

COMPLETION OF THE GREAT NORTHERN PACIFIC RAILROAD.

Among the most remarkable of recent events in this wonderful country is the "Driving of the Last Spike" for the completion of the Northern Pacific Railway, and the opening of this great thoroughfare to public travel, from St. Paul, Minn., to Portland, Oregon, a continuous distance of about 2,000 miles. The construction of the finishing sections of the road has been prosecuted during the last two years with extraordinary vigor, under the able management of Mr. Henry Villard, the President. The putting in of the rails for the last one thousand feet of the track and the driving of the last spike made occasion for a novel kind of railway celebration, in which many prominent personages from the Atlantic and Pacific shores and from the continent of Europe took part. The locality of this celebration was in Montana, fifty-five miles west of Helena, between Garrison and Gold Creek. Here, on the 8th of September last, according to the particulars given by a correspondent of the *New York Tribune*, came thundering along at the appointed hour, from two different directions, many long trains of cars, bearing prominent citizens from the Pacific coast to participate in the ceremonies. There were hearty greetings between the American guests of the East and West. All were surprised at what they beheld. Instead of the wilderness of the Rocky Mountains, they here beheld a magnificent pavilion capable of seating more than 1,000 people, over which floated the national colors of the American, German, and British nations. In front, and reaching to the roadbed, was an extensive promenade skirted by a platform with comfortable seats. To the right was a band-stand occupied by the Fifth United States Infantry band from Fort Keogh.

As soon as the last of the guests arrived the ceremonies were opened by President Villard, who divided the attention of the enthusiastic multitude with General Grant, who was seated on the platform. Mr. Villard's address was received with applause. He then introduced the orator of the day, ex-Secretary Evarts. His address was heartily applauded. Secretary Teller spoke on the great energy and capital required to complete the various transcontinental lines and their practical benefit to the nation. This enterprise of the Northern Pacific Company, he said, along whose lines there will be in a few years 9,000,000 of people, cannot be called, he said, local in its character. It was more than national; it concerns the welfare of other people.

Hon. Lionel Sackville West, the British Minister at Washington, said that Sir James Hannen would speak for the English guests. Sir James said the English visitors were filled with wonder and admiration by the sights of this magnificent country and its institutions. Mr. Villard was a person about whom their warmest sympathies and gratitude for this splendid hospitality could well cluster. "We have had the happiness," he continued, "of seeing what manner of man he is. We have been able to see in him the qualities which have earned for him the confidence of those who have been associated with him throughout his life, and we shall now carry back the recollection of having known a real man. It was a happy thought that the representatives of the countries which have contributed the population to the American nation should be present on this most extraordinary occasion. It fills me with wonder and awe to see the prosperity which has advanced with such rapid strides and which has at once reached the highest development of civilization."

The German Minister, Herr von Eisendecher, was then presented. He expressed the hearty good wishes of his fellow countrymen for the enterprise.

The Governors of Wisconsin, Minnesota, Dakota, Montana, Oregon, and Washington were also introduced, and made brief and appropriate remarks. General Grant, as he came forward, was received with hearty cheers. He greatly pleased the audience, which was largely made up of veteran soldiers, when he said that these intercontinental railroads would have amounted to but little were it not for the men who, after the war, had sought the Territories as fields of enterprise. They had made these railroads possible and prosperous. At the conclusion of General Grant's speech three rousing cheers were given.

The foreign guests were then given seats on the platform by the railroad, when a photograph was taken of them, Mr. Villard and family, and the most distinguished Americans. After that a horse that helped to build the road from its inception was brought upon the platform. Then there was witnessed a most extraordinary spectacle. Three hundred men with brawny arms quickly laid the iron and drove the spikes on the thousand feet of uncompleted track, except the last spike.

During the progress of the work, which was witnessed by the foreigners with amazement, the band played and the people cheered. When the work was nearly completed, a cannon salute was fired by the detachment of the 5th Infantry present. The last spike was finally driven home by H. C. Davis, assistant general passenger agent of the road, who drove the first spike on the opening of the road, and this spike was the same one first driven by him. The end was reached as the sun was setting behind the mountains. The enthusiasm of the audience, variously estimated at from 3,000 to 5,000, was indescribable. The heights reverberated to the mingled sounds of Cave Cameron and the shouts of men. When the ceremonies were over the trains were reformed and the guests departed, the English and part of the Americans, including George M. Pullman and Vice-Presi-

dent Harris, to the East, the rest westward to Puget Sound. The easterly end of the Northern Pacific Railroad is forked, one fork beginning at St. Paul, Minn., where connection is made with the general railway system of the United States; the other fork begins at Duluth, at the extreme westerly end of Lake Superior, which opens to the Northern Pacific Road more than two thousand miles of lake and river navigation. The two forks of the road unite at Brainard, Minn., which is near the center of the State, in about latitude 46. Thence the road extends due west, through Minnesota and the northern part of the Territory of Dakota, into Montana, until it reaches the Yellowstone River. The Missouri River is crossed at Bismarck, Dakota, on a splendid iron bridge, costing over one million dollars. In Montana the road follows the valley of the Yellowstone in a south westerly direction to Livingston, where there is a short branch road to the great National Park. From this point the road turns northwesterly to Helena, and on through the mountains and mining regions into the northern corner of Idaho, to the famous late Pend d'Oreille, into Washington Territory, thence southwesterly to Wallula Junction, thence northwesterly over the Cascade Mountains to Tacoma, where it connects with the navigation of Puget Sound and the Pacific Ocean; thence southerly to Portland, Oregon, and its railway, river, and ocean communications.

The land grants bestowed upon the Northern Pacific Railroad are extraordinary. They extend from Minnesota to Puget Sound in Washington Territory; they cover every alternate section of one square mile (640 acres) for a distance of 40 miles on each side of the road in the Territories, and 20 miles in the States. The company's lands embrace some forty-two millions of acres, or nearly eighty thousand square miles.

The explorations for the Northern Pacific Railway were begun under an Act of Congress, passed March 3, 1853. The company was incorporated by the Act of July 2, 1864, signed by Abraham Lincoln. Difficulty was experienced in financing the road; but, in 1870, Jay Cooke became deeply interested in it; he raised large amounts of money, and the work of construction was vigorously prosecuted until 1873, when financial depressions caused the suspension of the great house of Jay Cooke & Co., and with it the great railway went down. The road fell into a receiver's hands; in 1874 foreclosure of mortgages and sale resulted; a new organization followed under the presidency of Mr. Wright, of Philadelphia. He was succeeded in 1878 by Mr. Frederick Billings, under whom the company made good progress up to 1881.

In this year Henry Villard, of Oregon, appeared on the scene. This extraordinary man told his various friends that he had a scheme for making money in which they might join, provided they would put up ten millions of dollars in a "blind pool"—that is, without knowing what it was for. This they did, and with the money in hand Mr. Villard gained the control and presidency of the great railway, and finished up the work with astonishing rapidity. Such in brief is the history of the third and last great American railway across the continent.

THE PATENT OFFICE REPORT FOR 1883.

The Commissioner of Patents has submitted his report for the fiscal year ended June 30, 1883. It shows the following facts:

APPLICATIONS.	
For patents.....	32,845
For design patents.....	1,039
For reissue patents.....	247
For registration of trade marks.....	854
For registration of labels.....	749

Total.....	35,734
Total in 1882.....	30,062
Caveats filed.....	2,688

PATENTS AND TRADE MARKS ISSUED.	
Patents granted, including reissues and designs.....	21,185
Trade marks registered.....	883
Labels registered.....	618
Total.....	22,686
Patents withheld for non-payment of final fees.....	3,056
Patents expired.....	7,471

RECEIPTS AND EXPENSES.	
Receipts from all sources.....	\$1,095,884
Expenditures (not including printing).....	677,628
Surplus.....	518,255
Increase in receipts over 1881.....	305,989
Increase over 1882.....	165,020

The number of applications awaiting action on the part of the office on July 1 was 4,699, an increase of 39 per cent over 1882. The Commissioner says the business of the office is steadily and rapidly increasing in each of the divisions of the office. The success of the patent system, the Commissioner says, is due largely to its liberality to inventors, and the security and protection it affords them. It was not intended that revenue to the Government should be obtained by charges made for vesting in the inventor the right and title for a limited time to the exclusive use of his invention. But not only have the fees received on applications filed been sufficient to pay all the expenses of the office, but a large surplus—nearly \$2,500,000—now stands to the credit of the office in the Treasury. Greater liberality might, perhaps, be extended to the inventor by reducing the fee to be paid before a patent can issue, and with beneficial results. Certainly a more equitable rate of fees could be adopted than is now provided by graduating the fee to the character and nature of the invention. The fees now required in some

cases are excessive, and in others exceedingly small. In this way, rather than by an indiscriminate reduction in the fees now charged, as is urged by some, justice would be secured, and the office still be self-supporting.

Commissioner Marble comments with some severity upon the action of Congress in refusing the additional clerical force required, and in reducing the number of overworked employes. He says: "I have learned with great satisfaction that inventors and manufacturers throughout the country will soon take steps to impress upon those who have hitherto treated their rights with some indifference the importance of having a sufficient force in this bureau—as well as other appliances and accommodations—to fairly and promptly act upon their applications and determine their rights to the inventions claimed by them. It is believed by most of them that their votes are of quite as much importance and their support to the Government fully as necessary as pensioners and settlers upon the public lands, to whom not too great liberality has been shown."

Attention is called to the fact that a large number of examiners and assistant examiners have resigned during the last year. The Commissioner assigns as the principal reason for the resignations the insufficiency of the salaries allowed, and says the office feels the loss of such experienced men more than any other bureau. He adds: "The same reasons, substantially, which require an increase in the force of the offices in order that the work may be promptly and efficiently done, exist for urging proper salaries for securing the most efficient men for doing this class of work." The report recommends that Congress confer upon the Commissioner authority to institute proceedings to determine the question of the public use or sale of an invention. The attention of Congress is again called to the necessity for amending the statutes relating to the issue of foreign patents, either by granting the patent for a definite term, where the invention has first been patented in a foreign country or countries without any conditions subsequent, or by granting it for the full term of seventeen years from the date of the earliest foreign patent.

Too Much Haste.

Unlike New York, the fire alarm wires of Boston are used solely for the business of the department, and are therefore unlikely to get out of order. The general houses and central office are connected by private telephone. In general support of the present system, the commissioners say they can conceive of nothing better. While there is sometimes inconvenience caused by the turning out of all the men in the department at every alarm, whether the engines leave the houses or not, the commissioners say that, if it were not for this rule, the men in the outlying districts would hardly have to hitch up once a month. A growing evil in New York, which has been very much curtailed in Boston, is the calling out of the firemen for exhibition purposes. Says Chief Engineer Bates of the New York department: "This second business, hitching up in so many seconds and half seconds, is all nonsense. It makes the men reckless. They have need of care in hitching up and turning out, for there is always danger, in going to a fire, of being upset, smashed, and what not. The company would always get there in time enough if going with due regard to safety, even if a few half seconds were lost. Then, again, after the race to the fire, there is a rivalry to get the hose run out first. Now, in case of a fire on an upper floor of a tall building, there would be a chance to make time by all turning in to help running up the hose. But instead of that, the companies are apt to be running opposition as to who shall get up first, and by a scattering of strength they lose ground instead of gaining it. Then, when they do get the water on, the chances are, in their zeal, they throw too much on to have the name of having put out the fire. All that is wrong. Like the rushing down all hands at the first tap of the bell, it is overdoing it, and overdoing a thing is as bad as underdoing it. Men working with sense and reason can do a heap more than those who are in a hurry and stew, where there is no need." The Boston board of engineers cordially indorse this statement, and endeavor to act upon the Firemen's Standard.

Mechanical Speculations.

A correspondent incloses a published slip from a newspaper in which he has suggested the storage of wind power by means of winding up gigantic springs like watch springs when the wind is high and free, the power thus obtained to be given out as needed. He suggests the heating of our dwellings by the compressing of air, and the cooling of them by expanding the air. He considers electric light and the mechanical power for any necessary handy purposes as being also products of this harnessed wind force. But he goes still further and suggests the millennium of laziness. He says:

"Our food and clothing are now produced by very tedious, inconvenient, laborious, circumlocuted, and expensive means. The raw materials, from which they are produced, are dirt, water, and air. The inter-chemical action of these materials, aided by the effect of heat and light, managed by a vast amount of mechanical force, is the *modus operandi* of production. But heat and light being interchangeable with mechanical force, why is it not possible to produce food and clothing, in finished form, directly out of dirt, water, and air, by mechanical force?" This unanswerable question appears to cut off debate and close the subject.