railroad's presence.

<sup>191</sup> *more poorly named than Summit*: Jones was apparently expecting to view a spectacular vista as his train reached Sherman Summit, the highest point on the transcontinental route. Instead, he observed a prairie scattered with occasional rock formations, a sight that did not impress him.

<sup>192</sup> *Laramie*: Named for French-Canadian trapper Jacques La Ramie, Laramie began as a tent city in the mid-1860s as a workstation along the path of the Union Pacific Railroad. Despite a lawless beginning including extortion and gunfights, the city became a manufacturing center where glass, bricks, and steel were produced.

Our train devours space; it crosses flat and monotonous plains on the way to Laramie, which it reaches at dusk; in the middle of the plains darkness comes to surprise us and to drown out the contours of objects. During the night we crossed the plains of Laramie, passing near Rawlins<sup>193</sup> between low mountains; the first light of day arrives to illuminate an unseen, turbulent, country strewn with many hills; the soil is yellowish and bare -- due to a lack of humidity --

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there is no other vegetation than those that grow in alkaline soil such as *Sarcobatus vermiculatus* Torrey, *Atriplex confertifolia* Watson with some meager bushes of *Artemisia tridentata*.

Whitish bands of alkali appear on the soil surface or the banks of dried up rivers; we successively follow the arid path of each of them, and cross over many miles of expanse in this deserted and desolate region. As we move on, the soil becomes more rugged, and is segmented into low and creeping hills; *Artemisia tridentata* bushes are everywhere and the grayish hue of their foliage adds to the sad and dismal character of the landscape. Around noon we reach the Green River<sup>194</sup>, the first fresh water that we have met on a journey of a hundred miles.

In this place, and near the railway line, I find on *Iva axillaris* an interesting fungus, *Aecidium intermixtum* Peck sp. nov. (*Puccinia intermixta* Peck sp. nov.)<sup>195</sup> I consider this species as extremely rare because I have since then and before that time examined thousands of specimens of *Iva* without ever encountering the parasite in question. The rest of the day we go through this boring and monotonous assemblage of alkali, alkaline plants, and *Artemisia* bushes to Echo Canyon<sup>196</sup>, Utah, [400] miles west of Cheyenne.

Now the road descends, fast and steep, along the banks of a dry stream; the left bank rises among interrupted hills, while the right rises abruptly, displaying layers of clay alternating with rocky areas that grow little by little until they form the entrance to a gorge of overhanging high rocks half a mile above and which challenge any description. On one side the hills turned into dominating mountains, on the other sheer and steep precipices, rounded and impassable massifs, gorges with dark sides, and mysterious depths. Our train goes downhill, fast and bounding, it moves past rocky ridges, crosses many bridges along either bank - and the locomotive sounds its high-pitched whistle which is echoed by the flanks of the canyon. During our descent the first indications of grassland vegetation appear in the form of tufts of *Triticum repens* L., *Salix*, and *Alnus incana* Willd.

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<sup>193</sup> *Rawlins*: Founded in 1867, Rawlins grew around a spring that was the last chance for water before travelers set out across the Red Desert of south central Wyoming.

<sup>194</sup> *Green River*: Beginning in Wyoming, the Green flows for 730 miles, mostly in Utah, until it joins with the Colorado River. It is Utah's largest river and has had a paramount presence in the state's exploration and development.

<sup>195</sup> *Aecidium intermixtum*: *Aecidium* and *Puccinia* are related fungi and are commonly known as rusts.

<sup>196</sup> *Echo Canyon*: Just south of the watering and fueling stop of tiny Echo, Utah [56 residents in 2010], the Canyon features a narrow passageway through high rock walls, and was named for the prominent reverberations noted by early explorers.

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Water reappears in the stream bed, and leaving Echo Pass for Weber Pass<sup>197</sup>, we find ourselves on the banks of the Weber River, one of the sources of the Great Salt Lake. Both sides of the steep rocky walls of Echo Pass are adorned with a scanty growth of pines, plum trees, *Acer glabrum* Torrey, *Quercus undulata*, *Ceanothus*, and of course *Artemisia tridentata*. Along the railway line I recognize various *Lupinus*, *Cleome*, *Phacelia*, *Eritichium* and other species, without being able to collect any specimens.

Soon we cross Hell Gate<sup>198</sup>, and we see in the distance the valley and the blue waters of the Great Salt Lake; before long we reach Ogden<sup>199</sup>, on the left side of the valley in the shade of the mountains. There we change cars and travel south on the Utah Central Railroad. The almost plain ground is covered with *Atriplex confertifolia* and the inevitable *Artemisia tridentata*; here and there flourish the beautiful flowers of *Cleome integrifolia* T. and G., *C. aurea* and *Helianthus annuus* L. (*Helianthus lenticularis* Dougl.) Large farms appear wherever irrigation of the soil is possible; we discover fields of wheat, oats, and even meager crops of corn; at each station Mormon children come to the doors offering peaches, apples, pears, and apricots grown on their land, and the traveler is struck with surprise at the sight of this great abundance of fruit coming from a land that without irrigation would be completely infertile.

After a journey of 37 miles we reach Salt Lake City<sup>200</sup>. This charming place is located 7 miles from the lake at the base of the Wasatch Mountains<sup>201</sup>; it is shaded on all sides by magnificent trees. Numerous aqueducts snaking along the ground bring fresh water from the surrounding mountains and create a rich and abundant vegetation, but wherever water can not reach the soil is dry and barren and supports only *Atriplex*

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<sup>197</sup> *Weber Pass*: The Weber River of northeastern Utah's Wasatch Range flows through Weber Canyon, one of the state's historically most significant mountain passes. A wagon road was built through the Canyon in 1858, and ten years later the Union Pacific Railroad laid tracks along this route.

<sup>198</sup> *Hell Gate*: Also known as Devil's Gate, this formation is one of 61 landmarks and geographical places in Utah having the name "Hell" or a variant. The Devil's Gate in Weber Canyon was so narrow that the earliest wagons going through had to go into the swift current of the Weber River.

<sup>199</sup> *Ogden*: Ogden claims to be the oldest settlement in Utah, dating back to a fort established in 1845. North of Salt Lake City and east of the lake, Ogden was originally the nucleus of a farming area but gradually transformed into a railroad and business center.

<sup>200</sup> *Salt Lake City*: From 1847, the year of its founding by 148 Mormon pioneers, Salt Lake City had grown into a modern, prosperous community of over 20,000 by the time of Jones' visit. Railroad connections played a key role in the city's growth, while the discovery of mineral and metal ores in the mountains nearby also drew new residents. The city and surrounding region had become a popular tourist destination as well. Although a small minority, non-Mormons played a significant role in Salt Lake City's financial and cultural life. Not long after his arrival in the community Jones attended a service in the Mormon Tabernacle, where he was amazed to find himself among a congregation of 6,000 people. It is interesting to note that Jones rarely missed a worship service on Sundays and that he never collected or analyzed specimens on the Sabbath.

<sup>201</sup> *Wasatch Mountains*: The 160-mile long Wasatch Range, stretching from Idaho into central Utah, marks the western edge of the Rocky Mountains and the eastern boundary of the Great Basin [see note 205.] Glacial action created rugged peaks and narrow valleys in the Range, which provided building stone, water, and timber for the earliest settlers.

and wormwood<sup>202</sup>. The city counts 20,000 inhabitants -- mostly Mormons -- and has splendid buildings, both public and private.

## Description of Utah

Here is some information about Utah: it is a territory located between the 37th and 42nd parallels of North Latitude and the 109th and 114th degrees of longitude west of the Greenwich Meridian; its length is

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345 miles and its width is 275 [miles]; its population is [144,000] inhabitants. The chain of the Wasatch Mountains, running from north to south, divides Utah into two equal parts; each of these halves is further divided by the Uinta Mountains<sup>203</sup> which run from east to west perpendicular to the Wasatch; the intersection of the two systems is near Salt Lake City.

The whole eastern half of Utah is drained by the Colorado [River] and its tributaries; it is naked, barren, inhabited only by wandering tribes of Indians<sup>204</sup>. The western half is part of the Great Basin<sup>205</sup>. It is a region subdivided into smaller basins, where the waters are lost in dead-end salt lakes or in great plains filled with an alkaline mud of unfathomable depth, covered with *Carex* (*Scirpus lacustris* Vahl) [taxonomy unclear]. Water pours out at their surfaces and disappears.

The largest of these basins is that of the Great Salt Lake: it is 200 miles long by 40 to 50 [miles] wide. Watercourses which flow into it are, especially: from the north, the Malad and the Bear Rivers<sup>206</sup> (the latter is

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<sup>202</sup> *wormwood*: The bitter-tasting plant wormwood (*Artemisia absinthium*) belongs to the Asteraceae or Daisy Family, has been cited by authors such as Shakespeare and John Locke, and is used in the alcoholic beverage absinthe.

<sup>203</sup> *Uinta Mountains*: Many species of trees grow in the Uinta Mountains, such as Douglas-fir (*Pseudotsuga menziesii*), quaking aspen (*Populus tremuloides*), and Engelmann spruce (*Picea engelmannii*). Numerous varieties of grasses and shrubs are also found in this east-west running mountain chain of Utah and Wyoming.

<sup>204</sup> *naked, barren . . . wandering tribes of Indians*: The southern and eastern portion of Utah is a portion of the Colorado Plateau, a region that was sparsely settled during the times of Jones' visit although hardly qualifying as "naked and barren." Farmers, cattle and sheep ranchers, lumbermen, and miners were among the groups moving into the area. During this era the federal government was forcefully encouraging the Utes and other native people to abandon their nomadic lifestyles and settle in permanent reservations.

<sup>205</sup> *Great Basin*: As Jones stated, western Utah lies in the Great Basin, a region that also includes Nevada and parts of Idaho, Oregon, and California. The area is the largest desert in the United States. A cool or temperate desert, the Great Basin has great botanical diversity among its six major "life zones" and 200 smaller biological communities. After establishing his home in Salt Lake City and for scores of years thereafter Jones explored Utah's portion of the Great Basin, becoming very familiar with its botany and geology.

<sup>206</sup> *Malad and Bear Rivers*: The Bear River runs from southern Wyoming through Idaho, ending in Utah at the Great Salt Lake; it is the lake's largest tributary. At 350 miles in length, it is North America's largest river that does not ultimately drain into the ocean. The Bear's tributary, the Malad River, takes its name from *malade*, the French word for "sick," because its waters caused illness in early settlers of the region.

350 miles long); from the east, the Ogden and the Weber Rivers, and from the south the Jordan River<sup>207</sup> (coming out of Utah Lake<sup>208</sup>) and some other less important ones; there are none in the west. The Great Salt Lake<sup>209</sup> is at the bottom of this basin, at 4,260 feet above the sea; the perimeter of its shoreline is 350 miles wide, and its surface is 3,000 to 4,000 square miles<sup>210</sup>.

The salts of its waters destroy and annihilate all vegetation within reach of their attacks; its banks are covered with tiny larvae of myriads of *Diptera*, whose larvae produce a nauseating odor<sup>211</sup>. Its waves are translucent, limpid, and crystal clear; they roll lazily under the wind, prevented by their high density from breaking into foam. It is a place loved by bathers because the water is hot, and they can float there according to their whims, with their bodies sinking only half-way into the buoyant water.

An exact and complete analysis of the lake water gives the following results [%]:

Common salt (sodium chloride)	11.735
Chalk (calcium carbonate)	0.016
Plaster (calcium sulphate)	0.073
English salt (magnesium sulphate)	1.123
Magnesium chloride	0.843
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Solids [total solid residue]	13.790
Water	86.210
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Total	100.000

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One hundred grams of solids remaining after water evaporates contain:

Common salt	85.089
Calcium carbonate	0.117
Calcium sulfate	0.531
Magnesium sulfate	8.145
Magnesium chloride	6.118
	<hr/>
Total	100.000

<sup>207</sup> *Ogden, Weber, Jordan Rivers*: The short Ogden River has carved the spectacular Ogden Canyon, just east of the city of Ogden, as it flows toward the Weber River. Measuring 125 miles, the Weber flows from the Uinta Mountains into the Great Salt Lake and provides 25% of the lake's water input. Mormon pioneers settled along the Jordan River in 1847 and shortly constructed ditches and canals to draw upon its water for agricultural use.

<sup>208</sup> *Utah Lake*: Utah Lake is a freshwater lake near the cities of Provo and Orem and about 38 miles southeast of Salt Lake City.

<sup>209</sup> *Great Salt Lake*: Jones was obviously fascinated by the physical characteristics of the Great Salt Lake, the largest body of water in the United States that is not one of the Great Lakes. After moving to Utah in 1880 Jones studied the lake, keeping careful records of its capacity, and using his research to produce many articles analyzing its characteristics. He also enjoyed leisure time on the lake in his small sailboat.

<sup>210</sup> *3,000 to 4,000 square miles*: The lake has an area of 1,700 square miles in an average year, but it has varied from 950 square miles in 1963 to 3,300 square miles in 1988 when the Salt Lake was at its historic high. One reason for the lake's variation in area is its shallow depth, which averages only about 16 feet, and reaches a maximum of 33 feet.

<sup>211</sup> *diptera . . . nauseating odor*: *Diptera* is a large order of flies and other insects, including mosquitoes. Three species of brine flies inhabit the Great Salt Lake, with numbers estimated in the billions at peak times. When brine fly pupae casings, brine shrimp, and decaying algae wash up on the lake's shore the stench of hydrogen sulfide hovers in the air.

Compared with other saline waters those of the [Great Salt] Lake give the following results:

A) As a proportional quantity of dissolved salts:

	<u>% Water</u>	<u>% Salt</u>
Atlantic Ocean	96.5	3.5
Mediterranean Sea	96.2	3.8
Dead Sea	76.0	24.0
Great Salt Lake	86.0	14.0

B) As specific gravity <sup>212</sup>, distilled water taken as a unit:

Ocean	1.026
Dead Sea	1.116
Great Salt Lake	1.107

As indicated in these tables, salt obtained by evaporation of lake water is almost pure and is readily used on a large scale. The waters of the lake are brought into large, shallow ponds and are evaporated by the action of solar rays: [after evaporation] the salt remains, and hundreds of tons<sup>213</sup> are produced annually. The mines [nearby] use considerable quantities for the chlorination of ores; a proportion no less large is packed and shipped to the west, where it serves without purification for culinary purposes. The taste differs little from that of the best salt.

The Salt Lake Valley is divided by the Oquirrh Mountains<sup>214</sup> which range from north to south to the lake, where they break up and split into a row of raised islets<sup>215</sup> seemingly thrown into its waters. In the basin of this great region are the valleys of Sanpete, Cache, Rush, Skull, Strawberry, and Sevier<sup>216</sup>. Their average altitude is from 4,000 to 5,000 feet above sea level, with the highest edge of the basin being 5,420 feet. It seems today abundantly

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<sup>212</sup> *specific gravity*: Specific gravity is a measure of the relative density of a body of water or an object. Jones is showing that the Great Salt Lake's density is more than that of the ocean but less than that of the extremely salty Dead Sea, located between Israel and Jordan.

<sup>213</sup> *hundreds of tons [of salt]*: The salt industry was one of Utah's first business enterprises, dating back to the 1840's. Although early salt producers boiled water from the lake, by the time of Jones' visit the evaporation method he describes had become common. As he mentions, Utah salt was used in the processing of silver ore and was also sent by rail for the kitchens of San Francisco eateries.

<sup>214</sup> *Oquirrh mountains*: Located south of Salt Lake City, the Oquirrh range extends for 30 miles and stretches upward to a height of 10,600 feet. "Shining mountains" in the language of the Ute Indians, the Oquirrhs were once a major copper mining area.

<sup>215</sup> *row of raised islets*: The number of islands in the Great Salt Lake varies as the water level rises and drops. There are officially 17 named islands, including Antelope, Badger, Egg, Fremont, and Hat.

<sup>216</sup> *valleys of Sanpete . . . Sevier*: Sanpete (from a native American word meaning "bulrush") Valley lies south of the Great Salt Lake while Cache Valley is in the extreme north of Utah. Southwest of the lake lies Rush Valley, a marshy region fed by mountain streams. Nearby Skull Valley is known for the ghost town of Iosepa, which once housed several hundred Polynesian members of the Mormon church. Strawberry Valley, east of the Salt Lake metropolitan area, became the site of massive water diversion projects in the early 20th century. To the south is Sevier Valley, a fertile region in the high plateau country of central Utah.

proven that these various bodies of water were once only portions of a larger lake<sup>217</sup> covering the whole country and crossed by chains of mountains reduced to islands. Several hundred feet above Salt Lake City the contours of an old shore extend up to Ogden, Cottonwood, and the Oquirrh Mountains. This shore is recognizable by the inclination of its slope, by a concentration of pebbles deposited by waves, and other clues that are as clear and fresh as if the waters had left it only yesterday.

Another interesting observation is that for several years the water level has been rising<sup>218</sup> in these basins, revealing thus an increase of humidity; the average depth of the Great Salt Lake is currently 20 feet and reaches 60 feet in some places. It was barely 10 feet in 1863.

[Three dense pages of “Meteorological Tables” have been deleted in this version of Jones’ text.]

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It follows from these statistics [in the deleted tables] that July and August are the hottest months, December and January the coldest, but the monthly [temperature] differs little between summer and winter. The four hottest months have, at 9 o’clock in the evening, an average temperature of 14° [57° F], and the nights are deliciously fresh. The climate of Utah is much the same as that of Arizona and New Mexico; the thermometer rarely goes down to -18° [0° F]. Snow accumulates in depth only rarely and then melts quickly.

The good season starts about mid-March; trees and plants of all kinds suddenly come back to life with vigor; the air is clear and pure; rarely does a cloud appear to tarnish the brightness of the sky. This state of affairs continues until the end of June; at this time the soil dries and cracks, alkaline vapors fill the air, springs dry up, and vegetation languishes and dies, except in the mountains where it persists only to perish near the end of August under the murderous attacks of the first cold weather.

Utah's resources consist mostly of its inexhaustible mines of gold, silver, lead, iron, coal, etc. The inhabitants, for the most part belonging to the Anglo-Saxon race, are industrious and peaceful people, but they do not have clergymen<sup>219</sup>, and polygamy<sup>220</sup>, which reigns supreme, has destroyed the sanctity of their homes and brought social degradation to the point where it is exceptional to find a girl of 15 years who is still a virgin,

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<sup>217</sup> *portions of a larger lake*: Nearly as large as Lake Michigan and considerably deeper, Lake Bonneville was a prehistoric lake that covered northwestern Utah and parts of Idaho and Nevada. Bonneville disappeared about 14,500 years ago when most of its water was released in the Bonneville Flood. Great Salt Lake and Utah Lake are remnants of Bonneville, as Jones observed.

<sup>218</sup> *water level has been rising*: The decade of the 1870s saw some of the Great Salt Lake’s highest water levels since the Mormons had settled there, leading some people to fear that the lake would flood Salt Lake City and nearby farms before long. This concern was so grave that officials began to study a plan to drain some of the lake’s water into the desert to the west. When levels began to drop in following years this scheme was abandoned.

<sup>219</sup> *they do not have clergymen*: As a traditional Protestant who had served as a supply pastor for Congregationalist and Baptist congregations, Jones was unfamiliar, and likely uncomfortable, with the Mormon practice of relying on a lay, rather than a professional, clergy.

<sup>220</sup> *polygamy, which reigns supreme*: The Latter-Day Saints church publicly supported plural marriage from 1852 to 1890, but the majority of Mormon families never chose this lifestyle. Jones was among the many Americans who were appalled by polygamy, and he remained an outspoken critic of the practice for years after his move to Salt Lake City.



while cases of illegitimacy abound and make this city more than any other in the United States the boulevard and refuge of prostitution.<sup>221</sup> However, the higher authorities have already managed to suppress the more revolting practices of this sect, and soon, without doubt, polygamy will have ended and the Mormons will have become a happy and respectable people.

## Utah Flora

The flora of Utah is very special<sup>222</sup>; the vegetation is that of an isolated region, characterized by many alkaline earth species and by plants particular to the dry valleys and hills of the large continental basin. In the west, a few species from the shores

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of the Pacific Ocean have crossed the Sierras to populate this region, and in the north, Arctic plants grow only on a few high mountains, while low-altitude plants abundant in Idaho and Montana are scarcely represented. In the east, the plants common in Colorado exist only in the Uinta Mountains and only by chance in the Wasatch Range; in the south it is mostly species from Arizona and southern Nevada, Utah's adjacent regions, that constitute the flora of the deep valleys and hills up to the northern border of the territory.

The flora of Utah can be divided into two major groups, that of the basins and that of the mountains. The flora of the basins is divided in turn into the flora of the alkaline lands and the flora of the prairies. The first, occupying the low-lying alkaline bottoms of the basins, extends to California and southern Arizona. The plants that characterize it are the following: *Sarcobatus vermiculatus* Torrey, *Spirostachys occidentalis* Watson, *Suaeda depressa* Led., *S. fruticosa* Forsh. var., *Spartina gracilis* Trin., *Brizopyrum spicatum* Hooker, *Atriplex confertifolia* Watson, *Spergularia media* Presl., *Heliotropium curassavicum* L., *Triglochin maritima* H., *Sesuvium portulacastrum* L., *Salicornia herbacea* L., and *Glyceria aeroides* Thurber.

Among prairie species -- including aquatic plants -- not encountered on the mountains, I can report finding the following: *Scirpus validus* Vahl, *Erythraea nuttallii* Watson, *Castilleja minor* Gray, *Potamogeton gramineus* L. var., *P. pauciflorus* Push, *Zannichellia palustris* L., *Aster nuttallii* Gray, *A. falcatus* Lindley,

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<sup>221</sup> *girl of 15 . . . illegitimacy . . . refuge of prostitution*: The moralistic Jones rarely missed an opportunity to condemn sexual behavior among the Mormons. While it is apparent that young women in Utah did marry at ages 16 or 17, which was younger than the national average in the 19th century, he could present no proof of his claims about out-of-wedlock births. Salt Lake City was hardly alone among Western communities in having a large number of prostitutes in this era, for any number of the places he visited, such as Georgetown, Colorado, were known for the brothels that flourished there.

<sup>222</sup> *flora of Utah is very special*: Like Colorado, Utah has many different geographical features, a condition that contributes to the richness of its native vegetation and to the relatively high numbers of endemic plants [those found only in Utah] and of rare plants growing there. Compared with other states, Utah ranks fifth in the number of rare plants, trailing only California, Texas, Florida, and Oregon. The state [still a territory when Jones first visited] also resembles Colorado in having a wide range of elevations, soil types, and weather patterns; these account for the diversity of flora that can be seen there.

*Glycyrrhiza lepidota* Nutt., *Gaura parviflora* Dougl., *Brachyactis frondosa* Gray, *Solidago occidentalis* T. and G., *Iva axillaris* Pursh, *Senecio hydrophilus* Nutt., *Lactuca pulchella* DC., *Asclepias speciosa* Torrey, *Carex jamesii* Torrey, *Vilfa aeroides* Trin., *Elymus condensatus* Presl., *Beckmannia auraeformis* Host., *Erigeron canadense* L., *Glaux maritima* L., *Sparganium eurycarpum* Eng., *Phragmites communis* Trin., and *Hordeum jubatum* L.

The flora of the mountains is divided into the flora of the mountains proper and the flora of the hills. The first region is located at 7,000 feet above sea level, and the second descends from this level to the valleys below. Because of the complete absence of high mountains in the Wasatch chain<sup>223</sup> (where the tallest peak

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does not exceed the timber line), and the fact that the considerable quantity of snow that falls in winter melts almost completely under the hot rays of summer, there is in this region a confused and irregular mixture of alpine and subalpine species growing pell-mell next to each other. Here are plants such as: *Ranunculus adoneus*, *Epilobium angustifolium*, *Mertensia sibirica*, and *Triticum repens*.

Above two thousand feet altitude the following species grow (they are unknown in Colorado)<sup>224</sup>, *Galium bifolium* Watson, *Townsendia scapigera* Eaton, *Helianthella parryi* Gray, var. *multicaulis* Gr., *Lupinus laxiflorus* Dougl., *L. argenteus* Pursh, *Glycosma occidentalis* Nutt., *Aster elegans* T. and G., *A. adscendens* Lindley var., *Erigeron ochroleucus* Nutt., *E. caespitosus* Nutt., *Melica poaeoides*, *Aira danthonioides* Trin., *Draba alpina* L. var.; *Artemisia discolor* Dougl., *Chaenactis douglasii* H. and A. var., *Mimulus lewisii* Pursh, *M. moschatus* Dougl., *Collomia aggregata* Porter var. *attenuata* Gray, *Linum kingii* Watson, *Rudbeckia occidentalis* Nutt., *Aplopappus macronema* Gray, *Phlox canescens* T. and G., *Polygonum coarctatum* Dougl. var. *minus* Meisn., *Astragalus* sp. nov.?, *Angelica pinnata* S. Watson, *Aster kingii* Eaton, *A. asperugineus*, *Aquilegia flavescens* Watson, *Ivesia gordonii* T. and G., *I. unguiculata* Gray, *Peucedanum graveolens* Watson, *Orthocarpus tolmiei* Hooker, *Plantago eriopoda* Torrey, *Stellaria kingii* Watson, *Aspidium lonchitis* Sw., and *Puccinia aberrans* Peck. sp. nov.

Plants unknown in Colorado which grow in Utah between 5,000 and 7,000 feet of altitude are: *Aecidium giliae* Peck sp. nov., *Sedum debile* Watson, *Gilia watsoni* Gray, *Cercocarpus ledifolius* Nutt., *Aplopappus suffruticosus* Gray, *Hieracium scouleri* Hooker, *Lophanthus urticifolius* Benth., *Eriogonum kingii* T. and G. var.; *Polygonum* sp. nov.?, *Sphaeralcea acerifolia* Nutt., *Spiraea caespitosa* Nutt., *Epilobium*

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<sup>223</sup> *absence of high mountains in the Wasatch*: Although correct in his observation that the mountains of the Wasatch are not as tall as the Rockies, Jones must have been unaware that Mount Nebo, the southernmost mountain in the Range, is measured at 11,933 feet.

<sup>224</sup> *species unknown in Colorado*: Of the 52 species listed in this and the paragraph that follows, nearly half (25) actually are found in Colorado today. Of this number, most grow in western regions of the state that Jones did not have an opportunity to explore in 1878.

*glaberrimum* var. *latifolium* Barbey (see Flora of California)<sup>225</sup>, *Zauschneria californica* Presl., *Lepidium montanum* Nutt. var. *alpinum* Watson, *Mimulus rubellus* Gray, *Gnaphalium palustre* Nutt., *Anaphalis margaritacea* Benth., and *Erigeron denephyllum* Eaton.

I can not, speaking of the flora of the hills, invoke the results of my personal studies because the plants that are found in that area bloom very early in the season, long before I arrived in Utah.

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But I hope to return next season to collect the species characteristic of this most interesting part of Utah's flora. The explorations led by Clarence King recorded 305 species, of which 51 are specific to the Basin, many are shared only with Arizona, New Mexico, and California, and a single find is from farther north!

In summary, the flora of Utah's distinct regions is composed of the following families:<sup>226</sup>

Alkaline: Chenopodiaceae, Cruciferae, Compositae, and Gramineae

Prairie: Gramineae, Cyperaceae, Scrophulariaceae, Leguminosae, and Rosaceae

Mountains: Compositae, Leguminosae, Cyperaceae, Rosaceae, Gramineae, Caryophyllaceae, Ranunculaceae, and Scrophulariaceae.

The most richly represented family in the entire flora is that of Compositae. Then follow, in order of abundance, Gramineae, Leguminosae, Scrophulariaceae, Cruciferae, Rosaceae, Polygonaceae, and Cyperaceae.

My exploratory ventures in Utah, starting on July 18th, continued for two weeks along the Salt Lake and its surroundings. I scoured the land in all directions from Lake Point<sup>227</sup> 20 miles west of the lake, as far as

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<sup>225</sup> Flora of California: Jones is probably referring to the botanical section of the Geological Survey of California, published between 1876 and 1880. The Flora was authored by William Henry Brewer (1828-1910), Sereno Watson (1826-1892), and Asa Gray (1810-1888.)

<sup>226</sup> *flora of Utah's distinct regions . . . families*: The eleven plant families Jones listed for Utah have the following common names: Chenopodiaceae - Goosefoot family; Cruciferae [now known as Brassicaceae] - Mustards, crucifers, or cabbage family; Compositae [now known as Asteraceae] - Aster, daisy, composite, or sunflower family; Gramineae [now known as Poaceae] - Grass family; Cyperaceae - Sedge family; Scrophulariaceae - Figwort family; Leguminosae [now known as Fabaceae] - Pea family; Rosaceae - Rose family; Caryophyllaceae - Pink or carnation family; Ranunculaceae - Buttercup or crowfoot family; Polygonaceae - Knotweed or smartweed-buckwheat family.

<sup>227</sup> *Lake Point*: Originally known as "E.T. City," Lake Point sits on the south shore of the Great Salt Lake. When Jones visited in 1879 it featured a hotel and a new (2-year old) railroad connection.

City River Falls<sup>228</sup>, 20 miles east. I spent four weeks at Alta<sup>229</sup>, in the Wasatch Mountains, 30 miles southeast of Salt Lake City. At Alta the Uinta Mountains intersect with the Wasatch range; several peaks reach a height of 12,000 feet, and they retain their white blanket of snow year-round.

I climbed Bald Mountain<sup>230</sup>, the highest in this region. Here you would think you are looking at a logging zone were it not for the subtle transition from trees to bare ground that suggests it is just one of those open spaces that you often find right at the base of the timberline. At the summit I found the following: *Ivesia unguiculata* Gray?, *Aster asperugineus* Eaton, *Erigeron caespitosus* Nutt., *Puccinia aberrans* Peck, and a host of other good species. The most numerous and most interesting species of the region grow on Bald Mountain; it has been explored many times and in all directions.

The Cottonwood Lakes<sup>231</sup>, magnificent expanses of alpine water situated on the eastern slopes of the Wasatch Mountains, also provide me with many plants adapted to the locality.

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Close by, near Twin Lakes<sup>232</sup> I find more than anywhere else in Utah species that are representative of Colorado. While crossing the highpoint of the mountain chain I collect various interesting specimens. Toward mid-August the vegetation of the mountain summits dries out and dies, leaving practically nothing of the rarer species that don't yet appear in my collection.

On my way I find several occasional plants scattered among vegetation that is bent down and burned by the sun's fierce rays as I hasten to reach Salt Lake City, from where I make a short excursion to Bingham Gorge<sup>233</sup>, located 30 miles beyond, toward the southwest, in the Oquirrh Mountain range. But the plants here are withered and dry, the soil bare and cracked, and the wind batters the nearby mountains with thick clouds of dust that obscure visibility all day long; therefore my harvest of plants is insignificant. I eventually return to Salt Lake City and finish my Utah excursion on August 27th.

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<sup>228</sup> *City River Falls*: City Creek, a small stream fed by melting snow and mountain springs, was the original source of fresh water for Salt Lake City.

<sup>229</sup> *Alta*: Alta was a mining town in Little Cottonwood Canyon near Salt Lake City that had barely survived a devastating fire in 1878, one year before Jones' visit. The hard-working, hard-drinking silver miners of the region frequented 26 saloons in Alta, including the most notorious, the "Bucket of Blood." The abstemious Jones surely avoided these places, instead spending his time in Alta corresponding with clients who purchased his specimens and with other botanists.

<sup>230</sup> *Bald Mountain*: At nearly 12,000 feet, Bald Mountain is a striking peak in the western Uinta Mountain range of northeast Utah, the home to many species of wildflowers.

<sup>231</sup> *Cottonwood Lakes*: Big Cottonwood Canyon lies 12 miles southeast of Salt Lake City and is noteworthy for the number of rare and endemic plant species found there. Lakes in the Canyon include Silver, Mary, Martha, and Catherine.

<sup>232</sup> *Twin Lakes*: Utah's Twin Lakes is located near the other lakes in Cottonwood Canyon and is a popular hiking destination for today's visitors to the Brighton Ski Resort. This should not be confused with the Colorado location of the same name.

<sup>233</sup> *Bingham Gorge*: Originally a gold and silver mining area, Bingham Canyon became noted for the high-quality copper ores found there. The huge open pit mine that created the town of Bingham eventually consumed the community.

In this way I have managed, over the course of six weeks, to put together a collection of 550 plant specimens, and this unexpected result is due in part to the interest shown by staff on the various railroad lines -- Union Pacific, Utah Central, Wasatch, and Bingham Canyon<sup>234</sup> -- by providing the precious resource of easy and rapid transport from one locality to another; indeed, I am happy to take this opportunity to publicly express my gratitude to them. Similar assistance was, by the way, given me this year in Colorado by the Denver, Rio Grande and Western and the Colorado Central lines. I should also mention the help given me by Mr. J. Lynch, Professor Benner<sup>235</sup>, and others.

All that remains for me to do now is to say a few words about the region where I plan to botanize next season (1880)<sup>236</sup>. Of 263 species collected by an eminent botanist<sup>237</sup> in southern Utah only 17 feature on my list -- and his description only mentions 3 grasses, 2 ferns, and a single fungus. No doubt many species -- perhaps some new and certainly quite rare ones -- belong to lower botanical classifications and have been omitted by this scholar. My intention, therefore, is to botanize in the region around

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St. George [Utah]<sup>238</sup>, at the mouth of the great Colorado Falls<sup>239</sup> and along the Virgin and the Muddy Rivers<sup>240</sup>. Afterward I will head north toward the Great Basin to collect the flora of dry valleys and hills that I missed in 1879, and I am confident that I will reap an excellent harvest on this trip<sup>241</sup>.

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<sup>234</sup> *Utah Central, Wasatch and Bingham Canyon [Railroads]*: In addition to major interstate railroads such as the Union Pacific and the Atchison, Topeka, and Santa Fe, many smaller, independent lines connected towns and industrial sites around the country, providing passenger and freight service.

<sup>235</sup> *J. Lynch, Professor Benner*: John T. Lynch (1828-1908) was Postmaster of Salt Lake City; he probably helped Jones send specimens back to Iowa or to collectors in other areas. Amherst College graduate Edward A. Benner (1848-1925) was the principal of Salt Lake Academy, a private school affiliated with the Congregationalist Church. In 1880 Benner hired Jones to teach a summer course in botany and then gave him a full-time position teaching science in the fall of that year.

<sup>236</sup> *Botanize next season*: After Jones married Anna Richardson in Iowa, the couple journeyed to a new home in Salt Lake City in February, 1880, and immediately began to prepare for a botanical collecting trip. Traveling in a horse-drawn wagon, they headed toward St. George, Utah, [see note 223], taking 23 days to make the 300 mile excursion. Jones enjoyed working in this region, noting in his diary "vegetation comes on with great rapidity." [March 30, 1880]

<sup>237</sup> *an eminent botanist*: Among the renowned botanists who had explored the Great Basin region and published accounts of their explorations before Jones' visit were John Torrey (1796-1873), Sereno Watson (1826-1892), Charles C. Parry (1823-1890), and George Engelmann (1809-1884). It is not clear which of these predecessors Jones had in mind.

<sup>238</sup> *St. George*: Founded in 1861 as an intended but unsuccessful center of cotton farming, St. George is located in the southwestern corner of Utah. Jones was no doubt attracted to St. George because it sits at the meeting place of the Mojave Desert, the Great Basin, and the Colorado Plateau, three diverse plant habitats for a young botanist to explore.

<sup>239</sup> *great Colorado falls*: The identity of Jones' reference to this feature cannot be determined, unless he was alluding to the Grand Canyon of Arizona.

<sup>240</sup> *Virgin and Muddy Rivers*: 162 miles long, the Virgin flows from Utah, through the corner of Arizona, and to its confluence with the Colorado River in Nevada. The Virgin River course takes it through a desert region that is home to a diverse collection of plants and animals, a fact that would have prompted Jones' desire to study it. Nevada's Muddy River, only 32 miles long, was originally known as the "Moapa," from the Paiute word for "muddy."

<sup>241</sup> *excellent harvest on this trip*: Jones reported that he had collected plants belonging to 340 species on his 1879 trip, although elsewhere he provided a higher number.

*My own Reference List,*  
Highest No. 1600

**TO BOTANISTS.**

I take pleasure in sending these lists of interesting plants to the Botanists of the U. S. and of Europe.

The same care has been taken to keep the present collection up to the standard of that of 1878, in point of quality; and in quantity much more material has been added to make the sets fully equal to those of our best collectors. To those who have secured my large Colorado collection of 1878 these plants will prove valuable additions. The 150 additional species of this year will bring the whole Colorado list up to 1100 species. To these I now add over 500 species of Utah plants. Both lists (of 1879) contain nearly 15 new species and about 150 not reported from those sections before.

I have left but two full sets of the Colorado collection of 1878, containing 800 species. The Utah plants are put up in sets of 400 species, and the additional Colorado plants in sets of about 100 species.

All plants starred are not in the sets, from lack of enough material, there being from 1 to 10 specimens each. Of these as well as the rest botanists can make selections, and their wants will be supplied as far as possible.

All specimens are first-class, except those otherwise noted in the list. It is probable that most of the doubtful plants will prove to be new species. Prof. Watson has not yet reported on the plants sent him, and therefore some are still in doubt. But notice will be given if corrections are made. I have followed the latest and best authorities in the arrangement of species in their natural order.

The additional Colorado species were secured during May, June, and a part of July. The Utah plants between July 18th and Sept. 1st. I am very greatly indebted for the unusually large and interesting list of Utah and Colorado plants to the courtesy and generosity of the Supt. of the Union Pacific R. R., to Mr. A. A. Ball Genl. Ticket Agt. of the Colorado Central R. R., to John Risley of the D. & R. G. R. R., to Mr. Sharp Supt. of the Utah Central and Utah Southern R. R., and to J. G. Kennedy and G. M. Young of the Wahsatch and Bingham Canon R. R. Had it not been for the interest which the managers of these railroads take in the exploration and development of the far West, its natural resources would still be, to the world at large, unknown and valueless. And I am glad to bear testimony to the liberality which they are ever ready to extend to scientists seeking to make known the resources of the West.

It is my intention to give another full season to the elaboration of the plants of the little known section of southern Utah; and I expect to add 1000 species to the present Utah list. Hoping that these lists will interest you,

I am respectfully yours,  
MARCUS E. JONES, A. M.,  
Grinnell, Poweshiek Co., Iowa.

**FLORA OF UTAH. First Fascicle.**  
COLLECTED BY MARCUS E. JONES, A. M.

1351 <del>*</del> Clematis Douglasii, Hooker. (Fruit.)	1431 <del>*</del> Capsella Bursa-Pastoris, (Fruit.)	1437 Trifolium involucreatum, (Willd.)
1350 Anemone multifida, DC. (Fruit.)	1215 Thlaspi alpestre, L.	1046 pauciflorum, Nutt.
1194 Thalictum Fendleri, Eng.	1430 <del>*</del> Lepidium intermedium, (Gray.)	1010 Melilotus alba, Lam.
1225 Ranunculus Cymbalaria, Ph.	1270 montanum, Nutt., var. al-	1031 Medicago sativa, L.
1104 adenosa, Gray.	pinum, Watson.	1440 <del>*</del> denticulata, Willd.
1130 affinis, R. Br., var. leioear-	1316 Cleome integrifolia, T. & G.	1035 lupulina, L.
pus, Trautv.	1364 <del>*</del> Viola palustris, L.	1068 <del>*</del> Astragalus Canadensis, L.
1298 macranthus, Scheele.	1359 <del>*</del> Saponaria Vaccaria, L.	1443 <del>*</del> Utahensis, T. & G.
1348 Aquilegia flavescens, Watson.	1360 <del>*</del> Silene acaulis, L.	1210 <del>(Unassailed New?)</del> <i>var. peltata</i>
1349 <del>*</del> formosa, Fisch. <i>var. peltata</i>	1434 <del>*</del> Menziesii, Hooker.	1127 Kentrophyta, Gray.
1212 caerulea, James.	1120 Douglasii, Hooker.	1444 <del>*</del> Vicia micrantha, Nutt.
1154 Delphinium elatum, L., var. (?)	1372 <del>*</del> Schizis-Ajanensis, Regel. <i>silene</i>	1445 <del>*</del> Lathyrus polymorphus, Nutt.
occidentale, Watson.	1361 Drummondii, Watson. <i>marginata</i>	1447 <del>*</del> Prunus demissa, Walpers.
1175 Aconitum Fischeri, Reich.	1279 <del>*</del> Stellaria umbellata, Turcz. <i>(W.)</i>	(Fruit.)
1429 <del>*</del> Actaea spicata, L., var. argu-	1096 <del>*</del> humifusa, Rottboell.	1446 <del>*</del> Virginiana, L.
ta, Torrey. (Fruit.)	1293 <del>Ksagii, Watson. <i>arenaria</i></del>	1142 Spiraea discolor, Pursh, var.
1084 Berberis repens, Lindley.	1160 Jamesii, Torrey. <i>var. hirta</i>	damosa, Watson.
(Fruit.)	1363 <del>*</del> Arenaria verna, L.	1301 caespitosa, Nutt.
1197 Corydalis Caseana, Gray.	1433 <del>*</del> arctica, Stev., var. obtusa,	1448 <del>*</del> Neillia Torreyi, Watson.
1357 Draba Caroliniana, Walt., var.	Torr. & Gr. <i>(W.)</i>	1449 <del>*</del> Rubus strigosus, Mx. (Fruit.)
micrantha, Gray.	1362 <del>*</del> Sagina Linnaei, Presl. <i>(W.)</i>	1450 <del>*</del> Pseudis tridentata, DC. (Fr. <i>argentea</i> )
1211 aurea, Vahl.	1088 Spergularia media, Presl.	1451 <del>*</del> Cercocarpus ledifolius, Nutt.
1356 <del>*</del> Douglasii, Gray. <i>alpina</i>	1366 <del>*</del> Portulaca oleracea, L.	(Fruit.)
1235 alpina, L., var. alvida, <i>(W.)</i>	1435 <del>*</del> Malva rotundifolia, L.	1452 <del>*</del> Geum strictum, Ait.
[Regel.]	1365 <del>*</del> Sidalcea malvaeflora, Gray.	1264 Rossi, Seringe.
1251 Cardamine cordifolia, Gray.	1015 <del>*</del> Malvastrum coecineum, Gray.	1370 <del>*</del> Fragaria Virginiana, Ehrh.,
(Fruit.)	1085 Sphaeralcea acerifolia, Nutt.	var. glauca, Watson.
1177 Arabis Drummondii, Gray.	1907 Sida hederacea, Torrey.	1108 Potentilla glandulosa, Lindl.
1248 Lyallii, Watson.	1121 Linum perenne, L.	rivalis, Nutt., var. mille-
1358 <del>*</del> Caudanthus hastatus, Watson.	1112 Kingii, Watson.	grana, Watson.
1354 <del>*</del> Erysimum asperum, DC.	1173 Geranium Richardsonii,	1371 <del>*</del> Pennsylvania, L., var. stri-
1353 <del>*</del> Brassica alba, Gray. <i>var. longicaulis</i>	[Fisch. & Mey.]	gosa, Pursh.
1037 nigra, Benth. & Hook. <i>var. longicaulis</i>	1026 Erodium cicutarium, L'Her.	1227 gracilis, Dougl.?
1432 <del>*</del> Barroetia vulgaris, Br., var.	1083 Pachystima Myrsinites, Raf.	1453 <del>*</del> Anserina, L.
stricta, Gray. <i>1603-1557</i>	1437 <del>*</del> Acer grandidentatum, Nutt.	1202 fruticosa, L.
1192 Sisymbrium incisum, Eng.,	1436 glabrum, Torrey. (Fruit.)	1237 Sibbaldia procumbens, L.
var. filipes, Gray.	1438 <del>*</del> Nergando aceroides, Moench.	1113 Ivesia Gordonii, T. & G.
1117 var. Hartwegianum, Wat.	(Fruit.)	1231 New? Near to <i>anglica</i>
1236 Smelowskia calycina, C. A.	1187 Lupinus <del>parviflorus, Nutt.</del> <i>argenteus</i>	lata, Gray. <i>Make us of m. sp.</i>
Meyer.	1439 <del>lescurii, Dougl. <i>argenteus</i></del>	1455 <del>*</del> Rosa blanda, Ait. (?)
1198 Nasturtium obtusum, Nutt.	1439 <del>*</del> <i>argenteus</i> , Pursh. <i>argenteus</i>	1369 <del>*</del> Pirus sambucifolia, Cham. &
1352 patens, B. <i>argenteus</i>	1441 <del>*</del> Trifolium repens, L. <i>argenteus</i>	Schl.
1047 officinale, R. Br.	1442 <del>*</del> pratense, L.	1076 Cratogeomys rivularis, Nutt.
1334 <del>*</del> Vesicaria montana, Gray.		(Fruit.)

\*Plants marked with a star are not in the sets.

*1380 Rubus occidentalis*

3. Jones' catalog of Utah specimens with the notation "My own Reference List" at the top.

## Appendix A

### “A Trip to Pikes Peak” by Marcus E. Jones

Originally published in the Iowa College *News Letter*, 1879

#### Part I

Some Eastern people attempt to detract from the grand height of [Pikes Peak] by saying that, after all, it is no higher than Mt. Washington in New England, for the plains at Colorado Springs are themselves about 6,000 feet above the sea. This is a specious argument which lacks truth. It is true that the plains at the base of the foothills are 6,000 feet above the ocean. But if Mt. Washington were *an island in the sea*, and not a peak in a range away from the ocean as it is, and it were picked up and set down at Manitou in the foothills (6,000 feet altitude), its top would not even then reach as high as Camerons Cone<sup>242</sup>, a foothill this side of the Peak, and would only reach to the timberline on the Peak itself. Pikes Peak would tower above it, like a giant for 2,200 feet, with its great alpine meadows and massive cliffs, while the champions of Mt. Washington would be compelled to point it out as one of the neighboring foothills.

There was hardly a day or an evening after our arrival in Colorado Springs that we did not look toward this grand old mountain with a feeling of admiration and awe. So pure and so clear is the air that it looms up before you with wonderful distinctness. The great rocks on its sides and top are clearly visible, and so perfect are the proportions that you believe you could see a man if he was standing upon its summit. A narrow path, marked by pure white snow, seems to lead from timberline to the top of the Peak, but it is a mighty crevice, wider than a hundred paths, filled by almost eternal snow. Many times fleecy clouds would climb slowly with the rise of the sun, the great peak towering out of and above them, and the top of the mountains appearing below, till they reached the top and hung like a crown around it, and then vanished into clear blue sky.

We saw the great white mantle of snow slowly fade away as summer approached, until, by the last of June, only patches were left in the deeper recesses. Around us below, the plains had begun to put on the light brown of summer. The beautiful daisies (*Townsendias*), *Leucocrinums*, and wild peas (*Oxytropis*) had come out and decked the plains with pink and white, and had gone again. The *Penstemons* and lupines<sup>243</sup>, too, which

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<sup>242</sup> *Camerons Cone*: At more than 10,700 feet high, Cameron Cone is a prominent point on the side of Pikes Peak, hardly a “foothill” as Jones terms it. The feature was named for Robert Alexander Cameron (1828-1894), a Civil War general who played an important role in Colorado’s post-war development.

<sup>243</sup> *Townsendias* . . . *Lupines*: Somewhat unexpectedly, Jones mentions seeing only these five plants as he made his way to Manitou Springs to begin the expedition up Pikes Peak. However, this region was familiar territory for him by now, and it may be that he was excited by thoughts of the adventure that awaited him.

are the most conspicuous flowers of the plains, had almost passed out of bloom. The sky was clear as crystal day after day, the sun shone with intense brightness, the ground was often as hot as an oven; then strong winds would sweep over it carrying clouds of dust and sand. We had eagerly watched the snow fade away on the summit, for as long as much appeared in view the way to the peak would be difficult and dangerous.

The intense heat of the day led us to plan our trip to take advantage of the delicious night air and the weird beauty of moonlight on the mountains. So, late one afternoon, an Iowa minister<sup>244</sup>, (a member of my botany class), and I prepared ourselves for the trip. Each had a blanket to camp out in, and enough lunch to last until our return. Our guide was an old mountaineer who provided us “burros” (donkeys)<sup>245</sup> to ride. These diminutive animals we could have picked up in our arms. Some of us hinted at our doubts of their ability to hold us up, but being assured that they were good for a forty mile tramp with us on their backs, we said no more. The minister, because of his lofty profession, was mounted on the largest burro; the other two were mounted on smaller animals, for one was so short that should an accident befall him it would be but a short distance to the ground, and the other was so tall<sup>246</sup> that should any evil befall his donkey he could let his feet down and prop him up until the danger was past.

At length all was ready. The large burro led the way and the rest strung out in single file. What a stately, majestic cavalcade was that! How dignified were the burros! How kingly was the appearance of the members of the party as we moved slowly along, their feet nearly touching the ground on either side! How impressed were our friends with the solemnity of the occasion! It was only incessantly that shouts of laughter arose as we started, and the same solemn sounds fell upon our ears until we were entirely out of sight. We moved along so swiftly over the level ground that in the short space of half an hour we had traversed one full mile<sup>247</sup>, and by a vigorous system of kneading the burros’ sides with our boots we could accelerate the already rapid pace to a mile in three-quarters of an hour, but as we were not in a hurry we concluded to save their strength and ours, and so passed more leisurely along.

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<sup>244</sup> *an Iowa minister*: Jones noted in his diary that one travel companion was “Rev. Welles.” This was most likely Thomas Clayton Welles (1846-1937) an educator and Congregationalist pastor then serving a church in Keokuk, Iowa, who had an affiliation with Iowa College, Jones’ alma mater.

<sup>245</sup> *burros (donkeys)*: In the 16th century the Spanish brought small donkeys called “burros” to the Southwest, where they were frequently used as pack animals because of their strength and endurance. By 1878 the Colorado Springs firm of Marsh and Brent was advertising burro trips to the top of Pikes Peak as “a novel method of travel.” Based on his comments about the size of these representatives of *Equus asinus*, Jones must have been comparing the animals with horses. Working burros in Mexico today average 250 pounds and stand 45 inches tall; humorous hyperbole such as “we could have picked [them] up in our arms” appears now and then in Jones’ writing.

<sup>246</sup> *so short . . . so tall*: The “old mountaineer” who guided Jones and Welles up the mountain was named Gibbs. It’s probable that he was taller than Jones, who stood 5’6” and thus had the larger burro.

<sup>247</sup> *moved along so swiftly . . . one full mile*: Burros normally walk at the same speed that people do: 3 ½ to 4 miles per hour, so it may be that Jones’ expedition was proceeding exceptionally slowly to conserve the animals’ endurance. Covering 1 mile in 30 minutes computes to a speed of only 2 miles per hour.



We crossed the Monument and Fontaine (Creeks)<sup>248</sup>, then wound along over the mesas. We rode through a prairie dog town<sup>249</sup>, and saw on all sides the little yellowish-brown animals standing in the top of their crater-like holes and barking with all their might. When we approached too near, with a “chir-r-r” they would plump down and remain out of sight till we had passed, when, reappearing, would bark as vigorously as before. As we proceeded, the foothills began to loom up and assume their true proportions; the greensward on the hillsides, that we see from Colorado Springs, proves not to be grass but shrub-oaks<sup>250</sup> as high as a man’s head; what seemed to be little brush at Colorado Springs were tall pines scattered over the foothills. The peak which towers above Camerons Cone was hidden by the now lofty foothills.

We had nearly reached the mouth of Bear Creek Cañon<sup>251</sup> when the sun sank behind the hills, silvering and gilding the peaks. Soon we descended under cottonwoods to the bed of the creek and thence through the gateway into the cañon. This cañon and most of the others near Colorado Springs owe much of their grandeur to the magnificent gateways at their entrances. They are made by red metamorphic rocks tilted perpendicularly, often rising 1,000 feet above the plains. Through these the creeks appear to have cut a narrow way, leaving jagged precipitions [*sic*]<sup>252</sup> walls on either side. As we passed within these walls the dark shadows of the mountains made it twilight for us, though the peaks above us still glistened with golden light. But this gradually faded away as we moved along. One by one the stars came out shining brilliantly. The subdued light of the moon shone upon the face of the cliffs and mountains, leaving shadowy recesses and dark side cañons everywhere.

Not a sound disturbed the air, save the babbling<sup>251</sup> of the creek as it tumbled over the rocks in its course; not a bird flew across our path; not a living animal could be seen or heard, but all was as silent as the tomb; all nature seemed awed into perpetual silence in these mountains; for neither by night nor day can we hear or see anything, save a few lonely birds now and then. This cañon is made by two ranges of lofty foothills, running toward the Peak, whose sides incline at an angle of forty-five degrees, coming so closely together at the base that only the tortuous bed of the stream is left, and this is often filled with great boulders of hundreds of tons weight that have from time to time broken away far up on the mountains and swept down to the bottom with terrific force. In general, there is no timber on the sides of the mountains, but they are scantily clad with

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<sup>248</sup> *Monument and Fountain Creeks*: As they headed west from Colorado Springs, Jones and his party crossed the Arkansas River tributaries Monument and Fountain Creeks. In the text of *A Botanical Excursion* he referred to Fountain by its older French name Fontaine qui Bouille [see note 35.]

<sup>249</sup> *prairie-dog town*: With their keen sense of hearing, the black-tailed prairie dogs of Colorado (*Cynomys ludovicianus*) would have heard the Jones party long before the trio entered the colony of several thousand residents. Scientists today contend that prairie dog communication is quite sophisticated and can report more than danger; perhaps the “chir-r-r” that Jones heard merely meant “botanists - no threat!”

<sup>250</sup> *shrub-oaks*: This may be a reference to Gambel oak (*Quercus gambelii*), a species Jones had noted on his first Colorado trip. As darkness descended while the party made its slow way up Pikes Peak, Jones was understandably unable to describe vegetation in more than general terms, writing of encountering pines, spruces, and firs.

<sup>251</sup> *Bear Creek Cañon*: One of several canyons in the Colorado Springs area, Bear Creek lay on the path of the only route leading from Manitou Springs to the summit of Pikes Peak.

<sup>252</sup> *Precipitions [sic]*: The phrase should read “leaving jagged precipitous walls on either side. This error indicates that even an Iowa speaker of English could occasionally mistake Jones’ handwritten “u” for “n,” and partially vindicates translator Henri Fonsny.

bunches of grass and low straggling bushes. Very high up dark patches of pines and spruce are visible, appearing like beds of moss.

The narrow trail is dug out of the side of the mountain; it winds around great rocks, over hillocks, down to and across the creek, along the other side, then crosses and recrosses, zigzagging up the cañon, which is so steep that we almost slip off from our animals. The creek is now roaring constantly in its steep descent, and further on a deeper roar betokens a cataract or extensive fall. Now the trail leaves the creek and winds backward and forward until we are far up the mountain side, then curves around higher still until the roar of the water (hundreds of feet below) strikes faintly upon the ear. As the path becomes less steep and curves around toward the stream, we come into full view of a series of most lovely falls. The water leaps over a precipice many feet high, falling upon a shelving rock only to bound off in a spray-like sheet and drop upon another, then shoot out of sight beneath great boulders, only to reappear in other falls, blending into the silvery stream below.

## Part II

Our path now led to the broad, flat rock over which the water passes to make its leap of a hundred feet or more. Here we paused to look back upon the cañon. Its winding course we could barely make out in the now feeble moonlight. For a short distance the ribbon of silver that marks the stream we could distinguish, then it was lost in shadow. The great peaks of the foothills were around us; far below, at the mouth of the cañon, we saw the tops of the foothills that towered so high above us as we passed within the gateway. Between these peaks could be traced the bare outline of the boundless plains. We turned and passed into the shadow of great pines and spruces that here bordered the stream. We could hear rippling water near us but we could not see it; overhead was a canopy of trees, through which threads of light streamed upon the branches or flecked the ground; the mountains on either hand still reflected the faint glow of the setting moon. We crossed and recrossed the stream many times, stopping occasionally to drink the ice-cold water, or gaze upon the beautiful blending of light and shade upon the mountains.

Ere long we were out of the woods and into a beautiful park. We were then at an elevation of eight or nine thousand feet; the air cold, but not chilly; the grass and trees more abundant; here and there were the white tents of campers. Further on, the trail leads over fallen trees and through an extensive forest of burnt spruces that stand out, ghost-like, against the sky. The moon is gone, leaving the stars set out like diamonds in the

dark firmament<sup>253</sup>. We filed slowly along, climbing higher rapidly as we would around the side of Cameron's Cone.

We had been so absorbed in contemplating the beautiful scenery around us, that so far our journey was delightful, and though delightful still yet we realized that long continued donkey riding has some discomforts that we did not fully appreciate when we began. We toiled on however, at length passing over the watershed of Bear Creek, where once more we beheld Pikes Peak towering up in the darkness, gloomy and cloud be-girt. We turned to the left and descended among spruces till we came to a little break; near it, stretched out upon the ground, were half a dozen tourists asleep. Again we ascended to the top of a hill, then followed along the mountainside abreast of the Peak, amid a dense growth of spruces and firs, with a great alpine valley between. Far below was a tourists' cabin<sup>254</sup>, and near it we could see the surface of an alpine lake. The roar of its snow-fed inlets, mingling with that of the rising wind [and] its soughing<sup>255</sup> among the trees, and the immeasurable vastness of the mountain before us made an impression upon our minds that will not soon be effaced.

Far up on the Peak at the edge of timberline, gleamed another campfire, like a great star, marking the resting place of other tourists who were awaiting the first signs of the dawn to push forward and behold a sunrise above the clouds. At length benumbed with cold we reached another alpine lake, called a halt, and prepared to camp. We collected a mass of spruce boughs in the midst of the trees and soon had a rousing fire that lit up the dark forest in a strange and fantastic manner. Sheltered from the keen wind we ate our lunch, rolled up in our blankets, and laid down upon beds of soft spruce leaves. How grateful was this short rest, and how we longed to give way to sleep and stay there till the break of day! But this was impossible for it was already midnight, and we were three miles from the summit where we wished to be at dawn. So before an hour had passed we were in the cold and darkness again. The night was so deep that we could barely see a step before us; we would have been lost at once had it not been for the sagacity and sharp sight of our animals. We passed over the main divide, where the waters of the Peak begin to flow west and south, then entered a valley, and ascended along an alpine rivulet through ever denser forests. The piercing wind and intense cold crept through our many wrappings till we unrolled even our blankets and cast them around us.

After ascending for a long time we came upon white patches among the trees that turned out to be snow, and shortly after passed into the open space above the timberline, (12,000 feet above the sea.) On either hand the timberline extended around the mountain as clearly defined as the seams in rocks. Near us tall firs and spruces came square up to the alpine meadows and then stopped short off. Just above these were scattering

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<sup>253</sup> *stars set out like diamonds*: Jones uses some of his most inspired prose to describe stars, as in this sentence where he refers to them as "diamonds in the dark firmament" or in an earlier passage where they form a "luminous sepulchre," but he never refers to individual stars or constellations by name. Astronomy does not seem to have been among his scientific interests.

<sup>254</sup> *tourists' cabin*: Several of the early homesteaders on Pikes Peak, including the former gold rusher Joseph C. Jones, who has no known relationship with Marcus, provided overnight accommodations for mountain climbers.

<sup>255</sup> *its soughing among the trees*: Jones uses "soughing," a word derived from Old English, to indicate the rustling or murmuring sound of wind blowing through the trees.

trees that seemed never to have had any trunk<sup>256</sup>, but spread out flat upon the ground, their branches reaching five and even ten feet from the center, forming a dense and impenetrable mat as though they had been blasted for daring to pass the limit of forest. Below us far down the valley, were banks of fleecy clouds hovering over, and seeming to rest upon, the dense black forest. Around and above us was a vast meadow without a bush or tree, covered with matted grass and checked with many rocks or boulders. Clouds or bodies of mist swept upon us enveloping all for a few moments, then passed by to form the clouds beyond.

As we circled around up the steep mountain the eastern sky grew bright, then streaks of light shot out into the darkness, driving it into the valleys and recesses of the mountains. The sky grew brighter and the way more difficult every moment as we struggled on. We passed over ice and snow; the herbage grew scarce and rocks were everywhere. The trail became paved with sharp cobblestones, often slippery with ice; still higher up these passed into larger ones, a foot in diameter, and were laid so closely that they formed a sea of rocks, relieved occasionally by drifts of snow. Our animals soon gave out or went so slowly that we dismounted and left them to take care of themselves. There were no clouds above, but below they glowed with golden light, and thus we knew that if the sun had not already risen it was not far from appearing. Being upon the west side of the Peak we could not see eastward, and so began a race for the top, a quarter of a mile above. We scrambled over rocks or ran through beds of snow, till climbing up a very steep ascent, we stood amid boulders upon the top.

The red sun had just cleared the horizon [and] above us the sky was as clear as crystal; below was a sea of clouds bounded only by the horizon. Millions of fleecy billows were rolling in inextricable confusion, throwing up wisps of spray which the sunlight caught and turned to gold. There was not a break in the clouds to disclose the boundless plains lying below, neither did the numberless peaks in front appear, but we seemed to be standing upon a mass of rock resting upon nothing, ready at any moment to hurl us into the awful chaos below. Soon, to the right, the veil of mist reluctantly tore itself asunder and revealed a neighboring peak breaking through a snow-white mass of cloud, while the sunlight colored the ground and tinged the border of the fleecy cloud with the most exquisite tints of crimson and gold. The sea of mist now broke up into separate clouds between which appeared glimpses of peaks, valleys, and mountains. Far to the west masses of clouds were scurrying over South Park, revealing its surface occasionally, while far away on the western horizon a long line of mountain peaks rose above the clouds, marking the main range of the continent. South of us a few peaks appeared, but to the east the plains and foothills were so completely shut out that not even a glimpse of them was vouchsafed us.

We proceeded to the eastern edge of the Peak and looked down a precipice of over a thousand feet; the great crevice (appearing like a path at Colorado Springs) yawned below us partly filled with snow; far down, two thousand feet or more, began the evergreen forests whose trees appeared like dots upon the ground;

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<sup>256</sup> *scattering trees . . . trunk*: The stunted, flattened trees Jones describes were probably Engelmann spruce (*Picea engelmannii*) or bristlecone pines of the genus *Pinus*. Today the most misshapen trees of this type are called *krummholz*, German for “crooked wood.”

while between us and them were strata upon strata of fleecy clouds. The air was intensely cold, but so pure and fresh that it was a constant pleasure to breathe. There were no bloodshot eyes, no ringing ears, no pressure upon head or heart or lungs; but instead a delightful buoyancy far removed from the effects so confidently asserted in books of travel<sup>257</sup>. 'Tis true, it would be no place for a consumptive or one afflicted with heart disease, but few well people need fear a trip above the clouds.

The U. S. signal station<sup>258</sup> was nearby; soon we entered the massive structure and were hospitably received by the officer in charge. It seems like a lonely life to live on this isolated mountain peak, far from any society, in the midst of the war of the elements, but day after day through almost endless winter an officer [who] is on the watch, marking the storms gathering upon the mountains to break upon the plains, noting their course and strength, turns to his telegraph and send out warnings far and near. No one can tell the debt of gratitude we owe these men who peril their lives in fearful storms and terrible cold, at such high altitudes, for the benefit of their fellow men.

As we left the station we noticed among the rocks a few little patches of alpine grass, and mats of minute *Eritrichiums* hoary with copious white hairs and wool, densely packed together and studded all over with flowers like little blue stars; the petals were fringed with delicate hoar frost and each hair was tipped with a frozen dew drop; soon the sunlight melted the frost away and the tiny flowers came out as fresh and bright as our own "Spring Beauties"<sup>259</sup> after an April shower. Nature does not forget to clothe and guard her progeny, though they are placed on bleak and lofty mountain tops.

We descended over bodies of broken rocks with sharp and unworn edges, that seemed but yesterday to have been torn from the primeval mass. Lower down we could hear gurgling water beneath the rocks, then these large rocks passed into smaller ones and these in turn into still smaller ones or even to patches of soil where were growing the little *Eritrichiums*, alpine clover<sup>260</sup>, white *Phloxes*, and purple *Primulas*, none of them over an inch in height, but so densely matted and so extensive as to paint the ground with their brilliant hues. These flower beds became larger and more frequent as we descended, and close beside them were often banks of snow feeding tiny rivulets flowing through blue *Polemoniums*, purple *Primulas*, tiny *Cymopterus*, and golden *Actinellas*, and often on the very edge of the snow, and even pushing through it were yellow crowfoots, pink *Epilobiums*, or blue *Anemones*. Lower still we passed over vast stony meadows carpeted with short but

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<sup>257</sup> *effects . . . books of travel*: Despite Jones' dismissal of the troubling effects of acute mountain sickness, the condition is a real problem for about one quarter of visitors to even moderate elevations ranging from about 6,000 to 10,000 feet. Because he had spent the five weeks prior to the trek up Pikes Peak in Colorado Springs, Jones may have become acclimated to higher altitude and therefore less susceptible to its ill effects.

<sup>258</sup> *U. S. signal station*: In 1873 the U. S. Army Signal Service established the Pikes Peak Weather Observatory on the mountain top to monitor weather conditions and to report them by telegraph to Colorado Springs and the rest of the country. Equipped with thermometers, barometers, anemometers, and other instruments, the facility was one of more than 70 scattered around the country. This service was later separated from the Army and became the basis of the national weather service.

<sup>259</sup> "*Spring Beauties*": Spring beauty is a delicate wildflower with white to pale pink blossoms native to eastern North America (it is not found in Colorado) and more properly known as *Claytonia virginica*. Jones mentions it here in comparison with one of several species of *Eritrichium* which grows in the Rockies.

<sup>260</sup> *Eritrichiums, alpine clover*: . . . With the sun now lighting his way, Jones was able to spot fifteen plants on the downward trip, many more than he had noted on the way up the mountain.

luxuriant grass. Here were multitudes of great *Actinellas*, whose flowers were four and five inches in diameter, *Mertensias*, clovers, wooly thistles, yellow *Saxifrages*, blue and white *Gentians*, and hundreds of others in rich profusion. Thus in their season these meadows are truly vast gardens of the most lovely flowers.

Again we passed below the timberline, descending rapidly to lower and lower altitudes. We visited the Seven Lakes<sup>261</sup>, beautiful sheets of water, girt round with snow clad peaks. Thence we descended to the hot air and parched earth of the plains.

Monument Park is a humbug. FRIDAY, JUNE 27, 1879.  
Left Col. S. at 2 o'c.  
for Pike's Peak. Got to  
camp at 12 o'c. midnight  
rested an hour and then  
started for the summit  
to see the sun rise.  
Returned from Monument Park  
at 12 m. Had a fearful headache.  
SATURDAY 28  
Photographs \$3.00 Board \$5.00  
We got up on Pike's  
Peak just after sunrise  
Saw Halecomb \$3. Fare \$3.  
and saw a sea of  
clouds. Got several  
specimens. Went to the  
7 lakes and then home  
reaching there at 6 o'c.

4. Entries from Jones' diary describing his trip up Pikes Peak. "Monument Park" refers to a geological formation near the Garden of the Gods; it did not impress Jones, who called it a "humbug."

<sup>261</sup> *Seven Lakes*: When Jones passed through, the Seven Lakes area was connected to the top of Pikes Peak by a five-mile-long wagon road and boasted a crude log cabin hotel.

## Appendix B

### “Do You Think Marcus Really Wrote Like This?”

As our corps of translators worked to return Jones' text from the published French version to its original English, the group of six individuals who composed the team shared common observations about its literary style. Using words and phrases such as “flowery,” “exaggerated,” “overblown,” “over-the-top,” and “florid,” they reacted strongly to the wordy, dramatic flair Jones used in his descriptions of mountains, rivers, clouds, and other features of the West. Recall these passages from the narrative:

*. . . the atmosphere is replete with an indefinable charm that permeates all our senses and inspires the body to new vitality and awakens the latent faculties of our being. (p.1)*

*The silence of these mountains and the majesty of their appearance filled us with feelings of awe and terror; and now, although we had explored their chasms, scaled their most severe peaks and run around in all directions on the chain of mountains of which they are but a segment, we still cannot escape the sense of reverence and fright that struck us as we gazed upon the luminous sepulchre of the night stars. (p. 8)*

This is not the type of descriptive language we are accustomed to reading today -- who today uses phrasing such as “the latent faculties of our being” or “the luminous sepulchre of the night stars?” But before we condemn Marcus Jones for his extravagance, to put it mildly, with words, let us compare a portion of Jones' description of one of his favorite spots in Colorado, the Garden of the Gods, with an account of the same site by his contemporary author, Helen Hunt Jackson [see note 75].

First, the Jones version:

*We contemplated this admirable scene, and the majestic silence of the mountains of the West that reigned around us, overwhelming us and dominating us; there was not an animal's call, no song of a bird nor a sound of a living being. Nature, sublime in all of its frightening grandeur, seems to have thrown a sentiment of terror and silent power around itself. We could not avert our eyes, and it was painful to tear ourselves away from this wonderful spectacle -- but already the rays of the setting sun seemed to play hide-and-peek with the neighboring mountains; these rays left only with regret, and their last kisses caressed the heights of the Garden of the Gods with tints of silver and gold. [p. 22]*

Now the words of noted author Jackson, from her essay “A Symphony in Yellow and Red” found in the 1878 collection Bits of Travel at Home.

*Passing through this majestic gateway [into the Garden of the Gods], you find yourself in the weirdest of places; your red road winds along over red ground thinly grass-grown, among low cedars, pines, and firs and through a wild confusion of red rocks; rocks of every conceivable and inconceivable shape and size, from pebbles up to gigantic boulders, from queer, grotesque little monstrosities, looking like seals, fishes, cats, or masks, up to colossal monstrosities looking like elephants, like huge gargoyles, like giants, like sphinxes eighty feet high, all bright red, all motionless and silent . . . The stillness, the absence of living things, the preponderance of grotesque shapes, the expression of arrested action, give to the whole place in spite of its glory of coloring, spite of the grandeur of its vistas ending in snow-covered peaks only six miles away, spite of its friendly and familiar cedars and pines, spite of an occasional fragrance of clematis or smile of a daisy or twitter of a sparrow, spite of all these, a certain uncanniness of atmosphere which is at first oppressive.*

Comparing Jones' phrases “Nature, sublime in all of its frightening grandeur” and “sentiment of terror and silent power” with Jackson's “certain uncanniness of atmosphere which is at first

oppressive” and “colossal monstrosities looking like . . . huge gargoyles,” it is apparent that our botanist was not that far off the mark in his melodramatic descriptions of western scenes. It is arguable that Jones’ sentences were quite typical of the writing used in the Victorian Era, that they are excellent examples of the “purple prose” of that time. (We can concede that he really outdid himself with the overwrought phrase “the [sun’s] rays left only with regret, and their last kisses caressed the heights of the Garden of the Gods with tints of silver and gold.”)

Before dismissing this concern, let’s recognize that Jones’ manuscript passed through the hands of another person before appearing in print: those of Belgian chemist Henri Fonsny. Did Fonsny “totally ramp up” the language, as one member of our translating team asked? Fortunately, we have many samples of Jones’ writing in English, including his article “A Trip to Pikes Peak,” which is included in Appendix A. The following excerpt from this essay gives the flavor of his descriptive prose:

*The red sun had just cleared the horizon [and] above us the sky was as clear as crystal; below was a sea of clouds bounded only by the horizon. Millions of fleecy billows were rolling in inextricable confusion, throwing up wisps of spray which the sunlight caught and turned to gold. There was not a break in the clouds to disclose the boundless plains lying below, neither did the numberless peaks in front appear, but we seemed to be standing upon a mass of rock resting upon nothing, ready at any moment to hurl us into the awful chaos below. Soon, to the right, the veil of mist reluctantly tore itself asunder and revealed a neighboring peak breaking through a snow-white mass of cloud, while the sunlight colored the ground and tinged the border of the fleecy cloud with the most exquisite tints of crimson and gold.* [“A Trip to Pikes Peak”]

This paragraph makes it clear that Jones, not Fonsny, was the craftsman of the embroidered language of A Botanical Excursion and permits us to concede, “Yes, Marcus really did write like this.”



5. A Colorado vista of the sort that inspired Jones’ most purple prose.



## Appendix C

### Challenges for the Translators: From English to French, and from French to English

As noted in the Prologue, Marcus Jones was not the most precise speller, and his sometimes careless penmanship could render his texts bewildering to the reader. For the most part Henri Fonsny, the first translator of *A Botanical Excursion*, was able to decipher Jones' scrawl capably, but there was one circumstance in which the Belgian consistently misread the manuscript before him. This involved the confusing of two simple letters: "n" and "u", especially in botanical terminology and in place names.

For example, Fonsny, who was a chemist, not a botanist, repeatedly offered "*Bontelona*" for the genus *Bouteloua* and presented *Suckleya petiolaris* as the "truly rare plant *Snekleya*." [Extremely rare, as it does not exist!] The mountain town of Caribou, Colorado, became "Caribon" in Fonsny's version; the translator was likely unfamiliar with the American version of *Rangifer tarandus*, the European reindeer. Without doubt the gem of Fonsny's errors was this one: he proposed the name of "Bassin de Bijon," or "Bijon Basin," for a picturesque spot between Colorado Springs and Denver; wouldn't a native French speaker have recognized that "Bijou" was called for here?

Another source of confusion arose from the Belgian chemist's practice of rendering some American place names into what he considered to be French equivalents, and in the process obscuring Jones' meanings. For example, the city of Colorado Springs became "les sources du Colorado," which might signify "the springs of Colorado," which of course has a different implication. "Grand Lac Salé" for Great Salt Lake and "Riviere Claire" for Clear Creek were not problematic, but the location of "Pic de la Lance" was a mystery for some time -- where in Colorado is "Spear Peak," or is it "Lance Peak?" The solution came spontaneously during Game 7 of the 2017 World Series, an otherwise dismal event for Angelenos, with the realization that a pike is a medieval weapon similar to a spear, and therefore "peak of the pike" becomes Pikes Peak.

It is a mystery why the publication is titled "A Botanical Excursion" [Une *Excursion Botanique*] when it is clearly the report of two distinct trips made in successive years. Similarly, the reason why the Belgians chose to use the phrase "Le Far West" rather than "L'Ouest Lointain" for Utah is puzzling. Other place names that might have been rendered into French, but were not, include the Colorado cities of Golden [perhaps "D'Or"] and Leadville [possibly "le ville du Plomb."] It is not clear why Fonsny did not attempt to Frenchify the names of several Utah valleys such as Skull and Strawberry, which might have become simply "Crâne" and "Fraise," but for Rush Valley, the reason for his inaction is obvious: this innocent word might have been translated as "Ruée," "Jonc," "Hâte," "Bousculade," and more. [Adventuresome Utahns might think that Bousculade Valley has a nice ring to it.]



6. Albert Bierstadt's 1850 painting of Pikes Peak (*Pic de la Lance*).

## Appendix D

### Alphabetical Index of Plants Collected in the First and Second Excursions

This index contains the 557 plant species listed by Jones in his accounts of the trips to Colorado and Utah, and includes each specimen's formal, scientific name as he classified it in 1880 as well as a more current name for the plant, if applicable. A common name and place of collection (Colorado, Kansas, Utah, or Wyoming) have been added, and the formal and common names of plant families also appear. The index is available upon request.