Winter 1978

Carleton E. Watkins, Photographer: 1829-1916

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THE LOWER YOSEMITE FALLS
From a Carleton E. Watkins album at Syracuse University
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When, on August 19, 1839, Francois Dominique Arago announced the details of an invention by Louis Daguerre, called the daguerrotype, before a joint meeting of the Académie des Sciences and the Académie des Beaux-Arts at the Institut de France, photography was officially born.¹

At this time Carleton E. Watkins was ten years old, living in Oneonta, New York, the youngest of five children. His father was an innkeeper of Scottish extraction.

Other than these bare facts, very little appears to be known of the early days of Watkins' life, except that he developed a friendship that was to be lifelong with Collis P. Huntington, financier and entrepreneur, who, with four other men, developed and built the Southern Pacific Railroad.² Huntington arrived in Oneonta in 1842. There he and his brother Solon went into partnership in a hardware store.

Watkins went to California around the time of the gold rush. At that time there were several possible routes to California: the all-water route around Cape Horn or through the Magellan Strait; the overland route by Santa Fe and the Gila River, known as the Old Spanish Trail, or the South Pass over the Rocky Mountains at seven thousand feet above sea level; or the land and water route through the Isthmus of Panama or through Mexico.

Huntington sailed with a "group of Oneontans" on the steamer Crescent City from New York on March 15, 1849, to California via the Isthmus of Panama.³ If Watkins and Huntington were friends (Huntington at that time would have been twenty-eight years old and Watkins, twenty), it is conceivable that the younger Watkins could have followed his friend's lead and traveled to California with him.

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If he did so, the way was not unmarked by hardship. Once the passengers from the Crescent City reached Panama, they had to wait three months before passage could be secured to California. And the waiting was difficult. A letter from Collis Huntington to his brother, dated May 9, 1849, says "...we are here waiting for the Humboldt to sail and hoping she will sail soon for if she does not she will have to get another set of passengers as death is carrying off the Americans most fearfully. A gentleman told me yesterday...that there are from eight to ten deaths a day...this climate tells most fearfully on Northerners at this season of the year."4

The Humboldt finally did sail at the end of June 1849 and arrived in San Francisco on August 30. All in all, the trip from Oneonta, New York, to San Francisco took five months.5

What happened to Carleton Watkins from the time he set foot in San Francisco until we discover him clerking in a store on Montgomery Street in 1854 is presently unknown; but in the late 1850's Watkins got his start in photography by going to work for Robert H. Vance, the daguerreotypist, who had studios in San Francisco, Sacramento and San Jose. The story according to Charles B. Turrill, a San Francisco photographer, a friend to Watkins in later life, and his biographer, follows:

It chanced that the operator in the San Jose gallery suddenly quit his job and Vance asked the young man, Watkins, to go down and take charge of the gallery until he got a new man. Watkins went by stage to San Jose and the gallery was turned over to his care. He knew absolutely nothing in regard to photographic processes, and was simply for the first few days a care-taker of the place. In that town the great amount of business done in a daguerreotype gallery was on Sunday. On Friday or Saturday Vance visited San Jose to see how the young man was getting along. He had not gotten a new operator, so he showed the young man how to coat the daguerreotype plate and how to make an exposure for a portrait. This instruction occupied only a few minutes and naturally did not go into the minutiae of the profession. Vance told Watkins that when the visitors came in on Sunday he could make a bluff at making the exposure and take their money and that when they came back the following


week he would have an operator there to make over anything that had to be made over — it being the idea of both, that the green young man would not succeed in his daguerreotype operations. As good fortune would have it, he did succeed, however, and no new operator was ever sent from San Francisco to take the place his predecessor had resigned.  

Watkins remained with the Vance Gallery for three or four years until 1857 or 1858, at which time he established his own studio in San Francisco.  

Another photographer who also worked for Vance during this time was C.L. Weed. Weed and Watkins would find themselves in heated competition in the 1860's, from which Watkins was to emerge victorious with a national reputation as a landscape photographer.  

During the time that both Weed and Watkins worked for Vance the state of the photographic art (or business) was changing. The era of the daguerreotype reached its heyday in 1853. Although it was still largely used in 1854 and 1855, it was superseded by the wet plate collodion process during the late 1850's.  

Weed and Watkins must have learned not only the wet-plate process from Vance, but also garnered their predilection for landscape photography from him, since it is known that as early as 1851, Vance had traveled to New York City with three hundred whole plate daguerreotype views of the west, to be placed in exhibition. A contemporary account describes the exhibition as follows: “This collection comprises a complete panorama of the most interesting scenery in California. There are over three hundred daguerreotypes so arranged that a circuit of several miles of scenery can be seen at a glance. They are most artistic in design, and executed with a skill evincing not only a perfect mastery of the manipulatory art, but an exquisite taste for the sublime and beautiful.”

In 1859, C.L. Weed traveled to Yosemite, making stereographic views which were the first photographs made there with modest technical success. When Watkins went there in 1861, he set up his camera at many of the identical sites, only to be followed in 1867 by E. Muybridge.  

Some of the earliest information we have on Watkins' landscape work is that of a trip he allegedly made in 1858 or 1859 to the Mariposa Grove, where he photographed the "great trees" of California, the giant sequoias. According to J.W. Johnson, he was the first man

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to photograph the "Grizzly Giant." A print from that negative shows Galen Clark, discoverer of the Mariposa Grove and the first state guardian of Yosemite Valley, standing by the side of the Grizzly Giant. Watkins was to return again and again to photograph this area.

In 1861 Watkins, perhaps determined to better the stereoscopic photographs taken by Weed in the Yosemite Valley, went to Yosemite with a mammoth plate camera that had been made to order for him, probably by a San Francisco cabinet maker, since the body consisted of a wooden box with an opening for the lens in front and for the ground glass plate in the back. Such a camera was unusual for its time, and Watkins is the first field photographer reported to have used such equipment. It was not commercially available until after the Civil War. Watkins also had with him the relatively portable stereoscopic camera.8

The mammoth photographs were roughly 18'' x 22'', allowing for an inch or so at the edges which were not printed. Most of the prints now in existence are 15½'' x 21'' on the average.9 The lens that he used for at least some of his mammoth plate views was a Globe lens, invented in 1860 by Harrison and Schnitzer of New York City. The angle of light in the Globe lens was about seventy-five degrees.10 These mammoth-plate photographic prints were made for display in the parlor; and it was most likely for financial, rather than for aesthetic reasons, that Watkins went to such a large size. Enlarging of photographs, although known at that time, was uncertain and extremely slow.

Watkins' usual method of travel, when he went on his photographic trips, was in a two-horse photographic wagon, in which he carried his materials and developed his negatives. Collis Huntington would, from time to time, make available flat-bed railroad cars free of charge to Watkins for the transportation of his van. In photographing the more remote areas, however, he had to transport all of his equipment on mule back. Such was the case on many of his Yosemite trips.

According to Charles B. Turrill,

travel to the Yosemite Valley was difficult and the Valley itself accessible only by very crude trails. At least twelve mules were required to pack the outfit of the indomitable photographer. It must be borne in mind that large glass


10 Ibid., p. 12.
plates formed a very important part of his equipment. The portable dark tent used in coating and developing these plates was a load for one mule. This young man was compelled to take five mules in his train carrying camera, tent, etc., around the Valley with him, from point to point. As each picture was made the tent had to be set up, the plates coated and then immediately exposed and at once developed.Photographic processes were slow, as also the exposure, which must necessarily be prolonged. One of the most beautiful pictures in this early series — was taken in the early morning light, with an hour’s exposure, before the sun had risen on that part of the valley. Only by this method was it possible to have stillness among the leaves of the trees. These prolonged exposures will explain why there is no detail in the foam indicated in the waterfalls, as is shown by the rapid processes of today.11

Here Turrill was referring to the early days of the wet collodion process. Later on the exposure time was much less. The wet collodion process in itself was not an easy process to master, particularly when using glass plates as large as those used by Watkins. This is a description of the wet collodion process, taken from an article by Doug Munson:

The collodion, a mixture of pyroxyline or gun-cotton was extremely flammable and had to be adjusted to the particular temperature and humidity of the locale by the addition of ether and/or alcohol, so it would flow with the proper consistency. The iodides and bromides were added according to the photographer’s favorite formula, adjusted for the current circumstances. But unfortunately iodized collodion was not stable, it changed in speed and quality throughout its use. When new, it was speedy but apt to fog and be low in contrast. In order to smooth out these variations, it was common practice for a photographer to add a dash of “holy water” from an old collodion to a new one in order to “ripen” it. The glass had to be free of bubbles and other blemishes, and it was a good idea to make sure it fit the plate holders, especially out in the field, where temperature and humidity fluctuations warped the wooden equipment sometimes beyond use. But most importantly the glass had to be clean. Not merely dusted off with the fingerprints removed but well scrubbed,

11 Ibid., p. 7.
and if possible soaked in lye and washed in nitric acid. Just before use, it was scoured with rottenstone. Indeed, the glass had to be very clean, or all manner of blemishes would develop out on the plate.

Pouring the collodion onto the plate was no mean trick either. The photographer had to hold the plate at one corner between his thumb and forefinger and then pour the collodion onto it in such a manner that it never once reversed direction and flowed back onto itself, because a visible line would be produced if it did. And he had to make sure he covered every bit of the plate but at the same time not waste any over the edges. The excess was drained back into the collodion bottle while trying not to get any on the back of the plate. And all the while the plate had to be rocked back and forth to avoid the striations which tended to form as the collodion drained off it.

In ten to fifteen seconds, when the collodion had just set, the plate was placed on a holder and lowered into a vertical tank of silver nitrate, but lowered with one continuous motion or else, again, a line would appear on the negative. From this moment on the plate was light sensitive and had to be handled in either total darkness or orange light.

The silver nitrate sensitizing solution — commonly called "The Bath" — was the bane of the wet-plate photographer's existence. "The Bath" was merely an eight to ten percent solution of silver nitrate in distilled water, made just slightly acidic with nitric acid. But it would not be used right away, for it had to be aged a few days and a few poured plates had to be allowed to sit in it. When finally it was ready, it was used over and over again, each time picking up more gun-cotton, more ether, more alcohol, more iodides and bromides, and more plain dirt and dust; and all the while being depleted of silver. Suddenly, it would stop producing clean, blemish-free plates. A bath on the blink could halt a photographer for days while he tinkered with it trying to get it back into working order. As a last resort he might have to boil it down, recrystallize the silver nitrate, and start all over again.

The plate remained in the bath for a few minutes, then it was drained, put into a plate holder, and taken wet to the camera which was, of course, already set up and focused. The length of exposure was estimated on the basis of
experience and a knowledge of how the chemicals were responding on that particular day.

After exposure the plate was taken back immediately to the darkroom for it had to be developed before it had a chance to dry. Only after the plate was developed did the photographer know whether everything had been in order in each of the previous steps.

While the final steps were straightforward and rarely troublesome, they could be quite hazardous, for the fix used in wet-plate photography to remove the undeveloped silver halides was not the usual sodium thiosulfate, but potassium cyanide, which gave much cleaner results. However, if any acid were dripped into the cyanide or any of the acidic developer carried over to the fix, deadly hydrocyanic gas was liberated.12

Watkins, in his early 1861 plates, sometimes evidenced his technical problems with the collodion process, some negatives are streaked. These early photographs are also romantic in nature, reflecting the artistic sensibility of the times. His later work became more classical.

The shift may be partially explained by his relationship with Clarence King, whom he met in 1866. King was a geologist, one of the founders of the Society for the Advancement of Truth in Art, which had its start during the Civil War (1863). Basically, the society believed that the right course for young artists is faithful and loving representation of nature, selecting nothing and rejecting nothing, "seeking only to express the greatest possible amount of fact. There is no attempt at general affect, the truth is told about each square inch and therefore the truth is told about the whole."13 These would seem to be ready made conditions for photography; but no, the last issue of The New Path (which began as the journal of the society) states that photography can never supersede Fine Art, because no photograph can represent complete fact! It insists that the variation of tone in a photograph can never be as wide as it is in reality, but that an artist can come closer to rendering true tones than can a photographer. The final argument proclaims that the hand of the artist is more sublime than the mechanical process of the photographer.


Plate 4 from the Syracuse University Watkins album: "The Yosemite Valley from the 'Best General View.' Mariposa Trail." 8" x 12 3/16" (undated)
Plate 21 from Naef and Wood, *The Era of Exploration*: “The Domes from Sentinel Dome, Yosemite. No. 95. 1866. BPL” 18” x 22” (See Bibliography) By permission of the authors and the courtesy of the Trustees of the Boston Public Library.
Plate 35 from the Syracuse University Watkins album: "The Domes from Sentinel Dome." 1866?. 8" x 12"
At any rate, by 1866, Watkins had mastered the technical aspects of his work; and his photographs had become rich, meditative and classical in composition.

In 1864 both Watkins and Albert Bierstadt visited Yosemite. There is no way of knowing if they met while they were there, but both did strikingly similar renderings of the Grizzly Giant. It is thought that Bierstadt based a painting on the Watkins photograph, even reproducing the distortions in perspective given by the camera angle used by Watkins.¹⁴

In the summer of 1866, Josiah Whitney was in Yosemite to measure the region, at the request of the Commissioners to Manage the Yosemite Valley. It had been declared a public pleasure area by Congress in 1864. The result of his survey was a report entitled *The Yosemite Book*, containing twenty-four of Watkins’ original photographs. The book was published for the park commission by Julius Bien of New York, in an edition of two hundred-fifty copies. The introduction states, “Mr. C.E. Watkins, the well known and skillful photographer, whose views of Pacific Coast scenery have been highly praised by good judges in this country and in Europe, being in the Yosemite Valley at the same time with our party, I requested him to take a set of pictures with the Dallmeyer lens belonging to the survey for the purpose of illustrating the work then in preparation. He kindly acceded to my request and of the pictures then taken twenty-four were selected to accompany the volume in question.”¹⁵

During the time he was in Yosemite in 1866, Watkins unquestionably had with him his mammoth plate camera and most likely his stereo camera. He also used the Whitney survey half-plate camera with the Dallmeyer lens.

The Rare Book Division of the George Arents Research Library at Syracuse University owns a Watkins album containing sixty-five original albumen prints. Something of a mystery surrounds the dating of the photographs in the album. The title page, reproduced photographically, contains the date, 1863. It seemed that the 1863 date was the date of the production of the album. Further searching, however, disclosed that 1863 was the date that Fulgencio Seraqui, a professor of penmanship and drawing in San Francisco, drew the title-page for Watkins. Watkins later photographed the page and used it in many of his albums.¹⁶ There is another date in the album; that is the date on the second plate, the King and Gardner map of Yosemite.

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Also a photograph, the date is extremely difficult to read; but it is the same map that appears in the Whitney survey book (the first map ever done of the Yosemite Valley), and the date is 1865.

The book which has, to all intents and purposes, sparked the recent flurry of interest in Watkins, *The Era of Exploration*,\(^{17}\) contains some Watkins plates dated 1866 that are almost the exact duplicates of some of the photographs in the Syracuse University album, with one very clear exception. The photographs in the *Era of Exploration* were copies of mammoth plates (18” x 22”\(^{2}\)) and the ones in the Syracuse University album are imperial plate size, 8” x 12” approximately. The question arises: did Watkins have still another camera that he carried with him on this expedition? That would mean another supply of heavy glass plates to carry. If he did have another camera with him, that took imperial size plates, what were his reasons for doing so? Plate 19 in the *Era of Exploration* is captioned “C.E. Watkins. Yosemite Valley from the Best General View. No. 2. About 1866. M. AGS.” The *M* indicates a mammoth plate and *AGS*, that it is in the collection of the American Geographical Society, New York. Compare this view with Plate No. 4, from the Syracuse University album which is titled, “The Yosemite Valley from the ‘Best General View.’ Mariposa Trail.” There is no date and the print is approximately 8” x 12 3/16” in size. The second similar view is Plate 21 from the *Era of Exploration*, “The Domes from Sentinel Dome, Yosemite. No. 95. 1866. BPL.” *BPL* indicates the Boston Public Library. In the Syracuse University album, Plate No. 35 is titled, “The Domes from Sentinel Dome,” once again, undated and approximately 8” x 12” in size.

How very small the differences are! The placement of the clouds (but very often the clouds were printed in later), a slightly different vantage point, the angle of view slightly different, but otherwise, excluding size, almost exactly the same. The evidence seems to indicate at this time that the photographs in the Syracuse University album must have been taken around 1866.

There are one or two other albums similar to the Syracuse University album in other collections, but each contains fewer photographs and has no exact date. The puzzle of the definitive dating of the album, therefore, remains to be solved.

How this album came to be in the Rare Book Division of the George Arents Research Library is another mystery. The Manuscripts Division holds the Collis P. Huntington papers; and it is quite possible that the album was a gift to Huntington from Watkins and came to Syracuse with the Huntington papers. It’s possible, but it is not

\(^{17}\) The book grew from an exhibition, supported by the National Endowment for the Arts, which was a joint effort of the Albright-Knox Art Gallery in Buffalo, New York, and the Metropolitan Museum of Art.
documented. By whatever means it came to Syracuse, the album is beautiful and the prints are for the most part in excellent condition.

Watkins evidently maintained an ongoing relationship with such artists as Bierstadt and a fellow Scotsman by the name of William Keith, a California landscape artist with whom Watkins took two trips, one in 1868 to Oregon and one in 1873 to Utah. The Oregon trip took place the year that Watkins was awarded the first prize by the committee that judged photographic landscapes at the Paris International Exposition. When Watkins came back from the Oregon trip, he issued his own Pacific Coast series in competition with an existing series by Houseworth, entitled "Scenery of the Pacific Coast."

The year 1870 finds Watkins once again working with Clarence King, this time photographing Mount Shasta and Mount Lassen. Clarence King called Watkins the finest photographer he knew; but his friend C.B. Turrill said that he was "more of an artist than a businessman."

For whatever reason, Watkins went bankrupt in the financial panic of 1873-74. Watkins' entire property was sold at auction and purchased by I.W. Taber who had a portrait studio in the same building as Watkins' Yosemite Art Gallery. Taber not only purchased all of Watkins' negatives and stereographs, but also took over his gallery.\textsuperscript{18} Thus, Watkins' work is divided into two definite series: the old series from approximately 1861 to 1873, which was purchased by Taber, and his new series, from around 1874 to the end of his life.

Watkins went back to Yosemite in the 1870's and re-photographed all the Yosemite views that had been popular, from the same vantage points. So similar were they, that only the passage of time, the growth of foliage, the addition of buildings, indicate a difference. Taber printed from the sixty or seventy of Watkins' best negatives and some of Watkins stereo views of Yosemite, but none of the earlier mammoth plate views. Owing to the expense of glass, it is very likely that Watkins had cleaned off and reused the glass from these early views, for very few of them still exist.

It was during the year of Watkins' bankruptcy (which fate, incidentally, he shared with another famous photographer in the East, Matthew Brady) that he and William Keith traveled to Utah. Also, that year Watkins, with fellow photographers and competitors Timothy O'Sullivan and Eadweard Muybridge, exhibited photographs at the Vienna International Exposition.

In 1876, Watkins visited the Comstock Lode and took photographs around Virginia City, Nevada. It was probably during this trip that he met Frances Sneed, who later managed his studio on Montgomery Street and in, 1880, became his wife. Watkins was fifty-one when he

\textsuperscript{18} Naef and Wood, \textit{Era of Exploration}, p. 85.
and Frankie, as he called her, were married. They had two children, a daughter, Julia, and a son, Collis. Marriage didn't prevent his photographic trips, however. In 1880, he traveled to southern California along the line of the Southern Pacific Railroad (Huntington's line) and took the earliest views of San Bernardino, San Gabriel, Pasadena, Los Angeles, and San Diego. It was also during the 1880's that he took his famous Tree Portraits.

From the mid-1880's until 1906 Watkins worked often for landowners who commissioned photographs of their farms and ranches. By this time and, indeed, as early as 1875, competition in landscape photography became fierce, with the emergence of such people as Andrew Price, J.J. Reilly, E. Muybridge, S.C. Walker and G. Gagersteen, all of whom sold lines of Yosemite Views. Watkins obviously had to turn to other types of work in order to make ends meet.

All through his photographic career he maintained his San Francisco gallery, first on Montgomery Street and, later, on Market Street, where he not only sold his scenic views and stereo views, but took the usual carte de visite and cabinet portraits. He also did other kinds of photography.

By the 1890's Watkins' eyesight was failing, and he was in ill health. He was photographing the Hearst Hacienda near Pleasanton for Phoebe Apperson Hearst, but could not complete the assignment due to ill health.

In 1906, Watkins had his studio on the top floor at Ninth and Market Streets. Being partially blind by this time, in poor health, and once again in financial difficulty, he was negotiating with Stanford University for the sale of his collection of plates and photographs when the earthquake of April 18, 1906, struck San Francisco. Watkins lost his entire collection in the fire which followed the earthquake. He retired to the ranch near Capay, in Yolo county, given him by Collis P. Huntington. There he remained with his family until 1910, when it became necessary to commit him to Napa State Hospital for the Insane. He lived there until June 23, 1916, when he died, at the age of 87. He was buried on the hospital grounds. No gravestone marks his grave.

According to the Era of Exploration, the photographs of Carleton E. Watkins are significant in the history of American landscape photography as the first body of work to systematically present the landscape as wilderness before the arrival of man. But equally important is the sheer beauty of his photographic art. As Sir Isaac Newton once said, "If I have been able to see farther, it is because I have stepped upon the shoulders of giants who have gone before me." Watkins has given a "shoulder up" to the many illustrious photographers who have followed him in Yosemite Valley and the West. And it is
somewhat ironic to think that this man’s work, which barely sustained
him financially during his lifetime, should now be selling for as much
as five thousand dollars per print. 19

Description and Plate List

Watkins, Carleton E[mmons]. 20 Yo-Semite Valley: Photographic Views of the Falls and Valley of Yo-Semite in Mariposa County, California. 1863 ie. [1866?]

Spine Title: Watkins Yosemite Gallery
Bound in full green morocco with cover panels and spine compartments. Stamped in gold, Bartling & Kimball, 505 Clay Street, San Francisco, Cal. Page size of album 16 1/6” x 20”. Plate size approximately 8” x 12”. Each photograph is surrounded by a 3/4” gold (probably water color) border.

Plate List
(Captions follow format in the album)

1. (Vertical) Title Page (curved top)
2. (Horizontal) Map of the Yosemite Valley from surveys made by order of the Commissioners to Manage the Yosemite Valley and Mariposa Big Tree Grove by C. King and J.T. Gardner, 1865. Drawn by J.T.G. (photo)
5. " The Yosemite Valley From the Mariposa Trail.
8. " The Yosemite Valley From the foot of the Mariposa Trail.
9. " Up the Valley From the foot of the Coulterville Trail.
10. " El Capitan From the foot of Mariposa Trail.


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14. (Horizontal) Pohonol The Bridal Veil 900 ft.
15. "" Pomponpasos The Three Brothers 4480 ft.
16. "" Cathedral Rocks From the Merced.
17. "" View down the Yosemite Valley From the Ferry Bend.
18. "" View up the Valley From the foot of El Capitan.
19. "" Cathedral Rocks From the Ferry Bend.
20. "" The Domes.
21. "" View on the Merced Cathedral Rock in the distance.
22. "" Camp Grove.
23. "" View from Camp Grove down the Valley.
24. "" Tacoye The North Dome 3730 ft.
25. "" Tasayac The Half Dome 5000 ft.
26. "" River View down the Valley The North side of the Three Brothers.
27. "" The Domes Tasayac and Tacoye.
28. "" Royal Arches.
29. "" View looking down the Valley.
30. "" Mirror Lake.
31. "" The Lake Bank.
32. "" The North Dome, Royal Arches, Washington Column.
33. "" Cascade between the Vernal and Nevada.
34. "" The Nevada Fall From the Pool.
35. "" The Domes From Sentinel Dome.
36. "" The Lyell Group From the Sentinel Dome.
37. "" The Merced Group From the Sentinel Dome.
38. "" The Half Dome From Glacier Point.
39. "" The Vernal and Nevada Fall From Glacier Pt.
40. "" The Yosemite Fall From Glacier Pt.
41. "" Section of the Grizzly Giant 33 ft. diam.
        Mariposa Grove.
42. (Vertical) Pohona The Bridal Veil 900 ft.
43. "" Tutocanula Pass.
44. "" Outline of the Cathedral Rocks.
45. "" Lower Cathedral Rock.
46. "" Cathedral Spires.
47. "" Mirror View El Capitan.
48. "" Tutocanula El Capitan 3600 ft.
49. "" The Sentinel 3270 ft.
50. "" The Sentinel 3270 ft.
51. "" Side View of the Three Brothers.
52. (Vertical) Mirror View of the Three Brothers.
53. " " Mirror View of the Yosemite Falls. 2630 ft.
54. " " The Yosemite Falls 2630 ft.
55. " " The Lower Yosemite Fall 418 ft.
56. " " Glacier Pt.
57. " " Washington Column 2082 ft.
58. " " Mt. Starr King.
59. " " Mt. Starr King.
60. " " Tacoye The North Dome 3730 ft.
61. " " Piwyac The Vernal Fall 300 ft.
62. " " Mt. Broderick Nevada Fall.
63. " " Yowrye (or Yowiye) The Nevada Fall 700 ft.
64. " " The Yosemite Falls From Sentinel Dome.

Bibliography

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