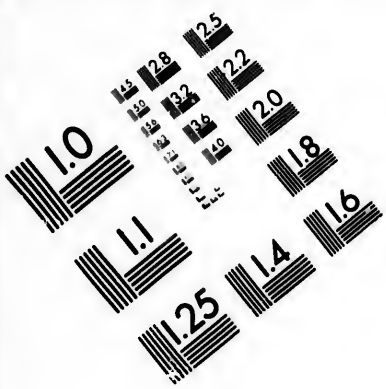

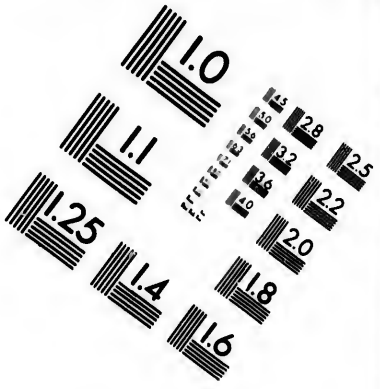

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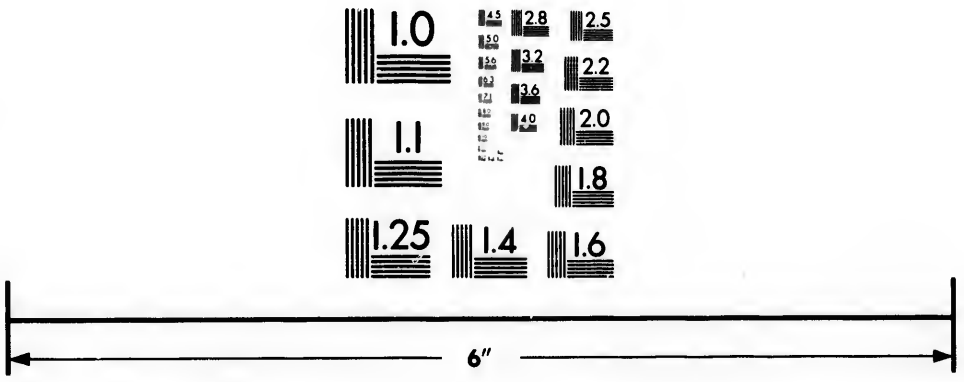

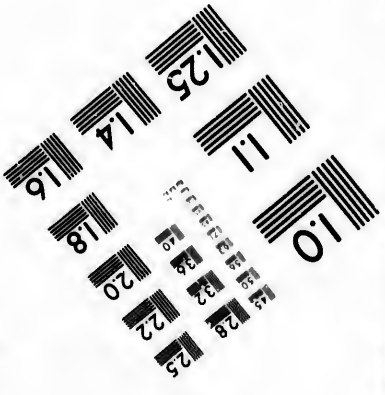

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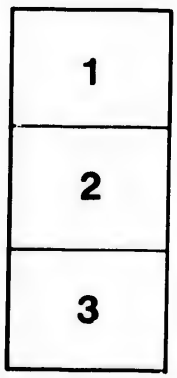
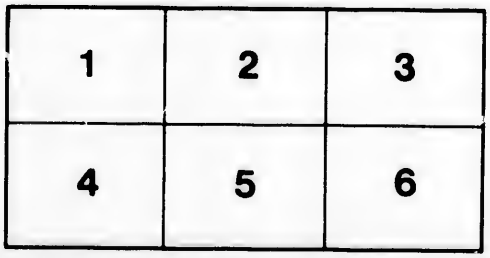




DIARY

Of the

Christie Party's Trip to the Pacific Coast.

By W. F. M.

C. M. Ellis, Printer, Toronto.

Not in Smith
Not in Peel
Not in Casey

6v. —

[The few copies of the "Diary" first printed were not enough, it seems, to go round, so the "Printing Committee" ordered another batch, a *second edition*, if you please, the issue of which herewith has afforded the writer an opportunity to extend one or two of his observations, to omit a few of the manifold crudities of the original, and to correct some errors of typography and detail. One irreparable mistake was made in leaving out the humors of the trip. The writer must either have enjoyed the fun too well to make a note of it at the right time, or the attractions outside were too much for him. There is this also to be said, that we had anither chiel amang us takin' notes—a real born *raconteur*—expressly commissioned to immortalize the "wit, wisdom and wickedness" of the Party.]

Diary

OF THE

CHRISTIE PARTY'S TRIP TO THE PACIFIC COAST.

By W. F. Munro

TORONTO, CANADA:
C. M. Ellis, Printer and Publisher, 67 Adelaide St. West.

NOTE.

THIS Diary was written for the amusement of my children, but, on reading over some parts of the manuscript to certain members of the Christie Party, it was thought that, in a more sightly and readable form, like what it has now assumed, it might be worth preserving as a souvenir of a trip which, to most of us, was a new, delightful and wonderful experience.

W. F. M.

Novar, Sept., 1897.

DIARY OF THE CHRISTIE PARTY'S TRIP TO THE PACIFIC COAST.

On the 15th day of July, 1897, fifteen persons met at the Union Station, Toronto, fully equipped for a long journey together. Our route was by the C.P.R. to Detroit, by the Wabash to Chicago, by the Burlington to Denver, by the Denver and Rio Grande to Ogden, by the Oregon Short Line to Garrison, by the Northern Pacific to Cinnabar, back again to Garrison and on to Seattle, then by the Seattle and International to its junction with the C.P.R., onward thence to Vancouver, then, after taking in Victoria, home by the C.P.R. to North Bay, and from North Bay, by the Grand Trunk, to Toronto, with stoppages at all the more important points of interest,—Chicago, Denver, Colorado Springs, and Pike's Peak, Salt Lake, Yellowstone Park, Seattle, Vancouver, Victoria, Banff, Winnipeg, Rat Portage, etc. For convenience a special boudoir car, the "Waterloo" by name, accommodated to the height of the bridges, sheds and tunnels on the different roads we had to travel on, had to be brought from Chicago, and had arrived the night before, we were informed. The fifteen persons therefore expected to find it connected with the regular western C.P.R. train scheduled to leave at 4 o'clock; but, strange to say, at 4 o'clock, and even at 5 o'clock, no special boudoir car could be seen. Here was a hitch to begin with—*in limine*, etc., our classical man whispered, quoting some old Roman conceit about

omens. The regular passengers, not understanding the delay, were not in the best of humor. Finally, we learned from the train officials that someone had blundered: the "Waterloo" had been sent to Buffalo, but was on its way back and would be here soon. At length about a quarter past 5, the runaway appeared; not another minute was lost in hitching it on to the train, and off we started on a long and beautifully smooth run to Detroit.

We soon had our several staterooms allotted. "When a man's single," he has to have a stateroom to himself, and when it happens to be roomy and next door to the smoking compartment, which is inconveniently small and overloaded with *impedimenta*, such a stateroom is apt to become a rendezvous, and to have a name given to it. All through the trip a stateroom of this character went by the name of Munrovia. Here the songs were sung, the stories told, the hairs split. Here, as the train bore us smoothly and comfortably along through the lovely afternoon, past fields of yellow grain, across green meadows, by forest glades and murmuring streams, we spoke of what we had proposed to do in the way of "solid reading," for which careful preparation had been made. I had brought Geikie's "Geology," his "Physical Geography," and "Geological Essays," for example; but it was prophesied that as this first evening had been, so would the days to follow be,—full of ease and content, but with little science and philosophy, *at first hand*. This wisdom was fully justified in our experience throughout the trip.

Here must be put in the composition of the party. First and foremost, the "General" himself, as he came to be designated—William Christie, far-ken'd his name,

obsequious to no man's opinions, having plenty of his own, ready to take up any gauntlet and hold his own with the best of them; a dour carle to thwart, but a big man every way, with a warm heart and an open hand. On this occasion it had opened wide, else this trip had not been made, and this tale had not been told. Next, the General's wife, unofficious, unflustered, smooth, ever ready with the kind act and word. Their only son, Robert, a chip of the old block, ready of tongue, given to nice distinctions, full of fun, comic songs, and good nature. His wife, graceful as a fawn, and as shy sometimes—"Kid," her boy used to call her. Next, Captain Mellis and his gracious, stately wife, from Huntly, in Aberdeenshire, Scotland, on a visit to the General—a distant relative. The captain has a fine voice, and can melt the Scottish heart as few can do. "Of a' the airts the win' can blaw" is one of his best, and rarely was it heard sung with more feeling. James Duncan and his wife—a sister of Captain Mellis—come next. Originally from the north of Scotland, they have been long resident in London, England. "A genial soul" was what the General promised us in Mr. Duncan, and the promise was amply fulfilled. In addition, we found him a ripe scholar, with a "fouth" of anecdote, and the funniest of old-world stories. His wife is a perfectly loveable little woman. The General's three married daughters come next. Mrs. Palmer, the eldest, has seen the world: she is a manager, and a born sight-seer, eager that you should see also and share her delight. Her daughter Mamie, dark-eyed and thoughtful, well trained and well-read, the pet and "lintie" of the party. Mrs. Barclay, the little one, smart as a cricket, hard to keep your hands off her. (Laura) Mrs. Clark, the youngest, tall,

stately, voluble, you feel that she thinks about your comfort, and would make you happy; one would like always to call her Laura. Last of all, except the writer, we had Mr. Thomas Robertson and his wife—a daring adventure for the latter to undertake, she having barely recovered from the effects of a terrible accident; but Mrs. Robertson is a woman of nerve, yet withal yielding, and soft of speech—no one more thoughtful of others. "Tam" is a metaphysician when he is serious; but the memory of youthful pranks is often with him, and then, as well as when he is serious, he is all that a companion ought to be. Tam looks at life and nature from the purely picturesque or artistic point of view—if life or nature have any other aspect it is all in the beholder, and he don't amount to much.

We had now crossed the Detroit River on the huge ferry—a marvel to our Scottish friends, as were also the high tower electric lights in the city. Our road was henceforth by the Wabash, and we hoped to resurrect in Chicago in the morning. This we did about 8 o'clock by Toronto time, but found we had gained an hour. It took us fully this hour to reach the station, to such an outrageous extent do the suburbs of the city extend, approaching it by the Wabash. And such suburbs! meanness, filth and squalor on all sides. On arrival at Dearborn Street, however, leaving "Waterloo" in charge of Shaw, our good-natured white negro porter, we were soon transported to the marble grandeur of the Auditorium, and a sumptuous breakfast. About 11 o'clock we all mounted a superb tally-ho and went off to see the sights, the day warm and bright. We drove along Michigan Avenue to 35th Street, then through Grand Boulevard, Drexel Boulevard, and on to Smith's Club House on 50th

Street, where we had lunch. We had seen the finest residential part of the city; many of the buildings were very much admired. After lunch, we drove through the World's Fair grounds, which recalled the splendor of 1893. Here the human interest was vividly awakened, and I should have been glad to linger and recall faded scenes and recollections. The lagoons are all back to a state of nature, but the Art Building still stands in all its white Grecian perfection. It is now used as a museum, but we had no time to visit the interior. The return was by the same route, except that we passed through Prairie Avenue, another beautiful residential street. Before reaching the hotel, a short detour was made into State Street, and we had a glance at the tall buildings, but were glad to be out of the throng, which was no place for a tally-ho. The trip lasted six hours. We had dinner at 6.30, our party being enlarged to seventeen by the addition of two invited friends of the General. There was much freedom and fun at table, American cousins looking on and taking notes; we had no thought of being in a foreign country. At length it was time to prepare to resume travel. Leaving by coach at 9.45, we drove to the station of the C. B. & Q. (Chicago, Burlington & Quincy), and started at 10.30 p.m. on the long run of 1,025 miles to Denver. Being worn out with sight-seeing, we retired early.

Saturday, July 17.—We had crossed Illinois and the Mississippi at Burlington long ere most of the party had risen. I was one of the forgetful ones on this, perhaps the only occasion where there was a sight to be seen, and it is a sight to cross this great river by the magnificent bridge at Burlington. All day we ran through in-

terminable fields of corn, the staple crop of Iowa. This State seems to be a vast rolling prairie, the soil deep and rich. Except for the few scattered towns and villages, one would scarcely imagine that the country was occupied, so insignificant are the farm buildings as seen from the train. Travelling by road, perhaps it would be different. The run through Iowa was rather trying to some of the party on account of the heat. Towards evening it cooled considerably, and at dinner in the dining car it was almost comfortable, and would have been more so but for the number of lamps burning. The dinner was first-class, equal if not superior to yesterday's at the Auditorium. Those of the male persuasion of our party sat on in the dining car and smoked—being the last to be served, and the waiters having been well tipped, this was tolerated. A conversation beginning with some reference to the General's aneroid barometer, which was always on hand to give us our altitude, drifted into an argument about the effect of water-vapor on atmospheric pressure. The writer maintained that the principal factor in determining barometric pressure, next to altitude, was the amount of water-vapor in suspension in the air. To illustrate the fact, Geikie's well-known experiment of weighing water-vapor and dry air was quoted, thus: Take two vessels, each capable of holding exactly one cubic foot of any substance; exhaust the air from each vessel, then fill one with water-vapor and the other with dry air, both at the same temperature. If the temperature be at 50° Fah. the water-vapor will weigh 4.10 grains and the dry air 547 grains; that is, dry air is about 133 times heavier than water-vapor. Hence, it was obvious that atmospheric air saturated with water-vapor would be much lighter, and therefore would exert much less pres-

sure than when free from such vapor. The discussion was rather amusing. The General did not directly attack the position, namely, that the presence of water-vapor in the air necessarily lightened it, but he went for the experiment. He contended that the experiment—that is, the determination of the relative weights of the two gases, water-vapor and dry air—was inconclusive, unless there was taken into account the pressure under which the two vessels were filled. I was of the opinion that temperature was the only factor in the case. Here the subject dropped for the present,* and we betook our selves to Munrovia to sing, smoke, and tell stories. We had crossed Iowa, the Missouri, and the Platte, and were rushing through Nebraska, another corn State—in the general opinion of the party more attractive than Iowa.

Sunday, July 18.—I rose early and found we had left vegetation behind, having entered Colorado, still on the same vast plain, now considerably elevated, and showing signs of cactus and sage brush. Out of the west rose the peaks of the Rocky Mountains, a serried purple ram-

* The subject was never resumed, but in thinking over it since I have seen that, theoretically, pressure has to do with the experiment, though Geikie does not mention it as a factor. For one of the vessels might have its charge forced into it, while the other might be allowed to fill under ordinary atmospheric pressure. The reason, I think, that pressure is not referred to is, that both vessels are filled under the same ordinary conditions,—that is, under one atmosphere. At the same time, the Law of Avogadro, as it is called —namely, that all gases in equal quantities have the same number of molecules—requires that the gases be under the same conditions as to both temperature *and* pressure. This, of course, is not a law founded upon actual experiment, but an assumption, which, however, is verified by other experiments founded upon it.

part, seemingly impassable. At 7 a.m. we arrived at Denver, and drove to the Brown Palace Hotel, worthy a better name, where we had breakfast. The city impressed us very favorably, not only at first sight, but aftewards when we drove through its main streets and suburbs, which we did in the "Seeing Denver Excursion Car." This is an electric tram, which makes the tour of the city twice a day on week days and once on Sundays, for the purpose of showing off the place to visitors. It was started by a land company, and is conducted by an agent, who stops at all points of interest, and in very good English lectures the passengers on the mineral and agricultural resources and capabilities of the State, especially the latter. As these were not very conspicuous as far as we could see, they seemed to be all the more in need of advertising. And yet it was surprising to see what could be done with a little water. We stopped at some gardens that were irrigated, and lo! the desert appeared to blossom as the rose. That, we were told, was what water would do in Colorado, which doubtless was the truth. As none of us contemplated raising garden truck, we took more interest in the historical part of the lecture. At Clear Creek Valley we were shown the stream where gold was first found in 1859, and whence it was traced to the mountains, which led to the rush of fortune seekers and the saying "Pike's Peak or bust!" At another point we had a wonderful range of vision, taking in, on the side of the Rockies, a sweep, it was said, of 250 miles. On the plain side, the eye took in a stretch sufficient to hold the entire population of the globe, allowing a square yard for every man, woman and child in existence. This vast plain rises abruptly into the Rocky Mountains—so abruptly in some cases that, ac-

cording to Geikie, "one might sit on the flat bed and lean his back on the vertical one." The sudden upheaval of the plain is due, according to the same authority, not to volcanic action, but to contraction of the crust. The rocks underlying the prairie to the east for hundreds of miles are all of cretaceous or tertiary origin, and become visible on ascending any of the gorges or canyons which have been eroded by the escaping drainage from the mountains. Bursting through the rocks of the plain, the ancient granitic and crystalline rocks have risen to be the peaks of the Colorado Mountains. But for this throwing up of these archaean masses the "Centennial State" would have been a quiet pastoral territory like the region to the eastward. The rise of these granitic ridges, however, has brought incredible wealth to the State, and in a few years has converted the loneliest mountain solitudes into busy hives of industry. In the Excursion Car we met a passenger who had ridden from New York on a donkey, and was on a bet of $5,000 to complete the ride to San Francisco within a certain date. He told us he had to make his living by the way, and one of his methods was to stand in front of a drug store with his donkey and sell a patent medicine, amusing the crowd meanwhile with an account of his travels. He had clippings from newspapers giviug accounts of his progress, and was engaged in writing a narrative of his journey, to be called "The Picturesque Pilgrimage of Pythagoras Pod," the accent on the penultimate of Pythagoras. I drew his attention to this, but he thought his western friends would prefer the vulgar pronounciation.

We were very much pleased with Denver and its surroundings. It is said to have a population of 163,000, 41 public schools, and 65 churches. The State Capitol

and the City Hall are both magnificent buildings. Denver was founded in 1858, on a barren waste, dry and treeless ; it is now the " Queen City of the Plains." Its clear, invigorating air and dry climate are famous. The plain on which it stands is 5,196 feet above the sea.

After dinner at the Brown Palace, we prepared to resume our journey southward by the Denver and Rio Grande Railroad to Colorado Springs, a run of seventy miles. On this part of the trip we encountered the first break in the weather, which ended in a rather severe thunderstorm as we approached what was to be our destination for the next two or three days. It was dark and very moist when we drew up at Colorado Springs, and walked to the Antler Hotel, a short distance from the station. I put in a very unhappy night. Something had gone wrong. In the morning I was sore and weak, and there was nothing for it but to reconcile myself to forego the ascent to Pike's Peak, which was planned for the day. I found it very hard to do this, as it was to me one of the great events of the trip. There was the famous Peak, 14,147 feet high, right in front of my bedroom window, only a few miles off as it seemed, and I bedridden! Well, there was no help for it, so I lay and slept. I forget how the day passed; I think it rained. Towards evening I heard with great satisfaction that the party had not gone up the Peak, but on account of the weather had driven in carriages to the Garden of the Gods. So there was still a chance for next day. And next day I was myself again, and so was the weather; neither could have been better. In the morning, a few of us rode out in the street car to see the ruins of the famous Broadmoor Casino, which had been burnt to the ground a day or two before. It was a favorite resort of

the natives and of visitors to the Springs. We were not admitted to the grounds, but could see that it was a choice spot, situate at the foot of the mountains. On returning to the hotel, we got ready for the afternoon trip to the Peak. The talk was all about the Peak, in which it was often twisted into "Peak's Pike," and this now became the party's name for it. We were off for the "Pike." An electric trolley took us first to Manitou, situate at the mouth of the gorge up which is the cog-wheel route to the summit of the famous mountain.

Manitou, according to the guide-books, is "the most famous pleasure resort in the West." It abounds in mineral springs, caves and caverns, but with the "Pike" ahead of us we had no time to explore the wonders of Manitou. On the way to it we passed the skirts of the "Garden of the Gods," and could see part of the crop, affording rare delectation, no doubt, for a geologist, but unattractive and uncomfortable for gods accustomed to a soft seat. This Garden of the Gods grows nothing ... red rocks, standing on end in every conceivable shape and form, the protruding fractured ribs of the tertiary or cretaceous plain, crumbling slowly away by the combined action of frost, wind, and rain.

It was not without fear and trembling that one or two of our party made the venture of ascending the Peak; one was forbidden positively by his medical adviser to attempt it, but we all did it with perfect impunity. I felt a little giddy on the summit, that was all. The day was so fine we hardly had any occasion to put on our overcoats. How can I describe what I saw? I had my field glass. What a panorama! 40,000 square miles of the earth's surface lay at our feet. To the east the vast plain, with towns and villages scattered about, no bigger

than flower-gardens; to the west the Sangre de Christo range, ever white with snow; to the south the Raton Mountains of New Mexico; to the north more mountains, Denver and the abyss! Art could never portray such a scene, and description fails.

The cog-wheel railway is a curiosity; it is about nine miles long, the maximum grade is about 25 per cent., the average 16 per cent.; it was finished October 20th, 1890, and must have been a work of enormous difficulty. The present equipment of the road consists of four locomotives and six passenger coaches. The engine pushes the car in ascending, and precedes it in descending: it is provided with two double steel cog-wheels, through which the power is applied, and these run in rack rails laid in the centre of the track, which is of standard guage. Powerful steam brakes are used.

The scenery of the gorge is indescribable. Through its lower portion rushes a snow-fed mountain stream, sometimes dashing against the huge masses of rock, that have fallen into its channel from the giddy heights above, at other times wholly hidden from view under these same masses, when, but for its roar, it would seem to have sunk into the bowels of the earth. What this stream is like after a cloud-burst on the mountains, or in the season of melting snow, one can but faintly imagine; and it requires a vivid imagination as well as intelligent research to be convinced that this stream, insignificant as it now appears, has been the agent which scooped out this gorge, and filled its own channel with the rocks that impede its course. An observant eye is required also to verify Geikie's theory with regard to the bending up of the Tertiary strata, and the escape upwards of the underlying granite. Had we been here soon after the final

upheaval took place, the jagged line of breakage would have been more visible, but the ever-active forces of denudation have been at work for ages, and worn away or covered up the flaws. Still, it is an easy matter to distinguish the later rocks at the lower end of the gorge from the more ancient at the upper. I had the impression, and it was shared by others of our party, that Pike's Peak was an isolated cone, risin in solitary state from the plain; but, seen from Colorado Springs, it is but a ridge, apparently in close connection with many other ridges, but as we rise above the Halfway House and pass through the narrow rugged walls of Hell's Gate, we enter a comparatively level stretch of two and a quarter miles, with mountains of course on either hand, though at some distance, and here Pike's Peak begins to assert its bold individuality.

It was 5.30 p.m. when we got back to the hotel, the ascent and descent having occupied about two hours and a half. After dinner, Captain Mellis and I went to the Opera House and heard the Hungarian Band play some very fine music. This band had been playing at the Casino, and in the fire had lost much valuable music—this concert was given for their benefit.

Colorado Springs is a city of 17,000 inhabitants, said to be, but I would judge that nearly half of that number were away from home. It has some good buildings, fine streets, and plenty of stores. It is a famous health resort, especially for consumptives, several of whom we met carrying th burden of their fell disease. There was at least one patie t at the Antler, whom I heard at nights but did not see- -clear sky and mountain air would be unavailing in his case, poor fellow! I would not care to recommend an hotel with such guests. At the same time

the Antler is a fine house, with stately rooms, a good table, and music in the hall in the evenings. But the time had come for us to leave it; accordingly on Wednesday morning, the 21st July, after a final saunter round the city, and a look into the shop windows, we started by the Denver and Rio Grande, *en route* for Salt Lake City. The road runs due south through a hot barren waste until we reach Pueblo, some 40 miles distant from Colorado Springs. Here we seemed to be in a furnace, where the air quivered over the arid soil formed of the waste of a soft whitish rock, through deep cuttings in which the train rushed amid clouds of smoke. We were told to imagine ourselves in New Mexico, which was not far away to the south, as in all respects it was the same kind of a country. No one cared to go to New Mexico; yet at Pueblo we were in the second city of the state, a busy thriving centre of trade and manufacture. Immense quantities of raw material and fuel abound in the vicinity; there are blast furnaces, steel works, and rolling mills. We were shown the picture of a mineral palace which cost a million dollars, holding a permanent exhibit of Colorado's mineral productions, from stone and coal to pure gold. We did not stop, having an idea we should have perished from thirst, so dry and parched everything seemed in the middle of the day. The railroad turns sharp near Pueblo and runs west. In the afternoon we enter the Royal Gorge of the Arkansas River, which is justly regarded as one of the greatest sights of the western mountain region. Nothing like this had ever been seen by any of us except the General himself and one or two others who had been through it before. We ran along the left bank of the Arkansas, brawling over its rock-strewn channel. Above, seemingly reaching to

the clouds, rose shear walls of rocks, sometimes receding from the river bank and forming glades and grassy holms, on which, strange as it appeared, were often seen cattle grazing. How they got there was a mystery. On the side of the gorge along which the railroad ran the scene varied every moment; now it was through a space where vast cutting had to be done, now over huge embankments on the river. On looking out, we seemed to be always entering or issuing out of some fearful chasm. It was only a glimpse I could get at the rock formation, but I was satisfied it was some paleozoic formation so metamorphosed by heat and pressure as to be beyond recognition. At one point we observed, both *in situ* and detached, great masses of red conglomerate, consisting of rounded pebbles held together by a matrix of red clay, apparently indurated and perhaps as solid as iron peroxide cement could make it. I grudged not being able to examine this more closely. Before we left this awful gorge our wonder faculties began to totter and fail; another gorge at that time would have been a surfeit. It must be a great thing for a railway to have such a gorge among its assets. I was told, but apparently not in full detail, of a fierce struggle between two rival lines of railway for the possession of this gorge. The Denver and Rio Grande won it by stratagem. As I understand it, this line quickly moved in the material of a bridge to a point where it was necessary to cross the river. Here they made a stand with over one hundred armed men, threw the bridge across, and held the position till the rival line had to quit the field. The gorge railway is on a continual rise, as we readily opine from the absence of still reaches in the river, along the banks of which we continue to run till we escape from it altogether; and

then we are still rising, until towards the gloaming we reach Leadville, which, however, lies in a valley, but the valley is 10,200 feet above the sea. Here we left our car for half an hour and had supper at the station. We had no sight of the town, which is at some distance from the railway, but there were several mean-looking houses about, reminding us of what it must have been twenty years ago when the miners first came in; thankful we were for the lapse of time and the departed reign of the six-shooter. Crowds of little urchins, boys and girls, met us on the platform with specimens of ore, which, at a nickel apiece, were not dear.

There was an uproarious night in Munrovia as we turned the axis of the mountains and sped down hill 5,000 feet to Glenwood Springs near the western base of the Rockies. Here the Roaring Fork and the Grand River—the main tributary of the Colorado—unite in a picturesque valley surrounded by mountains. There is said to be nothing in the State equal to Glenwood Springs, with its vapor caves, hot sulphur springs, and magnificent hotel, the "Colorado," said to be finer than anything at Long Branch, Saratoga or Newport, and except in size, equal in every respect to the Ponce de Leon at St. Augustine. We saw its search light gleam across the waters of the Grand River, but we did not stop.

After a good sweeping out and airing, Munrovia was converted into a sleeping apartment, and I lay down to dream of gorges and "Duncan" rivers. Captain Mellis was never at a loss for a name, and our genial companion, Mr. Duncan, lent his ungrudgingly to almost every unknown and remarkable object.

Thursday, 22nd July.—On looking out this morning, the eye took in a scene of desolation almost inconceivable. A vast plain of bare earth covered with alkaline crust or dotted here and there with hideous sage brush. Far and near, rising out of the plain, were seen huge crumbling cliffs of brown stratified rock, with enormous talus mounds at their base, of the same material as the surface soil on all sides—a dreary, hopeless, forbidding scene! Not a drop of water, no sign of vegetation in sight. Occasionally we passed a spot, generally a station, where water had been struck, and there life once more made its appearance. We breakfasted in the car.

At length we entered the valley that leads to Salt Lake, and things began to improve. This valley forms part of the Great Basin of the continent, from which no water escapes except by evaporation. The Great Basin is equal in area to the whole of France, of triangular shape, occupying the western portion of Utah, nearly the whole of Nevada, and sections of Oregon, California and Idaho. It is bounded on the west by the Sierra Nevada, and on the east by the Wahsatch Mountains. The base of the triangle in the north is some 500 miles from east to west, and it extends from north to south for nearly 800 miles. It is thus girded round on every side by high mountains, and traversed throughout by numerous ranges, sometimes parallel, sometimes blending and crossing. The valleys are usually sinks, the principal one being Salt Lake, which we are now approaching, wonderful as a natural phenomenon, still more wonderful to me at least, as the theatre of great events.

Salt Lake, though still 60 miles long by 32 miles wide, at its widest, according to Geikie, is but a mere millpond to what it once was. The successive stages of the

shrinking process it has undergone are traceable on the flanks of the Wahsatch Mountains, against which its waters once beat. Two old shore lines are seen to wind in and out, always horizontal, and always the same distance apart. I should mention, however, that these old lake beaches are not always in evidence to the eye at a distance. I watched for them very carefully, but could only detect them at a few points, the reason, I have no doubt, being, that they have been weathered away, or the detritus from the heights above has covered them up. The highest of these old beaches is 940 feet above the present surface of the lake, which is 4,250 feet above the sea level; hence, when the lake stood at the line of that high beach, it was 5,190 feet above the sea, and must then have been a great fresh-water lake, over 1000 feet deep, 300 miles long, and 180 miles wide, according to Geikie, having an outlet to the Pacific Ocean by Snake River, it is supposed. Geikie made an interesting discovery on his visit to the lake. He found the moraine of an old glacier which terminated at the upper beach. He does not theorize much on this find of his, but I have no doubt he was convinced in his own mind that when the Wahsatch Mountains had glaciers running down their flanks, they were much higher than they are to-day. At twice their present height, might there not be more than four times the moisture and precipitation there is to-day? If so, the land would have blossomed abundantly, and rejoiced with joy and singing. And if the mountains have shrivelled here, why not in Arizona and New Mexico? What if the old inhabitants of the south disappeared *pari passu* with their mountains? Sir John Lubbock says that the European Alps now stand on the site of an earlier Alps that were worn away by slow denudation.

We arrived at the station of Salt Lake City about 12. 30 p.m. On the way we were told that there were great goings on in the city, and that possibly there might be a lack of hotel accommodation ; the General therefore took a cab and went off to spy the land. He found that the " Knutsford " would be pleased to receive us, so we went there by street car, and found it a splendid first-class hotel, equal to any we had been in. It was evident that something extraordinary was in the wind. The city was aflame with flags and bunting, the streets were crowded with people. Was it the Passover, the Feast of Tabernacles, or the year of Jubilee, these imitation Jews were celebrating ?

It seems that it was on the 24th of July, fifty years ago, that Brigham Young, like Moses from the top of Pisgah, looked down from " Ensign Peak " on the future land of Mormon promise. He had seen it all before in a vision ; this far-stretching valley and broad, smooth lake (I wonder if he knew it was brine ?) Here at length after long wandering in the wilderness, like the older chosen race, and under a new Moses, were they to enter into possessson and begin the old story over again ; and yet it was to be the old story with variations—the Jewish theocracy and polity were to be blended with primitive Christianity, but it was not to be the Puritan blend,—there were to be no " Scarlet Letters " in it.

I confess to a very lively interest in these people, and what they have done. Brigham Young must have been a man of great natural ability. Born in 1801 in the State of Vermont, he went with his parents to New York and lived with them on a bush farm till he was twenty, when he married his first wife. He had no schooling. His parents were Methodists and he was one also. After

his marriage he worked some years as a carpenter. In 1830, some one showed him the Book of Mormon; that settled him. He had a brother in Canada, a Methodist parson, one would like to know where; him he went to see, and, with the Book of Mormon, had no trouble in converting. The family readily took to new revelations, and stuck to them. His first wife soon died, leaving two little girls. "The Church of Jesus Christ of Latter Day Saints" was established at Kirtland, Ohio; there Brigham met the prophet Joseph Smith, and being asked to pray, he "spoke in tongues," and Joseph's opinion being asked respecting this miraculous gift, he assured them "it was pure Adamic language."

Henceforth Brigham was ever on the move preaching the Gospel, he was made one of the twelve apostles, and undertook to convert the Indians, the Yankees of the Eastern States, and even the British nation. With seven of the twelve apostles, of whom he was now president, he landed at Liverpool in the spring of 1840, a stranger and penniless. In a year he had baptized 8,000 souls, printed 5,000 Books of Mormon, 3,000 hymn books and 50,000 tracts, sent a thousand saints to Nauvoo, and established a permanent shipping agency to keep up the stream of emigration. In all these things, he says, "I acknowledge the hand of God." He was no fool. He must have begun to see that there was a big thing in it. Great persecution fell upon the Saints at Nauvoo; Joseph the prophet was murdered in Carthage jail in June, 1844. Brigham stepped into the breach and became his successor, and eventually led the chosen people forth out of the land of bondage. The story of the exodus is one of thrilling interest. In a book which I purchased at the "Hall of Relics," each day's progress is recorded. I

have talked with several of the old pioneers, and seen many interesting mementoes of their eventful journey across the plains. In driving around the city, taking in the sights, I sat beside the coachman, who was a grandson of Heber C. Kimball, next in authority among the pioneers to Brigham Young himself. This man showed us everything; he took us to the Tabernacle and Temple, the former an immense building with a turtle back roof; it has a seating capacity of 12,000 people, and wonderful acoustic properties. One of the officials in charge illustrated these properties by dropping a pin on a table at one end of the building, while we stood at the other, and we distinctly heard it fall. The Temple is a magnificent piece of architecture, built of pure white granite at a cost, it is said, of six millions of dollars, raised no doubt by contributions from the Saints all over England and America. There are said to be marvels of sculpture and ornamentation within, but no profane eye has ever seen them. The faithful alone, and those only of a certain rank, are permitted to tread these sacred courts and look behind the veil.

We drove to "Emigrant Canyon," down which fifty years ago the first pioneers descended to take possession of the valley; we were shown their first camping ground and the first potato patch. Near by is now Camp Douglas, a military station located in 1862; it is occupied at present by a colored regiment, the 24th U.S. Infantry, a fine soldierly body of men, in command of Colonel J. Ford Kent.

Salt Lake City was originally laid out in ten acre blocks, with streets crossing at right angles, 132 feet wide; these blocks were subdivided into parts, one of which became the portion of a Saint, on which to build

his house; he was allotted a portion of land in the valley on which to expend his energies for a living. Many of the original town lots have still the original buildings on them, some of these of adobe, but the majority have been subdivided, sold and re-sold; many of them are now worth a fortune. Near Temple Square stands Pioneer Monument, the gift of the people of Utah to perpetuate the memory of those who gave civilization to the West. Its shaft is surmounted by a heroic figure of Brigham Young, which is very imposing, and in excellent taste. Near by is the "Hall of Relics," a miniature of the Parthenon, built apparently of the composite material used in the buildings at the World's Fair. The work seems to be well executed, but the effect is lost owing to the situation of the building, which stands alongside others which overtop it, and are by no means classic. A Parthenon must stand severely alone, and on an eminence. I spent an hour within this beautiful building. It contains the few remaining souvenirs and relics of the wilderness journey, fragments, which, to the 600 surviving pioneers, tell some tale of trial and endurance. That the souvenirs are few may be inferred from the fact that all superfluous things were denied transit, for teams were precious and life itself at stake; the wonder is that so many things escaped the order to "lighten up," as the weary loads, the weary days, and the weary months rolled on.

This great Jubilee feast of the Mormons was to last five days; we struck it on the third day, and were in luck. After dinner, I strolled out among the crowds and saw the night parade. The streets were brilliantly illuminated with colored incandescent lights. There was a long procession of emblematic figures mounted on wheeled platforms drawn by double teams of horses, and repre-

senting scenes and events in Mormon life, state industry, history and ethnology. Each county of the State was represented and had its place in the procession; its native races, descendants of the aboriginal cliff-dwellers, naked and unadorned, were displayed, along with its other natural, agricultural and mining products. Fanciful figures were numerous. The "Serpent of the Great Salt Lake" attracted much attention; it was moved rhythmically along by Chinamen hidden in the monster's interior. Altogether, it was the best show of the kind I had ever seen.

Friday, 23rd July.—After breakfast we were out again sight-seeing. This day's parade was nearly what we saw the night before. In the afternoon we took the train to "Saltair," on the lake, some eleven miles distant. This is the great pleasure resort of Mormons and Gentiles, of whom there is said to be about an equality in number in Salt Lake City. A magnificent casino has been built on piles out in the Lake where the water is four or five feet deep, the approach to it being a long platform built in the same way. Crowds come here every day to bathe, dance and drink coffee or beer. The Saints are in no way sanctimonious. Our coachman of yesterday, a good Mormon, told me that his people were in no way different from others, except in religion. They were now only a religious sect, tolerated and tolerating; the utmost harmony prevailed, both in religion and politics, they were all after the dollar, and the great majority in the city, as well as all over the State, wanted a silver dollar, they were all Bryanites—16 to 1 was the only salvation for Utah. In municipal affairs there is no preponderance on the side of the Mormons, the honors being

mutually shared. The whole State has been more or less Mormonized. The pioneers were indefatigable in the early days in planting colonies of believing immigrants wherever they could find suitable places for them. Utah is therefore a Mormon State, but the same thing has happened in every settlement, namely, a compromise first, and then fusion, in worldly affairs at least. This great Jubilee demonstration is a proof. They are all mormons and all gentiles for the time being. All classes are interested in it, all have taken part in it. The Governor of the State walked in the procession, and Uncle Sam's soldiers will march to-morrow. It is the jubilee of the settlement of the West, and they all want to make the most of it. The Casino is a mere money-making fake, and spoiled the romance of Salt Lake for me. Captain Mellis and Mr. Duncan bathed in the lake, among hundreds of others. I did not go in.

Saturday, July 24th.—This was the last and great day of the feast. The old pioneer, Wilfred Woodward, 90 years of age, president of the Mormon Church, from whose waggon fifty years ago to-day Brigham Young, lying sick of mountain fever, viewed the promised land and uttered the historic words, "It is enough. This is the right place. Drive on!"—this old man is to ride to-day in the procession. We shall not see him, as we must start at noon, and we have to find our way to the station through the press, which at first seemed impossible, but by making a bold dash through some thinnish ranks, and going a long way round about, we arrived in time for the train.

Our next point was Ogden, the terminus of the Denver and Rio Grande, some 40 miles due north, situated near

the lake. We left the car at this place, and had lunch and dinner in the restaurant at the station. The town seemed to be deserted, everybody was at the Jubilee; it was very hot, but cooled off in the evening. Ogden is the capital of Weber County, and an important railway centre. The Union Pacific, the Central Pacific, the Oregon Short Line, and two others join here. It has a Methodist university, a foundry, several mills, breweries, and manufactories of woolens, brooms, boots and shoes; the population is said to be 10,000. On the way up along the lake we had the mountains on our right, and I was on the look out for traces of the old beaches, but could seldom find them, perhaps for the reason already given; but I fancied I saw the break in the mountain wall which gave an outlet to the Lake when it was a thousand feet feet deeper than it is to-day.

It was 8.30 p.m. before we got connection on the Oregon Short Line, and made a start for Garrison, on the Northern Pacific—an all night and day's ride through the northern part of Utah, the eastern part of Idaho, and the southern part of central Montana. In the morning we were in the northern part of Idaho, which as well as the southern part of Montana looked different from anything we had seen to the south. In Montana especially, as the day wore on, we passed through some green inviting spots. The Federal Government have adopted the plan of storing up, by means of dams and excavations, the drainage of the mountains in spring, to be used for irrigation, without which agriculture is almost impossible in Montana. 20,000,000 acres, it is said, will be available for crops by means of these works. Montana has a milder climate than the Dakotas or Minnesota; it ranks third in size among the States and territories, having an

area of 146,000 square miles—about five times the size of Scotland. Between 1862 and 1889, according to the U.S. Treasury Reports, it produced $198,589,421 in gold and $108,992,319 in silver. Its yield in copper has also been immense; we passed on our way to Garrison, the greatest copper mine in the world—the Anaconda. From the water alone which gathers in this mine, it is said that copper, by a new and cheap process discovered by an old German miner, is extracted to the value of $300,000 annually. Montana may therefore be regarded as a great mining State; but the placer gold diggings, for the most part, have been exhausted, and for some years a great many miners and others have turned their attention to cattle ranching, for which both the climate and surface conditions are well adapted.

In the north-eastern part of Idaho, near the border of Montana, (the border between the two States being for the most part the Rocky Mountains) and on the Oregon Short Line, part of the Union Pacific system, is Beaver Canyon, from which there is a carriage road leading due east to Yellowstone Park, the great national reservation, some 90 miles distant. This is an accustomed route to the Park, coming up from the south. We could have left our car at Beaver Canyon and gone this way, which would have meant a stage drive of nearly 250 miles, including travelling from place to place in the Park; but in the heat of July this route was out of the question, especially for the ladies of the party. We had therefore to make a long detour of perhaps 400 miles, first to Garrison, then south-east to Livingstone, and south to Cinnabar, all by the Northern Pacific. A much shorter detour, if we had known about it, and could have arranged in Toronto for transportation thereby, would have been round by

Silver Bow over a branch line connecting with the main line of the Northern Pacific at Logan. The best way into the Park, from the eastern and south-eastern States, is unquestionably by the Northern Pacific; from Canada at present it may be reached either by way of Revelstoke or Lethbridge on the C. P. R., by the former through the magnificent lake region of the Kootenay, thence by railway to Spokane; by the latter, nearly straight south to Helena. We arrived at Garrison on the evening of Sunday, the 25th, and while waiting for connection with the overland Northern Pacific to take us on to Cinnabar, the General made the arrangement for transportation to that point, and back again, which he was unable to effect in Toronto, owing, no doubt, to the jealousy existing between rival lines for passenger traffic into the Park, which the Northern Pacific regards as its own special preserve, having extended a branch to within two miles of its northern boundary, the branch, namely, from Livingstone to Cinnabar. We left Garrison about dusk and heading now east by south, reached Helena about 10 o'clock p.m but saw little of the town. Helena (pronounced, contrary to the classical quantity, Hel'-na) is the capital and commercial centre of Montana. It lies among the foot-hills of the Rockies, which rise to the south. Its population is said to be 25,000. "Last Chance Gulch" was the name it went by in 1864, when gold was first discovered. and when it consisted of only a few log cabins.

In the morning we found ourselves at Livingstone, where we left the main line, and took the branch which extends to Cinnabar, about two miles distant from the northern boundary of the National Park—one of the great objects of our trip. The branch line to Cinnabar

runs all the way along and up the valley of the Yellowstone River. Geikie rode up this valley long before the railway was built, and gives a very interesting description of it in one of his geological sketches. Its glaciers at one time were of enormous extent. "In the course of our ascent," he says, "we found that the ice had perched blocks of granite and gneiss on the sides of the volcanic hills 1,600 feet above the present plain of the river, and that it not merely filled up the main valley, but actually over-rode the bounding hills, so as to pass into some of the adjacent valleys."

The same authority says: "The Valley of the Yellowstone is of high antiquity. It has been excavated partly out of ancient crystalline rocks, partly out of later-stratified formations, and partly out of masses of lava that have been erupted during a long succession of ages. Here and there it has been invaded by streams of basalt, which have subsequently been laboriously cut through by the river. In the whole course of our journey through the volcanic region, we found that the oldest lavas were trachytes, while the youngest were invariably basalts, the intervals between the eruption of the two kinds having sometimes been long enough to permit the older rocks to be excavated into gorges before the emission of the more recent. Even the youngest, however, must have been poured out a long time ago, for they too have been deeply trenched by the slow erosive power of running water. But the volcanic fires are not wholly extinguished in the region. No lava, indeed, is now emitted, but there are plentiful proofs of the great heat that still exists but a short way below the surface."

The Yellowstone River rises high up in the mountains south of the Park, then flows north-west and drains, with

other mountain streams, into Yellowstone Lake, which is one of the sights of the Park, lying twelve miles east of Upper Geyser Basin. This lake stands at an elevation of 7,788 feet above the sea level. On leaving this lake the river runs a serpentine course through the Park, and onward to Livingstone, where its course is eastward and then north-east until it falls into the Missouri, of which it is the principal affluent. Its length is 1,300, and it is said to be navigable for steamboats for 300 miles from Fort Buford at its junction with the Missouri. But the interest of the Yellowstone River centres in the Grand Canyon, some 20 miles long, which some consider the main feature of attraction in the Park. Geikie seems to have spent more time in the Canyon than elsewhere in the Park, and his description of it is most graphic. We did not visit it; the way was long and crowded with visitors, the dust and heat intolerable, and the ladies suffered from the strain of the long drives we were obliged to take in order to see what we did see.

It was the afternoon when we arrived at Cinnabar, where we were met by the coaches of the Park Transportation Company, which carried us to the Mammoth Hot Springs, a distance of about seven miles, five of which were within the Park boundary. The coach road runs part of the way up the valley of the Gardner River, which joins the Yellowstone near Cinnabar. This valley deepens into a gorge in some places, and the rock seemed to be of ancient date, but not igneous. I learnt afterwards that it was of paleozoic formation, in this respect differing from all the rocks in the geyser basins, which are of plutonic origin.

We were pleased to get to the hotel at Mammoth Hot Springs, but our pleasure was considerably modified on

finding the house full—we had arrived in the wake of a fierce invasion of excursionists, mostly Christian Endeavorers, on their way back from San Francisco, where it was said 40,000 of them had assembled. Most of them were elderly, yellow, spectacled, unhappy-looking women, far from robust. To be dragged round those dusty roads to look at hot spouting water was a punishment many of them thought they had not deserved,—we heard them bemoan their cruel fate. Notwithstanding the crush, the General managed to make it tolerably smooth for our party, all of whom succeeded in getting rooms. After dinner, and when it was getting dusk, we strolled over to the nearest Springs, distant not over 100 yards from the verandah of the hotel. We saw a number of circular and semi-circular basins, each of which had an exquisitely fretted rim, the hot water flowing over in places and gathering into other basins at lower levels. Wherever the water trickles down it leaves, on evaporation, a white sinter, which when dry and exposed to the weather cracks into thin scales, or crumbles to powder; but the sinter of the rims of the basins, and of the little terraces over which the water continually falls, is as hard as flint, and difficult to break off if one were allowed to do that; but breaking off sinter and taking it away are strictly forbidden, and the Park Police are always at hand to enforce the regulations. The sinter at these springs is calcareous; when moist and fresh it has a bead-like tracery of scarlet, yellow, orange, and green, on a white ground-work, the colors being due, it is said, to the presence of certain colored algæ that live in waters of high temperature, and by whose instrumentality the sinter deposits have been built up. From these lower basins a path leads up a steep hill of crumbled white sinter to

another series of springs occupying the summit. From the hotel, this hill looks like the termination of a glacier. It presents on one side a steep front to the narrow plain at its base; in places where the front is dry and weathered it looks like chalk, but where the water pours over, and the algæ are still at work, the coloring is very marked. The overflow from these upper springs runs down one side of the hill into a creek, the waters of which are quite warm a considerable distance beyond. Returning to the hotel, we rested and refreshed, sat on the long verandah and smoked, looking often up at the ghostly hill, and thinking. Thus ended Monday, the 26th of July. To-morrow, we have a long, hot, dusty ride of forty miles before us, and are to start early.

Tuesday, 27th July.—The General managed that our two coaches should head the long procession that was to start at 7 o'clock *en route* for Fountain Geyser, 40 miles to the south. When, after a good breakfast, the party assembled in the morning ready for the journey, we found the long verandah of the hotel already crowded with Endeavorers waiting for their coaches to draw up. There was a hushed surprise when the Canadian party were summoned to their seats in the first two coaches; they must have thought we were no mean crowd. From what they saw of us the night before, they probably concluded we were a broad-minded type of Christian Endeavorers. It is a rule of the road that the coaches keep their place in the procession, so we kept the lead throughout the day, and thereby escaped much of the dust, still we had our share, and the heat was impartially distributed; some of the ladies suffered a great deal. The first four miles of the drive from Mammoth

Hot Springs to Norris' Geyser Basin is up a long hill leading to the "Golden Gate," where we enter the wildest part of the Canyon of Glen Creek by a road which in some parts is a mere gash in the side of the mountain, in others it has been built up with great labor from projecting shoulders in the steep slope. Through the pine woods far below we caught gleams of the rushing torrent. It was a ticklish spot, and somewhat trying on the nerves. Looking back to the north and west after reaching the summit of the pass, we had a splendid view of the Gallatin range of mountains, of which Electric Peak, 11,155 feet above sea level, forms part, said to be a great natural galvanic battery, giving powerful shocks to the venturesome climber if he happens to be high up during a thunderstorm; the play of the lightning on the peak at night is said to be one of the great sights. Farther on the road had been cut at great expense through ridges of obsidian, which rise in vertical columns like basalt hundreds of feet in height. Although lying about in tons, visitors are not allowed to take specimens. Mr. Robert Christie's hat blew off as we were passing, and he had to get down; it was said that the driver winked when he got up again. Obsidian is found in almost all volcanic countries; it was brought to Rome by a person named Obsidius—hence the name,—and was used for making mirrors, They used it for this purpose in Peru and Mexico, and also for making spear and arrow heads. That deadly club the Aztecs fought the Spaniards with was armed with obsidian. It is the vitreous condition of an acid lava, mostly black, but sometimes green, red, brown, striped or spotted, and more rarely shot-colored, —then it is worth having your hat blown off to get a sample. It is a curious circumstance that whole masses

of this rock undergo devitrification and pass into a stony enamel-like substance, which gets the name of pearl-stone; but we saw no signs of devitrification going on here, the obsidian is all as black as anthracite. To run a road along and through a solid wall of glass was no mean undertaking; it it said that the engineer, having in mind, perhaps, how Hannibal crossed the Alps, made great fires on the cliffs, and then poured water on them, which broke them up.

Objects of interest multiply as we advance. Beaver Lake on the right, Roaring Mountain, 8,000 feet high, on the left, from the summit of which steam constantly escapes, with a shrill, penetrating sound at times; we saw the steam, but did not hear the roar. After passing the "Twin Lakes" and the "Frying Pan," we are glad to draw up at the Half-way House, which gets the name of the Norris Geyser Basin; here we rested two hours, and had lunch in a tent among a crowd of Endeavorers. The heat was excessive and our stay short, so we were unable to take in the wonders of the place; our next stage of twenty miles, however, promised us wonders enough. A short way out from the hotel, on the face of a hill and close to the road, we passed a steam geyser which roars night and day without any seeming diminution of pressure—sending up a great column of "steam," as it is called, but it must be highly superheated vapor charged with lime and sulphur, for wherever it lights and cools—on the grass, on the road, or on the trees,—it leaves a soft, white, pulpy substance, which gradually hardens and then crumbles, like the weathered sinter around the springs. We stood a while and looked at this roarer, thinking of the uses to which it might be applied if it could bear transportation.

The rest of our journey was quite as full of surprises. At one time we were surmounting a high ridge, then dipping into a round level plain, sometimes a mile or more in diameter, sometimes less. Pausing and looking around in the centre of these plains, we seemed to be hemmed in by a ring of mountains. I hazarded the opinion that we were standing in the filled-up crater of some vast ancient volcano. An examination of the soil showed, in every case, that it was composed of crumbled sinter, deposited by springs long since dried up. In other plains, where the springs were still active, we could see the process of levelling and filling up going on. At Fountain Basin, our destination for the night, this was very marked. All around the hotel were bubbling springs, overflowing and spreading their deposit wherever the water ran. In front, at the distance of a quarter of a mile, the Little Fountain Geyser threw up great sheets of water, which ran off in all directions, and on a much larger scale, the Great Fountain, a mile or so further away, was performing the same operation.

We found the Fountain Hotel very much congested. The omnipresent Endeavorers were arriving on their way back from the Grand Canyon or Upper Geyser Basin, and clouds of them were in our rear, impatient as ourselves for rest and refreshment. We managed to get dinner, and after a smoke on the verandah, I strolled up to the Geyser and witnessed two of its exploits—thinking hard. It was all one could do under the circumstances. A little way to the east the Devil owns a Paint Pot. I stood beside it and tried it with all the thinking I could bring to bear, but it was of no use. Fancy a huge vat of boiling white mud, about twenty yards in diameter, jerking splutters a foot into the air. Round the sides of the

cauldron the mud was more pasty, and somewhat colored; here the bubbles when formed remained, and became enlarged by expansion from within; then they would burst on top, and the thin mud would pour over the sides —for all the world like minature volcanoes. "I wonder what does it?" I heard someone say. He was evidently thinking, so was I; and though it was really of no use, as I have said, this is what I did think about it: Here was a boiling spring, that might have been as clear and limpid as another just beside it on a somewhat lower level, but on its way up to the surface it encountered a shattered vein of rock which, either by the mere mechanical force of ebullition producing friction between disjointed fragments, or by chemical action, it reduced to powder, which it has been cooking ever since. But at once I felt ashamed that a more obvious theory did not first present itself—namely, that the spring, instead of grinding the stuff out of hard rock, found it ready ground in some deep bed of old sinter, through which it burst up anew after ages of inactivity. At Hell Hole (or, if that is not its real name, it ought to be) we looked down into a vast boiling cauldron acres in extent, which had abruptly sunk down 30 feet or more in the floor of a wide plain of sinter. In its perpendicular sides, from top to bottom, one could see the thin ragged edges of the ruptured layers of sinter, deposited during a long succession of years, perhaps ages. Something went wrong below, and the bottom fell out; luckily nobody was there at the time, as it happened long before a white man ever saw it, and we may be sure no Indians were about, as they have too much respect for the Great Spirit to venture within the bounds of his private property. By the theory last suggested, this ought to have been a Paint Pot, and it

would have been a monster, but the water was still and clear, perhaps it had not been churned long enough, or it may have lacked some chemical constituent necessary to convert the sinter into mud. The stuff in the Devil's Paint Pot, first mentioned, looks like thin whitish putty-plaster, and may be largely lime, but only an analysis could tell what ten thousand years' cooking at the boiling point has made of it.

Wherever we had been hitherto I had always had a room to myself; to-night I slept in the parlor with eight others, and I slept well. Not so all of our party. Mr. Duncan had suffered much from the heat and the long ride, and was ill and weak. Captain Mellis, never at a loss for a name, called his complaint "Duncanitis." Most of us had had a touch of it; the General rather enjoyed it, though it had its inconveniences, especially in a procession.

Wednesday, 28th July.—There lay before us, to-day, a nine miles' ride to Upper Geyser Basin, the exploration of the wonders there, and the ride back to the Fountain Hotel to spend another night. The day was perfection, as all the days had been but the one at Colorado Springs. The heat in the middle of the day was a little troublesome, but the nights were delicious. I speak here for myself. We started at 8 a.m., heading the procession as before. Much to our regret, Mr. Duncan could not go with us, although we were going to see the greatest of all the wonders of the Park. The General was very much "chagrined." However, there was no help for it, so we left our genial friend and his faithful wife behind to watch the cooking in the Devil's Paint Pot, and superintend the performances in the Fountain Geyser, till our

return. We had a merry ride, and many surprises by the way, the greatest of all to my mind being "The Morning Glory," a still, deep, circular pool, as clear as crystal, the water warm, I know not how warm, full to the brim, and almost level with the road we were passing along; a cavernous hole down at the bottom was seen to shade off from deep blue to utter blackness, while the sides, contracting downwards, were one mass of blazing jewels, reflecting in the sunlight all the colors of the rainbow. Not a ripple disturbed the surface, and very little steam arose. As I gazed at this lovely and yet terrible sight, I thought of the New Jerusalem, but down that awful blue-black hole was the way to another place.

Upper Geyser Basin was to be the limit of our wanderings and explorations in the Park. We were sixty miles from our home in "Waterloo," fifty miles from the Mammoth Hot Springs, and we had all the journey to do over again to-morrow, no wonder the General thought we had better leave out the "Grand Canyon." There used to be a large hotel at Upper Geyser Basin, but it was burnt down, and now there is only a restaurant, without night accommodation. On arrival here we had lunch, and then commenced exploring. We had not far to go. From the verandah of the restaurant nearly all the great geysers were within view, some were spouting, others getting ready, all steaming. "Old Faithful," the nearest, had had a fit a little before we arrived, and was due to have another soon. I sauntered up and looked into her mouth, but not too near; a young man a few minutes before had not been so cautious, and got his face badly scalded with the superheated vapor. We saw him later all bandaged up, and suffering much pain. The vent of Old Faithful is about a couple of feet in

diameter, and rises two or three feet above the broad terraced mound of sinter deposit its waters have formed around it. The sinter in this basin is silicious, and brownish when moist, but when the algæ die in it, and it is exposed to the weather, it crumbles into scales and dust like that at Mammoth Hot Springs and elsewhere. As we stood looking on at Old Faithful she began to get angry, expressing her feelings by loud gurgitation, then all of a sudden, with a roar of indignation, she threw up a column of mingled water and steam to a height of over 100 feet it was said. This avalanche of boiling water fell in a torrent over the mound, and ran from one fretted terrace to another until it found its way into the Firehole River, which receives the drainage of all the region and carries it northward into the Madison, the Madison into the Snake, the Snake into the Columbia, and the Columbia into the Pacific Ocean. We are close on the Continental Divide; a few miles to the east and the drainage finds its way into the Atlantic. The Yellowstone, for instance, flows into the Missouri, the Missouri into the Mississippi, and the Mississippi into the Gulf of Mexico. Old Faithful repeats her performances every hour and some minutes, and can always be depended upon, hence her name, but she is by no means the most imposing of the geysers, either in the volume of her discharge or the height to which she rises. The Giant, the Giantess, and the Beehive far surpass her, but they are intermittent and fitful. The Castle Geyser, which has an immense cone, favored us with a magnificent exhibition just as we were leaving. An old habitue of the Park, Mr. G.L. Henderson, whom the General had met on a former visit, introduced us to the "Three Sisters." These are hot springs commmunicating with each other

through rifts in their beautifully-fretted rims. One of them, Mr. Henderson considered, was the greatest curiosity in the Park. Every seven or eights minutes there was seen rising from the crater at the bottom large and small transparent globes of gas, which as they neared the surface burst, throwing up the water, which, as it fell, took on a tinge of heavenly blue, with touches of carnation. It was a beautiful sight, Mrs. Palmer was in ecstacies. We watched it subside and begin again. Mr. Henderson, who lives near it and keeps store, had watched it for years, and knew no change from what we saw. He had ascertained that the bubbles consisted of light carburetted hydrogen. If so, they would ignite if a light was held above the water when the explosion took place, I said. Mr. Henderson never thought of that, but was of the opinion that there would be no flame. Thinking it over, I came to the conclusion that the gas might be so attenuated by heat that there would be nothing to burn. The General and I had a long talk with this intelligent old gentleman in his store. He had all the lore of the Park at his finger ends, and has been writing about it in newspapers and pamphlets for years. He is now engaged in publishing his most important work on the subject, to be called "The Two Wonderlands," which will contain sketches embracing fifteen years of the Park's history and development. The Park evidently owes much to Mr. Henderson, who seems to have been fascinated with it from the first. It was mainly by his writings and representations to the Government that the Park has been gradually improved so as to be made accessible to the public. Being of a metaphysical turn of mind, he sees in the Park two wonderlands, one without and another within, the latter being the "human increment,"

as he calls it. His classification of geyser activity may, however, be correct. There are four varieties, he says —the Gaseous, of which the "Mugwump," one of the "Three Sisters" mentioned, is an example; the Vaporous, like the Roarer we passed; the Aqueous, or spouting geyser, like Old Faithful and others; and the Chemical, of which the Paint Pots are an illustration. The General subscribed for copies of "The Two Wonderlands," and no doubt the book will be interesting.

The whole party crossed the Firehole Riv a foot bridge, and wandered over the wide sinter plain, passing close by, and looking into, the great geyser vents—the Giantess, the Beehive, the Lion and Pups, etc., etc. We were satisfied. Sauntering along, I picked up a small piece of sinter, and was putting it in my pocket when I felt a hand laid on my shoulder. I turned around and faced one of the Park police, who told me I had transgressed the rules. I dropped the specimen, and told him I had forgotten. Of course, if these rules were not enforced the vandals would soon destroy those beautifully fretted rims of the terraced basins. I never would have thought of doing anything like that; the piece I picked up was lying loose among the heaps scattered about in all directions.

But the time was approaching when we must leave this wonder-haunted spot. By 6 o'clock we were back once more to our hotel at Fountain Basin. "The rage of thirst and hunger satisfied," we had another look at the Devil's Paint Pot. The mess was still cooking, no one could tell when it would be ready. At dusk we went to see the bears—real, wild bears, but well accustomed to the sight of man, who is not allowed to shoot them, or any other game in the National Park. Emboldened by

immunity, Mr. Bear frequents the garbage heaps around the hotels, and helps himself to whatever he can find. We saw four, one great black fellow, two smaller black ones and a large cinnamon. A crowd of visitors stood a hundred yards off looking at them unconcernedly nosing in the rubbish. All at once a dozen or so of young fellows, a woman or two among them, made a rush as if to head them off from the woods which were close at hand; off scampered the bears, the boys after them yelling; one of the bears took to a tree, and was up among the top branches in no time. It was a sight to see him climb. There he sat looking down at his pursuers, who dared not do more than shout at him. They say the bears are getting too numerous, however, and will have to be killed off. Elk and deer are said to be abundant, but we saw none.

Thursday, 29th July.—Up early and prepared for our long ride back to "Waterloo," waiting for us, we hoped, at Cinnabar. We started at 7 o'clock; the morning bright and cool, and Mr. Duncan in good heart for the journey. At Norris Basin we had our two hours' rest. The afternoon drive to Mammoth Hot Springs was in the heat, and with lots of dust, but we got through it, arriving at 4 p.m. After a good dinner, we pushed on over the last stage of seven miles to Cinnabar, arriving at 8 o'clock, and finding Shaw and "Waterloo" both ready to receive us. In fifteen minutes we were off, back to Livingstone, on the main line of the Northern Pacific, there to meet the Overland west-bound train for Seattle, going over the ground we came by as far as Garrison, then into new territory. This night we were tired, the air was less blue in Munrovia, we went early to bed and slept well, I did, at least.

Friday, 30th July.—All day in the train, rushing through a sea of mountains, and passing many grand sights in the north-western portion of Montana. It was dark when we entered Spokane, in the State of Washington. The General spoke at one time of stopping off here and taking us up to Rossland, but our time was running on, and we had far to go and much else to see. I would have liked to have had a peep at Spokane, which is the metropolis of the western portion of the State, a great lumber and railway centre, and growing rapidly in population and importance, but the train made only a short stay, and it was too dark to see anything. This night we did not retire quite so early, and Munrovia had to be well swept out and aired.

Next morning, Saturday, 31st, I noticed a change; there was a freshness in the air, and a greener shade in the vegetation. We were coming under the influence of the great ocean. We made some wonderful curves and doublings in our final escape from the mountains. The Northern Pacific must have had many nice engineering difficulties to overcome at this end of the road. We saw men at work over a large section tearing down the hillsides with artificial geysers, and running streams of mud into the ravines to fill them up. These ravines—great deep gorges some of them—were crossed by wooden trestle bridges, and now these were being buried up to the sleepers in the washed-down mud. About 2 o'clock p.m. we arrived at Seattle, the terminus of the line, situate on Elliot Bay, an arm of Puget Sound, and some eighteen miles north of Tacoma. The approach to the city by rail is over a long platform on trestles laved by the salt water of the bay when the tide is in. At low

water, as was the case when we came in, we seemed to be crossing a far-stretching lake of slime; but the briny smell of the sea greeted us as we passed along. At the station we left our car and the good-natured Shaw, and were driven to the Reiner Grand Hotel, where some of the party had lunch, but most of us waited for dinner to be served at 6.30, and meantime set forth to view the city.

It did not take long to discover that Seattle is a stirring place, and well worth seeing. Beautifully situated on a succession of rolling hills, it looks down on a fine bay, with more than sixty wharves along its water front. The business part is down below, the residential part above, on the hills. Cable cars run up and down; of these we took advantage, seeing the sights and enjoying the cool breezes. It was evident that the gold craze had something to do with the bustle and eager crowd that was seen on the streets. Outfits and supplies for Alaska were advertised at every door, and the windows were hung with maps of the gold fields showing the different routes. Pamphlets, made up for the most part of Ogilvie's reports to the Canadian Government, were also in abundance. A shipload of adventurers had sailed a day or two ago for the Yukon, and there were crowds waiting for passage by the next steamer. There was no word of going to Canada, it was all Alaska. Still, this is by no means one of your bumptious American cities, forever dangling "Old Glory" in your eyes; we did not notice it the whole day. Seattle claims 65,000 of a population. In 1889 a terrible fire destroyed the whole business portion—60 blocks with the wharves. The loss was nearly $10,000,000. Within a year 265 new buildings, mostly of iron and stone, besides 60 wharves, were

erected. It is the chief seat of the State lumber trade, and has an immense shipping.

We had a good dinner at the Reiner Grand, and after another stroll, betook ourselves to Waterloo, which had to stay in the railway yard all night, there being no connection to be had for Vancouver till morning. We had a quiet night, out of the bustle of the city, and lying along the wharves on Elliot Bay.

Sunday, August 1st.—Our route was now by the Seattle and International Line to Vancouver. This line connects at Mission Junction with the main line of the Canadian Pacific, of which virtually it is a southern extension, connection thereby being made with the other transcontinental lines, and with San Francisco. We left at 9 a.m., all well and hearty, and with no thought, alas! of its being the "Sawbath" day. The sky was bright, the air fresh, and the woods green; no Sunday solemnity in nature either. So on we went and on, ever through greener woods and richer grass till we crossed the 49th parallel and were at last in our "ain countree." There were signs of an outburst of patriotism on the part of the younger members of the party, which the General, careful of our dignity, and of giving unnecessary offence, suppressed for the time. But there were no restrictions upon "The Maple Leaf" and other patriotic songs when we were well over the border. At length we struck our own main line at Mission Junction, but had to wait over an hour for the train. From this point to Vancouver, across the broad delta of the noble Fraser River, and along Burrard Inlet, the ride was inspiring. We arrived at Vancouver, the terminus of our great railway, at 5 p.m. The first thing to strike a stranger, arriving at

this time of the year, is the dense growth of vegetation. The undergrowth in the woods seems impenetrable, and any small clearing we passed, not under crop, was overgrown with a rank profusion of tall coarse ferns, half burying the enormous blackened and charred stumps of cedar and Douglas fir. Twelve years ago, the site of Vancouver was covered with just such vegetation, the remains of it still visible on some of the streets. Now it is a bright, clean city, in a noble situation, surrounded by mountains. It has miles of well-made streets, with electric trams, a hospital, a handsome opera-house, buildings of brick and granite, three parks, extensive wharves, with a regular steamship service to China, Japan, Australia, San Francisco, and Alaska. We drove to the Vancouver Hotel, a splendid structure, and handsomely appointed. After a clean up, and a good dinner, we sat and smoked on the spacious verandah, gazing at the mountains to the north, on the highest peaks of which lay crouching in silent majesty the "Lion and Lioness." The night was delicious, and our contentment full.

Monday, August 2nd.—Spent the day visiting the sights. One of the C.P.R.'s three White Empresses, the Empress of India, was to sail to-day for Japan. I sat for two hours on the wharf, and watched the passengers and freight going on board. I was afterwards taken through the vessel, which I thought magnificent. A great many Chinese and Japs were leaving, among the latter Prince Arisugawa and his retinue, returning from the Jubilee. In the afternoon we drove through Stanley Park, and saw the "big trees"—cedars and Douglas firs; one cedar not less than 60 feet round, firs 250 feet in height. The

park is entirely virgin forest, with dense undergrowth, through which walks have been cut in places. The main drive is round the outskirts, affording fine views of the Inlet, especially at the Narrows, English Bay, and Coal Harbor. In the evening we strolled around town, or sat on the verandah of the hotel—the mountains were still there, with the lions on top, above all, the North Star. mountains we knew, what was it?

Tuesday, 3rd August.—Rose at 7, and walked about. After breakfast, made ready for a trip to New Westminster, on the Fraser River, to see the Canneries. Started about noon, distance nine miles by electric tram, through dense woods and some clearings. The run took fifty minutes. New Westminster is a much older place than Vancouver. It was once the capital, but Victoria has snatched away that honor, and made haste to ensure it for all time to come by getting the Provincial buildings erected. This may be all very well for Victoria, but Vancouver, the terminus of the railway, by all odds should have been the capital. New Westminster is still an important place, with a population of 8,000, and the head of the salmon canning industry. It has a penitentiary, a lunatic asylum, and there are large saw mills. We visited one of the canneries, of which there are said to be over thirty in operation on the Fraser this season. The run had been prodigious, this being one of the great years. In Vancouver I saw a magnificent fish, a bountiful meal for a large family, sold for five cents. The canneries are large wooden sheds on the bank of the river, with narrow wharves on which to land the fish. At one end of the cannery we visited the floor was heaped with a cargo just landed, and all hands, nearly all Chinese,

were busy. Boys with iron hooks lifted the fish by the head and laid them on to the cutting table. The first operation was to cut the head, tail and fins off, open the body, and roughly remove the inside. The fish was then passed on to other tables to be washed, to be cut up and packed in tins, which were then soldered and tested for air-tightness. They were then placed in vats of boiling water, afterwards in close steam boxes at a temperature of 240 deg. The cans were then washed, and packed in cases for shipment. Our impression of the entire process was, that canned salmon might be eaten by the most fastidious; everything was done with cleanliness and despatch. I asked one of the men what was done with the offal, but his answer was not entirely satisfactory,—on the steamer to Victoria next day, however, I saw where it went. This is not right, and there has been an outcry about it. It seems they carry it away in barges and dump it out at the mouth of the river ten miles below, where vast quantities of it were seen floating. What stupid waste! but this will all be mended some day.

After some rest and refreshment at the Guichon Hotel, we took the tram again, and were back to the Vancouver in good time for dinner. In the evening we had the verandah, cigars, and the mountains. What more could one want?

Wednesday, August 4th.—Our next move was to pack up for a trip to Victoria, by the steamer Charmer, a large vessel making the trip in six hours, starting on the arrival of the overland train from the east. There were quite a number of passengers, the weather was perfect and the scenery matchless. I never enjoyed a sail better.

Northward stretched the Straits of Georgia, studded with islands, mountains all round; to the south the long coast line of the State of Washington, and Mount Baker, white with snow, behind.

We arrived at Victoria about dusk, drove to the Driard Hotel, in the heart of the city, and had a good dinner. In the evening some of us strolled out, and explored the Chinese quarter. Good order and seeming comfort appeared to prevail everywhere; we suffered no molestation, in fact, some of them lit up their joss-house for our inspection. It was a strange sight but quite indescribable. A native tried to explain the gaudily tinselled ornaments and emblematic devices, but we could make little out of it, his English being very deficient. Buddha in his sacred shrine we of course recognized, but all else was mystery, and of little interest. One thing I did notice —the Chinaman is utterly devoid of reverence. On the way back to the hotel we tried to get a cup of Chinese tea, but were too late, and called instead at the "Poodle Dog," a famous restaurant, where some of us had refreshments.

Thursday, 5th August, was a day very full of interest. In the morning, I was introduced to a young Englishman, Mr. Cowell, a practical assayist and mineralogist. He showed me over and explained his whole plant, chemical apparatus, and machinery. He has a powerful two-stamp mill, just put in, with all the latest improvements, capable of crushing ore by the ton load, which affords the only reliable test for gold. He had just finished a mill test of 14 tons. At 11 o'clock we met by appointment Mr. H. D. Helmcken, who had come over in the boat with us from Vancouver, where we had been intro-

duced to him. He is a lawyer, and prominent in Victoria, being the grandson of Vancouver's first Governor, Sir James Douglas, when Vancouver was a crown colony. Under Mr. Helmcken's pilotage, and through his influence, we explored from top to bottom the new Provincial Parliament buildings, not yet completed. Nothing we had seen in our travels was at all comparable with this magnificent building of white stone. It is Roman in architecture, with a vast St. Peter's dome crowned with a fine statue of Vancouver, the old British captain who more than a hundred years ago mapped out and measured, with so much accuracy, the coast line of the great island that will forever bear his name.

Mr. Helmcken took us through the quaint old gubernatorial mansion, embosomed in rare trees and rich shrubbery; in all its internal arrangements the old house is just as his grandfather left it. In the afternoon, Mr. Helmcken took us by electric tram to Esquimault (pronounced "Squimalt") a distance of perhaps two miles. Here England's flag, and the flag of a British admiral, floated proudly on a famous ship—the first-class cruiser Imperieuse. After viewing the magnificent dry dock, we were put on board a small propeller, and made the circuit of the harbor. Then we drew up alongside the Imperieuse, and after a short preliminary were permitted to board her. I had never been on the deck of a man-of-war, and it was with the keenest interest and enjoyment that I saw everything, the guns especially. A barefooted sailor, whom the General lavishly tipped, showed us around the whole ship, and explained everything. There was another man-of-war in the harbor, the Comus, of an inferior class; we passed her alongside, but did not go on board.

Mr. Helmcken's family was residing for the summer in a cottage on the harbor; here we were landed, and royally entertained. After enjoying ourselves for an hour we steered back to the landing, took the cars, and reached the hotel in time for dinner. We had to leave that night. The Charmer sailed at 11 p.m. on her return trip to Vancouver, But our short stay in Victoria had been made very pleasant. It is an attractive city, charmingly situated on a deep bay near the south-east extremity of the Island. It has a cathedral, public library, a fine park on Beacon Hill, and a number of factories. The climate is that of the south of England, and the town is peculiarly English in most of its characteristics. Originally a post of the Hudson Bay Co'y, its connections were mostly with England, until the completion of the C. P. R. in 1885, when it came more in touch with the Dominion. The Island of Vancouver became a crown colony in 1849, when it was leased to the Hudson Bay Co'y for ten years. It united with the colony of British Columbia in 1866, and in 1871 the united colonies joined the Canadian confederation.

Friday, 6th August.—On looking from the window of my sleeping berth early this morning, I found that we were more than half-way back to Vancouver. There was a cool morning breeze, and a considerable ruffle on the water, which had a Fraser River color, that is, a dirty white; the offal from the canneries was also very much in evidence. I dressed and stepped on deck. It was a glorious sight. The Charmer soon took us into blue water, and past lovely islands—Mount Baker gleaming white in the distance—and at length through the Narrows into Burrard Inlet, and on to the wharf, which we

reached about 9 o'clock. Then back to our old quarters in the Vancouver, to a good breakfast, to which was to succeed more sailing and sight-seeing; for in the afternoon Mr. Gideon Robinson and his pretty daughter took us in a small propeller up to near the head of the Inlet, a trip full of enjoyment. All the way up and back we seemed to be passing through a succession of lakes, girt about with forest-clad mountains. We were back to the hotel in time for dinner; after that, the verandah and the Lions.

Saturday, 7th August.—We had still this day and part of to-morrow to spend in this charming city. After breakfast some of us had a stroll; called on the Oppenheimers at their store, where they do a large wholesale grocery business. Mr. D. Oppenheimer showed us some very rich specimens of gold ore, and gave us a description of his Antler Creek property in Cariboo. He and some others had secured from the Provincial Government a twenty years' lease of fifteen miles of placer diggings on Antler and other creeks, along with a charter granting concessions of unusual liberality, as he stated. He gave us a copy of the Bill to study on our way home. In the afternoon a number of us went to English Bay, a part of Burrard Inlet, to have a swim in salt water. We found the shore alive with bathers, but there was plenty of room out on a raft in deep water. I plunged in, with Mr. R. Christie and Mr. Duncan, and had a glorious swim. Only two of the ladies, Mrs. and Miss Palmer, ventured in. We spent the evening about the hotel as usual.

Sunday, 8th August.—We started in the afternoon in

bright warm sunshine, the same that had ever shone on us since we left home, with the single exception of the day at Colorado Springs. We have had here a week of sight-seeing and enjoyment such as I, for one, never had before. And lo! we are only half way on our journey; the other half to be accomplished in half the time, though crowded with greater sights and wonders than we had yet seen.

The journey homewards through another wonderland, another system of mountain passes, lakes and cataracts, was undertaken with an appetite for these blunted to some extent by our experience of the wonderlands we had already seen. After the Royal Gorge and the Yellowstone Park, what remained to startle and amaze, to revive and excite our flagging faculty of wonder? The answer must be—the canyons of the Frazer and Thompson rivers, the cataracts of the Illecilliwaet, the passes, peaks and precipices of the Gold Range, the Selkirks, and the Rocky Mountains. Things that separately were beautiful, terrible, or sublime we had often seen, and were still to see, but it was reserved for our trip from Vancouver to Banff to experience the sense of terror, beauty and sublimity combined. The southern mountains would ever be associated in our minds with baldness and glowing heat, the brown, treeless wastes with the deserts of Syria or Arabia—"a dry and thirsty land, wherein no waters be." We were now to enter a grander, greener, wilder, and sterner land. For the first 13 miles we ran along the south shore of Burrard Inlet, a far-fetched arm of the mighty Pacific, creeping in at the "Narrows" from the Strait of Georgia, which separates the island of Vancouver from the mainland. Snow-tipped mountains on the opposite shore reflect their shadows

in the smooth gleaming water. At Fort Moody, once the terminus of the railway, now silent and deserted, we leave salt water (not very salt) behind, and continue east by south, through the vast delta of the Frazer, to Mission Junction. So much of the way we had already passed over, beyond was all new to most of us. Keeping still on the right bank of the great river, we pass along north-easterly, crossing Ruby Creek, so named from the red garnets found in it, and past Agassiz, where there is a Government Experimental Farm, growing fruit and grain of all kinds; past the bottomless pit, or Devil's Lake, and on to Hope. The geologists say this is the head of the old estuary of the Frazer, that below it was a great arm of the sea, now filled up by the detritus brought down by the river, and at length converted into a vast fertile plain, the granary of British Columbia, subject, unfortunately, in seasons of extraordinary precipitation in the mountains, to overflow, like the flats of the Assiniboine and Red River. When we think of the length, breadth and depth of this great alluvial plain, we are struck with the wonderful eroding and transporting power of running water. All this alluvium was once rock or glacial drift, and that too was once rock; it all came from the great central plateau of British Columbia, which has an average height of 3,500 feet above the sea. What must it have been before the delta of the Frazer was formed? A plateau is not always a plain; this one is said to be like the ocean in a storm when the waves are running mountains high, but the waves are mountains, and they are standing still; between them are the inevitable valleys, beds of torrents at certain seasons of the year, all bearing down detritus to some main channel, which finally empties into the Frazer. Speaking of the Frazer

from the point of view of the gold-miner, Dawson, in his "Mineral Wealth of British Columbia," says: "It may be regarded as gigantic ground sluice; its valley, originally excavated in tertiary times, in the rocky substratum of the country, was subsequently, during the glacial period, largely filled with drift material, through which, at a still later date, it had to re-excavate its bed, leaving great series of terraces or benches along its banks in many places, as this was gradually accomplished. A portion of the gold now found in its bed and banks has without doubt been worn out of its rocky matrix directly by the action of the river, while another portion may have been derived from the glacially transported drift materials. The first-mentioned moiety may be supposed to include the 'coarse' gold, the last must be in great part 'fine' gold."

Not alone the Frazer, but all the old stream courses that find their way into it, especially from the Cariboo district, are found, according to the same authority, "to have pursued very much the same directions that their present representatives follow"—a very important point for the miner to know. These old stream courses, of which there is a complete network in the Cariboo country, were originally trenched out of the same rocky substratum as that of the Frazer; they were all filled up with glacial drift, through which, with more or less success, they have cut, or are still cutting, their way. Down in their old beds, where these can be reached and worked to advantage, as well as all the way up to the top of their benches, gold is still found in paying quantities. In the early "sixties" this region was what Klondyke is to-day; over $20,000,000, it is said, was taken out of a space of only a few miles, on Lightning, Williams and Antler

Creeks alone. The two former creeks happened to have a bed of boulder clay beneath their present channels, and above the gravelly floor of their old beds, which kept the water well out of the shafts and tunnels, hence the rich finds on those creeks; but Antler Creek has no clay, and up till now, according to Dawson, has not been bottomed. I have heard old miners who have worked on the benches of this creek say the same thing. The day is not far off, however, when improved methods and more powerful machinery will master all difficulties, and Cariboo will yet become a great mining centre. There is a good stage road from Ashcroft, on the C.P.R., to Barkerville, on Williams Creek, a distance of 270 miles. I met the gentleman who has the contract for carrying the mails between these places; he told me it was not a bad country to live in, the roads were good and perfectly safe, and there was gold everywhere. He saw a man make five dollars a day on the roadside opposite his office window.

At Yale, fourteen miles above Hope, we arrive at the head of navigation; a welcome spot to reach it must have been for old Simon Frazer after his experience among the foaming rapids of the awful gorges through which he was the first to steer a birch-bark canoe It was Alexander Mackenzie, of the old North-West Fur Company, after whom the Mackenzie River is named, who, in crossing the divide from the Peace River, first struck the head waters of the Frazer, which he believed to be the Columbia; this was in 1793; thirteen years later, Simon Frazer followed the river from its source to the sea, 1,000 miles at least, and gave it his own name. The story of his canoe voyage is one of thrilling adventure.

It was some distance above Yale where gold was first discovered on the Frazer; this was in 1857; a great rush took place the following year. It was the universal belief at the time that the lower Frazer was a great sink of gold, which had its origin in richer deposits towards the sources of the great river; it was this belief which led to the rush into Cariboo in 1860 and 1861. There cannot be the least doubt that immense treasure lies buried in the deep sinks of the lower Frazer; the coarse gold does not travel a great way, but the "flour" floats far, and settles like other sediment; how vast an accumulation of this fine stuff lies buried in the broad delta of the great river who can tell?

Yale was formerly an outfitting point for miners and ranchmen northward; it occupies a bench above the river; a deep glade behind it, with high mountains rising abruptly around. From Yale to Boston Bar, a distance of 23 miles, the great river rushes in swirling eddies or foaming cataracts through the great canyon. It was now too dark for us to take in its wonderful scenery, though we sat up late looking out, now from one side, now from the other, some from the rear platform of the car, and all calling to one another to come and see something imagined to be more wonderful than what one was looking at. It was only snatches here and there, revealed by the uncertain light of the moon, that any of us could obtain, but they were snatches that impressed the mind with a sense of awful grandeur. It is not, however, from a moving train, even in daylight, that one gets the full effect of such scenes; the tourist must take time, and stop over a day or two at all stations where accommodation is provided; these stations, fortunately, are numerous and well-appointed. There is a charming little

chalet hotel some few miles above the canyon, where amid scenes of matchless grandeur and magnificence one might revel for a week.

Near Cisco we cross the great river by a steel cantilever bridge, and at Lytton, six miles further up, enter the valley and canyons of the Thompson River, which here rushes into the Frazer out of a gorge almost as profound as the one from which we have just escaped. But Munrovia is now deserted by all but its single occupant, and he is asleep.

Next morning we are still in the valley and gorges of the Thompson River, winding slowly northward: two powerful engines in front, and thirteen cars behind, all, but our own "Waterloo," loaded for the most part with Christian Endeavorers. At Ashcroft, the point of departure for Cariboo and other gold fields in the northern interior of British Columbia, the railway turns to the east, still along the left bank of the Thompson, through canyon after canyon. After these the river widens into Kamloops Lake, along the south shore of which the railway runs some 20 miles. A series of mountain spurs project into the lake, these are pierced by numerous tunnels, one following the other in rapid succession. At Kamloops we have attained an altitude of 1160 feet. The north fork of the Thompson comes down from the mountains 200 miles northward, and here joins the main river. After this we get a glimpse of grass, fenced fields, and growing crops, with herds of cattle. This is a ranching country extending far to the north and south and one of the garden spots of British Columbia. Beyond is the great Shuswap Lake, so named from the Indian tribe that lived on its banks and still has a reserve there.

It is a curious lake, or rather labyrinth of lakes, its long arms winding in and out among the mountains. The railway runs along the southern shore of one of its widest stretches, and crosses one of its arms at a place called Sicamous, from which a branch of the railway runs south to the head of Lake Okanagan, on which a steamer plies to the new Boundary Creek mining region; the country along and around is said to be very beautiful, and well settled. Near the lake, at a place called Kalowna, Lord Aberdeen has a large fruit farm and employs a great many men.

After crossing the "Narrows" at Sicamous, we have three great ranges of mountains before us,—the Gold Range, the Selkirks, and the Rockies, all three, roughly speaking, parallel, running north-west and south-east, all differing in form, contour, age and constitution, fine subjects for expansive treatment if one had only the geological knowledge and experience. I must confess I have no sentiment with regard to them; my mind dwells on the nature and operation of the awful forces that have produced them,—still more on That which seems to be behind, of which we know no more than what we can think about it. Is it a waste of energy, indulged in only by the weak and ill-informed, as my friend Robertson will have it, to think about it at all? You may be all right, Tam, and your peculiar view of life and nature may be the right one. "Wha's contrain' ye?" as the General would say.

However, our present business is to get through the Gold Range. We are quite sure we can get through, but can't exactly tell how, unless a big hole has been bored somewhere in that great rampart ahead. Sure enough, there is just such a hole, not made with hands, indeed,

but a well-finished job all the same, the credit of which is due mainly to the Eagle River. It was a lucky find for the C.P.R. when this valley was discovered. I don't know who discovered it; perhaps some keen sportsman in his canoe on Shuswap Lake put in for the night at the mouth of Eagle River, which enters the lake above the Narrows, and next day followed it up to the mountains; perhaps, and this is more likely, the pass was discovered from the other side—some explorer in the Columbia valley caught sight of it, fortunate for the railway, as I have said, otherwise it might have had to make a long detour, perhaps as long as the Columbia has to make in doubling the north end of the Selkirks. The valley of the Eagle River, with its dense forests of Douglas fir, hemlock and cedar, its four beautiful lakes in succession, Eagle Pass, and the lofty mountains on either hand, combine to form a picture the effect of which it would be hard to describe. I had the impression that I would enjoy camping here for a week. The highest point on Eagle Pass is at Summit Lake, from which we descend into the broad valley of the Columbia, which, after being fed from the eastern flanks of the Selkirks, doubles round them at the Big Bend and flows southward, expanding into long navigable lakes, after which it enters upon a brilliant career through the State of Washington, finishing up in the Pacific Ocean. Hail! Columbia, thou art a noble river, and I would like to thread your mazy course from the Selkirks to the sea. It requires a bridge of half a mile in length to span this great river at Revelstoke. And now for the Selkirks, up the valley of the "Rushing Water" (Illecilliwaet), white and cold from the glacier heights, mighty as an eroding force, but for which there would be no thoroughfare in

these mountains; but what a thoroughfare! We enter it by a chasm not more than ten yards in width, with vertical rocky walls, the tops of which we had to crane our necks far out to see. Here, where there was a fierce struggle for right of way between the railway and the rushing Illecilliwaet, the din of the train and the roaring river was deafening. At Albert Canyon, a few miles further up, the railway is perhaps 300 feet above the bed of the torrent, which is here compressed into a boiling flume about twenty feet wide. The train is stopped for a few minutes at this point for passengers to wonder and think of their latter end. At one point the rock rose perpendicularly from the water to a level with the railway without a joint or flaw, a solid, uniform mass of apparently crystalline schist, clean cut as if it had been done with a knife,—where the other slice was no one could even imagine, there was no place around where it could have been hidden. According to Dawson, crystalline schists and granites are scarcely known in the Rocky Mountains between the 49th and 60th parallels, but, he observes, they are abundant in the Selkirks and Gold Range, together with great masses of palæozoic rocks. This Rock at Albert Canyon, therefore, may be palæozoic, metamorphosed beyond recognition, for aught I know.

Between Albert Canyon and the Glacier House, near the summit of the Selkirks, there is a stretch of 22 miles according to the mileage table in the guide books, the figures given indicating the distance west of Montreal. But how do they do it?—here in the Loop Valley we are twisting and turning and doubling on our tracks, cutting great gashes in the mountain sides one above the other in the heroic attempt to climb the vast bulwarks

of the old carboniferous ocean that rolled far to the east before the Rockies—things of yesterday—were born. At length we reach the summit at Glacier House,—not exactly the summit, which is two miles further up, where the altitude of the pass is 4,300 feet above the sea—at Glacier House the altitude is 4,122 feet. Here we should have stopped over a day or two if the General had not been misled. William Spotswood Green, F.R.G.S., the famous glacier specialist, spent six weeks here, and found the time too short. For the accommodation of those who can stay—and they are the lucky ones—the C.P.R. has built a handsome Swiss chalet hotel. A mile and a half away, and only a few hundred feet above the level of the track, the forefoot of the great glacier of the Selkirks is seen—from the verandah of the hotel it appears to be only a few hundred yards away. But what can I say about it, or about the hoary peaks of Cheops and Sir Donald, and the cascade which ploughs down the almost perpendicular side of a mountain, in full view of the railway station? We were only an hour there, eating half the time. Mr. Green, perfectly familiar with the high Alps of New Zealand and Switzerland, took more than two weeks to develop the topography of the region. He went about it systematically, measuring a base line of 660 yards on the top of the snow sheds, and from points at either end fixed a third station at the opposite side of the loop made by the railway. On his plane-table he then took the bearings of all the peaks in view, making profile sketches, and numbering them for future identification. But you must read his book, "Among the Selkirk Glaciers," published in 1890; you will find it a rich treat. Let me give you a short extract:

"A short distance from the inn, and just beyond

where the forest had been demolished by the great avalanche (there is a good road through it now), we left the path and struck straight up the mountain side through the heavy timber..... The whole ascent was one continuous scramble, the bushes giving us the means of hauling ourselves upward. For 2,000 feet we ascended through forests so dense that no distant view was possible. Nothing was visible but the huge stems of the hemlock and balsam firs. At an elevation of 2,000 feet above the railway the trees become more gnarled and dwarfish ; in shady hollows we come on patches of snow; next we come to some grass slopes, and after a scramble over great heaps of shattered rocks composed chiefly of conglomerate which cropped out at a gentle angle dipping to the south-west, we reached the knoll forming the apex of a triangle which we had plotted on the previous evening. Though not actually the summit of the ridge it was a good clearly-marked position, commanding a splendid view of Sir Donald and all the surrounding mountains.....Looking eastward the great fall of the glacier formed a fine foreground."

We are not yet done with the savage Selkirks. Before descending their eastern flanks into the upper valley of the Columbia, we have to go through Rogers Pass, named after A. B. Rogers, the fortunate discoverer. Previous to 1883, no human feet had ever trod the awful solitudes of this part of the great central range. The pass is through a vast amphitheatre of snow-clad mountains, the grandeur of which is beyond description : Mount Macdonald on the right, the Hermit on the left, the Beaver River below, rivalling in the fierceness of its torrent the Illecilliwaet which we left behind at Glacier House. There is a "Beaver Canyon" in the Rocky

Mountains, on the border line between Montana and Idaho, which we passed on our way to Garrison, but did not see—would it compare with its namesake down which we were now thundering in the dark, to meet once more the great Columbia at the foot of the Selkirks? I cannot say, but I doubt very much. From Beaver mouth, where, out of a frightful gorge, the river plunges into the Columbia, the railway follows up the valley of that river to Donald, the headquarters of the mountain section of the railway with repair shops, etc. Here the time changes and we lose one of the three hours gained on the trip west. The great river at this place is over 1,000 feet higher up than when we last saw it at Revelstoke, on the other side of the Range, and we cross it here by a much shorter bridge. It is well fed, as I have said, from both the east and the west flanks of the Selkirk range, but, according to Mr. Green, it gets little or nothing from the Rockies, except during a short time in the spring; this means that the Rockies do not get their fair share of moisture, and it is well seen on them when their vegetation is compared with any of the three ranges to the west.

When, after leaving Donald, we began the ascent of the Rocky Mountains, all thought of Munrovia being the sleeping apartment of a modest "young man" was forgotten—conventionality went by the board. As long as we live, this, our second night in the mountains, will never be forgotten. The dread magnificence of the scene in moonlight who can portray? The full moon, riding on the silvered edge of a dark cloud, seemed to dance from one lofty peak to another, mocking us on our way, and fleeing altogether as we enter the Cimmerian gloom of that terrible gorge lying between Golden

and Palliser. Here exhausted nature claimed its victims, and the party, "serene and mortal," sank to repose.

Tuesday, 10th August.—In blissful unconsciousness we had been carried up the lofty steep of the Rocky Mountains, through the Kicking Horse Pass, and over the summit at Stephen, 5,296 feet above the sea. That great mountain mass behind is "Hector," so named in honor of the discoverer of the celebrated pass. Dr. Hector was attached to Captain Palliser's expedition sent out by the British Government in 1858 to explore the western mountain region of North America. He had crossed the mountains to the westward, and, on seeking his way back, struck a river coming down towards the north-west, and near where it empties into the Columbia, he received a severe kick in the chest from his horse, which rendered him senseless. He says in his published diary: "My recovery might have been much more tedious than it was, but for the fact that we were now starving, and I found it absolutely necessary to push on after two days. On 31st August we struck up the valley of Kicking Horse River, travelling as fast as we could get our jaded horses to go, and as I could bear the motion, and on the 2nd September reached the height of land." In his report to the British Government Captain Palliser thus comments on Dr. Hector's discovery: "In that pass Dr. Hector had observed a peculiarity which distinguishes it from the others we had examined, viz., the absence of any abrupt step at the commencement of the descent to the coast. This led him to report very favorably upon the facilities offered by this pass for the construction of a waggon-road, and even that the project of a railroad by this route might be reasonably entertained."

I wonder how the new Crow's Nest Pass, or the old Athabasca Pass of the fur traders, between Mts. Hooker and Brown and through to the big bend of the Columbia, would compare with the Kicking Horse—would like very well to settle the question by actual examination and at my leisure. But here is Banff, on the verge of the great plain into which we are about to descend, still, however, at an altitude of 4,500 feet! We are driven a mile and a half away to the lovely hotel built by the railway company above the falls of the Bow River and the mouth of the rapid Spray. Seated on one of the noble balconies, at a vast height above the junction of these rivers, and encompassed by an ampitheatre of peaks bathed in a haze of sunlight, I thought of Beulah Land and the Delectable Mountains—if ever I get there I shall say, I have seen all this before. Banff is the station for Rocky Mountain Park, a national reservation, 26 miles long north-east and 10 miles wide south-west, in which there are many scenes of indescribable beauty and interest; the roads and bridle-paths are excellent. The railway company have a small propellor on the Bow River above the falls, where the water is smooth and deep for about eight miles up; twelve of us went on board and enjoyed the sail immensely; the water was ice-cold and grey-white, like all the glacial-born rivers we had seen; it looked clear when dipped out and was pleasant to drink. From every point of view we seemed to be moving in the centre of a circle circumscribed by mountain peaks of every conceivable shape and form. This most enjoyable trip lasted two hours. On returning to the little wharf, Captain Mellis, Mr. Robertson and I walked up the river to the "Cave and Basin"—warm sulphur springs, now under Government control and in

charge of attendants. The cave is a great natural curiosity; we got the history of its discovery when sailing up the river. A village blacksmith was one day prospecting among the hills when he discovered a hole in the ground, and, putting his ear to it, heard water gurgling at some depth below. Procuring a rope, he let himself down some 25 feet to the bottom, when he found himself in a round natural cave of about 40 feet in diameter, with warm water bubbling up from the floor. The blacksmith lost no time in applying for a grant of the land, which he obtained, but the Government, hearing of the discovery, revoked the grant, and made the cave a pleasure resort for the public. The hole in the roof remains, but the entrance is now by a tunnel about 30 yards in length pierced in the side of the hill. The hill is a solid mass of calcareous sinter, deposited very long ago from water charged with lime, as it is rounded and weathered on the top. The dome-shaped roof and jagged walls of the cave are composed of the same material, as, in fact, is the whole region around, which leads to the conjecture that this spring is the feeble survivor of some ancient and powerful geyser. The floor of the cave has been hollowed out, levelled and rounded into a pool three or four feet deep, and bathing is allowed in it. But, for swimmers, the "Basin," close by, open to the light of day, but surrounded with walls of sinter, from which it has been excavated, deep, and clear as the "Morning Glory," is much to be preferred. We all had a glorious plunge in it, and were loth to come out; the temperature of the water is constant at about 80 deg. Fahr.

The rest of the evening was spent on the balconies of the hotel watching the mountains and the moon, not

very sure but there might be a diminutive thunderstorm after the great heat of the day, but it all passed over with a display of fireworks, the clouds giving way before the heat radiated into them from below. It was one of the nights when even "Tam" Robertson would forgive the indulgence of sentiment. I never remember witnessing such a combination of the beautiful and the sublime. Here was a presence that disturbed "with the joy of elevated thoughts"—

> "A sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean, and the living air,
> And the blue sky, and in the mind of man."

We were to have connection with the next train for the east, to arrive during the night, a long way behind time, owing to the heavy loads; for the Christian Endeavorers were still on the wing, and would be with us as far as Moose Jaw, where most of them, it was expected, would take the Great Northern for a short cut home. Let us hope they all got there in safety, with their minds full of what they saw in Canada, which I am sure they will remember to the end of their days. I think we were all sound asleep when "Waterloo" began to move, and we were well out of the mountains before breakfast, though still, even at Calgary, we stood 3,388 feet above sea level. This is a place I would have liked very well to stop at —a place from which a new career, so to speak, opens, a coign of vantage, from which to study the amplitude, the wonder, wealth, and beauty of that great country we are proud to call our own. Behind us are the everlasting hills, still visible and present, as they

will ever be in the mind, like remembered dreams; before us, the vast, once mysterious plains. You, Ned, will not soon forget the wide prairie we crossed at the tail of a Red River cart, sleeping at night on a buffalo robe, with the star-spangled banner of the zodiac for an awning; nor you, George, the long sail up the flooded Assiniboine to Fort Ellice, then along and across the Qu'Appelle to "Last Mountain." In those old days before the railway, it was like a nightmare to think of a journey to the foot-hills of the Rockies. The farthest west I had ever been on the southern route was to what was then the "Blue Hills of Brandon," the scene of a not long antecedent Indian fight; no thought then of the Brandon of to-day. What a change has come over the country! The buffalo has given place to the herd of the rancher, the Blackfeet are no longer feared, the railway spans the continent, and even runs north to the Saskatchewan, opening up the great Peace River valley, and beyond, to the Yukon and the Klondyke. Talk of "magnificent distances!" the lands of the C.P.R. alone would make a good-sized kingdom. Just think of it! twenty-five millions of acres of agricultural land! for that is what a generous country has given to this great corporation. All Scotland, mountains, lakes, and islands included, covers only 19,777,490 acres; Ireland, bogs and all, only 20,819,928 acres. Fortunately in one sense, unfortunately in another, this vast landed estate of the railway is not a solid compact whole. In every square of six miles, two square sections of 640 acres each belong to the Hudson's Bay Company; other two have been reserved for the endowment of public schools; sixteen are reserved by the State to be given away to actual settlers; the remaining sixteen belong to the rail-

way, except what has been sold, which is but a trifle compared with the whole. The ingenuity of mankind could not have devised a more effectual arrangement for blocking the settlement of a new country; at the same time, the ingenuity of mankind could hardly suggest how, under the system of square survey, it could be otherwise. It is not difficult to imagine the effect of this arrangement upon the settlement of the country. When an intending settler comes along looking for a free homestead, the chances are few that he will find, within convenient reach of the railway, the exact situation that will tempt him to stay; he will, in all probability, find that it is already allotted, sold or reserved. What a difference it would make if we could offer unrestricted selection of unoccupied land to all *bona fide* settlers. A good settler is a better investment for all concerned—for the country, for the railway, and even for the Hudson's Bay Company—than an empty homestead. By all means, therefore, let us make it easy for settlers to get on to the land. Wherever there is a location that would tempt a settler to settle, there let him settle. There might have to be certain prescribed limits, but let them be as circumscribed as possible. If the situation that would tempt him to stay formed part of a reserve, let the State satisfy the holder of the reserve; if the holder is the Railway, surely the Railway wants the land settled, and should be willing to make an exchange of lands with the State. Some have advocated the wholesale purchase of the railway lands by the State. This is absurd, but the country could well afford to make some arrangement by which farming immigrants should have a free choice of any unoccupied or unsold land within certain limits not too far removed from civilization. There may be diffi-

culties in the way, but they are not insuperable. Perhaps, if the Railway took the first step, something might be done towards a solution of the difficulty. For example, there are thousands of situations, a square mile in area, let us suppose, with grass and water in abundance, and with sheltering bluffs and coulees—situations that are not likely to be homesteaded or purchased for years to come, but which are eminently suitable for small cattle-ranches, creameries, or cheese-factories,—industries that can be carried on with unquestionable advantage on a partly co-operative principle, that is to say, in partnerships composed of four or more individuals with their families; each member of such a partnership or small colony being at liberty, of course, to homestead, occupy and work independently his own separate quarter-section of free Government land, secured as near to the partnership ranch as possible. Now, what I have long advocated is, that the Railway and the Government should make selections of situations of this kind and for this purpose, and give out that settlers in small groups or partnerships with the necessary means to make a start should have their choice of a selected ranch of say 640 acres to lease for 20 years, with the option of purchase at any time, at a rate to be determined by arbitration. That it would pay both the Railway and the country at large to combine in some such way, so as to promote settlement of this kind, there can be little doubt. The offer might be restricted to *bona fide* immigrants from the mother country and the United States, and there should be added to it the further inducement that duly qualified guides and instructors would be furnished in every case.

On this great plain, away from the question of its

settlement, the mind is apt to revert to times long antecedent to the present or the more recent; one thinks of the old carboniferous ocean whose waves once lashed the flanks of the Selkirks, before the rise and fall of the plain and the outbreak of the Rockies; then, of the subsequent cretaceous sea, whose western shore was these same Rockies, from whose base, as the waters gradually receded, stretched long lagoons and marshes, out of which have grown the lignites of the Bow, the Red Deer, and the Saskatchewan; later still, of the fresh-water "Mediterranean" of the waning glacial period, when the drainage to the north was still blocked by the lingering ice, which in great masses floated southwards dropping huge boulders on the way—a god-send to future generations of mangy buffalo. How everything works round for good if we could only see it, the mange as well, perhaps, but that is one of the things the carnal mind is unfit to deal with, though we should be glad to believe (if we could) that "good is the final goal of ill."

But we must get on—I am anxious to see Will at the head of his company in Winnipeg, and how the city has prospered since I last saw it thirteen years ago. The railway distance between Calgary and Winnipeg is 840 miles, and there are 52 regular and 46 flag stations intervening; with our heavy load, we have almost two days' run before us, but the feeling is, we are at home in our own country, "where green grass grows," not in brown arid wastes, though for many a mile the soil is too dry for wheat. It was incautiously claimed that no sage-brush grew in Canada; Mrs. Palmer knew better, and won a bet on it from "Tam"; but sage-brush and the protruding broken bones of the back of the old cretaceous or tertiary plane, to use Geikie's nomenclature,

which covers the central part of the whole North American continent, are soon left behind; so is the Bow River, which kept us company most of the way from Banff; we shall hail it for a moment once more at Crowfoot, and then, "No more by thee my steps shall be," etc. I have a real regard for the Bow, and was proud of its acquaintance up among the mountains,—more pleased, however, to have been able to explore its deep shaley beds above Calgary, had that been possible.

We are now in a famous ranching country, and the grass is abundant and green—greener surely than usual in August. What billowy bays of grass, ever rolling in shadow and sunshine, there must be here and all over in early June! Coal is also plenty—the coal of cretaceous times, an excellent fuel; I have told you what the geologists say with regard to its origin. Now we are in the valley of the South Saskatchewan, the great deep drain of the eastern face of the Rocky Mountains to the south, far separated from its other and longer arm doing the same duty up north, both arms, however, gravitating towards each other and meeting at length beyond Prince Albert, whence, after long wandering and many vicissitudes, it attains "Nirvana" in the bosom of Hudson's Bay; but first it takes a header into Lake Winnipeg, and there, perhaps it may be said, loses all its individuality. Until the opening of the railway, this great river had been the main highway into the interior; the Hudson's Bay Company have used it for 200 years as their only route to the Mackenzie basin and down to the Arctic Ocean, and, but for three or four miles of rapids occurring above its entrance into Lake Winnipeg, the city of Winnipeg would have an uninterrupted waterway of 1,000 miles to Edmonton: the city, however, would have to

mend its own ways on the Red River down at Selkirk ; they have been trying to get the Goverment to do this for them. The Hudson's Bay people get over the rapids on the Saskatchewan by a short railway, and the only other portage of any account they have from this point to the mouth of the Mackenzie River is between Edmonton and Athabasca Landing, a distance of 90 miles. It is along this portage that it is proposed to extend the Calgary and Edmonton branch of the C.P.R. in order to establish a Canadian route to the Klondyke.

This has taken us a long way from Medicine Hat, where we cross the south branch of the great river on a fine steel bridge. I like the appearance of the place, but it is fiercely hot in the afternoon, and one's impression is that a good shower of rain would be a blessing; the river is full, but nowhere else is there any sign of water ; water is what this country wants evidently, and I am told it is going to get it—irrigation works are being agitated, and as the country prospers, they are sure to be introduced, with a result similar to what we saw in Colorado.

Seven miles beyond Medicine Hat is Dunmore, where a branch line leads off westerly to Lethbridge, 110 miles distant. Lethbridge is famous for its coal, which is said to be superior to the lignites farther north. From this point the new line through the Crow's Nest Pass is to run to Nelson in the Kootenay mining region, and in time probably to the coast : what will then become of the old line with its panorama of wonders? Surely the railway will never give these up. For some 30 miles beyond Dunmore there are rock exposures said to be rich in fossils of the Reptilian Age; this was earlier than the Tertiary ; the great saurians lived in Jurassic times, and it might settle a long dispute if these rocks were

proved to be Jurassic—we had no opportunity of examining them. From Medicine Hat to Swift Current the line skirts or pierces the spurs of the northern edge of the great plateau extending southward to the Missouri River, sometimes called the "American Desert," or part of it, more commonly the *Coteau de Missouri*. That small portion of it which extends into Canada gets the name of the Cypress Hills, and sometimes the "Dirt Hills"—these literal names betraying the "untutored mind," which has not attained the æsthetic plane. "Moose Jaw," for instance, is "The creek where the white man mended his cart with a moose jaw," but the Indian could make it much shorter, and the white man has followed his example. "Moose Jaw" and "Kicking Horse Pass" will probably stand, but "Pile of Bones Creek" would never do for the capital of the Territories. The Cypress Hills, as one prefers to call them, attain an elevation of 3,800 feet toward the west; some parts of them are well wooded, but, I am afraid, not with cypress; cypress bushes there may be, but not the wood that Noah made his ark out of, or Cupid his arrows. Don't be too ready to remind me that it was *gopher-wood* the ark was made of; it is true the Scripture says so, but learned commentators know better, and assure us, on *a priori* authority, that it was cypress, the *C. Sempervirens* of the Mediterranean countries, a beautiful and one of the most durable of woods, which accounts for the hull of the ark lasting down to about the 15th century, when it was a common thing for pious eastern travellers to bring home well-preserved pieces of it, which the curious may still find in the museums of the faithful, among other sacred and veritable relics of the past. As for the arrows of Cupid, there can be no question as to

their being made from the same material as the ark. After this disquisition, it may be a little irrelevant to mention that the skirts of the Cypress Hills, owing to the abundance of water and the shelter afforded by their deep gullies and wooded groves, are well-adapted for stock-raising, and here there are some famous ranches. At Swift Current, the Canadian Land and Ranch Company have their principal sheep farm, where they round up annually some 28,000 head. This great company have quite a number of farms in different parts of the country, aggregating, it is said, about 105,000 acres—they grow grain, and raise horses, cattle and sheep.

In front of us now lies the great broad Regina plain, 200 miles in length, absolutely treeless, but of the finest agricultural land. At Moose Jaw, or rather eight miles further on, at a place called Pasqua, we part with our Christian friends, the Endeavorers, who, weary and worn, take the branch line to Estevan, by which connection is made with St. Paul, Minneapolis, and other points south and east.

It is now dark, the waning moon being still below the horizon. Standing on the rear platform of the car as we bowl along, a great level blank like the ocean at rest is seen stretching to the sky-line; the immeasurable purple vault above is powdered with stars down to the very rim; low down in the south the fearful Scorpion blazes, how baleful is the gleam of Antares—universes on fire, millions of them, millions more not on fire and therefore invisible. "It's a sair sicht," as Carlyle would have said—did say, in fact, when on one occasion his friends pointed to the stars as the best answer to his doubts—there was no comfort there for him —"This most excellent canopy, the air, look you, this

brave o'erhanging firmament, this majestical roof fretted with golden fire—why, it appears no other thing to me than a foul and pestilent congregation of vapors." And yet, when he was a young man with a good digestion, though his dyspepsia came early, he was fond of Addison's beautiful hymn, which so well expresses the old teleology:

> "The spacious firmament on high,
> With all the blue ethereal sky,
> And spangled heavens, a shining frame
> Their Great Original proclaim."

He was an unhappy old man because his stomach was out of order as the General maintains, but, no less, because the old teleology no longer covered the wider field of his experience, and there was nothing yet in sight to take its place.

But let us in to Munrovia and hear what another doubting Thomas has to say—nothing *sour* about him, and if there is a way of correlating hilarity and good fellowship with the Sphinx of the universe, he is the man to do it; meantime,

> "Fill high the bowl with Samian wine,
> We will not think on themes like these."

Why court the malady of thought? Give us "The Cooper o' Fife," or a good story from the General or Jamie Duncan. Mind you, this is not my philosophy, as you know; it is never anybody's, really, and even if it were, what have we ready and conclusive to say against it? It was a "grand nicht," but we missed seeing the capital of the Territories.

We used to wonder how they fixed the capital of Assiniboia, Alberta, Saskatchewan and Athabasca at

"Pile of Bones Creek"; changing the name to Regina did not mend it; how it was done let the archives of scandal tell. Here the Council of the Territories meets, and the Lieutenant-Governor resides. It is the headquarters of the Mounted Police Force, a military organization numbering at present I believe about 800 men, stationed in small parties at many different points, to look after the Indians and preserve order. A branch line extends northward to Prince Albert, crossing the south branch of the Saskatchewan at Saskatoon. This part of the country is well settled; for many miles east and west it was nearly all taken up by the abortive Colonization Companies of former times—we know the history of some of them.

The morning of Thursday, August 12th, ushered us into the Province of Manitoba with its farms and wheat fields, many of them ready for the reaper, others not so ready. Our General was moved at the sight, and, if the owners of these late crops had been around, they would have got a lecture. Judging from his remarks on the appearance of the fields as we passed along, the lecture would have been something like this: "Gentlemen, your neighbors' wheat is yellow and yours is green; this cannot be from any difference in the soil or the sun, it must be in yourselves. You did not have your seeding done in time, your fields were not ready in spring; if you don't conform to the demands of your climate your wheat will be frosted, and don't you forget it."

We stopped but a short time in Brandon, but long enough to be convinced that, for a fifteen-year-old town, it was a marvel. Occupying a splendid situation on the high bank of the Assiniboine, it is dry and clean, has

well-made streets, and many substantial buildings, including eight elevators for storing and shipping grain. It has a populatien of over 5,000, and is the centre and distributing market of a rich and prosperous country extending far and wide on all sides, with branch lines of railway pushing out into still more remote regions to the north-west, the south and south-west.

Brandon is well up on the second steppe, at an elevation of 1,150 feet; the land, all the way down to the first steppe, rises and falls in long low swells. At Austin, we descend into the valley of the Assiniboine, and, having passed station after station, arrive at Portage la Prairie, the next town of importance before reaching Winnipeg. Here the county is as level as a lake all the way to the Red River and beyond as far as the "Ridge." The "Portage" is a much older town than Brandon or Winnipeg itself, being originally a French half-breed settlement. French half-breeds once occupied most of the lands along the Assiniboine down to the Red River, a distance of 60 miles; but many of them, by this time, have probably sold out and left. Their river-front farms were only a few rods wide, but they stretched for miles into the prairie—farms they were not, only a few acres near their houses on the river were ever cultivated, and that by the women for the most part, while their husbands were away hunting or freighting. I could have much to say to you about the half-breeds, and the country lying between Portage la Prairie and the head of Lake Winnipegoosis, but Ned knows something about both, and you have read what I wrote in the *Canadian Monthly* in 1879.

About the country between the Portage and Winnipeg you have been told that it is as level as a lake, yet there

is a fall of fully 100 feet, as the current and rapids of the Assiniboine show. A life on such an ocean-like plain, amid scenes so unvarying, must be dull and uninteresting; such is one's first impression; but is there nothing to relieve the monotony? It all depends on one's make-up—what interest one takes in the "ever-changing kaleidoscope of the sky," cloud-effects by day, and the slow-moving cyclorama of the stars at night. "There is nothing to point the eye upward," I have heard it said: that eye must be "prone;" all lines here end upward. We had a thrilling experience of cloud effects during a race we had with a thunderstorm on our way to Winnipeg. We saw the clouds marshalling on the higher steppe beyond the Portage, and spreading out over all the western sky; from both wings of the main body skirmishers went out, as if to intercept our advance; their motion almost seemed like rest, but they were gaining on us rapidly, and finally we were caught. The fireworks were brilliant and much admired, but there was no great deluge of rain after all; through the cloud-rifts the yellow rays of the sun were shot on the prairie, turning it into a "field of the cloth of gold."

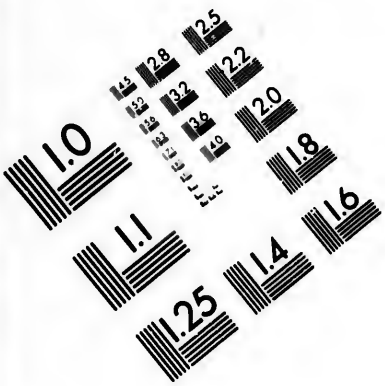
We arrived at the station about dusk. Will had been notified and was there waiting. I spent the evening with him, walking about the town and recalling well-remembered places, or sitting in the hall of the "Manitoba," a grand new hotel built by the Northern Pacific Railway since I was last here. Next morning I had more running about with Will; we visited the drill-shed, and I was introduced to some of his friends; he has a fine office on Portage Avenue, and still boards with the Rev. Mr. Owen. Will's three years' residence in Manitoba has done him good; he has taken two courses at

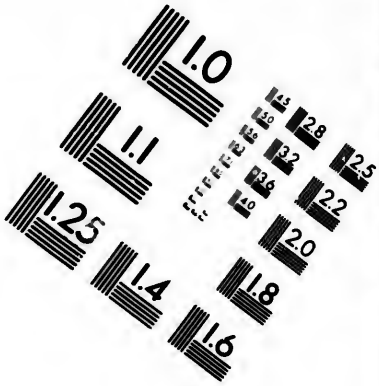
the Military School, and he shows it in his manners. I was glad to hear our General say he had "a fine manner." He has still his old laugh, but is doing his best to regulate it, though his friends still save up their jokes to spring it on him. Soldiering seems to agree with him, but he is not captain of his company yet; he has only been acting captain for a time, and is first on the roll for promotion, which will probably come soon. I saw the house he has bought, on some new street across the Assiniboine, I forget the name; he has it rented at present, but is no doubt looking forward to begin nesting in it himself.

In the afternoon we all met again at the station prepared to resume our journey. I felt that our stay had not been long enough. Will brought his young lady, and she was introduced to the party, who all thought her a sweet girl.

It was Sunday, the 8th of August, when we left Vancouver, it was now Friday, the 13th, when we bid farewell to Winnipeg. Our next stopping-place was to be Rat Portage. The run down the right bank of the Red River to East Selkirk and then eastward to the Lake of the Woods, was not inspiring; the afternoon was dark and lowering after the thunderstorm of yesterday, and we had left friends behind; it was the first time on the trip that I had felt cast down. The country east of the Red River as far as the Ridge is still mainly level, but low and uninviting. The Ridge, which is more distinct and traceable further south, may have been the eastern rim of an old glacial lake, the bottom of which, at this end, had been probably less silted up than that further west on the prairie. Beyond the Ridge we enter

a region which has no counterpart on any portion of the continent to the west,—a region of rock, lake, marsh, and muskeg, part of a vast area occupied by the lower archæan formations, which extend, with various ramifications, from the coast of Labrador to Lake Winnipeg, where they turn south to Hudson's Bay. Within the folds of these Laurentian and Huronian rocks, as they are called, there are more than a thousand lakes, all of glacial origin, that is, they are the original hollows or depressions in the primitive crust from which the overlying strata, subjected, perhaps, to a long period of decay, had been ground down and carried away by the gigantic force of moving mountains of ice. Lake of the Woods is one of the largest of the lakes, being at least 100 miles long by 300 miles round; it is literally strewn with rocky islands, but all wooded more or less; part of it is in Manitoba, another and larger part in Ontario, and a third part in the United States. How a part of the Lake of the Woods comes to be within the United States is worth mentioning as a point of historical interest. By the Treaty of Paris, in 1783, the boundary line between the British possessions and the then newly recognized United States' territory as claimed by them, was made to run up Pigeon River, which falls into Lake Superior between what is now Duluth and Port Arthur, then on through Rainy Lake and Rainy River up to the most northerly point of the Lake of the Woods, thence in a due west course to the Mississippi, which it was believed at that time such a line would intersect; but in 1842, when the 49th parallel was determined under the Ashburton Treaty, while the line through the rivers and lakes was adhered to, it was found that its continuation westward would not cut the Mississippi, which was not





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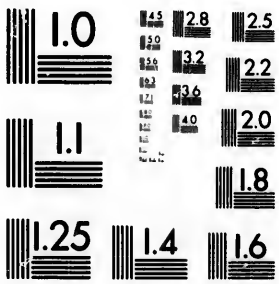

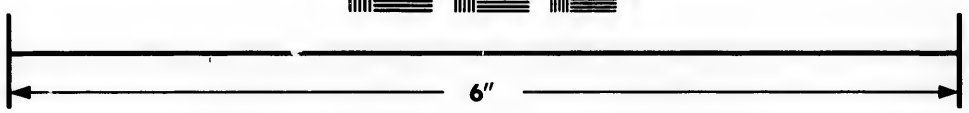

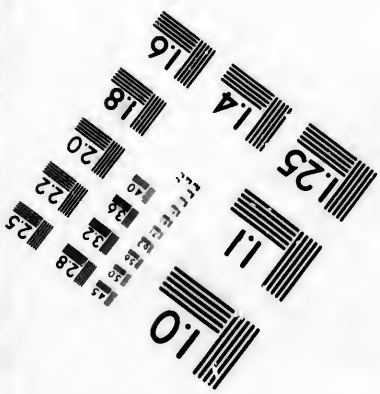

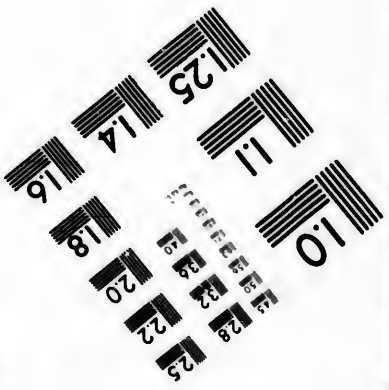

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there; hence at the "North-west Angle" of the Lake of the Woods the line was dropped perpendicularly to the 49th parallel, along which it was run with no other deviation until it reaches the Pacific Ocean. The United States thus hold a block of land and water of about 120 square miles which enters Canada like a wedge, it forms part of the State of Minnesota, and its north-west angle is the most northerly point of United States territory on the continent outside of Alaska, being in latitude 49 deg. 23 min. 54 sec. The Lake of the Woods breaks out at two points on its northern rim, namely, at Keewatin and Rat Portage, and falls into Winnipeg River, which carries its waters on to the great lake of the same name, to mix with those of the Red River and the Saskatchewan. From the falls of the river the Keewatin Power Company have just created one of the greatest water powers in the world; the Lake of the Woods Milling Company have erected an immense flouring mill, there are also great saw-mills. Here the famous hard wheat of the west is ground and sent east, while lumber is manufactured and sent west—both going in the direction where they are most in demand. Where such a trade is centred and with such capacity of extension, there we may expect to find a gathering of people.

We reached our destination somewhat late, and "Waterloo" went into a siding, where we remained quiet and secure till morning.

In the morning, a few of us set out to see the town, which we found to be a stirring place, but our object was to see a gold-mine. The lumbering and milling industries of Rat Portage are far from being the whole of its attractions. Not to speak of what it has to offer to the tourist and the sportsman, whether among the thousand

islands of the lake, or down along Rainy River and Rainy Lake, it is as a mining centre that it is now bringing so many people together. Our General had a letter of introduction to the owner of the Sultana mine, some few miles distant by the lake; we hired a good-sized steam tug, which very soon took us there. The owner was not on the ground, but the foreman, an intelligent Swede, took us all over the works. We looked down the deep shaft, I forget how deep, and saw the ore brought up; it is a bluish quartz, having considerable show of iron pyrites, but no gold that any one could see; it is there, however, both free and in combination with the pyrite, though not in very startling quantity—only from ten to fifteen dollars a ton. The ore is hauled in trucks up a railed incline to the crusher by means of a wire rope wound on a drum by the engine at the mouth of the shaft. The stamps are not of the latest pattern, but a new plant is being put in that will crush 650 tons a day. The concentrator takes up the free gold, the other moiety, which is in combination, runs off with the tailings, but is caught: the tailings which contain it, owing to their greater weight, fall into a receiver, from which they are taken and dried, then roasted to break up the combination, then chlorinated. We were all much interested; that it was a real gold-mine we had seen no one had any doubt, but the evidence was not of that kind which appeals to the senses—we saw no gold, but were assured we had some of it in our possession contained in the good-sized specimens of ore which were freely given to us; so we came away satisfied, and had a pleasant sail back, a little rough for a small craft on some of the wider stretches of water we had to cross, but it is never very far to shelter at the northern end of this

island-bestrewn lake. We got back in time for a good dinner at the hotel, and spent the rest of the evening in an animated discussion on the General's favorite subject of heredity, in which he upheld the contention of Herbert Spencer, namely, that acquired characteristics *are* transmissible, in opposition to the views of Galton and Weismann. It was one of our *noctes ambrosianæ*—a veritable feast of reason and a flow of—bowl, "Tam" would insinuate, but that's only like him, Philistine that he is.

Sometime in the dead of the night the Atlantic Express came along, and, seizing hold of "Waterloo," without appeal on the part of its serene and unconscious occupants, rushed into the darkness of the Laurentides.

Sunday, August 15th.—This day was spent in meditation, meet amid such scenes of desolation as the north shore of Lake Superior sometimes presents. It was the opinion of Hugh Miller that great tracts of America are still undergoing the grinding down and filling-up processes by which nature prepares the earth for the abode of man, and that man has prematurely invaded some of those regions; this may be one of them, but in these days man does not live by bread alone, he is after the stones more than ever before; hence we find traces of him here, for I need not tell you this is a great mining country. Towards evening we have many magnificent views of the Great Lake; looking down from the edge of lofty ridges the dark blue water is seen at a profound depth close up to the face of the rocky wall; at other places there are stretches of pebbly shore. At Fort William the scenery is solemn and impressive—the dark Indian-like Kaministiqua, Mt. Makay,

Thunder Cape, and Pie Island, all long to be remembered. Here was the famous old post of the Hudson's Bay Company, the rendezvous of the *voyageurs* and *coureurs des bois* of former times—the starting-place of the old Dawson Route, of Sandy Mackenzie's "Water Stretches," and Wolseley's expedition.

Another night and part of next day among the rocks and rushing waters, with sky and forest reeling together, then wearing into a fairly good farming country about Lake Nipissing, where, however, I must not linger.

At North Bay, on Monday evening, August the 16th, we change to the Grand Trunk, and in the morning open our eyes on familiar fields near Orillia. Home at length about noon, ending as we began and remained throughout the trip, in perfect harmony and good fellowship.