

OUR SPECIAL CORRESPONDENCE.

A Trip to Texas—Competition in Sleeping Cars—\$3,000 a Year yielded by one Car!—Prodigiously Profitable Patents—Punctuality of the Trains—The Country around Rochester—The Workshops of the West—Cleveland and its Manufactures—A Tornado on the Mississippi—"Yellow Jack" in the South.

MESSRS. EDITORS:—I left Chambers-street, New York, at 5 o'clock, P. M., on Thursday, May 24th, for a swift trip to the heart of Texas. Buying for \$48 a through ticket to New Orleans, by the way of Albany, Buffalo, Cincinnati and Cairo, I arrived at Albany at a quarter before 11, and, by the advice of a fellow passenger, ran to secure a berth in a sleeping car. But there was no occasion for haste, as there were two of these cars, and they were hardly half filled. Observing a manifest competition in securing passengers, between the two men in charge of the cars, I inquired what was the meaning of it, and learned that these are private enterprises; the patentees having the cars built on their own account, and giving the railroads the use of them on condition of being allowed to draw what revenue they can by the sale of berths. The price is 50 cents for a single berth, and \$1 for a double one. The manager of the car on the Cleveland and Cincinnati road told me that his car had 56 berths, counting the double ones as two, so that his receipts ranged from \$56 downward, for the round trip, never having been less than \$18. He makes two trips a week, and if we call his average receipts \$30, one car yields a revenue of over \$3,000 a year—two or three times as much as a large farm. The original cost of a car is about \$3,000, and of course the cost of repairs and superintendence is considerable. These cars are an invaluable luxury to people who travel night and day. It is true that the berths are narrow and uncomfortable when compared with broad beds and clean sheets, but when a person has been sitting all day, it is an inexpressible relief to be allowed to stretch out horizontally for a few hours during the night; and though the pint of water each and a single towel for the whole company contrasts unfavorably with the copious supplies of Croton and clean towels which are had at home, even these imperfect means of ablution are immeasurably better than carrying the cinders of the day before, sticking to your face all through the morning.

I took breakfast at Rochester, N. Y., dinner at Erie, Pa., and supper at Cleveland, Ohio; then breakfast, the next morning, at Seymour, Ind., dinner at Olney, Ill., and breakfast, the next morning, at Columbus, Ky., being only one meal in each of these large States, as I swept through them. Having, as above-intimated, left Chambers-street at 5 P. M., one day, and arrived in Cleveland at 5.20 P. M., on the next, the whole distance traveled was 641 miles in 24 hours and 20 minutes, or, counting from Thirty-first-street, the distance was 640 miles in just 24 hours. Still quicker time than this is made going eastward, as the Cincinnati express is 13 miles from Cleveland, 24 hours before it arrives in New York, making 654 miles in a day. I arrived at Cairo, at the mouth of the Ohio, at 11 o'clock on Saturday night. In all this distance, running night and day, all the stations have been reached, and all the connections with the numerous cross and branch roads have been made within one minute of the schedule time. What a wonderfully-complicated and beautifully-operating machine is the system of railroads of a great country! To see an express train tearing forth into the darkness of night, wholly unconscious and reckless of the fallen stones, sleeping cattle, broken bridges or other obstructions that may lie in its path, seems to indicate a sublime trust in the care of Providence or a fool-hardy confidence in the perfection of human arrangements. And yet, with the exception of rare accidents, how surprisingly regular are all the operations of the system! They are surpassed only by the movements of the planets in their appointed courses.

Taking such a wash as was possible in the car, I sat down on Friday morning to enjoy the view of the charming country through which we were rolling, in the neighborhood of Rochester. It is a most beautiful and delicious region. It is true that, early in a clear morning, in the last of May, almost any country looks finely; still, in the whole route from Albany to Cairo—through the wheat fields of central New York and the settlements of Ohio, among the clearings in the forests of Indiana, and across the broad prairies of Illinois—the

thrifty villages, the neat dwellings, the cleanly-tilled fields and the broad and dark green leaves of the forests and orchards are all the unmistakable indications of a fertile soil.

Twenty years ago, I passed through the West, and prophesied then a rapid growth of the manufacturing interests, but they have far surpassed my anticipations. Almost every town has its machine-shops, foundries, flouring mills, &c. At Cleveland I observed large piles of stoves which had been cast in that place; the cars bore the name of a Cleveland manufacturer; and the conductor told me that, hereafter, they were to make their own locomotives.

I am now 21 miles below Cairo, and it is 530 miles, by railroad right down the Mississippi, from here to New Orleans, making 1,843 miles from New York to New Orleans. The 21 miles from Cairo to Columbus are passed by steamboat, and it so happened that we were caught in a tornado on the river, nearly equal in violence, it is said, to the one which made such havoc in Cincinnati, last Monday. We tied up to the bank, and the delay costs us 24 hours. I have enjoyed the trip exceedingly, so far, and hence I feel better than I have done before in six months, and I should like to make the same journey every Spring. Before I left New York, I noticed that the yellow fever had already made its appearance in New Orleans, and yesterday's Cincinnati Commercial says that it is very sickly in Texas. B. Columbus, Ky., May 27, 1860.

THE UNITED STATES PATENT OFFICE.

MESSRS. EDITORS:—Presuming that the readers of the SCIENTIFIC AMERICAN will be interested in various matters transpiring at the federal metropolis, I propose to occasionally drop you a line, as circumstances will permit, concerning such things as I may deem of most interest.

Doubtless, a great portion of your readers are interested in patents and the Patent Office, and to such I would say that the building of that great establishment is nearly completed. The interior of the north front is in the hands of the plasterers and painters; the rooms in the basement and on the main floor are finished and are now receiving their furniture; they are to be occupied by the Department of the Interior, the Pension and other offices. There are forty rooms in those two stories, each about 21x24 feet square; also two large anterooms. The upper story will comprise a great hall, similar to and in continuation of the three great halls now used for the exhibition of models; when completed, all four will be thrown into one, which will probably be the largest and best exhibition hall in the world. I presume that, when the Patent Office needs the whole building, those portions now used by the Department of the Interior proper (the Land Office, the Indian Office and the Census Office), a separate building will be prepared for this trio. The large courtyard that is surrounded by the Patent Office is being handsomely laid out with flagstone walks, grass plats, and two fountains of Potomac water, which will add much to the beauty and health of the premises.

The business of the Patent Office goes bravely on, accumulating from day to day and from year to year; and the questions are often asked, "Will not the inventive genius of the country cease?" "Is there anything new under the sun?" To both these interrogatories, we can only answer by saying that there appears to be no end to applications for patents, and it is well known that a vast number are granted. The issues, amounting to an average of one hundred patents per week, afford presumptive evidence that the value of patent property is duly appreciated by a large class of our citizens. What a contrast is apparent between the number now granted weekly and that which was issued seven years ago, when the patents averaged only about twenty per week, and then only after many of the cases had been pending for months! But about the time referred to, a strong arm, combined with a clear and energetic mind, took charge of the Patent Office and gave it a start—an impulse—a mighty bound forward, which carried it onward for several years with increased success; and though the same mind does not now preside there, the influence which it gave and the rules which it established are felt, and have been adopted and continued by all successors, much to their credit and to the benefit of all concerned. So may it ever be, and so may the benign influences dispensed by

the Patent Office be seen and felt in the improved condition of all the mechanic arts, in the improvements and facilities brought to light and put into practical operation through the protection afforded to inventors, to the great advantage of our people generally!

Several members of the Japanese embassy have taken great interest in the Patent Office, and have visited the building several times; they appear very quick to comprehend the working of the various machines, as shown by the models, and inquire particularly for dredging machines, looms, oil presses and printing presses. The worthy Commissioner affords them every facility for examining both models and drawings, and they appear to appreciate every attention shown them. The *attachés* of the embassy seem to have the "freedom of the city," as they enter all places of business and manufacture and watch, with great attention, the labor and handiwork of the mechanics and the working of machinery by steam. It is said that some of the Japanese are learning the daguerreotype business at Brady's gallery, and that they are apt scholars. Quite a party of the officers and their artists have been witnessing the operations of the telegraph.

SCRIBE.

Washington, D. C., June 2, 1860.

BALANCING MACHINERY.

We take the following useful extracts from a recent number of the *Journal of the Society of Arts*, in England, written by a contributor:—

We frequently observe in workshops, factories, and mills, where machinery is in operation, that the floors, the walls, and even the ground in the neighborhood is in a state of constant vibration, causing an unpleasant sensation and a reasonable fear of danger. Now, the principal cause of such results arises from the inaccurate balancing of the drums, pulleys, and gearing, as the following fact will illustrate:—Belonging to one of the largest machine-works in England there was a large shed, in which was a circular saw, driven by a pulley on a counter-shaft affixed to the roof beam; this shaft was driven about 600 revolutions per minute, and the pulley was thirty inches in diameter; it caused the beam and roof to vibrate exceedingly, to prevent which the proprietors secured large upright and spur timbers to the beam and to the stonework on the ground; when the shaft was put in motion the vibration was as great as ever, and shook the ground all about so that draughtsmen and clerks in a building on the other side of the street complained of its interference with their operations. The foreman of the works mentioned these facts to me, and I informed him that the pulley was not balanced; "but," said the forman, "it is beautifully turned and polished and runs as true as a hair." "It matters not," said I, "it is not balanced." I then showed him how to test it, and he found that the pulley was 2½ lbs. out of balance; it was then adjusted and perfectly poised and again set in motion. The result was most satisfactory; it worked without any perceptible vibration, and, as was remarked, as quietly as a lever watch. It thus appears that the small weight of 2½ lbs. uncounterpoised, and revolving at a velocity of 4,000 feet or 5,000 feet per minute, is sufficient to exert the marvelous force described; and when we consider that there may be hundreds of wheels, pulleys, &c., similarly poised in mills or workshops, we can account for much of the vibration. Attention is not sufficiently directed to pulleys and wheels; they are seldom tested after being finished. It is true, the heavy gearing and spur-wheels seldom attain a high velocity, but as momentum is the compound of weight multiplied by velocity, and in heavy gearing, such as wheels of one ton weight, the inaccuracy of balance may amount to 50 lbs. or more (no attempt being now made to test them), it follows that, in such a case, a wheel making 100 revolutions, and being 50 lbs. out of balance, will cause as much vibration as one making 1000 revolutions, and being five lbs. out, at a similar distance from the center.

Some engines, lathes, and tools work steadily, whilst others, by the same maker, from the same patterns, are quite unsteady, although bolted down to extra stonework; neither the engineer nor machinist at all divining the real cause of the difference. But the most important of all, perhaps, is that of railway wheels; for although great attention is paid to construct the wheels so as to insure accuracy, they are never tested in any manner whatever after they are fixed to the axles, to prove that they are accurately balanced or poised.