

## 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.

There is no doubt that there are hundreds of thousands of wheels now working on railways which are exceeding out of balance; every one must have experienced the oscillation, both lateral and to-and-fro, in traveling on a railway; of course, much may be ascribed to the rails, and much to the bad working of the engine, but a great deal is caused by the wheels of the carriages; and when we consider the results before alluded to,  $2\frac{1}{2}$  lbs at a velocity of 4,000 feet or 5,000 feet per minute, what must be the effect on a carriage of  $9\frac{1}{2}$  lbs. going at a speed of 2,000 feet or 3,000 feet or (as in express trains) of 5,000 feet per minute!

It will be readily imagined that where there is a constant working of the buffers and springs, there is a constant wear and tear, and the bolts, screws, and joints must rapidly become loose, for, although constructed of enormous strength, nothing can withstand the separating force of vibration; there is also a large amount of needless wear and tear upon the rails and permanent way, as well as great injury to goods caused by the oscillation also a wasteful expenditure of power, so that altogether it is probable millions of money are by these means lost to the railway companies every year; and lastly, but a most important point, causing uneasiness, danger, accident, and sometimes loss of life to passengers. If the wheels of the engine and carriages be properly balanced, and the rails in good order, there would be very little more oscillation at forty miles per hour than there is at ten.

#### DYSPEPSIA AND CONSTIPATION.

This disease is not to be cured by medical prescriptions got from books. You must get at the cause and remove it. Of a dozen dyspeptics, scarcely two may be affected alike. In many cases, abuse of the stomach is doubtless the source of the trouble. All aperient pills increases the weakness which causes the complaint; to this rule there is no exception. All nostrums and patent medicines, of whatever pretensions, are injurious. In no case can any relief be obtained from their use.

Whoever uses tobacco or malt liquors, or other constant stimulant, or even coffee, and finds symptoms of indigestion, must first abandon these habits; and it will be ~~more~~ enough to think of active remedial treatment when it is found that the disease is not then removed. Whoever has a troubled mind, or is confined to monotonous toil without exercise of labor or bodily recreation, and finds himself dyspeptic, must first seek relief by correcting these causes; for, so long as they exist, pampering the disease, medicine can be of no avail.

If there be any drain upon the vital powers in any direction, beyond healthful moderation, it must be checked before we can hope to return to the digestive organs the vigor of which they are robbed. No doctor's stuff can supply the natural forces which only the vital chemistry of the living body can create. Like intoxicating spirits, dyspeptic medicines may for the moment exhilarate a patient and make him feel great things; but, afterwards, they each make the trouble greater than before.

Beware of tea and toast, and such like diet as remedies for dyspepsia. These do but impose unreasonable tasks upon impaired digestion. What is wanted is exactly the opposite regimen, namely, food that is small in bulk and rich in substantial nutriment; something which, with the least exertion of power, the stomach can turn into rich blood to relieve the poverty of the fluids. Rare beefsteak, for instance, not fried in a pan of fat and sole-leathered, but quickly embrowned on a grid-iron, and served up with the oozing juices of red life; and if fluid accompaniment is desired, let us try port wine, weakened to suit the strength of the organs, but rather reduced in quantity than watered much.

Bran-bread is of no account in this disease. It is excellent for constipation, if used now and then, but not continuously. We must discriminate between these complaints. In constipation, often, the digestion is even super-excellent, and the torpor of the bowels, which occasions the trouble, is due to the too thorough absorption of the liquid parts of our food, leaving a residuum too dry and rigid to be freely moved forward through the curvatures of the lower bowels. The most distressing affliction grows out of the impaction of matter in the colon from this cause, giving dull pains which banish sleep and good humor. Pills are not the remedy for this distress, but tepid or cold water injections, which readily reach the colon, and, by supplying moisture,

bring away the obstruction. This treatment, though not a cure but a temporary relief, secures from distension of the bowel, which weakens its muscular power and promotes costiveness; and it also prevents it by dislodging, frequently, remnants which often lie impacted in the colon for years, causing all sorts of distressing feelings.

#### INFLUENCE OF MACHINERY.

Our valuable Scottish cotemporary, the *Practical Mechanics' Journal* recently published the following truthful remarks:—When the place of hand labor is first supplied by machinery in any branch of manufacture, the wages of those who still endeavor to obtain employment in the working of that particular branch by hand are reduced; but those who have the ability to embrace other employments, and particularly the manufacture or use of the machines which have usurped their ordinary handicraft, reap the advantage of their knowledge or genius, and, by increasing demand for the manufacture, ultimately make more wages than they would formerly have made by hand labor. When the use of machinery was in its infancy, this reduction of wages had more evil effects than it has at the present day, or will ever have again, for the spread of education and moral culture has widened and will widen the abilities of men, and teach them that certain general knowledge especially aids their advance in life. Who so capable as the transcribers whose wages were lowered by the introduction of printing, to undertake the duties of compositors and readers in a printing establishment?—fitted both by their literary attainments, and by the similarity of the employments which they would respectively have to give up to embrace. It is obvious that, with a stout heart and a clear head, all the difficulties of the new style of things would be quickly mastered, the condition of the *ci-devant* transcriber would be ameliorated, and where one copy was produced, thousands of comparatively permanent copies would be sent forth to the world, in their turn to call forth latent energy, and to disseminate knowledge. The history of power-looms and saw-mills show results equally favorable to the general adoption of machinery. All improvements, and amongst the rest the use of machinery in manufacturing processes, substitute extensive employments for circumscribed ones. Society at large participates in the additional production, and is benefited thereby. The general adoption of machinery will bear the test of profit and loss; it is also consonant with the same reasoning which sanctions divisions of labor, and its advantage, furthermore, is proved practically by an appeal to statistics.

#### SUSPENDED AND SUBTERRANEAN RAILROADS FOR CITIES.

It has been proposed, through the columns of the *Daily Times*, that a lofty iron railroad viaduct shall be constructed, to extend from the City Hall, over the tops of houses and streets, to the Central Park, and that from thence it shall connect with the several railroads that extend from New York to other cities. It is intended that locomotives shall run upon this viaduct and come into the very heart of the city, with their trains, without changing their method of draught at the outskirts from steam to horses, as is now the case. This proposition deserves public attention, because the difficulties and expense to the railroad companies, of employing combined animal and steam power, are increasing with the growth of our population. In London and some other cities, such elevated railroads are in daily use, to the great relief of the crowded streets below, and why may not the same system be adopted for New York with equal benefits. With our modern improvements in science, the mechanic arts and civil engineering, it appears to us, that such an iron railroad viaduct may be constructed without obstructing the streets during its erection, and that it would be a great advantage to the entire community.

Another system has already been proposed (through our own columns) which has the same object in view, and for which we claim equal attention with the above. It is a grand subterranean or tunnel railroad, for the relief of our streets. It may cost more in original outlay, but the difference would not be much, while for durability and a conscious feeling of greater safety, it is to be preferred. We present the two methods to the public; both

deserve attention and discussion, for the time is not far distant when one or other must be adopted and go into operation. If we had a government worth a tinker's ladle, we should hear of more inquiries into matters of practical importance for the present and future relief of our city. Property-owners along the lines of railroads are constantly quarreling against the running of steam cars, and our municipal authorities suffer this conflict of interests to wage until one or other succeeds through the power of the court. It is a pity that we have not Louis Napoleon to manage us for a while. He would not only relieve Broadway but he would also devise some plan of mutual accommodation between the railroads and the people, and stop this sort of Kilkenny-cat fighting.

#### MILKING BY MACHINERY—THE INVENTOR'S REMARKS ABOUT HIS MACHINE.

MESSRS. EDITORS:—I was happy to learn from yours of the 25th ult. that you had succeeded in obtaining both patents on my two cow-milkers. I have fully tested the machine, used it daily for eight weeks, and can assure you that it is a practically useful implement which will come into general use. With some improvements in its construction, lately made, I can fit any cow, as to the distance the teats are apart or the different sizes, without changing the machine in the least; and three minutes is all the time needed to milk any cow in, and with less labor than otherwise occurs. The cows stand quieter, and like to be milked with the machine better than by hand.

There is satisfaction in succeeding in any undertaking; and it affords me pleasure to know that I have not only invented a good thing, but that the thing is mine for 14 years to come, and I am now fully satisfied that you have done the best for me possible. Please receive my sincere thanks for your faithfulness; and I can assure you my future patronage is yours.

Yours, truly, L. O. COLVIN.

Cincinnati, N. Y., June 4, 1860.

[We are having an illustration of Mr. Colvin's apparatus prepared (which we shall publish in a week or two), showing a dairy-maid in the act of using the implement, the cow "standing" as if she "liked to be milked," as Mr. C. states. What will not the mechanical skill of our inventors accomplish?—EBS.]

#### EGG PHILOSOPHY—GREAT BIRDS.

We have heard of "philosophy in a nut-shell" and "philosophy in an egg," and many persons may suppose that philosophy cannot be of much account when it can be cramped into such contracted receptacles. If the value of philosophy were to be estimated by the length, breadth, height and depth of modern eggs, we would certainly conclude that we lived in degenerate times, in comparison with those supposed pre-adamites who sojourned in the Connecticut valley before the Flood. Professor Hitchcock in his work on "Fossil Foot-prints," describes a biped—*Brontozoum giganteum*—which had a foot 18 inches long, and a step of not less than five feet. It was 12 feet high, and weighed from 400 to 800 pounds. The ostrich is the largest of living birds; his height is from seven to eight feet, his step is 26 inches, and he only weighs 100 pounds. The old gigantic birds had undoubtedly eggs proportioned to their size. At one time they traversed the Connecticut valley in flocks, and numerous are their tracks in the sandstone near the railroad at Northampton. Hundreds of the foot-prints, as fresh and distinct as if they had been impressed but yesterday upon the mud, are now to be seen in many sandstone slabs.

ECONOMICAL COAL BURNING.—The engine *Delaware*, on the Central Railroad of New Jersey, has run three trips, of 128 miles a trip, with 6,120 lbs. of the American Coal Company's coal. The train (mail) averaged 23 miles per hour, including stops, and consisted of three passenger cars and one baggage car. The cost of coal on the tender is \$5 per ton gross. The cost of wood averages \$5 25 per cord on the road. One and three-quarters cords of wood is required for a trip of 128 miles. The cost of altering the engine—perforated grate, enlarged smoke-arch, wire gage, straight smoke-stack and sub-treasury—was \$100. This shows a saving of above 80 per cent of coal over wood.—*American Railway Review*.