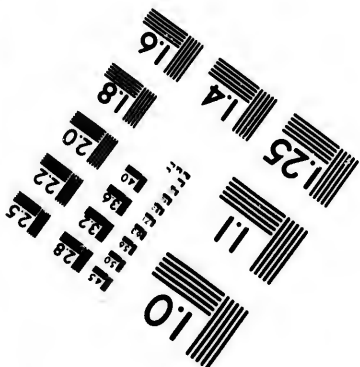
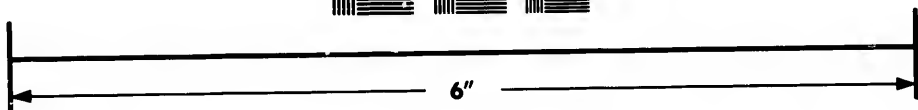
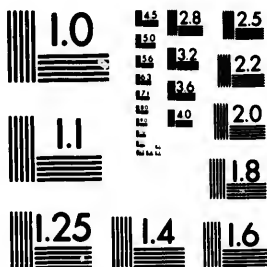


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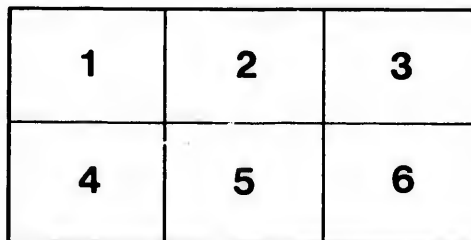
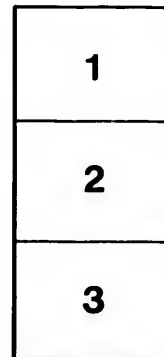
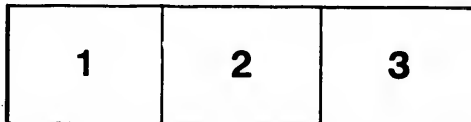
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# ATLANTIC

AND

# AMERICAN NOTES

FROM THE JOURNAL OF THE  
REV. DR. J. W. WALKER, D.D.,  
OF THE UNIVERSITY OF CAMBRIDGE,  
AND HIS SON, J. W. WALKER, M.D.,  
OF THE UNIVERSITY OF CAMBRIDGE.

BY

J. P. WALKER

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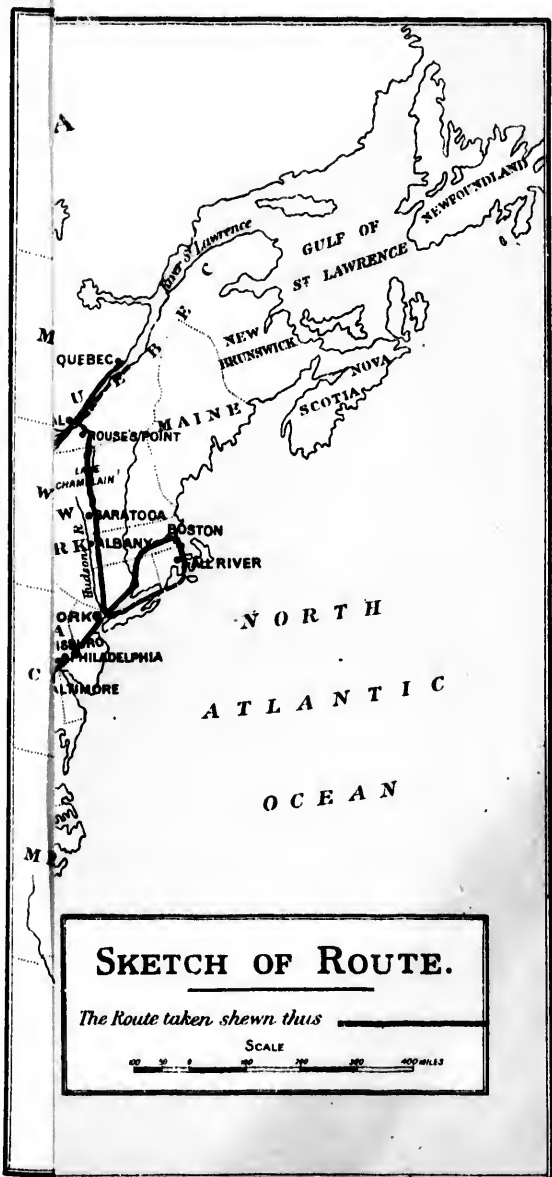
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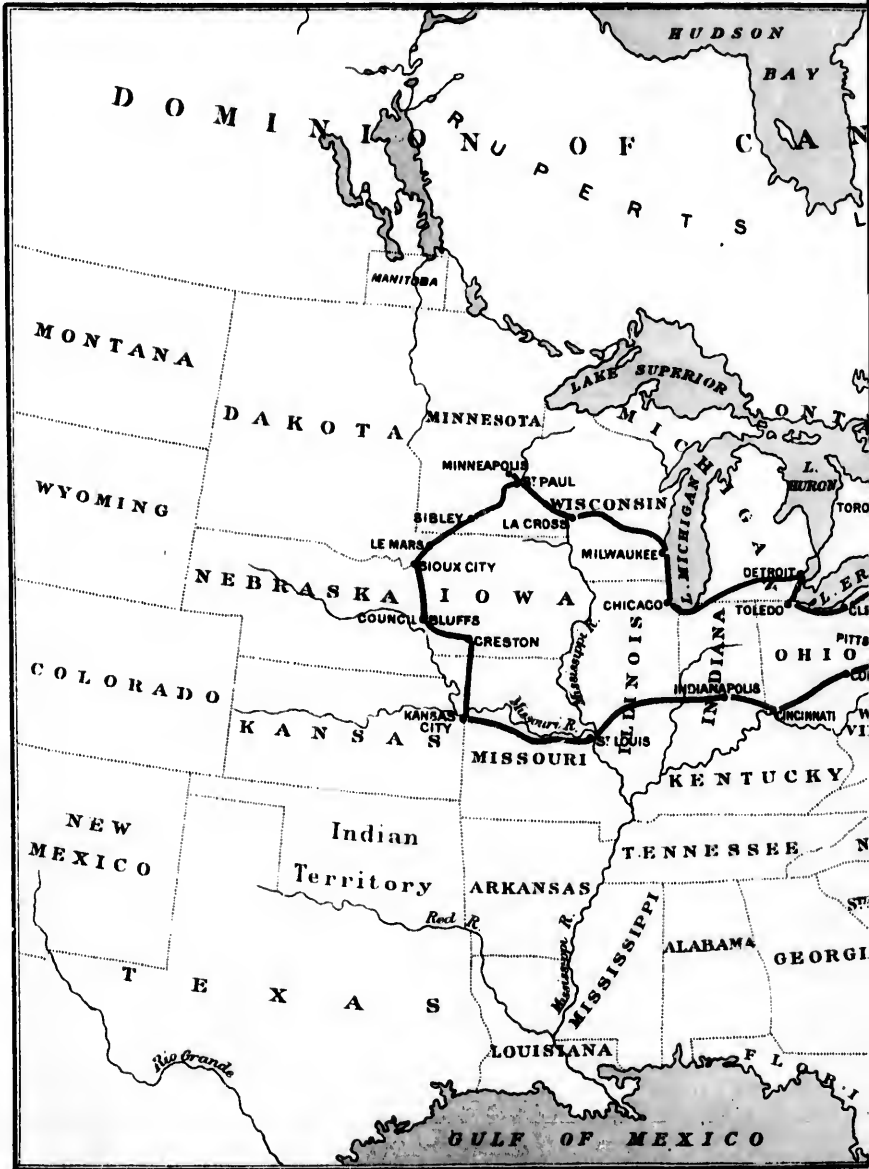
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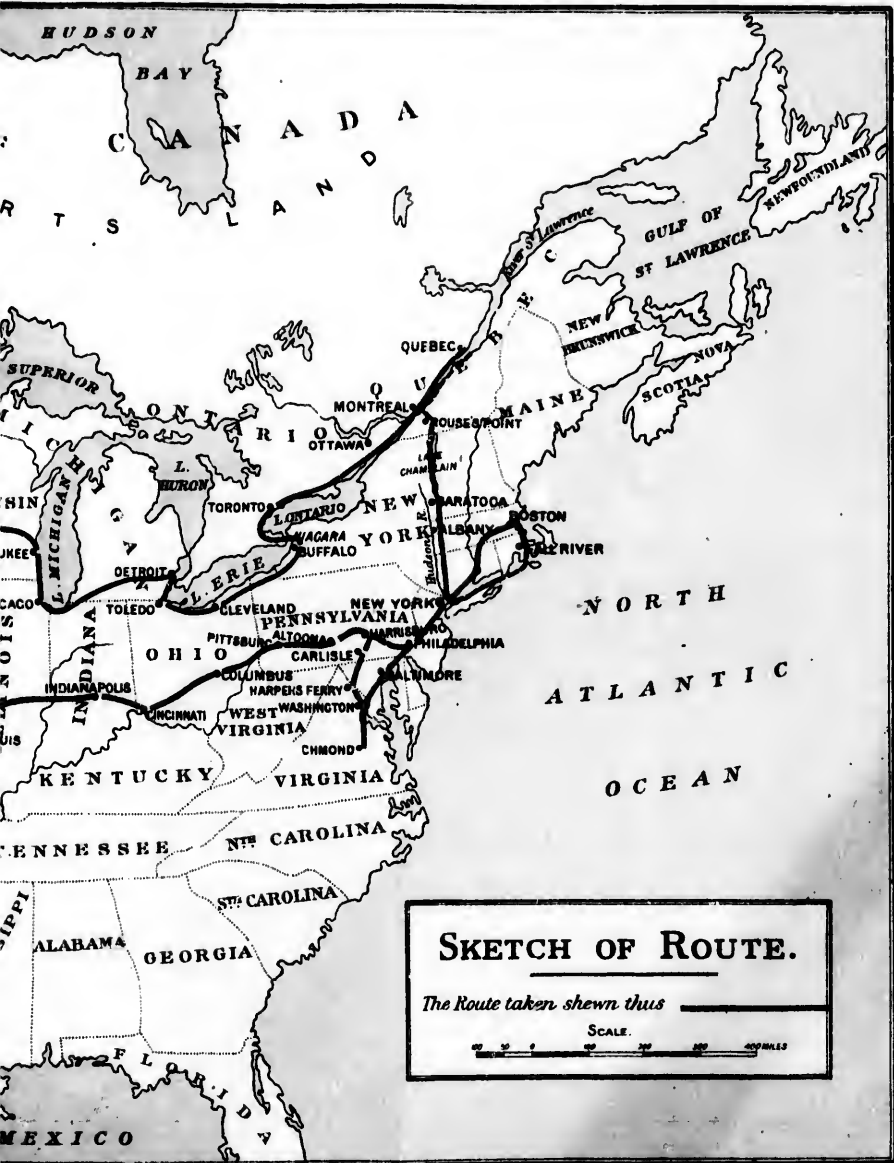


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NORTH ATLANTIC OCEAN







**SKETCH OF ROUTE.**

*The Route taken shewn thus* \_\_\_\_\_

SCALE.

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# ATLANTIC AND AMERICAN NOTES,

By GEORGE P. NEELE.

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## A PAPER

*Read at Euston Station, London, on Monday, March 13, 1882,*

EMBODYING SOME ACCOUNT OF THE RECENT VISIT OF THE  
DIRECTORS OF THE LONDON AND NORTH WESTERN  
RAILWAY TO CANADA AND THE UNITED STATES;

WITH A MAP SHEWING THE ROUTE ADOPTED, AND AN

## APPENDIX

CONTAINING MEMORANDA RELATIVE TO TRANSATLANTIC RAILWAYS.

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"Some said, John, print it."—BUNYAN, *Pilgrim's Progress*.

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## ATLANTIC AND AMERICAN NOTES.

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IT affords me much pleasure, in response to a suggestion made by some of my fellow-officers, to give a short sketch of the journey made by the representatives of the London and North Western Railway Company in America during the spring and early summer of last year.

Our party consisted of His Grace the Duke of Sutherland; his friends, Sir Henry and Lady Green; Mr. Russell, widely known as "*The Times*" correspondent in the days of the Crimean War; Mr. Henry Wright; our Directors, the Marquis of Stafford, M.P.; Mr. Bickersteth; Mr. Knowles, M.P.; Mr. Stephen; Mr. George Crosfield; and last, but not least, one who was intimately connected with the whole scheme of the journey, with whom I had many lengthy consultations and communications in perfecting its programme, and whose lamented death has now thrown a dark shadow across our reminiscences, otherwise unclouded—I allude to Mr. Henry Crosfield, our well-known auditor.

We left London on Good Friday, April 15th, and stayed for the night in Liverpool.

On starting from Liverpool we experienced the usual scene of confusion at the Landing Stage, enhanced by the fact that there were three steamers, besides our own, all starting with the same tide; by one of which a large number of Norwegian emigrants took their departure, and the quay was consequently congested with an unusual quantity of passengers and baggage; after a while we managed to shake ourselves free and find our way to the tender appointed to convey us to the "*Gallia*," one of the noble steamers of the Cunard Fleet, by which we were to make our outward journey.

Our friends said "farewell," the tender left our ship's side, and steadily we steamed out of the Mersey. After some time spent in roaming up and down the vessel, in which everything was strange to us, we settled down and obtained possession of the separate cabins, called "State Rooms," set aside for our use. Before long the weather

thickened, and the fog-whistle on the steamer, startling the passengers with its jarring sound, was set agoing at frequent intervals, till we were well beyond Holyhead.

At the first meal in the saloon each passenger finds allotted to him the particular seat he is to use throughout the remainder of the journey. Accordingly we found the whole of our party appointed to one of the tables which accommodated twelve, being two more than our number, and these seats were occupied, the one by an unsociable Colonel belonging to the United States Army (we met with no end of Colonels), the other by a regular voyager who had crossed the Atlantic several times, knew all about the ship, and proved great alike at playing "poker" and compounding wonderful salads.

We reached Queenstown early on the morning of Sunday, the steamer anchored in the harbour, and several of our party went ashore. The Roman Catholic Cathedral forms a striking feature in the panorama of the place, we walked up to it, paid our penny to go in, and being Easter Sunday found the interior crowded with worshippers.

Some of us attended the service at the English Church, and then went down to the railway station, waiting the arrival of the train by which letters and passengers leaving London on Saturday night by our Irish Mail were able to join the "Gallia" at Queenstown. In a few minutes these were all on board and we steamed away for the West with the prospect of 2,000 miles of sea-sickness before us.

We had been warned by experienced voyagers that the time we should be most likely to experience the disquieting sensations connected with the sea voyage would be during the first two or three hundred miles after leaving Queenstown, and we prepared ourselves for the worst.

All went well and steadily, however, and we gradually sighted and lost sight of point after point on the Irish Coast, until, as we came to the last lighthouse, called the "Fastnet," the outline of the land was barely distinguishable, and night closed in upon us; when we rose on the following morning, we were glad to find that the 200 miles had been passed without any unpleasant consequences arising to any of our party.

Time will not admit of my giving any lengthened description of life on sea-board; all is strange at first; it is difficult to pack yourself into your berth, it is more difficult to get out, but practice made us perfect in this respect, and we became quite nautical before the voyage was over; Captain Hains, with his chief engineer, and indeed all the officers doing their utmost to render our voyage pleasant.

Daily, at about five minutes before noon, the captain of the vessel and his chief officers on duty are engaged making their observations of the sun, and so soon as the meridian is reached—12 o'clock is announced—clocks are set, and the calculation of the ship's progress made. Owing to the westward movement of the vessel sailing towards America, it is necessary to alter the chronometers daily, and this is done by extending the ordinary period of 60 minutes between 11 and 12 noon to 90 minutes, an hour and a half thus elapsing between the two; the day consisting of twenty-four hours and a half—thus, gradually, on the voyage, absorbing the difference of time that exists between London and New York of about five hours; for when it is noon in New York, it is 5 p.m. with us in London.

Another mild piece of excitement breaking the monotony of the voyage takes place shortly after 12 o'clock each day, when the chart is posted up at the cabin door indicating the number of miles run, and showing the track of the vessel.

The lowest number of miles made by the "Gallia" in the day was 329 miles; the highest was 390 miles, this figure being the maximum she had ever attained.

There are on board all the American Liners—a set of passengers who make this question of daily mileage a source of gambling. In the smoking cabin a regular daily lottery is held; tickets are drawn representing about the mileage expected to be made, and the holder of the ticket nearest to the figure actually declared is the winner of the pool. Large sums of money change hands by this means—the pool on one of the days amounting to £33.

The "menu" issued for meals was extremely liberal, and the attendants, who only answered to the name of "steward," and paid no attention whatever if you happened unfortunately to call them "waiters," carried out their duties with marked precision, the covers being raised from the dishes at the sound of a hand-gong, and the replacing and removing of plates and dishes being carried on with almost mechanical regularity.

In the intervals between meals the passengers amused themselves either by a little music in the saloon (which was furnished with one of Broadwood's pianos); played on the deck with quoits made of coils of rope, or at bagatelle, with flat discs; varied occasionally by a tug-of-war. The habitués made up card parties, and played a game known as "poker" for hours together.

Atlantic Voyagers always provide themselves with folding chairs for

use on the steamer's deck, generally bearing their name or initials on the back; the chairs are cleared away at night, but "early birds" each morning were to be found securing for themselves and party the sheltered and favourite spots for the day's occupancy; the freedom of promenade along the deck was much interfered with by some of these "squatters" locating themselves beyond the line in total disregard of other people's convenience.

There is a great deal of sociability on board among the passengers, and American people are not slow in making acquaintance. Those of you who knew Mr. Henry Crosfield will be aware what a chatty and genial man he was, he won golden opinions on the voyage, and was the most popular man on the ship: at first the "audiphone" that he used on account of his deafness was a puzzle to many; still more, when it was found that there was another gentleman on board who also used the "audiphone." One lady asked me why those two gentlemen were always biting at their black Japanese fans. The second deaf gentleman proved to be a Mr. Rhodes, of Chicago, the actual inventor of the "audiphone."

I must not omit to mention that on the voyage a poor woman—an Irish emigrant—contrived to contribute an additional passenger to the number registered on leaving Queenstown; Mr. Crosfield's fatherly kindness was at once elicited, and he managed to collect a very handsome sum for the benefit of the woman and her baby. On the Sunday afternoon prior to our reaching New York, this baby (which had caused so much talk and sympathy among the lady passengers) made, by Mr. Crosfield's arrangement, a triumphal procession through the saloon, and was received with loud applause.

We met very few vessels on our way to America, and the approach of one on the horizon was the signal for immediate excitement on deck.

Our passage out was remarkably smooth and pleasant. Only on one night was a storm experienced; and on this occasion the remarkable display known as St. Elmo's Fire, consisting of small phosphorescent or electric jets of light glittering from the yard-arms, was to be seen; unfortunately it occurred during the storm, and at such a late hour, that but few passengers were on deck.

The warm influence of the Gulf Stream was very perceptible as we passed across the portion of the Atlantic subject to its action, and the captain stated that he was able to ascertain almost to a nicety the position of the vessel by the temperature of the water taken at certain points.



After passing through the Gulf Stream, we came upon the foggy portion of the ocean, lying off the coast of Newfoundland, where the discordant fog-horn was again constantly sounding, causing unpleasant sensations to all the passengers.

Approaching the American shore, another opportunity was given for our gambling friends to try their luck. Lots were drawn, representing the registered numbers of the New York pilot boats, and the holder of the number corresponding to that of the pilot who was successful in boarding us and taking the vessel into New York, was of course the winner. When the pilot boat was seen approaching, the excitement was great to ascertain his number; and when he came on board he brought with him a supply of American papers, and the intelligence of the death of Lord Beaconsfield.

At length the dim outline of the American shore became visible, and under sunny skies, and with a beautifully smooth sea, we gained our first sight of the "New World." The shipping became more frequent, and vessels somewhat different in rig from those to which our eyes are accustomed to on the English coasts were met with right and left.

The usual signalling by flags from our vessel to one of the light-houses was exchanged; and we had the satisfaction of knowing that the London evening papers of Monday, April 25th, would contain the announcement of our arrival.

A little delay, waiting for the tide to serve, took place off the "Bar" near Sandy Hook, the name given to the entrance to the harbour of New York.

We were brought to anchor opposite the Quarantine Office, and had to wait there to allow the Quarantine representatives to ascertain that there was a clean bill of health not only amongst the cabin passengers, but also amongst the emigrants, a few of whom came across in the "Gallia."

When this formality had been gone through, some gentlemen connected with the Customs came on board. By the courtesy of the United States Government our party were allowed to pass the whole of their luggage in bulk, and we therefore escaped any trouble in connection with the searching of portmanteaux, &c. This courtesy was shown to us through the good offices of the Hon. Mr. Pierpoint, who had been personally acquainted with the Duke of Sutherland when in England.

Whilst the passengers were filling up the forms in connection with the Customs Declarations, our vessel had been slowly moving forward round the point of the harbour, passing through the fortifications, and

bringing into view first the villa residences on the shores and slopes of the river banks, and then the spires, towers, and large buildings of Jersey City, Brooklyn, and New York—gradually the “Gallia” (towed by a couple of small steamers) makes her way through the unfolding panorama towards the appointed landing place.

Now there are busy wharves on each side of us—Atlantic steamers in position, loading and unloading; sailing ships of all nationalities; large ferry steamers (conveying not only passengers but omnibuses, carriages, and carts), six or eight together were crossing and re-crossing the Hudson, whose narrow waters divide New York from Jersey City on the one side, and from Brooklyn on the other; steam tugs, taking over railway waggons from New York to the various railway depots on either side of the opposite coast; and high above all navigation, through the opening vista of the East River, hangs the apparently light fabric of the huge suspension bridge that is to connect New York with its populous neighbour Brooklyn. The scene presented was one of extreme activity, and the extent to which business was being carried on at all points struck us with surprise.

The wharves are so constructed that vessels are drawn in at right angles to the stream, and do not lay broadside as is the case in the Thames. Each of the large American shipping companies has a separate wharf allotted, to which there are offices attached for customs purposes, and the whole of the baggage is taken from the vessels to these offices, the passengers not being allowed to remove any packages until they obtain the authority of the officials.

No sooner had our vessel been made fast to the Cunnard wharf than half-a-dozen newspaper reporters ran forward, all anxious to be introduced to the Duke of Sutherland. His Grace managed to avoid them cleverly at the landing stage, but there were several interviewers in waiting at the Brevoort House, the hotel at which we stayed, and we were plainly told by the landlord that some information would have to be given to them, as they would not leave the hotel until they had spoken to some members of the party. Mr. Russell kindly acknowledged the bond of union existing between himself and these reporters of the press, but very adroitly shook them off by saying that he had not come as part of the railway contingent, and referring them to me.

They expected that I should give them a complete explanation as to our object in coming, what we were going to do, where we were going to, and full particulars of every one connected with the party. I fear that the information they obtained hardly came up to their inquisitive requirements.

On leaving the busy wharves of New York, which fringe the whole river frontage, the first impression an Englishman experiences is that the streets are kept in a most wretched condition; riding in vehicles is rendered most unpleasant owing to the ruts and mounds allowed to exist in the very best streets and avenues. Nothing can be worse than the state in which the roads in that city are allowed to exist.

The next thing that occurred to us was a sight of the "elevated railway," under which we passed very shortly after leaving the steamboat wharf. A train of carriages was running right over our heads, upon an apparently slight framework supported by pillars. We passed under two portions of this line of railway, and on a subsequent day had an opportunity of inspecting it throughout its entire length. The trains run at an elevation equal to the first floor windows of the houses, and sitting in the cars the passengers see plainly into all the rooms they pass. The up line is carried over the pavement on one side of the road, and the down line on the other side. Four separate railway routes traverse the entire length of New York—two of them being over the footpaths and two over the roadways. As an illustration of the extent of traffic, I may add that the number of trains daily running on this system in New York is 3,500, and the number of people conveyed 240,000. (*See Appendix, page 49.*)

The population of New York is about 1,500,000, and the streets are laid out in square blocks, crossing at right angles, on the principle which obtains throughout the whole of the modern cities in the United States. The ground plan presented by a series of chess boards, extended one after the other, will give the best rough idea I can suggest for the ground plan of New York. The broad roadways running north and south, twelve in number, are called "Avenues," and those that intersect them at right angles are called "streets," and are numbered from 1 upwards to 225. The railway stations are known as 27th Street Station, 42nd Street Station, and so on. The Avenue which contains the finest houses is known as the 5th Avenue; in it will be found the most noted churches, some of the finest hotels, the residences of the Vanderbilts, and the marble mansion of the Stewarts; it terminates in the Central Park.

This Central Park (the "Rotten Row" of New York) is remarkably well laid out, the drives well kept, and skilfully conducted round the masses of protruding rocks *in situ*. Numerous public museums are erected on its borders, and the sister obelisk to our Cleopatra's Needle is placed on an eminence within it. The equipages driving round the Park are of a very showy character. It appeared to be the proper thing for

ladies driving there to embosom themselves with roses, and though the season was early the display of these flowers by the fashion in the city was very extensive.

Trotting horses in the light vehicles called "buggies" were very numerous, and as there is no protection to the driver from the stones and dirt thrown up by the heels of the horse it did not appear to be a very pleasant mode of taking driving exercise. A story is current of the wealthy Mr. Vanderbilt, who invariably purchases the fastest trotting horses he can obtain, having taken out a friend for a drive of this description, as the animal was tearing along, throwing up stones and mud, Mr. Vanderbilt enthusiastically said to his friend—"Is she not going beautifully?" The only reply was that his friend had not been able to see anything since he entered the Park, owing to the dirt that was spattering in his face.

The horses have all long switch tails, said to have the advantage of keeping off the flies. The animals are trained to stand very quietly in the streets, tethered by long leathern straps with a weight at the end, to short standard rails, provided apparently for the purpose, near the doors of the houses: this is called "hitching" the horses. There are notices in the parks prohibiting "hitching" horses to the trees.

The wheels both of carts and carriages are very narrow, and it was a puzzle how such slender frames could stand the bumping and shaking over the badly kept roads they had to traverse. The poles were remarkably low—below the line of the horse's body. The carts are all built sloping downwards towards the rear, and this is said to be for convenience in loading and unloading contents, which are kept in position by upright movable poles inserted at the end.

There is one street in New York which corresponds neither with the avenues nor the cross streets, as it intersects them in the manner of a diagonal: it is the celebrated Broadway, the great shopping thoroughfare of the place. The portion nearest to the steamboat quays and wharves is occupied mainly by the offices of the numerous railway and steamboat companies. Passing along its busy thoroughfare, through which from morning till evening "the full tide of human life is flowing," the visitor will note some splendid buildings of the Insurance Companies, the Post Office, the establishments of the various Telegraph Companies, the Newspaper offices, two or three of the Theatres, the American Bank Note Company's head-quarters, large blocks of buildings used as general shops, called "stores," putting such establishments as Whiteley's and Shoolbred's completely in the shade. Hotels of gigantic proportions and

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blazing restaurants are not wanting to complete the catalogue. In common with many of the other chief streets, its fine vista is sadly disfigured by the introduction of a perfect forest of telegraph poles along the footpaths, with cross pieces and wires running at all angles against the line of buildings.

The tramways are essentially American, and few only of the best roadways were free from them. There was a class of vehicle much in use in the streets, of a very heavy and unwieldy description—the two-horse omnibus, or "stage," as it is called. There are no conductors to these omnibuses, and the door is held in by a strap worked by the driver, who has a glass at the back of his seat, which enables him on turning round to take a view of the interior of the vehicle, in order to see what passengers he has. Inside the vehicle, but close to the driver, is a receptacle in which each of the passengers is expected to place the exact amount of the fare, generally five cents. If they are unable to place this particular coin in the receptacle, they must hand their money to the driver, through the trap, and among the change given he always includes the required coin, which they then place in the receptacle. In wet weather, there being no conductors, these vehicles are crowded with people, who enter and stand down the middle, regardless of the number of passengers already in the omnibus.

We found the electric light making its way; it had been adopted in some few of the shops in New York, but much more generally in connection with the restaurants and hotels.

Of course it was the proper thing for us to go to Delmonico's, the most fashionable restaurant in the States; a splendid entertainment, with the most recherché menu, was given there; the central plateau at the table was one enormous mass of roses.

The hotels are all large and handsome piles of buildings; the ground-floor is used as one large entrance-hall, having around it not only the manager's office, but stalls for the sale of papers and periodicals, a bureau for the sale of railway tickets, another for cigars and tobacco, then a baggage office, barber's shop, reading lounge, offices for the telegraph and for the telephone; also elevators or hoists for conveying the guests to the upper floors; the hoists fitted with electric calls from each floor, and an indicator showing externally on each landing where the hoist is, and whether it is approaching or receding.

One of the points to which our attention was called in New York was the excellent arrangements made for the suppression of fire. The entire city is divided into certain small districts, each of which has its central

fire depôt; and the whole place may be said to be in electric communication with these fire depôts, fire-alarms being provided at the intersections of the various streets. The sounding of this fire-alarm at any particular point rings the electric bell in three of the adjacent fire depôts, at which there are men and horses in readiness, both by day and night, to attend to the first alarm. The ringing of the bell disconnects the halter by which the horses stand secured; trained to the work, they at once spring forward and take their position in front of the fire-engine, and the moment they are there, the harness, which hangs suspended overhead, falls on to their backs, and in less than thirty seconds they are ready to move forward with the fire-engine.

The twelve men allotted to work with them at night are sleeping in a room up stairs. Six men trained to sleep on their right side, and six on their left, their fire boots in readiness close by; at the sound of the electric bell they start up, immediately pull on their fire boots, which have leather trousers attached to them, and rushing down stairs, they take their stand by the fire-engine, on which their coats are placed in readiness; the doors are thrown open, and literally in a minute the whole gang are ready to move forward and make for the position indicated on the electric dial as the spot from which the alarm of fire has been given. This was done two or three times in the fire office under our inspection, and on another occasion an experiment was made by the Duke of Sutherland striking the fire-alarm at a corner of a street selected by himself, and we waited there for the coming of the fire-engines and the men. The arrangements were carried out completely, and from three directions there came fire-engines conveying the men, with hose and ladders, men for the salvage department, and police department, there being in less than five minutes a display of strength ready to prevent the spread of fire, which could not have obtained a very great hold in the short interval allowed it.

There is but one large railway terminus in New York, that of Vanderbilt's line—the New York Central. The others are in Jersey City, and passengers are ferried across the river by large steamers belonging to the various railway companies from their New York wharves to the depôts on the opposite side of the river; goods trucks are brought across in like manner and unloaded in New York.

The whole arrangements in connection with the working of the goods traffic at the station wharf, or depôt, of the Pennsylvania Railway were shown us, together with an experimental alarm of fire to display the good organisation of the place, prior to our making a tour of

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New York harbour, which we did, with a great display of bunting, in the Railway Company's steamer "Juniata"; and then, after inspecting the lofty grain elevator of that Company, the abbatoirs and timber yards on the Jersey City side of the river, we made the first of our long railway journeys in the States from Jersey City to Philadelphia.

We were much struck by the unprotected way in which railways were allowed to pass through the main streets of the towns and villages; not only do the trains travel with road vehicles unfenced right and left of them, but tramway lines intersect the railways, and the public highways cross the metals on the level with very indifferent protection. The notice to be met with at the crossings, for there are but few gates, is: "Railway Crossing. Look out for the Locomotive," and people have to look sharp accordingly! For their protection, however, there is a requirement that warning must be given on approaching each of these crossings, by the fireman ringing a large bell, which is provided on each of the engines.

I have, however, elsewhere read a paper on the details of railway working in the States [*see Appendix*], and I must not now enlarge on the subject.

The country between New York and Philadelphia is uninteresting. The frequent advertisements all along the line between those places are probably the most striking feature of the journey; every fence, every house, every rock that can be utilised, having painted upon them in immense letters, requests to smoke somebody's tobacco or cigars; to use certain Bilious and Liver Pills, St. Jacob's Oil, Steel Mixture, Hop Bitters, Schenke's Sarsaparilla, or some equally valuable nostrum. Again, on a stretched canvas would be depicted a huge figure of a man holding up a warning finger to a weakly, slim-looking traveller, and saying, "I tell you the best hotel is so and so, and don't you forget it!"

We spent a couple of days in Philadelphia; it is a very large, but somewhat monotonous city, with a population of 820,000. Almost all the houses have white marble jambs to the doors and windows; and although the roads in the city are nearly as bad as those in New York, yet outside the town leading to Fairmount Park, in which the recent Centennial Exposition was held, they are very well kept, and we had a most interesting drive to view the extensive buildings still remaining. The chief of them are to be used as a permanent exhibition of art and industry, gallery of sculpture and painting, and an horticultural tropical conservatory; but the minor houses and buildings put up in the Centenary year (1876), as models of various national styles of



residences, are being allowed to fall into decay, and show signs of dilapidation contrasting very unfavourably with their pretentious appearance.

The main streets are all laid out on the square block principle, but are not called "avenues"; they are named after trees, such as "Chestnut Street," "Walnut Street," &c., the cross-roads being numbered from one upwards; and the numbering of the houses in the streets are good indications of the position they occupy, thus, No. 1301 in Chestnut Street would be No. 1 next to 13th Street; No. 1401 would be next to 14th Street, and so on. The numbers may appear large, but they are easily identified, so soon as this system is known.

At Philadelphia we were received by the Mayor, and shown over Independence Hall, a noted building in the time of the American struggle during the reign of George the Third. It was somewhat curious to observe in one of the rooms the portraits of the Stuart and Hanoverian Kings of England, the other being devoted to Washington, Jefferson, Lafayette, Penn, &c.

Two remarkably fine buildings are being erected in Philadelphia, one being the Post Office, and the other the New Law Courts. We were shown over these buildings, so far as they were complete, and found an illustration of the American love of display in the dome-like structure which is to surmount the law courts. There was a drawing in the building, showing that the ultimate design was to make it one of the most lofty buildings in the world. Determined to outdo even the lofty spire of Cologne Cathedral, the dome is to be surmounted by a colossal figure of William Penn, in order to make the highest point twelve feet higher than the spire of Cologne. The result will be that the Law Courts will be completely dwarfed by the huge disproportionate adjunct, and its lofty and cumbersome dome-like tower.

We visited the Academy of Fine Arts, glanced at the paintings, admired its statuary, and were permitted to pass through the schools for drawing and painting, and for modelling from the human figure. In the business portions of the city mules were largely employed in the teams, railway waggons being drawn through the streets by five or six mules in a string. A new railway terminus, with lines on the elevated principle, was in course of construction, with a large goods shed adjacent, admittedly modelled on our English system.

The Continental Hotel at which we stayed in Philadelphia may literally be called a marble hotel, the whole of the walls being of that material. The floor of the dining hall is laid with chequered slabs of black and white marble. The brilliant white of the electric light in the

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hall had a singular effect on the blackness of the faces of the grinning waiters, the whole of whom were negroes.

Leaving Philadelphia, and travelling towards Baltimore, our train was stopped to enable us to view the stone marking "Mason and Dixon's" boundary line, separating the States of Pennsylvania, Maryland and Delaware. It was formerly considered the dividing line between the Free and the Slave States, and, under the old régime, so soon as a fugitive slave reached this boundary he breathed more freely, and hailed with delight his arrival in "Dixie's Land."

Here we were on the borders of the Peach Country, a district producing peaches to a fabulous extent. The peach trees were, however, barely in bloom.

After crossing the Susquehanna by a bridge more than half-a-mile long, we reached Baltimore, where we were met by a deputation from the town and a railway contingent. A steamboat trip round the harbour enabled us to visit the terminus of the Baltimore and Ohio Railway, where a large number of emigrants from Norway, who had just landed, were being despatched by train to the districts beyond Chicago, and where we had explained to us the mode of sampling tobacco for customs purposes—tobacco being forwarded in large quantities from Baltimore. A drive through the town and round the park afforded us a general glance at its traffic and position. A gentleman resident in Baltimore described it as a little paradise, enjoying ten months of summer in the year, and self-supplied with fruit, fish, and vegetables at very cheap rates. The population of the place exceeds 340,000; the ladies well deserve their title of the "beauties of Baltimore!"

From Baltimore we made our journey to Washington. Our train travelled at reduced speed right through some of the main streets of Washington, with vehicles and foot passengers unprotected on both sides in the way previously described. We hardly expected to find such an arrangement in force in the capital of the United States.

The streets of Washington are remarkably fine and broad, giving width for two tracks of tramway in the middle and ample room at the sides for three or four other vehicles, which was not the case in any of the other towns we visited. The city has been planned on a very bold scale. The House of Representatives and the Senate meet in a large central building called the Capitol, a noble pile with a white marble dome similar to St. Peter's at Rome. It stands in the centre of the city, and broad avenues radiate from it in every direction; the avenues are named after the various States in the Union; "Pennsylvania

Avenue" is the finest and the one containing the largest number of public buildings.

We were shown very great attention whilst in Washington, receiving cards of invitation both from Mr. Blaine, the Secretary of State, and from the Attorney-General; the whole of our party were presented at the White House to the late President Garfield, who received us in a very courteous manner, and exchanged a word or two with each gentleman of the party.

I look back with some degree of pleasure to the fact of having had an interview with a man occupying such a distinguished position; rising from ground so unpromising, struggling with difficulties, weighted with disadvantages, yet making his way to the very highest position in the land by sheer honesty and force of character.

I was not a little struck by one of the comic publications which found circulation in the States called *Puck*, one number containing a skit on the visit of the London and North Western Directors: the outside cover of this publication has its cartoon printed in colours; on the number in question was portrayed a large imperial crown, the band fitting round the head having medallions upon it representing the different crowned heads of Europe:—

There was the Queen frightened by Fenians;  
The Emperor of Russia afraid of Nihilists;  
The Emperor of Germany in fear of assassination;  
The Pope in terror for his freedom;

the motto being—

"Uneasy lies the head that wears a crown."

The circumstances that have since taken place with regard to the assassination of poor Garfield, show that it is not necessary to be a crowned head to be exposed to such attacks.

Whilst at Washington we visited the Exhibition of Paintings and Sculpture called the "Corcoran" Exhibition, and were there met by Mr. Corcoran himself. This gentleman, who is a man of large means, has given to the American nation the paintings in question. It formed a very interesting morning's engagement to inspect them.

A flying visit was paid to the Smithsonian Institute, a large museum founded by an Englishman, and presented by him to the States, and subsequently we obtained admission to the Meteorological Department of the War Office; a large map of the States, having marked thereon the observations at the various signalling stations for rain, cloud, direction of wind, temperature, barometric pressure, &c., was displayed, and the

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system explained on which the telegraphic intelligence received three times per day was worked out.

The plan adopted is to have a conference three times daily of the principal officers, when each brings forward the result of the information obtained from the points of observation in his own department, this is compared with the previous announcements, its prospective value calculated, and the forecast for the next eight hours transmitted to the papers.

These forecasts were said to be generally very correct with regard to the land, but the Meteorological Department disclaimed all responsibility with regard to the weather to be expected on the "British, French, and Norwegian coasts."

All they were responsible for were the intimations sent to the newspapers of their own local prognostications, and while willing to speculate upon the state of the weather for two days in advance, they declined to make any predictions beyond that period. It would appear that the clerk of the weather kept by the enterprising proprietors of the *New York Herald*, who occasionally warns us of coming depressions and storms, does not obtain his information to any great extent from the Washington Bureau.

The Patent Office is another of the sights of Washington. You know the American mind is very fertile in what are called "notions," and when I tell you that to obtain a "Patent" in the States it is necessary to deposit a small model in this Patent Office, you will understand somewhat of the enormous extent of the miscellaneous articles that are to be found here duly numbered, registered, and laid by in glass cases.

We were taken, under the auspices of General Burnside, to the Senate House and to the House of Representatives in the Capitol, there being at the time a session of the Senate respecting the "deadlock," as it was called, in the Conkling affair, a complication with which the assassination of the unfortunate President was by no means remotely connected. This "Conkling" difficulty lasted during the whole time of our visit to the States, and day by day appeared in one shape or another in large type in the newspapers. In the Senate House each of the Senators has his separate seat and desk, and, I may add, spittoon.

The whole ornamentation of the building in the way of paintings and statues points towards the glorification of George Washington, and the humiliation of the Britishers; but as the Americans got the best of the fight, they are entitled to display the trophies in their own Capitol.

The authorities at Washington invited us to take an excursion on the River Potomac, and we steamed down as far as Mount Vernon in

the Government steamer "Dispatch," one of their small war vessels. Very many of the noted men connected with the American Senate, together with Generals Sherman, Sheridan, and Burnside, Abraham Lincoln's son, Mr. McVeagh, and Mr. Blaine, the Secretary of State, were among the party.

The scenery on the Potomac is not very striking; neither is there much of note about Washington's house at Mount Vernon. It is a small, old-fashioned residence; the actual furniture used by the family still remains in the rooms; the bed on which Washington died remains as it was in his day; so also does that on which Lady Washington died. According to the account given to me by one of the ladies of the party, the reason for Lady Washington removing to one of the small upper rooms in the house, was, that she lived, or rather died, in fear of her slaves, it having been directed by General Washington's will that they should be free at her death; knowing this, she appears to have lived in terror lest her death should be accelerated, and to have secluded herself, living in the upper part of the house with one female attendant.

From Washington we made a day trip to Richmond and back, meeting on the journey, by appointment, General Fitzhugh Lee, a man who was noted in the days of the struggle between the Confederate States and the Northerners. As the train passed along, he pointed out to us the sites of many of the skirmishes, and crossing the Rappahannock, he completely fought that noted battle o'er again. The General has now turned his sword into a ploughshare, and is a jolly-looking farmer.

At Richmond we found the vegetation very much more forward than it had been at Washington and New York. Lilacs were in full bloom, and the splendid green of the newly unfolded maple gave beauty to the gardens and parks.

The proportion of black population to white was very noticeable at this place; but it is a poor town compared with those we had seen in the North. We could only wonder at the pluck of the Southerners in daring to venture upon the chance of war against the forces of the North.

We went over a large tobacco manufactory, the whole of the people employed being black. The men were in one part of the establishment and the women and girls in another. The various modes of dealing with tobacco were explained to us by the foreman of the works.

Whilst we were going through the factory a sound of music was gradually audible, and the whole of the men broke out into the singing of anthems; somewhat different to the singing one would experience in looking over a Birmingham or Manchester manufactory.

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Leaving Washington, and travelling by the Baltimore and Ohio railroad, we made a detour to Harper's Ferry. The scenery here—the junction of the rivers Shenandoah and Potomac, at a gorge amid lofty cliffs—was the finest we had yet seen in America. The road, the railway, and the rivers all passing through a grand ravine, with pine-crowned cliffs, at this point. We were shown the spot where John Brown was taken prisoner, and where his soul is said to be still marching on.

From thence we travelled towards Harrisburg, stopping on the way at a small town called Carlisle.

At Carlisle the Government of the United States has established a large school for the training of the children of the Red Indians, representatives of probably forty different tribes. This is the first attempt of the kind they have made to reclaim the descendants of the races which at one time owned all this part of the American Continent, and by degrees have been forced to retire as the white man has gradually advanced his footing.

We passed through several large rooms in which boys, some of them the sons of chiefs, were receiving lessons; and in other parts of the buildings girls were being educated. Some young American ladies, enthusiastic in the work, were giving the lessons.

We also visited the industrial portion of the school, where lads were being trained in carpentering, making saddles, bridles, tinware, and learning other trades likely to be useful to them in their future career.

There is a great heaviness about their countenances; their skin is of a reddish copper, ribstone pippin tint; their hair lank, black, lustreless, and quite straight.

Captain Pratt is the gentleman in charge of the whole of the arrangements of this large establishment; and he inquired whether we would wish to see one of the Indian lads in full costume and war paint. We were glad to avail ourselves of the opportunity, and ere long a young man appeared fully dressed and decorated. His coming was the signal for an outburst of laughter and applause on the part of his comrades. He was decked out in full array of eagle's feathers, which were attached to the cloak thrown round him; mocassins upon his legs, and a bow and arrow in his hands. We did not, however, think much of his archery, as he rarely struck the target.

After he had gone through a portion of his performances the whole body of children were summoned by the ringing of a bell to a large schoolroom attached to the building, and here, in response to the call

of Captain Pratt, they sang two or three songs in the English tongue, led by the young ladies.

After a word or two from the Duke of Sutherland, in recognition of the pleasure which we had received from the inspection of the school, we returned to the train, and proceeded to Harrisburg, which is situated on the Susquehanna, here a very broad but shallow river. The town lies very low, its streets are all formed on the rectangular plan, and it is the capital of the State of Pennsylvania.

During all our visit this was probably the place at which we least approved of the hotel arrangements. It was roughly American in its style, and did not come up to our ideas of comfort. Rats nearly as large as rabbits were seen running up and down the stairs, by no means suggestive of a night's repose.

There is one point of interest in connection with Harrisburg which I may mention. The town takes its name from "John Harris," a Yorkshireman, an extensive trader with the Red Indians. Early in the 18th century, having from some cause offended one of their bands, they seized and tied him to a mulberry tree in front of his house, intending to burn him; while kindling the fire another band of Indians came upon the scene and released him uninjured. The spot is still shown as one of the sights of the place.

I mention the circumstance simply to show the position between the red and the white man at that date, as compared with that which exists at the present time.

We slept at Harrisburg in spite of the rats, and next day proceeded towards New York, first stopping on the way to inspect some large steel and iron works, two miles from Harrisburg, and subsequently leaving the train for the purpose of inspecting some noted dairies, and a perfectly model farm.

Upon reaching New York we proceeded to the wharf, whence the steamers of the "Fall River" Line sail for Boston. The vessels leave New York in the evening, and passengers after sleeping on board find themselves in the morning at Fall River, a large town of 45,000 inhabitants, whence they proceed by train to Boston.

The steam vessels making this trip, the "Bristol" and the "Providence," are palatial in character—floating Noah's Arks—fitted up with large central saloons, with an upper gallery and balcony, with commodious cabins and state rooms surrounding the saloon. Accompanied by the President of the line (Mr. Choate) we occupied so long as daylight lasted a position on the upper deck, and as we passed along the East River and

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Long Island Sound he pointed out to us the various places of interest which were to be seen. Two or three large islands exist between the New York and the Brooklyn sides of the river, and upon them have been erected numerous asylums belonging to the city, such as the Almshouses, Lunatic Asylum, Blind Asylum, Penitentiary, Convalescent Hospital, Idiot Asylum, and Infant Hospital—a singular succession of such establishments, all built of granite quarried by convict labour on the islands—and then we arrived at the formidable point called “Hell Gate,” a collection of sunken rocks, at one time a source of terror to the vessels entering New York harbour by this route, but which by submarine blasting has been now almost entirely removed.

In the early morning, after a most comfortable voyage, a train was at our service at Fall River, and by it we reached Boston.

Boston, for some reason, is called the “*hub* of the universe.” Can it be that the Bostonians consider, like the fly on the carriage wheel, they are the cause of all the stir in the world? It is said that the question always put by Boston as to a man’s capabilities is: “What does he know?”

By New York: “What is he worth?”

By Chicago: “What can he do?”

At any rate, knowledge and intelligence rank deservedly high in the standard of estimation of Bostonian society.

The city, being one of the older places in the States, is not constructed on the rectangular plan; its central streets more nearly resemble those of an English city than of an American one; the new portions of the city are formed on ground reclaimed from the low lying edges of the old Harbour.

Its principal buildings, parks, and places of attraction were shewn in due order as we drove through the city in our usual style, accompanied by a deputation of the town authorities, who, after introducing us to the Governor of the State (Massachusetts) at the State House, took us on board a Government steamer, and made the tour of the harbour, pointing out its elevators, railway depôts, and wharves.

In the harbour lay one or two of the United States armoured vessels, which had been celebrated during the war between the Confederate and Northern States. Here also we were shown the spot at which the chests of tea were thrown into the river by the angry mob of Boston, as the first active demonstration against this country at the commencement of the quarrel between ourselves and the United States.

In the evening of Saturday a banquet was given to the Directors, at

which several of the leading citizens of Boston were present, and on the next day (Sunday) we went to service at one of the Episcopal Churches, where the sermon was preached by the Rev. Phillipps Brooks.

The Americans have very sensibly cut off all the redundancies and repetitions from the English Prayer Book, and thus reduced the length of the morning service. The musical portion of the service was relegated to a selected band of celebrated singers, whose voices were listened to in their portion of the service quite as attentively as that of the clergyman in his.

In the afternoon we had (I fear somewhat to the scandal of some of the Bostonians) a drive round the city and the outskirts. We visited Bunker's Hill, where the first collision took place between the English and American forces; thence we drove three miles to the adjacent town of Cambridge, a place of 50,000 inhabitants, noted like its English namesake for its academical renown—Harvard University being the most celebrated of its institutions; we visited its splendid Memorial Hall and some of our party had the good fortune to be introduced to Professor Longfellow, whilst others, including myself, drove through the Cemetery of Mount Auburn and round the Chesnut Hill Reservoir back to Boston.

At night we left Boston, and travelling in the elaborately-ornamented sleeping cars of the Boston and Albany Railway, found ourselves early in the morning at New York. One annoyance experienced on the journey arose from the continual stoppages made by the train at every place where other lines of railway crossed our track on the level, and these are numerous in the States. There is a requirement that trains shall stop at each of these places, and stoppage after stoppage, suddenly made, jolted us almost out of our berths. On this day one of the longest continuous journeys which fell to our lot was made, for leaving Boston shortly before midnight we reached New York at six o'clock in the morning, and starting thence at 9 a.m. in a special train, provided by the Pennsylvania Railway Company for our accommodation, we travelled through to Montreal—the distance covered in the 24 hours being no less than 623 miles. To this train, on leaving New York, was attached the very handsome private car of Mr. Vanderbilt; two of his sons received us at the New York terminus and accompanied us as far as Albany.

The line of railway known as the Hudson River Railroad passes along the banks of the River Hudson, and through charming scenery. The prison of "Sing Sing," where the political prisoners of the United

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States are confined, is visible from the line, so is West Point, the National Military Academy. Here, also, is the district near the Catskill Mountains, celebrated by Washington Irving as "Sleepy Hollow," in Knickerbocker's Historical Sketches of New York.

It was a lovely summer day on which we made our journey alongside the Hudson, but we were reminded of a different state of temperature by observing at numerous landing stages along the river, large storage houses used for the collection of ice, which forms in great quantities in winter, and is here kept in reserve to meet the requirements of New York.

On arrival at Albany we were met by the Mayor and several residents of the town, and were conveyed in carriages to the State House.

Albany (90,000) is the capital of the State of New York, it having been considered injudicious that the Legislative Representatives of the States should meet in the chief business towns. The local State Senators and House of Representatives are therefore appointed to meet at towns of a second rate character. Thus "Harrisburg" is the State capital of Pennsylvania, whilst Philadelphia ranks as its first city. In the same way Albany is the capital of the State of New York, not bearing the least comparison with the City of New York as a business town.

The State House at Albany, now nearly completed, is a very noble building, and, next to the Capitol at Washington, will be the largest and most splendid edifice in America; one remarkable feature in it being the various coloured marbles with which its passages and walls are lined. There are marbles of all tints of colour, either placed by way of uniformity or by way of contrast, brought from various parts of the United States—the whole of them being the product of that country.

Leaving Albany, where we parted with the Vanderbilts, we took our journey towards Canada in what I may call our own train. It was most courteously placed at our disposal by the Pennsylvania Railway Company, and in it we made our journey from New York throughout the States and Canada, the railway companies over whose systems we had to travel kindly permitting its passage over their lines.

The train consisted of three vehicles, one being the private car of Mr. Roberts, the President of the Pennsylvania Line, fitted up with day and night compartments, cooking apartment, a well-stocked wine cellar, and an open-end platform, affording an excellent opportunity for inspecting the line and the scenery. From this vehicle we could pass into No. 2, one of Pullman's dining cars, which was capable at night of being converted into a sleeping carriage, making up twelve beds—this also

had its cooking apartment, and very satisfactory meals were produced by the skilled black cook who accompanied us. The third carriage was one for the use of the servants and the baggage. We could pass at pleasure right through the train from end to end, and avail ourselves of the open-end platform both in front and rear.

We had for the entire trip a conductor to accompany the train on its journey, and a baggage-master to take charge of all our luggage, besides sundry black men who acted as assistants to the conductors.

Amongst the points of interest we passed through, I may mention the town of Saratoga, but the month of May is not the season at that place, and the giant hotels for which it is noted were completely empty. In autumn the place is crowded like Scarborough, but at other times of the year it is a deserted town: the huge trunks required by fashionable ladies to hold their extensive wardrobes have been christened "Saratogas" in connection with their constant appearance here in the season.

The fact of its being early in the season also deprived us of a visit to Lake George, the scenery of which is said to be superior to that of Lake Champlain, which we were now approaching. Our train was here in charge of two young engineers who seemed determined to show the British railway men how smartly they could traverse their length, and regardless of any amount of discomfort the passengers might experience, they were resolved upon making a speed of upwards of 60 miles per hour.

The consequence was, that on passing round the curves on the edge of grand precipices overhanging the lake side, the travelling was by no means pleasant, and at a certain point, one of our directors endeavouring to move from one side of the carriage to the other, acquired a lesson in the laws of gravity, being lurched forward and thrown violently on to the floor of the vehicle. As we travelled through this district the elevated peaks of the Adirondack Mountains were visible on the left-hand side, and those of Vermont on the right.

At "Rouse's Point" we changed engines, and an unexpected challenge by the Customs officers, as to whether we had "anything to declare," told us we were passing the boundary. Several residents who had gathered at the place gave "three cheers for the Duke" as the train entered on territory owing allegiance to Queen Victoria.

Darkness came upon us before we reached Montreal, but shortly before arriving at the terminus we were fully apprised by the reverberating noise that we were passing through the celebrated Victoria Bridge, which spans the St. Lawrence within a short distance of the city.

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This bridge, nearly two miles in length, we inspected the next morning, but unfortunately the weather was far from brilliant, and at the time we were there a very heavy rain was falling.

Altogether our first impressions of Montreal were not very favourable, and having seen so much prosperity and activity in the American cities, an unfortunate impression was made upon our minds by the somewhat desolate appearance that Montreal presented, as compared with the towns of interest we had previously visited.

Our trip next day, from Montreal to Quebec (166 miles), was made by one of the Richelieu Navigation steamers, which ply daily, or rather *nightly*, between those points on the St. Lawrence. We left Montreal in the evening, sleeping on board, and in the morning came in view of the celebrated citadel of Quebec, adjacent to the heights of Abraham, reviving in our memory the old story of the death of General Wolfe at the moment of victory.

At the landing stage we were met by carriages sent down by His Excellency the Governor-General, and some of our party were invited to the citadel, whilst others were quartered at the St. Louis Hotel, not very far away.

Unfortunately the fine weather which we had experienced throughout our journey across the Atlantic, and during our visit to the States, appeared to have deserted us, and we suffered the inconvenience of two or three wet days in Montreal and Quebec. The streets of Quebec are chiefly paved with wood, not in blocks, but with planks laid longitudinally, and the footpaths are made in the same way. The street vehicles are strange compounds of cabs, cabriolets, and Neapolitan calèches, with huge leather C springs, surging the passengers about in a remarkable, but unpleasant style.

The town is divided into two portions, the higher part built around the fortifications and upper Esplanade, and the lower consisting of the shopping portion of the town and the wharves.

There is an elevator or sloping tramway, somewhat similar in style to that at Scarboro', to enable passengers for a small fee to pass from the lower to the higher level, and thus avoid the circuitous road, or the Jacob's ladder of steps, which otherwise have to be traversed in walking from one part of the town to the other.

The public buildings and churches are for the most part roofed with tin, in small sections, which give a peculiar glittering effect to the city when the sun is shining.

One of the first places to be visited was, of course, the heights of

Abraham. The spot where General Wolfe met with his death-wound is marked by a lofty pillar, with an inscription :

"Here fell Wolfe."

There must be a divided feeling in Quebec with regard to the results of that celebrated conflict, inasmuch as whilst the English people refer with pride to the victory, the largest portion of the inhabitants are descendants of the French-Canadians, and in one of the Catholic churches there is an eloquent inscription to the memory of Wolfe's great opponent (General Montcalm), and his skull is also retained and exhibited as an object almost of veneration.

It is not a little singular that on this portion of English territory we should not only find the currency and calculations effected in dollars and cents, but should meet with public notices in the French language, and learn that in the Canadian Parliament the French tongue is used in the debates quite as much as the English.

We spent two evenings at the citadel, the Marquis of Lorne being in residence at this period of the year in Quebec, instead of Ottawa, the head-quarters of the Government. On the first occasion a dinner-party, limited to our railway contingent, and two or three officers of the garrison; on the second, a larger gathering, or reception, at which several of the members of the Quebec Parliament and their wives were present. At the dinner, one of the entrées consisted of filets of moose, the deer of the northern parts of Canada; the flesh resembled very dark-coloured beef.

The education of the young folks of Quebec is almost entirely in the hands of the Roman Catholic nuns, and both Protestant and Roman Catholic girls are trained by them.

The most celebrated establishment is that of St. Ursula, one portion of the nuns living a life of very strict seclusion, others being required to turn their attention to the educational department. A special reception was given to the Governor-General, the Duke of Sutherland, and our party, at this convent. We were received by some high ecclesiastic, and when we entered we took our seats on an elevated dais behind the Governor-General and the Duke, in the large schoolroom, which was very prettily decorated with flowers and garlands for the occasion.

A body of young ladies, evidently selected for their good looks, was ranged in front, whilst around the sides of the room were the nuns and their pupils, some dressed in black and some in white, forming altogether a remarkable grouping.

The young ladies came forward and sang very nicely two or three

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Scotch melodies, no doubt in compliment to the Marquis of Lorne and the Duke of Sutherland. At the close of their singing one lassie advanced and made a short address of welcome; then eight or nine, bearing large bouquets of flowers, came to the front and handed these nosegays to our party. It was a ludicrous sight to see some of the gentlemen encumbered with a bundle of flowers quite as large as an ordinary-sized cauliflower.

As a great privilege, we were shown over the whole of the arrangements of the nunnery, some of the nuns displaying even the retirement of their separate cells.

The whole of the domestic arrangements were explained; the novitiates were also permitted to be interviewed, and a day of most unusual excitement was experienced by the residents in the convent. Nothing short of a Governor-General would have obtained such a departure from the usual rule of seclusion.

Whilst in Quebec the Governor-General took us in one of his small steamers down the St. Lawrence, and showed us the new graving docks and harbour in course of construction.

On this occasion we steamed as far as the Falls of Montmorency. The accumulated snow of winter was still around them, forming a large cone at the base of the Falls; Lord Lorne drawing our attention to the lofty fall (250 feet), reminded us that it was far beyond the height of Niagara, so guarding us against the disappointment usually felt at the first sight of that noted cataract.

At Quebec, with much regret, we parted company with Mr. Knowles, his health not allowing him to undertake the fatigue of the long land journey that lay before us, and he returned by steamer from Quebec to Liverpool.

Leaving Quebec in the afternoon, we travelled back to Montreal by railway, passing through a poor country, most of it under fair cultivation, but having no appearance of wealth. We were appointed to arrive at Montreal at half-past nine, in order to witness the introduction of the electric light for illuminating the station buildings at the railway terminus at "Hochelaga," the original Indian name of Montreal. Unfortunately our engine failed on the journey, and instead of reaching Hochelaga at 9.30, we did not arrive until a quarter to eleven.

A large and enthusiastic mass of people were waiting to receive us, and we hastened at once to the goods shed, which was electrically lighted on what is called the "maxim" principle. The lights appeared to be as easily regulated as ordinary gas burners.

There was great excitement in connection with the affair, inasmuch as

it was discovered that the electric wires had been cut in four places, the intention evidently being to bring about a failure of the electric light and throw discredit upon it. Some of the Directors of the Montreal Gas Company were charged with connivance in the matter, and very fierce invectives were indulged in, the speeches (several of which were delivered in French), being divided between congratulations on the visit of the Duke of Sutherland, and on the progress of electricity, and denunciations of the Directors of the Gas Company.

On this second visit to Montreal we were more fortunate in the weather, and were more pleased with our inspection of the town and its principal buildings; it improved on acquaintance; we made the usual processional drive through the place, culminating in our reaching the Elevated Park, formed on the plateau of Mount Royal (Mont-réal), from which the town takes its name. When standing on this height, 750 feet above the valley, the course of the St. Lawrence for many miles was at our feet, and the whole town of Montreal was laid out before us like a map. Every possible attention was shown by both Mr. Hickson and Mr. Seargeant of the Grand Trunk Railway, and through their auspices we found ourselves enrolled as members of the leading literary club of the city. The enthusiasm of the Scotch residents was very remarkable, and the Duke of Sutherland must have been much pleased with what he witnessed.

There is a very large Roman Catholic element amongst the Canadians; the shops at Montreal were filled with a display of Madonnas, Holy Families, Crucifixes, &c., reminding one of a Continental rather than of an English town.

Early next morning we started by rail to reach the point at which the Lachine Rapids on the St. Lawrence have to be shot. A steamer is appointed to make a trip down these rapids daily, starting early in the morning. There was nothing very alarming in the affair, though the steamer rolled and surged to some extent while coming through the turbulent passage; had there been less water in the river, the navigation might have been more difficult.

We left Montreal towards evening, and after travelling a few miles found ourselves crossing the River Ottawa close to its junction with the St. Lawrence. It was the scene referred to in the well-known Canadian boat song, "Row, brothers, row"; here was St. Anne's where the evening hymn was sung; there was "the green isle"—"the stream runs fast, the rapids are near and daylight past"—and while crossing the surges of the *Ottawa* in a way that Tom Moore never imagined, I found the explanation

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of the expression to be met with in all the old editions, "*Ut-away tide!*" that had always before puzzled me. That night we made our way to Prescott, sleeping in the cars of our train, proposing to avail ourselves of the steamer of the Richelieu Navigation to take us through the scenery of the "Thousand Islands," reported to be the most lovely portion of the St. Lawrence.

Unfortunately, when the morning and the steamer came, the weather was so foggy that the captain stated he could not guarantee our being able to make the voyage in the appointed time, and as he added that he might probably, under the circumstances, not be able to start that day, we gave up this portion of the programme with regret, and continued our journey by rail, under the care of Mr. Spicer, the Superintendent of the Grand Trunk. Towards the afternoon we found ourselves skirting the northern shores of Lake Ontario.

A break-down had occurred on the line, and the road was obstructed by the wreck of a goods train; fortunately it had taken place just prior to reaching a somewhat shaky bridge. We had to leave our train at this place, walk across the bridge with our luggage past the *debris*, and take our places in a train which had been provided on the opposite side.

At night we reached Toronto, a very lively city of 80,000 inhabitants, and the most business-like place we had as yet seen in Canada. A deputation of the Mayor and Aldermen waited for us at night, and arranged for a drive round the city next morning.

Here we had the pleasure of meeting Mr. Swinyard, a gentleman formerly well known in connection with the business of the Manager's office at Euston, but now largely interested in the Telegraph Companies of Canada, &c.

The University and some of the public buildings of the place were duly inspected, and at one of the schools, on the strength of having asked for a half-holiday for the children, the Duke obtained a round of cheers, and "God save the Queen" was sung with much vigour.

A luncheon at the house of the Governor brought to a termination our visit to this pleasant town.

From thence we travelled, *via* Hamilton, towards Niagara, by the Great Western of Canada Railway, meeting with an old railway comrade, Mr. F. Broughton, now the manager of that line.

We passed under the works of the Welland Ship Canal, which furnishes the means of navigable communication between Lakes Erie and Ontario, as a bye-pass to the Falls of Niagara.

Our interest was concentrated upon the approach to Niagara, but it

was unfortunately pouring with rain when we arrived at Niagara station, about a mile below the Falls. Here the Niagara river, with its thick green-coloured waters, hemmed in by lofty vertical cliffs of limestone, flows by with a hurried and turbulent rush. A few minutes more brought us within sight of the Fall, and shortly the whole of the world-renowned scene was before us with its two-fold cataract, its sullen roar, its clouds of spray rising in immense masses of mist to the skies. It is a sight never to be forgotten, but no words of mine can adequately describe it.

In simple prose, at this place, descending at one sheer swoop of 158 feet, rushes the water of the Niagara River, the sole outlet of nearly half the fresh water on the surface of the globe; of lakes and streams covering more than 150,000 square miles. Lake Superior and Lake Michigan flow into Lake Huron, Huron into Lake Erie, and here, at the rate of 100 million tons per hour, the watery mass falls headlong towards Ontario and the St. Lawrence; seven-eighths of the stream passing by the Horse Shoe Cataract, and the remainder by the American Fall; the river turning its course from the foot of the Falls nearly at right angles to its previous direction. Though estimated by one writer to equal the roar of all the lions that have lived since the days of Daniel, the noise made by the fall of the water did not come up to my expectations.

It is remarkable that shortly after the seething waters have fallen to the level of the river they assume a comparative stillness on the surface, so much so that ferry-boats cross from one side to the other with perfect ease. The water in fact appears stunned by the blow it receives in the fall, and flows on smoothly for nearly half-a-mile before the turbulence of the stream becomes apparent; from that point in the river there is a continual growing commotion, the lofty limestone cliffs at the side approach each other more closely and hem the stream in, causing it to be thirty feet higher in the centre than at the sides, giving rise further down (three miles from the Falls) to the constant ebullition called the "Whirlpool Rapids."

The American Fall is well seen from the point called Prospect Park, where, relying on the protection of a parapet, we viewed quite close to us the water taking its irresistible leap. We followed the water; descending more leisurely by means of the "vertical railway" constructed for the purpose, and stood as close as we could to the bottom of the Fall. The mass of ice and snow which accumulates during the winter from the frozen spray of the cataract still formed a mamelon or cone some thirty feet high, which we had to climb to obtain the view. Again ascending by the "vertical railway," we made our way to Goat Island

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for a view of the American Falls from the other side; and after this, by means of a small bridge, 5 ft. wide, 200 ft. long, underneath which, rushing impetuously, just four feet below, the rapid stream is raging, we came to the point of vantage, close to the corner of the wide semi-circular sweep (2,000 ft.) of the Horse Shoe Fall, immediately before it makes its final descent into the chasm below, whence is ever ascending a volume of spray to be carried away by the winds, as a drenching torrent to the adjoining shore.

Words fail to convey an idea of the grandeur of the scene. It is the constant, irresistible, ever-moving, onward, headlong, impetuous flow that impresses the mind. Man is dwarfed to insignificance when standing near its majestic force. Well might our respected friend, the late Mr. Crosfield, recite as he did, Buckingham's eloquent lines to Niagara:—

Hail! Sovereign of the world of floods! whose majesty and might  
First dazzles—then enraptures—then o'erawes the aching sight.  
The pomp of kings and emperors, in every clime and zone  
Grows dim beneath the splendours of thy glorious watery throne.

No fleets can stop thy progress—no armies bid thee stay,—  
But onward—onward—onward, thy march still holds its way.  
The rising mist that veils thee, as thine herald goes before,  
And the music that proclaims thee, is the thundering cataract's roar.

Thy diadem is an emerald green of the clearest, purest hue,  
Set round with waves of snow-white foam, and spray of feathery dew.  
Thy reign is of the ancient days, thy sceptre from on high,  
Thy birth was when the morning stars together sang with joy.

And from that hour to this, in which I gaze upon thy stream,  
From age to age, in winter's frost, or summer's sultry beam—  
By day, by night, without a pause, thy waves with loud acclaim  
In ceaseless sounds have still proclaimed the Great Eternal's name.

One or two of the usual points of view were not accessible to us, in consequence of the winter still interfering with the safety of the structures by which visitors ascend or descend to inspect the Falls, and those of us who ventured along the narrow and dizzy precipice which leads beneath the Fall on the Canadian side, felt that we were standing on treacherous and unsafe ground, in venturing as far as we did under the tremendous cataract. None of our friends would have recognised us in the ugly waterproof costumes that have to be adopted when going through this portion of the programme in connection with a visit to Niagara.

Not far from the Falls is a curious natural phenomenon, consisting of a "burning spring." The waters at the place emit into the air sulphu-

retted-hydrogen gas, which burns with a brilliant flame three or four feet high when ignited. It was singular to see such a volume of fire issuing from such an incongruous source.

Though we spent portions of three days at Niagara, during no period were we favoured with such a gleam of sunshine as to display the beautiful rainbow tints for which the Falls are celebrated.

At this point our party was again reduced in number, as the Marquis of Stafford decided on returning to Quebec, appointing to rejo'in us at New York.

Leaving Niagara we hastened to Buffalo, and in one respect we were certainly disappointed in this place, for, remembering the charms of the "Buffalo Gals" depicted in song, we expected to see a display of feminine beauty. If there were any such ladies, they certainly did *not* "come out" on the day we visited the place, as we could not but be struck with the remarkable plainness of the countenances of those we met.

Here again the usual procession was formed, the Mayor of the town and the railway celebrities meeting our party and driving us round. It is a busy and black town of 140,000 inhabitants, celebrated for its iron foundries; the railway passes right through the market place, unfenced in any way; the tolling of the engine bell being the signal of the train's approach. There is nothing very striking in connection with the place; but in the best streets, called "avenues," the unfenced way in which the gardens and grass plots of the houses adjacent come down to the roadway is worthy of note; all lie quite open to the public, there being no protection whatever in the shape of a boundary fence between the foot-paths and the grounds of the houses; in many instances the pathway is laid so as to leave a considerable breadth of green sward between the path and the roadway. The Americans call this "boulevarding."

Leaving Buffalo, the next place at which we made any stay was Cleveland, and here we may be said to have "struck ile," for we visited one of the largest oil works in the United States. Yet the oil is not found at the spot; it is brought by conduit pipes no less a distance than eighty miles; the convenience of water and railway accommodation at Cleveland being I presume the cause of its selection.

Both crude and refined petroleum are despatched from these works. The conveyance of the crude oil employs the very large stock of 6,000 iron tank railway waggons, all belonging to this one firm. This is the birthplace of hundreds of thousands of the well-known blue-coloured barrels, in which a more refined oil is sent out. We saw them in course of

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construction, and the rapidity with which they were turned out was almost magical. Machinery was arranged for every stage; directly after the staves were marshalled into circular order, to tighten the whole together with iron bands. draw down the hoops, plane the edges, test the barrel, and send it down the long procession of casks that travelled gradually along the trough to the paint shop. The painting was done by hand; a broad paint brush is dipped into the composition by the man entrusted with the work, and with one or two turns of the finger the barrel is twisted, painted all round its circumference, on the top and bottom in addition, and is sent rolling to join its companions. Four to five barrels a minute were turned out by one man.

The formation of the tin canisters was as rapidly carried out. A huge stock of square plates of tin was shown us. By a stroke on the right-hand side and another on the left, one of these plates suddenly assumed the shape of a square canister; another turn out on the top, second put on the bottom, whilst a third adjustment fixed a tap on the top and the work was complete!

Cleveland is called the "Forest City," its streets and squares being shaded by lofty elms and leafy maple trees. The most noted street is called Euclid Avenue,  $2\frac{1}{2}$  miles long; it is lined with noble houses standing in their own grounds, coming down unfenced to the pathway in the mode I have already mentioned.

As we drove through the Avenue we were informed that Mr. So and So, worth so many dollars, lived on the right, Mr. So and So, worth so many dollars, lived on the left, &c., this estimate of wealth appearing to be the principal gauge of the estimation in which the citizens were held by the representatives of Cleveland.

I should not omit to mention the huge swing bridge which has lately been constructed in Cleveland, across the river Cuyahoga, connecting the two sides of the city, in substitution for a ferry. The bridge in breadth equals London Bridge, and has such an apparent solidity that to see it swing aside, to allow vessels to pass along the river, was a surprise to us as onlookers.

We travelled the next day to Toledo, a small port at the extreme west end of Lake Erie (about 50,000 people).

The grain elevators are the principal pride of the place; these elevators are very lofty constructions, consisting of immense bins for the storage of grain and corn, with mechanical appliances for clearing the contents either out of ships, or out of trucks, when brought alongside, and for raising (elevating) the grain by a kind of Jacob's ladder into

these huge bins; there the corn remains until orders are received for forwarding it, when it is delivered by means of shoots and endless bands into ships, or into trucks, as may be required.

The way in which the wharf frontage of the railway dépôt had been damaged and torn away during the winter showed how powerful the action of the ice had been along the sides of the Lake.

From Toledo we travelled to Detroit, our train being drawn by an engine called the "Fontaine." The engine is very peculiar in its construction, but the patentee expressed himself highly satisfied that it would be the engine of the future. Few people, however, beside himself appear to have adopted this sanguine expectation. Those to whom he had shown his original scheme told him that the engine would not move itself! but this prediction was falsified, and it must be admitted that he carried out his promise to run our train at sixty miles per hour. For several miles we maintained this speed. The peculiarity of construction is that the driving wheel is fixed high up on the side of the boiler, acting upon two other wheels, the lower of which rests upon the rails. A notice of the engine appeared a few days back in one of the English railway publications, but the whole system of its construction was condemned as a mechanical blunder.

Detroit is a far more important port than Toledo; it is a place of 100,000 inhabitants. We were met at Detroit by another deputation of the representatives of the town, and made a tour of the river frontage in a beautiful steam yacht belonging to a Mr. McMillan, the proprietor of the largest railway car-building establishment in the State. The city extends about seven miles along the side of the stream, with mills, shipyards, foundries, grain elevators, railway steam ferries, and warehouses on the banks. On the opposite side of the river lies Windsor, a much older place, but on Canadian territory, and here again we were struck with the want of growth on the part of the Canadian town as compared with Detroit, where business seemed to be progressing with wonderful rapidity.

We drove in the usual processional style through the principal streets of Detroit; it is one of the best paved towns in the United States. Circular blocks of pine trees, there called cedar-wood, are used for making the roadways. A central square named "Campus Martius," and the wide street called Woodward Avenue, comprise the principal features of the town. The private houses are generally constructed with verandahs, and to sit outside in rocking chairs, under the protection of the verandah, seemed to be the afternoon custom of the inhabitants.

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Leaving Detroit we settled down for the night in our cars, and in the early morning found ourselves on the shores of Lake Michigan and approaching Chicago.

This is the great central city of the United States, with lines of railway converging to it from all directions. It is the point which regulates the railway traffic arrangements for the conveyance of bread stuffs, and meat and provisions to the coast. It is also the centre of the pork packing business. One of the newspapers published there gives itself the title of the *Inter-Oceanic*.

As in other towns the first thing that occurred to us was the wretched state of the streets. The excuse given was that they had never had them right since the great fire, but, although the city has suffered from fire twice—first in 1871, and again in 1874,—there would appear to have been plenty of time to put the roadways in condition. Some very handsome edifices have sprung up since the last fire, and the town is an illustration of the rapid and substantial growth of commercial cities in the States. In 1830 the place consisted of twelve or fifteen houses, and about 100 inhabitants, whilst in 1881 the population was nearly 550,000.

We were informed by the Mayor of Chicago that one of the establishments Englishmen always inspected were the slaughtering places and packing-offices in connection with the Union Stock Depôts. He gave such an account of the disgusting details of the treatment of the unfortunate animals appointed to be made into pork, that I made up my mind not to accompany that portion of the excursion. From information received, I am assured that the statement is perfectly correct that unfortunate pigs—to the number of 10,000 a day!—are made to run up a plank at one end of the establishment, caught by the hind leg by a running noose, elevated momentarily to the place of execution, then passed through various stages, and come out in the end, part cut up into joints, and part manufactured into sausages. Only a few of our party went over the premises, and I observed that for some days afterwards they carefully avoided eating either ham or bacon.

I occupied myself that afternoon in witnessing a game of base-ball, which appears to be the American national sport. The excitement in connection with the match (one between the players of Chicago and Buffalo) was very great; many thousands were present in the enclosed ground where the match was played. The result of each innings was telegraphed immediately to clubs interested in the game, and on the ground telegraph intelligence was received and announced of two other

matches which were being played at the same time in distant cities of the States. The game more resembles the boyish one of rounders than it does that of English cricket.

The day on which we were at Chicago was that appointed for the appearance of the revised Edition of the New Testament. Two of the leading newspapers in Chicago undertook to include in the columns of their daily paper the whole of the Testament. I obtained admission to one of the , and witnessed with much interest the wonderful rapidity with which these enormous sheets of paper were being struck off, folded and sent out for sale. The price of the newspaper containing the whole of the New Testament was five cents., about  $2\frac{1}{2}$ d.

One of the places we visited was the Exchange, where the quotations for corn, grain, pork, and provisions are settled. The clamour of the place was simply deafening. It was crowded with a mass of men who looked more like roughs at a race course than men carrying on commercial interests of the largest value.

The hotels of Chicago are very extensive. The landlord of the "Grand Pacific," at which we stayed, was very attentive, but seemed to think that he had the right of patronising us to any extent.

He suggested to the Duke of Sutherland that there was a performance worth seeing at one of the theatres, and obtained a half-promise that His Grace would attend. We dined without any hurry, and presently the fact was elicited that the performance at the theatre had been kept waiting for the coming of the Duke from half to three-quarters-of-an-hour, whilst at the time the Duke was quite unconscious that any promise he had given would have the least effect upon the regular course of the performance. The affair however, was taken in perfect good part by the audience.

The town itself is upwards of ten miles in length, and is built entirely on the rectangular principle; the parks are three or four in number, and are well kept, but all look so new, and are of such recent construction, that they appear more like ornamental nursery gardens than parks; we had a long afternoon's drive through them under the guidance of Mr. Newell, the manager of the Michigan and Lake Shore Railway, in whose charge we had been since leaving Buffalo.

Outside the town boundary of Chicago to the southward, a miniature city has lately sprung up, which we were shown over. It is called the Town of Pullman, and is rising on 3,500 acres of land, purchased by the Company of that name, the principal proprietor being the gentleman who is known in connection with the sleeping and dining cars. Here are schools,

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hotels, a public library, parks, lakes, public grounds, a station terminus, waterworks, canals, model dwellings, all in connection with the shops and factories of the Company. The streets and avenues are 100 feet wide. The works are a model of completeness. The stationary engine which works the whole of the machinery is said to be the largest in the world, and had originally been at Philadelphia at the Centennial Exposition.

Adjacent to the Pullman Car Works were to be found the Paper Car-Wheel Company's Works, a company formed for the purpose of using paper in lieu of iron for the centres of railroad car-wheels. The paper is made from wood reduced to pulp, and, being condensed under hydraulic pressure to solidity like granite, becomes impervious to water and all atmospheric conditions.

From Chicago, we travelled to Milwaukee, a town of 150,000 inhabitants, on the west bank of Lake Michigan, celebrated for its bitter beer.

The Canadian lines have endeavoured to push their interests as far as this place by running steamboats and floats across to the opposite side of the lake; it forms a small competitor with Chicago for the corn and grain industries.

Here we were met by the Honourable Mr. Mitchell, a Scotchman by birth, to whose business activity and enterprise the town owes much of its present prosperity. We were shown all the points of interest by him, and visited the "National Asylum for Disabled Soldiers," beautifully situated on the outskirts of the town.

Mr. Mitchell is the president of a consolidation of railways of upwards of 4,000 miles in length, the bulk of which has been promoted by him into the corn-producing districts of Wisconsin and Minnesota, those States having made grants of land in aid of such extensions.

Leaving Milwaukee, we made a dash towards the prairie districts; and our night journey through the State of Wisconsin brought us at day-break to the Mississippi, which we crossed at the town called La Crosse. Our journey thence to St. Paul, a distance of 180 miles, was made along the river side. The banks of the Mississippi consist of a series of headlands called "bluffs," jutting up throughout its whole course. Some are precipitous, some worn into strange shapes, some conical, occasionally long frontages of limestone cliffs. One "bluff" was pointed out to us, called the "Spirit Rock," having been worshipped of old by the Red Indians; another, the "Maiden Rock," from which some young love-lorn girl sprang into the stream.

As our train passed along the banks we noticed steamers accompanying large floats of timber. The steamers are of peculiar construction, having the paddle wheels at the stern instead of the side, and the mode in which they convey the floats of timber (called "lumber") is by steaming behind and pushing the lumber in front.

By middle day we reached the town of St. Paul, which was decorated with flags to welcome us. This place now numbers 50,000 inhabitants, whilst in 1838 not a single house existed on the site it now occupies.

A log chapel, built by a Jesuit Missionary in 1841, gave the name to the place; and now, in the course of but forty years, this log hut has developed into a city with forty churches, four public libraries, three hospitals, a State Capitol, an opera house seating 1,200 people, and innumerable mills and factories.

After a tour of inspection round the place, we were driven in the afternoon of a frightfully hot day ten miles to Minneapolis, another town of 50,000 inhabitants.

These two places are the head-quarters of the milling trade, an enormous quantity of flour being exported thence to all parts of the States as well as to this country.

At Minneapolis, we were told by the Mayor, in true American style, that there they had the "largest mills upon the planet," and we were asked to accompany him to inspect them. When we arrived at the mills, however, owing to some misunderstanding or miscalculation (though our coming was certainly known), we were told that the works of the mill were "down"; "they were not working," and to be shown over a flour-mill not at work was by no means interesting. It was conjectured that, on the supposition that some of our party were millers, the mill was purposely closed against inspection; but I am assured by Mr. Finlay Dun, who visited the States last autumn, shortly after us, that there cannot have been any intentional discourtesy or unwillingness to allow us to inspect the mill. In his case, the proprietors knew that he was making official and technical enquiries, and afforded him the fullest opportunity for thoroughly completing his task.

There is no lack of water power in Minneapolis; the town is situated on the river Mississippi, and the falls of St. Anthony, close to the large mills, are now utilised as power. These falls were formerly celebrated for the beauty of their cascades, but as they were gradually eating away the river banks, they have been shorn of all their attractiveness, and instead of falling in cascades, have been closely boarded up at



the sides and along the river bed, and now flow along a wide wooden shoot, being utilised for working saw mills, corn mills, and other similar establishments.

On the return from Minneapolis we stopped to look at the noted waterfall called Minne-ha-ha ("Laughing Water"), known to all readers of Longfellow's poem, "Hiawatha." It is a graceful and elegant fall, like a thin, glittering veil. The waters shoot over a projecting ledge, and there is a footpath by which visitors easily walk underneath and behind it.

Shortly after leaving St. Paul early the following morning, two or three Red Indian Squaws came up to the train and spent a profitable half-hour (while we were waiting for Mr. Russell, who had managed to be left behind) in exhibiting their wares, consisting of bead and bark work, reindeer skin slippers, &c. There is nothing inviting in their countenances, and all poetical ideas of Hiawatha and Pocohontas vanish at their presence.

This day after passing along the richly wooded banks of the river Minnesota we travelled towards Sioux City for at least ten hours continuously through the prairie. For miles and miles land destitute of trees stretched right and left in unbroken evenness. Portions of it were well under cultivation, with splendid black virgin soil, eighteen inches deep; while elsewhere large herds of cattle were to be seen around the recently erected farm sheddings. One of the difficulties of those districts is the want of timber. So plentiful, however, is the growth of maize, that it is in cases of necessity used for fuel. The States are making concessions to parties undertaking to plant timber like trees for future use.

We were accompanied by a Mr. Drake, the Land Commissioner of the line, and his uncle of the same name: the latter gentleman had been the pioneer of the line at a time when neither villages nor population existed near. He and a few friends originally obtained the concession of the land, and had satisfactorily carried out the construction of the line. It is in this way that at the present time railway companies in the States are able to extend their systems, either selling off the allotted land at a premium or renting to farmers willing to settle in the district.

The Government Survey divides the land into sections, each one mile square; thirty-six of these square miles making a township. The thirty-six squares are all regularly numbered on a systematic principle. All those with odd numbers are given to the railway company to dispose of, and the rest (the even numbers) are for sale by the State to settlers or speculators, one or two being reserved for educational endowments.

Stations are established every six miles, and many of these have gradually developed into villages, and are still developing as an extended acreage of land comes under cultivation in their neighbourhood. The streets are obliged to be of a certain width, and the frontages of the houses must conform to an appointed line.

At one of the stations, named Sibley, our party made a long halt, and some of them visited the farmyards which were remote from the line. On their return they expressed themselves much pleased with what they had seen, and with the pluck and energy of the Englishmen and their wives who were settling in these places, and who spoke in terms of satisfaction at their prospects in the undertaking. Agricultural implements were to be seen at all the station yards, showing a brisk business; and advertisements for "breakers"—meaning men to break up the ground—were posted up at all the stations. The largest English settlement is at a place called Le Mars; but it was late at the time we arrived there, and we did not make any stay at that station.

It is in these prairie districts that the enormous number of emigrants we hear of as annually flocking to the States are absorbed. In passing through we came upon settlements made up of various nationalities; some being inhabited entirely by Russians, some by Norwegians, &c. The whole of them are of necessity obliged to conform to the laws of the United States, and before they can hold land and become denizens of the States they must renounce, or express their willingness to renounce, their allegiance to their former Sovereign.

We travelled through the night from Sioux City to Council Bluffs, on the River Missouri, close to Omaha. Here in the morning we were met by Mr. Barnard, the manager of the line upon which we intended to travel to Kansas, and were informed that, in consequence of the mischief done by the Missouri in a recent flood, the line, which followed the course of the river, had been washed away in many places, and was impassable. It was necessary for us somehow to get to Kansas, and so commencing our journey by this damaged line, we soon saw to what an alarming extent the river had affected it.

On many portions it was doubtful whether we should maintain our stability upon the track, for the train surged up and down more like a ship at sea than a train upon an ordinary line of railway. However, the bogie vehicles stuck well to the rails, which our English coaches would certainly have left; and after a short experience of this journeying we made a detour of sixty additional miles, to Creston, and towards evening found ourselves again on the banks of the Missouri, at a point called S

Joseph. Again we had to travel with great care, in consequence of the line being on the edge of the river, which here, as farther north, had interfered with the position of the rails skirting its banks.

The Missouri is not by any means so fine a river as the Mississippi. The water is thick, and the river runs black and muddy, whilst the scenery is flat and the bluffs have no interest in their outlines.

Late at night we reached Kansas, and there next morning our pleasant party had to divide. The Duke of Sutherland and those that accompanied him, Sir Henry and Lady Green, Mr. Stephen, Mr. Russell and Mr. Wright, were to make their way across the continent to San Francisco, whilst we turned in the opposite direction towards home.

There was nothing of note in Kansas, nor anything of marked interest on the journey thence to St. Louis, if I may except the very forward state in which we found the crops in this southern portion of our journey. We had left snow on the ground at Quebec, but as we journeyed through the State of Missouri wheat was already in full ear.

St. Louis is a large town (the third in the States in point of population, 560,000 inhabitants), situated on the Mississippi, after that river has received the waters of the Missouri. The principal feature of interest is the splendid bridge which spans the river. It is a double bridge, having an upper portion allotted to vehicles and foot passengers, whilst a double line of railway passes beneath. The wharves on the river side were busy with steam vessels trading to and from all points along the river, and the town is a large railway centre with connecting lines in all directions.

Another night journey from St. Louis, through Indianapolis, brought us to Cincinnati. This place is situated on the River Ohio, and lying very low suffers frightfully from heat. Within a month of the time of our visit we heard that so excessive had been the heat that sunstroke had carried off as many as seventy-five people daily for several days together.

In the churches Japanese fans were considered a part of the fittings, all the pews being provided with them, and men and women alike availed themselves of them.

The place is surrounded by a range of heights, which are reached by vertical tramways, so constructed that not only can passengers be conveyed upon them, but carriages and tram-cars with their horses are raised from the lower level of the town to the upper range of the hills which surround it. Tram-cars starting from the centre of the town finish their journey in the outskirts without the passengers having to alight when passing up the inclines.

At the top of each of these inclines pleasure grounds are formed, from which extensive views of the surrounding country can be obtained, and at which extensive quantities of lager beer are consumed. The German nationality was in the ascendant, and we saw how the German mothers were teaching the young idea how to drink, by giving this beer to children scarcely more than a month old.

Some of the outskirts of Cincinnati are nicely wooded. We drove through them in the afternoon, and returning late witnessed a sight new to me, that of fire-flies dancing in multitudes in the grass along the roadside.

From Cincinnati we made a day journey to Pittsburgh, a town of 140,000 inhabitants, arriving in that smoky city towards evening. One of the suburbs is named Birmingham, another Manchester, and for blackness and smoke Pittsburgh, with its suburbs, certainly carries off the palm from their namesakes in this country. Judging by the quantity of smoke, the amount of business done was very large. Mills, forges, collieries, and factories, on all sides, were adding to the blackness, darkening the atmosphere to such an extent that from the windows of our hotel, on the borders of the Monongahela River, only the most occasional glimpses could be obtained of the opposite side of the stream, about 300 yards wide. The "smoke abatement committee" had certainly no hand in the arrangements of Pittsburgh.

The town is somewhat similar to Cincinnati in its situation, having inclined tramways to enable passengers to reach the elevated heights which surround it.

We spent the forenoon in examining the station arrangements of Pittsburgh, which is a large transfer station of the Pennsylvania Railway. The shunting grounds for goods traffic are well laid out on the gravitating principle, the ground falling in both directions at a suitable gradient.

In the afternoon we made our journey from Pittsburgh, through the Alleghany Mountains to Altoona. The guide books all spoke highly of the scenery to be traversed, and it certainly was very beautiful. The line climbed through gorges, reminding us of the most striking portions of Dovedale and Alton Towers, fresh beauty being developed as each curve opened out a fresh scene.

While ascending the incline towards the summit of the range we observed, on the line of rails on which we were travelling, a considerable growth of green vegetation, the line looking like a corn-field in spring, whilst on the opposite line the track was bare and stony. This proved to be an illustration of the flow of the traffic over the

line in one direction as compared with the other, for on the journey towards the seaboard, the way we were going, corn in bulk is conveyed in large quantities, and the grain had trickled down from the trucks on to the track and sprouted into life, whilst nothing of the sort existed on the opposite line.

The "Horse Shoe Curve," which we traversed after passing the long tunnel at the summit of the line, is well known as a triumph of engineering skill—a continuous descent of six miles along the hill-side, through beautiful pine woods, curving sharply round at the horse shoe, and following the defiles of the mountain slopes. About twelve miles from the summit lies the railway town of Altoona, at which we stayed the night.

The morning of the next day was spent in an inspection of the works. Passenger engines, goods engines, carriages, saloons, waggons, wheels, axles, springs, and the whole paraphernalia of railway appliances were here to be seen in full construction.

We originally intended to have made a detour hence to see the oil region, and the coal region of the Lehigh Valley, but time did not allow; we had to push forward to reach New York by nightfall. On the way, as our special train stopped at one of the stations, intelligence was brought, greatly to the satisfaction of our American friends, that the Derby had just been won by "Iroquois."

Our course this day lay along the banks of the River Juniata, and afforded constant scenes of beauty, reminding us of Matlock, only the rivers were wider, the valleys broader, and the hills more lofty.

This was our final railway journey in the States. Swinging along at nearly a mile a minute, we had a farewell dinner in the train with our friends of the Pennsylvania line; and a hearty vote of thanks was given to the manager of that line (Mr. Frank Thomson), whose kind offices had been actively and constantly aiding us not only in planning our journey, but during its continuance. That evening we found ourselves once more in New York (this time, at the Windsor Hotel), having safely completed our 5,500 miles of railway travelling (an average of 138 miles per day) since our first arrival in that city.

A couple of days in New York enabled us to see something more of the city and its business developments, and to make farewell calls on our friends. One evening we strolled into a church, adjacent to our hotel, at which a wedding service was proceeding; the evening is the usual time for weddings in America, no prohibition as to canonical hours existing.

The Marquis of Stafford rejoined us at New York, and on Saturday, 4th June, our party, five in number, met at the White Star Wharf, and

at ten the "Germanic" sailed for England, in charge of Capt. Kennedy. Again we were most fortunate in the weather for our voyage across the Atlantic; no sea sickness was experienced by any of our party, and pleasant companions rendered the voyage most enjoyable. The twelve o'clock observations were taken in the same way as on the "Gallia," but coming eastward the day was one hour shorter than on the opposite direction: only thirty minutes were allowed to elapse from eleven till twelve o'clock was announced. The same system of speculating on the run of the vessel, and balloting for tickets, took place as on the outward voyage. The best day's run we made coming home was 385 miles in  $23\frac{1}{2}$  hours, as against the "Gallia," 390 in  $24\frac{1}{2}$  hours. It is permitted to passengers on the afternoon before reaching Queenstown to descend to the depths of the engine-room and inspect the machinery; it was a new sensation to be below the level of the sea and witness the turning screw-shaft tearing round at the high velocity necessary to maintain our speed.

Among our passengers were the Wynans, American gentlemen, owners of the cigar-shaped yacht, now lying off Cowes. This form of vessel they strongly contended would be the steamer of the future, especially for Atlantic sailing. We had also Madame Gerster, a prima donna, on board, whose musical fame was such as to deter any of the other lady passengers from venturing to sing in the saloon. A special concert in aid of the Liverpool Seamen's Hospital was given on board (the Marquis of Stafford in the chair), at which this lady greatly distinguished herself. Colonel Stanford, the Ex-Governor of California, was also a passenger. He is the owner of a very large stock farm near San Francisco, and his great hobby is the study of the action and attitudes of animals: he had organised at his place in connection with his trotting ground, a series of thirty or forty cameras for instantaneous photography; the lenses were brought into action by the actual passage of the animals, either at speed or when walking, and the photographs thus obtained placed in due order in his album (which was constantly on view, and in explanation) gave complete series of views of the action of the horse, &c., in walking, trotting, cantering, leaping, galloping, and so forth, the result differing largely from the conventional mode of displaying such attitudes.

In now drawing this paper to a close, I take the opportunity of expressing my thanks to the Directors of our Company for selecting me (in view of the inability of our General Manager, Mr. Findlay, at the time to join) as a member of the party appointed to visit America. The journey was a continuous success! From the hour of our landing at

New York to the day of our departure, those we met with appeared to vie with one another in showing us attention. With regard to the railways, there was a contest of courtesy throughout the whole journey in Canada and America; our only regret being that we were unable to avail ourselves of the friendly offers made by various lines for our accommodation.

At the hotels our difficulty was to make the managers understand that we did not wish to be boxed-up in a private room, but preferred taking our meals in the ordinary saloon, thus having the opportunity of observing, even at the expense of being ourselves observed.

The menu for meals was always very liberal. Here is one for breakfast:—

Breakfast.			
Apples.			
English Breakfast Tea.	Oolong Tea.	Coffee.	
Chocolate.	Green Tea.		
FISH.			
Smoked Salmon.	Fresh Fish, fried or boiled.	Potomac Herring.	
	Cod Fish Balls.	Salt Mackerel.	
BROILED.			
Lamb Cutlets.	Rump Steak and Fried Onions.		
Sirloin Steak.	Veal Cutlets.	Calf's Liver.	Mutton Chops.
	Ham.	Breakfast Bacon.	
FRIED.			
Calf's Liver.	Frizzled Beef with Cream Dressing.	Mush.	
STEWED.			
Hashed Beef.	Mutton.	Oatmeal.	Kidney.
	Cracked Wheat.	Chicken.	
POTATOES.			
Baked.	Stewed.	Fried.	Lyonnalse.
EGGS.			
Fried.	Shirred.	Scrambled.	Boiled.
Omelettes Plain, with Jelly,	Parsley,	Ham, Cheese, or Rum.	
COLD.			
Ham.	Corned Beef.	Tongue.	Roast Beef. Chicken.
BREAD, ETC.			
French Rolls.	Wheat Bread.	Soda Crackers,	
Graham Rolls.	Graham Bread.	Corn Cakes.	Water Crackers.
Corn Bread.	Corn Muffins.	Flannel Cakes.	
Toast.—Dry, Dipped, Buttered, Milk.			

Fruit was always served at the commencement of breakfast. Apples, oranges, bananas, and as the season advanced, strawberries. Tomatoes cooked and uncooked were supplied with every meal. With regard to dinners, the fish ever recurring was "shad," a kind of half-breed between a soft mackerel and a softer salmon. Oysters were to be had in May, remarkably delicate in flavour notwithstanding their large size. "Clams"

were constantly in the menu, either raw, or in soup, or in clam chowder, but in no shape did they seem inviting to me. The soup made from terrapin was esteemed a higher delicacy than turtle, and would have given a London Alderman a new sensation. The terrapin is a kind of cross between a turtle and a gigantic frog.

The hotels adopt, for the most part, a fixed price per day for the rooms occupied, including the daily *table d'hote* meals, 4,  $4\frac{1}{2}$ , or 5 dollars per day being about the charge at the best houses. At these the bed-rooms have attached to each of them a bath-room and a dressing-room, and are furnished with writing-tables and easy chairs it not being considered otherwise than usual to receive callers in the daytime in the bed-room. The bed-room servants were for the most part Irish women; the hotel servants, with scarcely an exception, were "darkies." Fees may not be expected, but they are certainly not declined. It fell to my lot to keep the accounts. I found no difficulty in dealing with the calculations of American money; their currency is a decimal system, with the dollar as the standard; the dollar is worth 4s. or 4s. 2d. in our money, and roughly the  $\frac{1}{2}$ -dollar represents our florin, and the  $\frac{1}{4}$ -dollar "25 cents"—our shilling. The 20-dollar piece in gold is a very handsome coin, about the size of an old George III. penny; this gold currency is not in very general use, the bulk of accounts being dealt with in paper currency. The notes are known as "green-backs," or disparagingly are spoken of as "shin-plasters!" The notes are for 50, 20, 10, 5, and smaller figures of dollars. In settling with cab-drivers they will often produce a handful of dirty-looking notes for 1 and 2 dollars each.

We found both the telegraph and telephone in very general use, the former being almost the exclusive medium for communicating with our railway friends, the distances being too great to allow of very rapid correspondence by mail service, however well organised; the charges in the Eastern States are very moderate, but beyond Chicago the tariff rose considerably. An arrangement, however, is in force by which half-rates only are charged for messages sent after 6 p.m. The telephone was in constant employ in the cities; no hotel or public office was without one, and, as an illustration of its extensive use, I may adduce the fact that from our hotel at Boston not only could we speak to any office in Boston, but the system was so complete that we were able also to speak to any of the offices in Lowell, a town twenty-six miles distant. The telegraph organisation by which banks and public offices can instantly apprise the police at their central or district offices of robbery, forgery, or other necessity for prompt action, was spoken of as highly effective. The



English people are very far behind the States and the Canadian towns in many of these respects.

With regard to the newspapers of America, and particularly the newspaper reporters, I cannot say that any favourable impression was made. Their articles generally struck one as being in bad form; they dwell much more on the mode of delivery than on the drift of the speeches; and our own party by no means escaped the offensive but feeble personalities by which they fill their columns. We found, on our return to New York, that one of the daily papers circulating in that city had day by day been giving some absurdly grotesque accounts of our doings by an assumed correspondent, who was represented as accompanying the party, but who evidently had never been absent from Broadway. The newspaper reporters at Cleveland thought it worth while to state that I objected to be called "Neeley," for, owing to some unaccountable reason, the Americans did not pronounce my name correctly. From the day of arrival in New York I found myself called "Neeley," and had hard work to get my patronymic recognised in its proper pronunciation. The President (Garfield) asked me "how I spelt my name?" and I observe that Dr. Russell, in his work "Hesperothen," containing a very full account of our journey, has failed to give it accurately.

I cannot speak in too high terms of the bearing and intelligence of the gentlemen, whether directors or officers, representing the American lines of railway with whom we came in daily communication; there was none of the swagger and boastfulness we are accustomed to associate in our idea of the American, nor among the officers of the Army did we see any of the self-laudation and conceit said to be one of their characteristics. With Mr. Russell in their company (he was always called "Bull's-run Russell" in the newspapers) perhaps they thought it inadvisable to recount too many triumphs. At Chicago we certainly met with many of the thorough Yankee type, and some of the Chicago men on board the "Germanic" were equally marked in their manners.

Our visit was of course a short and flying one, but so far as it afforded opportunities for observation, I think I convey the general impression left on the minds of the whole of our party, in saying that we were much struck with the solidity and magnitude of the business, and of the business capabilities of the United States. Every port we visited, every station we inspected, every town we saw, every State we traversed, added its evidence in this direction. Everything seemed prosperous and successful. Fluctuations may from time to time occur; "corners" and "rings" may occasionally interfere with the legitimate development

of business, but there is in the States a firm understratum of sound commercial enterprise capable of almost unlimited expansion, directed by men of the keenest intelligence, men endowed with great originality and activity of mind, and carrying on their work with such energy and vigour as to make the task a difficult one for the rivals of America to hold their own in the race of competition.

Speaking individually, I must say I returned from America entertaining a high respect for the country, far beyond that I had felt at the outset, but having seen nothing to cause me in any degree to regret that I "remained an Englishman."



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## APPENDIX.

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### NOTES RELATIVE TO AMERICAN AND CANADIAN RAILWAYS.

Our first experience of American Railways was on the elevated Railway of New York. This line, in many respects, differs from any other on the American continent; it is constructed on a track (gauge 4 feet  $8\frac{1}{2}$  inches), formed through some of the principal streets, about on a level with the windows of the first floor; some portions of the railway are formed on pillars (single ones) placed on the pathway, the up line above the footpath on one side, and the down line on the other, thus the trains run over the heads of the foot passengers. Other portions are constructed over the centre of the streets on double rows of pillars, and run over the heads of the teams using the streets, and over the busy lines of tramways which serve the public of New York. The line takes some sharp curves at the corner of streets where it pursues a course at right angles to its previous route; the speed is considerably moderated at such points.

The trains consist of four or five long vehicles, called "Cars," with entrances at each end of each vehicle, these entrances forming an end platform to each car by which passengers at the stations pass to and from the station platform, which on these elevated lines are high platforms level with the carriage floor. The seats of the vehicles are ranged in the same way as in a London 'bus, a broad passage existing down the middle. Each car accommodates about fifty people. There is a conductor to each two vehicles, whose duty it is to announce to the passengers the name of each station as the train approaches it, and to open and close the small iron gates leading from the end platforms of the car to the station platform. The signal to start is given by the head conductor, who rides in the middle of the train, pulling the cord that runs throughout the train, to intimate to the driver that all is right.

The fares on the line are uniform by all trains for any distance in the city—by the early morning trains 5 cents, during the day 10 cents. The tickets are issued at a small office to passengers as they enter the station, they are clipped by an examiner, and the passengers are requested to put them at once into a box which stands conveniently for the purpose on the platform, close to the entrance.

The trains are very frequent, the stations very close, but except at the junctions there are no signals whatever; the rules require the drivers to maintain a constant look-out, and keep out of each others way.

The Eames Vacuum Break in the driver's hands, acting throughout the train, is the great defence against accident.

There are 3,500 trains run daily on the four lines which compose the undertaking, carrying about 240,000 passengers per diem, the average mileage made by each train and engine being 102 miles. There were in the first instance two or three separate Companies which organised these elevated railways, but they have been absorbed or worked by one system called the "Manhattan" Railway, it being found advantageous, I was told, "to operate them as a unit" rather than as distinct undertakings.

The entire interior fittings of the cars are of wood, no canvas or cloth being used; the floor has upon it, in lieu of a carpet, a cover of light shafts of wood placed near together, so as to allow an intervening space, an arrangement very necessary in view of the spitting habits of the American passengers.

On the other American lines the form of passenger carriages is uniform, about 60 feet long, with end platforms for exit and entrance, and a central passage or aisle, with seats capable of accommodating two passengers side by side, the vehicle thus carrying about 48 passengers; the backs of the seats are reversible, so that the passengers can at their pleasure sit facing their neighbours, or can turn their backs upon them; the space allowed to each passenger is very limited, and the accommodation for luggage or small packages extremely poor. Each car is, however, provided with a water closet, urinal, and lavatory. Iced water is also furnished for the passengers; a heating apparatus is in use in the winter, and compressed gas or kerosene is adopted for lighting.

Each carriage has a communication cord passing through it, by which the driver's whistle can be sounded, and in addition each car has a cord for the break, which is applied instantaneously by pulling the cord. In the great majority of cases the Westinghouse Automatic Break is the one in use.

The cars are without exception constructed with bogie trucks, generally eight-wheeled vehicles, *i.e.*, a couple of four-wheel bogies. Some few of the private cars have twelve wheels, *i.e.*, a couple of six-wheel bogies, many of the Pullman are so fitted, but the majority have four-wheeled bogie trucks. The coupling adopted for these cars is automatic, and one or two patent couplings came under our observation. The "Miller" coupling is the one most in use, but the Pennsylvania Railway adopt the "Janney" coupling; both consist of a clutch, which, when struck by the opposite coupling, turns partially round and firmly grips it. To ensure a thorough coupling the blow struck has to be somewhat smart, and the connection was not always made at the first attempt.

We travelled throughout the States and Canada in a special train of three cars, one a private saloon, one Pullman's sleeping and dining car, and the third a car for baggage and servants. A passage existed throughout the train so that we could readily move from one vehicle to another, and the commodious open platform at the ends of the cars afforded an excellent position for inspection while travelling. We frequently made from 50 to 60 miles per hour, but at these speeds the running was never so easy and smooth as that of our own best trains on our own firm roads. At from 30 to 40 miles per hour the running was steady, and meals could be taken in comfort while so travelling on good lines, but on some of the railways towards the west the usual "trimming up" of the line after the winter had not taken place, and others had suffered from floods, so that these roads were extremely bad, yet the bogie trucks managed to keep on these uneven and shaky tracks which would certainly have thrown our rigid engines off the metals.

The action of the break in our train was quick and smooth. It was tried experimentally by pulling the cord in our carriage while running, and acted promptly and powerfully, bringing the train to a stand although the driver had his steam fully on.

The passenger engines are all constructed with bogie trucks and "cow-catchers," and they all have the means of applying and releasing the break throughout the train. A heavy bell is hung on the engine, and this is tolled by the fireman as he approaches any level crossing, or nears any busy spot, or shunts backwards and forwards in any station. The clangour of these bells, when two or three engines are moving about in the stations, is most discordant and confusing.

The appointed time-table called the "Schedule," pronounced

"Skeddle," is that which regulates the running of the trains on the American lines, and in accordance with it the trains travel, and on single lines (the extent of which is very great) meet each other at certain fixed places on the journey. If there is any departure from the timetable owing to the trains running out of course, they are controlled by telegraph messages from sectional head-quarters by a "train despatcher," who is appointed to this special duty. On some of the single lines regulations exist by which, in case of unpunctuality, certain trains have priority over others, and if after the lapse of *five* minutes (which is allowed for variation of watches) an expected train in one direction has not arrived, the driver of the other is justified in going forward, expecting in accordance with the printed order that such other train must have been detained from some cause, and that the driver of it, well knowing that he could not keep his appointment, had not started from the previous station. If, however, the train has started and has failed on the journey, it is the duty of the driver to send a flagman forward to stop the other train, and on this system very large portions of the single lines of railway in America are worked.

When special trains are run they are spoken of as "wild" trains, and are generally arranged to run as "second portions" of the trains already shown in the time-table, the engine of the first portion carrying a distinctive flag as an indication to any train appointed to meet them on the road that a second portion of the train is following, and that the latter must be crossed at the same place as the first portion, unless a contrary order is given by the train despatcher.

On some of the lines a block system is being introduced, "absolute" for passenger trains, "permissive" for goods trains; but even on a line thus worked the special train by which we travelled, when in transit over the single line, was met on a long loop by one of the New York and Chicago expresses, there being no signalman at either end of the loop line upon which the trains crossed. Such a method of working block and conducting trains over single lines was somewhat disquieting to any one acquainted with the chances of misunderstanding in dealing with traffic.

Automatic electric signals were in operation on portions of the Boston and Albany line, and on some few other lines, the signals being put on by the action of the train passing along the rails, and taken off again by the passage of the train at indicated spaces of half-a-mile or a mile. I also observed near Cincinnati, and at one or two other points, an electric arrangement, whereby, so long as an engine or portion of a train remained upon a single line, a danger signal was exhibited against

any train approaching in an opposite direction. The same arrangement was in operation at the entrance to some of the tunnels, a danger signal being exhibited until the whole train has run clear of the tunnel. Indications are also given in some cases to level crossings of the approach of trains by the same system. So far as electric signals are concerned, this was the only appliance that came under my notice which appeared to be of any special value.

With regard to signals generally there is a great diversity in shape, height, and mode of exhibition. On the Pennsylvania Railway the signals are exhibited from an elevated oblong frame worked by hand pulleys from the block signal towers. On the Grand Trunk of Canada the only signals are distant signals, one at each end of the station. The only approach to a home signal to be found at their stations consisted of a small square board suspended from the telegraph office. If the approaching train has to be stopped out of course, the board is turned to show towards the driver, otherwise the board stands on edge, and is not therefore sighted by the driver.

On other lines no distant signal existed, the only indication to the driver being a pendent target at the telegraph office, in the centre of the station. If the line is clear for the train this target has to be turned off, and *held off* by the telegraph operator until the train has passed, as the normal state of the disc is against the driver.

A simple flag stuck in a hole in the platform suffices on some lines as a signal to stop an approaching train; station signals, both home and distant, being entirely unknown on such lines.

The only class of signal in general use is one attached to the points, of sidings connected with the main line: if the main line is "right," each of these, at night, shows a green light to an approaching train, but when the points are open for the siding a red light is shown; during the day time, if the points are open for the siding, a red disc or red cross is shown to the driver; if all is right for the main line these signals are on edge and not visible. Safety points for loops and sidings are scarcely known.

Along the line there are occasionally found posts marked W or R; W signifying "sound the whistle," and R "ring the bell." These may be assumed to take the place of distant signals, but they give no indication to the driver whether the line is clear or otherwise. Large notice boards are adopted on some lines, stating, "one mile to such a station," "half-a-mile to such a crossing." At night the huge lamp

which the engines carry in front casts a light on these notice boards, and enables the driver to ascertain his whereabouts.

The junctions of railway lines, which we in England consider most important for protection by signals, are, in America, less guarded by signals even than the stations.

There are scores of junctions with no men in charge, no signals at them, and no indication to the drivers that such junctions are at hand. In the Boston district they are called "know nothing" junctions, and the expression is by no means an unsuitable one. It is the duty of the driver as he approaches these junctions to come to a stand, and when he sees that the way is clear he crosses the junction and proceeds upon his journey. The law requires that trains should come to a stand in this way, and the stoppages on the journey, where many junctions exist are in consequence very frequent.

Not only are junctions dealt with in this unsatisfactory way, but there is no prohibition in the States to one railway crossing another on the level. These crossings are in consequence very frequent, and, although no notice-board is required in connection with the junctions, yet the State Legislature of several of the States requires that there shall be a notification half-a-mile away before reaching these railway level crossings, that a railway crossing will be met with within half-a-mile.

Whilst the engine-drivers have to look out for each other at the junctions and railway level crossings in the way I have described, the foot passengers and drivers of road vehicles have to look out for themselves at the level road crossings. With few exceptions no gates exist, in the majority of cases a notice is exhibited: "Railway crossing, look out for the locomotive" or "Look out for the cars;" and it becomes the duty of foot passengers to look out accordingly.

Cattle are of course liable to stray on the line at these level crossings, but to prevent this, barriers are placed on each side of the crossing, and a *deep trench* is made in the four-foot and six-foot spaces, as well as for a short distance beyond, which forms the protection to prevent cattle straying down the line. This arrangement, or one equivalent to it, is in operation universally in the States, and is spoken of as the "cattle guard."

So far as fences are concerned, in many cases no trouble whatever is taken with respect to them. In some of the States it is the duty of the adjoining proprietors to fence against the railway, and they avoid all expense in connection with them by letting them go into decay. The primitive settler's form of fence—a zigzag erection of rails without any



posts—is the general form ; but on lines recently opened, for which the State has laid the obligation of fencing on the railway company, a barbed wire-fence is adopted, which is alike effective against man and beast.

Not only in the small villages do the lines of railway pass through the main streets unfenced, but even in such cities as Richmond and Washington the trains start out along the main thoroughfares, having horse and foot traffic on each side without the least protection. In the town of Buffalo several streets are thus crossed on the level, and the trains pass along the market-square. Lines of tramway cross the lines of railway, and road vehicles and foot passengers appear to possess an equal right with the locomotives, the only warning given of the approach of trains being the monotonous ringing of the bell on the engine by the fireman.

The City authorities of Chicago and some of the large cities require a limitation in speed for trains while running within the city limits. In Boston the roadways have large suspended boards extending across them, lowered and elevated to clear and to block the crossing.

In the town of Newark, near Philadelphia, the roadway is closed whilst the train is passing by a couple of barriers worked on a pivot by a man in charge of the crossing. These barriers are lowered to stop access to the line when a train is approaching, and when the line is clear are raised to a perpendicular position, leaving the roadway free. In the adjacent town of Elizabeth the authorities objected even to this security being given, and preferred to maintain uninterrupted freedom of passage across the roadway, falling back on the arrangement of a notice-board : “ Look out for the locomotive.”

At first sight these things were somewhat startling to our English sentiments, but as day after day passed in railway travelling, we came to consider them as ordinary circumstances. The newspaper paragraphs that came under notice, recording questions affecting railways, showed that there is some considerable trouble ahead for railway companies in the State Legislatures in this respect, and any accidents that occur are taken advantage of to bring under review the responsibility of the lines for improving the appliances for safety.

The rejoinder I invariably met with when calling attention to the frequent want of protective arrangements in America was that the driver had the train thoroughly in hand, and could avail himself of the whole break power of the vehicles at a moment's notice.

The scale of Fares in operation is regulated on recently opened lines by the State Legislature, but under the old concessions no limit has been placed upon the charge that may be adopted.

The General Railway Law of New York State provides that, "The compensation for the transportation of any passenger and his ordinary baggage is not to exceed three cents per mile."

New Jersey State authorises  $3\frac{1}{2}$  cents ;

Pennsylvania State authorises 3 cents for through passengers, and  $3\frac{1}{2}$  cents for what are called "Way" (local) passengers. A minimum rate of 10 cents is allowed to be charged in New York and New Jersey States, and in computing the fares fractions of a mile may be charged as a full mile.

In quoting fares, 5, 10, 15, or 20 cents are adopted as fractional parts, no division of less than 5 cents being made in such quotations.

On the Chicago Minneapolis and St. Paul Line a reduction is made to clergymen, ministers, and commercial travellers, cards of identification being issued to them at the commencement of the year, authorising station-masters to issue tickets to them at half-rates.

Contract tickets are very generally issued to commercial travellers, a ticket book, price 15 dollars, covering 1,000 miles. Any passenger can obtain a contract ticket book covering 1,000 miles for 80 dollars.

On the Erie Line, 500-mile and 1,000-mile tickets are issued at the rate of about 2 cents per mile, available over a limited section, and good for one year. For the convenience of commercial travellers, Excess Luggage Ticket books, consisting of several pages of small square coupons (attached like sheets of postage stamps), each coupon being good for 100 miles, are very generally issued in the States ; they are paid for in one sum, and are torn off day by day as required, on completion of the mileage distance.

In all the large towns in America notices are exhibited at numerous offices and shops announcing that "cut railway tickets" at reduced fares are obtainable between stated places. These tickets are the coupon portions of long journey tickets, such as those between New York and St. Louis, New York and Chicago, &c., the through ticket being issued considerably below the sum of the local fares. An extensive trade is evidently carried on in the sale of these sectional portions of railway tickets ; the men who keep these offices are termed "scalpers."

The railway companies are endeavouring to protect themselves from this fraud by issuing tickets limited to a certain number of days, and in such a shape that coupons will not be obtainable for separate sale.

By an arrangement between the large companies the sale of tickets for the chief trunk lines at the hotels has been abandoned, and an agreement has been come to limiting the number of authorised railway town offices to three for each company, in such places as New York, Chicago, Washington, Philadelphia, &c.

The tickets of the Great Western of Canada, and of the Grand Trunk were obtainable at the hotels at Montreal, Toronto, Niagara, &c., for through foreign bookings, but not for local bookings.

The interior of the Station Booking Offices are very similar to those in England: Railway tickets for short journeys are on card of the same description as our own; those for long journeys are long narrow tickets in coupon shape, and the tubes for their reception are made deep enough to accommodate them, the ticket case being therefore much larger than our own.

A convenient arrangement is in operation at several of the large stations by which an Indicator points to the time at which the next train starts, the *whole* of the stations at which such train calls being enumerated below the Indicator; the names of the stations are painted on slides in a suitable frame, the slides being varied train by train to afford the correct information.

The General Waiting Rooms at the stations are large, with good arrangements for warming in winter, and iced water is supplied in the summer. A separate room is provided for ladies, and in many cases the booking office is so arranged that one of the openings through which tickets are issued faces towards the Ladies' room. Passengers are kept back until the trains are ready to start, much in the same way as is done on the French lines.

There are no porters to give any information to passengers or to carry their luggage. The passengers attend to themselves, their baggage having been surrendered to the baggage office at the time of booking.

In the majority of cases the platforms are level with the rails; but at country stations in some of the Western States, where goods are removed from the waggons at the same places that passengers are dealt with, the platforms are high, with the object of giving the double accommodation.

Trains are for the most part run on the opposite set of rails to that used in England, the up trains being run on the left-hand road and the down trains on the right. This is not, however, the invariable rule, as at Buffalo the Eastern Lines come in on one system, whilst the Michigan and Lake Shore Lines adopt the other arrangement.

The usual gauge for the lines is the English normal standard of 4 ft. 8½ in., but there are other gauges in force—the Erie Line is both 6 ft. and 4 ft. 8½ in. They are engaged at the present time in bringing all down to the latter standard. They have been running freight trains with vehicles “mixed,” some of one gauge, some of the other, coupled together in their trains.

The following are the arrangements for the Baggage-check system:—

The passenger on arriving at the station has first to purchase his ticket, this being evidence that he is entitled to check his baggage. He then proceeds to the baggage-room, a building hung around with innumerable leathern straps, having two small brass checks (twins) attached to each strap—the two checks having the same number stamped thereon—one will be handed to the passenger, the other will be attached by the leathern strap to the luggage, and this luggage will only be surrendered on production of the twin check: the “route” by which the baggage is to be checked is determined by the ticket which the passenger holds. If travelling from one large town to another there are complete engraved sets of checks, each route having a separate set; these are so worded as to be reversible, and can thus be used in the opposite direction: if travelling to a station where baggage is but seldom sent, a perforated card with the name or number of the destination station is attached in addition to the brass check.

A passenger booking for a long distance journey, and wishing to break his journey, must have his luggage checked only to the point of break.

There is a baggage-master at all the principal stations as well as a baggage-master with each train; the latter takes an account of the baggage received, sorts it in his car, gets it ready at each station, and gives out with the baggage a list of the checks handed out with it: a return of the whole of the checks dealt with is sent to head-quarters for each train, and the baggage is said hardly ever to go astray. Each station has to hand to the train baggage-master a list of the baggage checks from that place.

On arrival at destination luggage is carted to hotels or to private houses by the representatives of the “Express” Companies, to whom the passengers surrender their checks for the purpose.

The parcels traffic, large and small, is in the hands of these Express Companies, for whom three, four, and five large cars are run by the through trains, each accompanied by one or two men on the journey, and met at stations by men belonging to the Express Companies.

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These Companies have ramifications all over the States, various rival routes support and are adopted by the three or four Express Companies, and though in a few cases some of the railway companies are trying to free themselves from this position, yet they have to work the parcels traffic as a separate organisation, and advertise it as an Express Company, for by this means only can they book their traffic beyond their own limits.

On enquiry from Mr. Abbott, the representative of the Erie Company, why they allowed a remunerative parcels traffic to pass from them, he stated that the Express Companies paid their Company 60 per cent. of the gross receipts, and according to the best calculations the railway company could not work the terminal and transit operations at a less proportion than 40 per cent.

In addition to the baggage cars and the cars of the Express Companies on the principal trains there is a Post Office car. The arrangement for the conveyance of letters is very similar to that in operation in England, and has no doubt been adopted from it. The Post Office makes a contract with the railway companies for running certain vehicles, which, though marked as carrying the United States mails, are the property of the railway companies. The remuneration is varied from time to time, according to the record taken of the weight of letter bags conveyed.

On the main trunk lines dining room cars are also run, in some cases belonging to the railway company, in others to either Pullman or Wagner. These dining room cars can at night be converted into sleeping cars. On the Pennsylvania Railroad no less than 125 Pullman vehicles are daily in work.

Between Boston and New York the sleeping cars are beautifully furnished and very commodious. They are highly ornamented with inlaid cabinet work; the interior fittings and arrangements are very complete and compact. The Boston and Albany Company have very kindly given me drawings of the details of these vehicles.

The average loading of the through express passenger trains in America is from twelve to fifteen cars; the speed on the best lines fully forty miles per hour.

There is an arrangement in force in connection with the payment of excess fares, which touches on the difficulty we experience in England in compelling the prepayment of fares, or rather of making an extra charge, as a penalty, for travelling without previously booking.

On the Baltimore and Ohio Line an additional charge of 10 per cent. is made in cases where passengers are found travelling without

having previously taken a ticket, and the voucher given to the passenger in exchange for the fare he pays, states that "this excess beyond the ordinary fare will be refunded at any of the stations of the Company on the production of the voucher." This is, of course, the check on the conductor of the train who collects these fares, and upon whom other than by detectives there is no check.

On some other lines 10 cents extra are charged to passengers omitting to take tickets before starting, and this extra charge is retained by the Company.

Its legality has been objected to, but provided the whole sum paid comes within the maximum authorised by the Company's charter it can be maintained.

The goods traffic, or as it is called the "freight department," is worked in a peculiar groove, in consequence of an original want of union or system or organisation between the companies, and, as a consequence, the persons interested in the transmission of freight from the interior have had to undertake the task of consulting with the various companies, guaranteeing a certain amount of traffic, and then announcing themselves to the public as a "freight line."

The largest of these originally, if not still, independent of the railway companies is the "Merchants' Despatch Line" owning their own trucks called "freight cars," and running them over the various lines with a claim for mileage (three-tenths of a cent per mile), having their own general manager with agents all over the States.

This system has led to the development of very numerous "freight lines," which the railway companies either now absorb or originate to suit the special flow of traffic; their names are displayed on the freight cars belonging to each, such as "The Empire Line," "The Union Line," "The Blue Line," "The White Line," "Hoosac Tunnel Line," "National Despatch Line," "Continental Line," "Erie and Pacific Despatch," and many others; the cars, many thousands in number, being owned and contributed in proportion to mileage by the railway companies constituting the route along which the "Line" is organised. Each line has its own general manager, head-quarters, and agents.

These organisations are an American development of the early railway carrying arrangements of Pickford's or Crowley's, but in their rolling stock ownership they more nearly approach the West Coast and East Coast Joint Stock, and they are regulated in their charges by conferences similar to our English and Scotch Meeting.

Between competing places the traffic is "pooled" (thrown into

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division), and although there are continual disputes between the companies, and constant complaints of some one or other allowing drawbacks and rebates, the "pool" has continued in operation for many years. The companies west of Buffalo, consisting of the New York Central, Erie, Pennsylvania, Baltimore and Ohio, and Grand Trunk Companies constitute one pool; and those west of Chicago constitute another. These latter claim by combination, and hold a mileage proportion of the receipts of traffic to the ports better than that obtainable by the companies east of Chicago.

The combination between companies to establish these "lines" of traffic is not confined to the through traffic from the interior to the sea-board. There are "lumber lines" for some sections of inland traffic. There is a "Union Tank Line"—large iron cylindrical-shaped tanks for the conveyance of petroleum crude oil. One oil-works at Cleveland owned no less than 6,000 of such waggons. There are also numerous patents for refrigerating cars, used for the conveyance of butter, fresh meat, and market produce, all appointed to run in certain circuits, and owned in proportion to mileage among the railway companies interested.

There is no demurrage charged on these trucks either for wrong-sending or for delay. Mileage accounts are kept by a separate office at the head quarters of the various companies.

The whole railway system of the States seems in hot competition at all points, and the plan of "pooling" the receipts is the accepted panacea for stopping foolish reductions of rates.

Each set of "pools" has a commissioner appointed, to whom returns are made, and who sees to the due distribution of the receipts, and who, in case of dispute between the railway managers constituting the "pool," is authorised to quote officially any reduced rates for adoption by the conference, and, according to recent agreement (11th March, 1881), he is, in case the reduction is one forced by the under-quoting or irregular action on the part of any of the constituent members, to name the company to blame, and state the circumstances under which he feels bound to adopt the reduced quotation, and the rate will then be quoted by the railway representatives to the managers of the various "freight lines" interested.

There is no carting or terminal delivery done by the railway companies. Consignees are advised of the arrival of goods, and make their own arrangements for delivery.

Some exceptional cases arise where railway companies have water competition, or where rival lines are more favourably situated in respect

to access to works, &c. In these instances the companies have to make arrangements to place themselves on an equal footing.

The goods trains, or as they are called in the States "freight trains," are much longer than we are accustomed to run in England, but the speed seldom exceeds 18 to 20 miles per hour. Almost the whole stock of freight cars are covered trucks, the average length being 30 feet; but the cars for the "lumber" trade (timber) are specially made 33 feet long, so as to enable two lengths of sawn timber of 16 feet (the standard size) to be loaded in them.

On the Pennsylvania Railway we saw several goods trains of 60, 70, and even 80 waggons in one train, thus extending nearly half-a-mile. The engines drawing these trains have ten wheels, the leading pair of wheels being what are called "pony" wheels, the other eight wheels being coupled. Cylinders  $20 \times 24$ , with 4 feet driving-wheels.

The couplings of the freight cars are close, and are made by a central pin dropped down into a looped-shaped link which projects stiffly from the one waggon, and fits loosely into a slot on the opposite one. The play between the trucks is from five to ten inches. Each truck has a break upon it applied from the roof, and has steps at the side so as to enable the breaksman to ascend. These men pass easily from roof to roof whilst the train is running, though in winter their occupation is extremely perilous. Three or four breaksmen are often seen standing up on the roofs as the trains travel. Owing to the ease with which level crossings are permitted, there are not many overbridges in the States, but wherever any obstruction exists less than 18 ft. clear above the rail, it is protected by a "bridge guard" or high gallows placed about 100 yards in advance, with a pendent set of whip thongs, or a light elastic rod, calculated to give a sharp warning to any of the breaksmen on the roof, of danger close at hand.

The goods trucks weigh from 9 to 10 tons each, and are capable of conveying an average load of 13 tons. When conveying grain 10-ton waggons are used, the average load being 15 tons, and for coal the 10-ton trucks are expected to carry as much as 18 tons.

The charge for the conveyance of grain from Chicago to New York, at the time of our visit, was three dollars per ton. Distance 960 miles, thus giving about one-third of a cent per ton per mile.

The bulk of the traffic running to the sea-board consists of grain, and the appliances by means of elevators for loading and discharging these truck loads of grain are very complete at all places where the trans-

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shipment takes place, either from waggons into the elevators, thence to be discharged into ships, or from the ships into elevators, thence to be discharged into waggons.

A train of eleven trucks of grain (15 tons each) was discharged in our presence at Toledo; the trucks were clear and the corn into the elevator in the course of six minutes.

The railway companies pride themselves on the size of these large elevators, and at places where we stopped the first object desired to be shown to us was the corn elevator.

The freight trains in addition to the breaksman, whose place is on the roof of the trucks as already described, have a conductor, who rides in charge of the invoices in the rear van, which is called the "Caboose."

It is his duty to see that the whole of the cars in his charge are safely "sealed" and handed over in that condition at the terminal point, or transferred to the onward company. In the case of through invoices they are handed over at the junction to the freight department, and are there checked and a calculation placed on each showing the amount due to the company in respect of such invoice. In the absence of a Clearing House particulars of these invoices are sent to the head-quarters of each company, and the accounts are adjusted week by week between the "lines" and the railway companies interested.

On some of the railways in recently opened up districts an arrangement exists by which the station is used as a shop or store, the building itself being constructed by parties willing to open the store, the shop-keeper acting as agent for the railway company, but not being their direct servant. The only staff found by the railway company at such places is the telegraph clerk, or, as he is called, the "operator."

At all places at which telegraph "operators" are employed the whole of the wires are led into a frame in the office, so that in case of any contact or failure on the part of one wire, any of the others could be made available by the insertion of a connecting switch peg.

The telegraph is very largely used in connection with railway business, the distances being so long that ordinary letter communication is not readily available to and from head-quarters as in this country. The railway companies have adopted for telegraph purposes an extensive series of codes or authorised abbreviations, an arrangement which, in view of the difficulty we have in avoiding the overcrowding of our wires, might advantageously be schemed by our telegraph department.

Great attention is paid in America to the appliances for extinguishing fires. At all the principal passenger stations and large goods sheds there

are electric communicators to announce the first outbreak of fire, and to indicate its locality. The goods porters are well trained to act on the first alarm, and in one experiment made in our presence the whole appliances were brought to bear and the water was playing in three minutes from the time of the signal being given in the shed.

The telephone is being brought into very general use at the railway stations. In all the large towns the hotels are in communication with the stations, and from any of the offices or stations in cities where the head-quarters of the company are situated all the chief officers can at once be reached by the same means.

The question of standard for local "time" in such a wide country as America presents a difficulty in the railway time-tables. In England Greenwich time differs so slightly from local time that uniformity is easily arranged; in Ireland the adoption of Dublin time only affects accuracy as far as Galway by a very few minutes; but in the States there is a difference of no less than four hours between 12 o'clock at Portland in Maine and 12 o'clock at San Francisco, and the railway companies have to adopt certain centres for their various standards. The Grand Trunk observes Portland time on one portion of its line, and Montreal time on the other; at Niagara, Canadian station, Toronto time is in force; at the American Depôt, New York time is observed, a difference of upwards of twenty minutes. This became very confusing in cases such as St. Paul station, where the trains to the West start in accordance with St. Paul local time, and those to the East run in conformity with Chicago time, a difference of twenty minutes in the same station.

I was requested to obtain, while in the States, some particulars as to the organisation of the officers and holders of position on the American lines. There is considerable diversity of system, but the leading spirit on the lines appears to be the president—sometimes a financier, sometimes a practical railway man who has risen up through the higher gradations. He has under him two or three vice-presidents, men responsible for various departments—taking, one the general working of the traffic, with its agreements; the other, capital, finance, shares, and dividends.

On some lines the general manager is also vice-president; on others the vice-president holds the superior position; and whilst the general manager is the head, regulating all outlay, alike of train working, locomotive, stock and staff, as well as permanent way and works, he does not control the "general passenger agent" nor the "general freight agent," who are responsible to the first vice-president direct; the fares and rates

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and the arrangements for attracting traffic being in the hands of these two agents.

The general manager has usually three chief officers under him:—

I. Chief of motive power (locomotives and vehicles).

II. Superintendent of transportation (train working).

III. Engineer (roads and bridges).

He is also the head of the general superintendents of the line (whose number varies with the extent of the mileage of the line), and they in their turn have three assistants under them for their own sections:—

I. For motive power.

II. Superintendent of transportation.

III. Engineer—roads and bridges.

These superintendents appear to take no cognizance of receipts or station accounts, or of the public applications for rates, &c., these being dealt with through the general passenger agent and general freight agent, as stated above.

With respect to new lines, the authority for their construction is given by the Legislature of each separate State. Any syndicate or association of subscribers can obtain the grant of a new line on submitting the articles of association to the Secretary of the local State, and depositing five per cent. of the estimated outlay. Competing lines can only object if their land is touched, and their claim can then be disposed of in the same way as other proprietors, by the valuation of three independent persons.

Crossings by one line of another on the level are permitted without any difficulty, and do not form ground for compensation.

There is in each State a railway commissioner, to whom appeals can be made by the public as to rates, fares, train connections, &c. Some States have one individual filling this position; others have a court of three men, but they are not men of railway-experience—a newspaper proprietor, a retired general, a farmer, or occasionally a civil engineer.

The State of Massachusetts has a regular Railway Bureau as part of its State organisation, and it is spoken of as being far ahead of the other States in its action on behalf of the public in connection with the railway interests.

With regard to the wages paid to railway employés in the States, the following were quoted as average payments per month:—Roadside Station Masters, \$30 to \$35; Goods Conductors, \$90; Passenger Conductors, \$100 to \$120; Train Buggage Masters, \$60; Switchmen, \$35 to \$40. Locomotive Drivers and Firemen are paid a mileage scale;

for Passenger trains, Drivers  $2\frac{1}{2}$  cents per mile; Firemen,  $1\frac{1}{2}$  cents per mile; for Freight trains, Drivers 4 cents and Firemen  $2\frac{1}{2}$  cents per mile; Breaksmen, \$1.50 cents per day.

We had, unfortunately, no engineer in our party to make correct notes of any points of interest that came under observation affecting the engines and rolling stock, the permanent way and works; photographic drawings of the details of construction were, however, given with the utmost readiness, and I found that on the most highly maintained lines the companies have adopted regular standards for the mode of constructing their roads (single and double); the crossings of highways; the laying-in of cross-over roads; the arrangements of switches and signals; the construction of water-tanks (said to be frost-proof); the tool houses, and various other constructions along the line, so as to ensure uniformity throughout their system. I have obtained photographic drawings of several of these details.

On the leading lines modern "switches" are to be found, but for the most part the switch in use is the old-fashioned contractor's switch, one which the Americans call the "stub" switch, the "butt-end" or "square-toed" switch. The expression "points" is apparently a new one and hardly ever used in America.

The Wharton switch is largely in use in the States, and though our own facing-point lock and accompanying signals give us security where we have such connections on single lines, yet in America this peculiar switch presents the advantage of leaving an unbroken main line while the switch is not in use, requiring no signals for its protection. When brought into use the tongue of the inside switch rail acts on the wheels of any vehicle taking the siding, and the outside switch rail is elevated so as to catch on the flange and take the vehicle across and over the main line rail.

Another arrangement in use is that called the "Lorenz" spring. A spiral spring works back the tongue to its proper position when points have been run through whilst shunting in a yard.

A movable spring called the "winged frog" or "spring rail" is also in operation, acting upon the diamond crossings when vehicles are being shunted across them. It is said to be effective, and to ensure a firm through road in place of the opening otherwise presented to the flange of the wheel when going through the crossing.

The lines of railway in America are not laid as in England with a length of rail terminating on the right and left exactly opposite to each other, but are laid so as to overlap, terminating half-way along the

length of the opposite rail, on the principle called in America "break joint." Sixteen sleepers are laid down for every thirty feet of rail.

The trains for supplying ballast to the line, or for constructing new lines, are cleared in an ingenious manner, by having on the waggon at the rear end of the train an implement similar to a snow plough, with a groove formed in the lower part of its beak. When the contents of the trucks have to be discharged this plough is drawn by a drum worked from the engine, along the whole of the trucks in the train, which have a guide in the middle fitting the groove in the plough. The ballast is very rapidly discharged by this means.

Many of the railway bridges in the States are famous for the engineering skill displayed in their construction. The new swing-bridge connecting the elevated railway of New York with the lines along the Hudson River was inspected by us, and its working explained.

On the older lines some very insecure structures in the shape of trestle bridges exist, and the trains have to pass over at a walking pace; the lines had been constructed on the American motto of obtaining the "mostest railroad for the leastest money!" At all these wooden bridges, and along all the wooden viaducts, a number of vats full of water were placed at intervals as a security against fire, and a man appointed to walk over the line after the passage of any train.

At viaducts and lofty bridges, and other places where any serious accident might arise should a train leave the rails, a double guard rail is introduced, one to each rail, each guard being placed about ten inches from the side of the rails in the four-foot space.

Refuge sidings where the lines are double are generally placed between the two lines, the main travelling lines being on the outside. The siding forms a long loop with facing-points to the one line, and trailing-points to the other at each end. These are sometimes one-half, three-fourths, or even a mile long, and they have a post marked "half-way" erected to indicate to drivers that they have reached the middle of the siding. A train having entered in one direction is at liberty to go up to that post, but not beyond. In all long sidings there are switches at this "half-way," so that shunted trains may get out again to the main line.

Trains shunt into these places in accordance with the time-table ("skeddle"), and move out again on to the main line when the appointed trains have passed; the men in charge of the trains work the points for this purpose, there being no fixed signalmen at such places.

We spent some hours in visiting the large works of the Pennsylvania

Railway at Altoona. It is a repetition of our Crewe and Wolverton united, the whole of the engines and carriages used on the Pennsylvania Railway being made there. The wheels are cast complete, no tyres being affixed; the plan of chilled tyres is adopted, and the same description of wheel serves both for passenger and freight cars. Four-wheel bogies are exclusively used, and the manager of the line explained in detail the whole of the safety appliances adopted in case of the bogie wheel or axle giving way.

The wheels for the locomotive bogies are 28 inches high, and those for the cars 33 inches.

The journals for the freight cars are  $3\frac{1}{2}$  by 7, and made of iron or steel, those for the passenger cars are  $3\frac{1}{4}$  by 7, and are all steel.

The Pennsylvania Company are using Ramsbottom's plan of troughs for supplying water to engines while running, they call them "track tanks," and, by adopting the plan of passing steam into the water, they experience no difficulty in winter through the frost.

They have a simple plan for coaling engines from the mines in the Alleghany mountains through which their line passes. The coal is loaded into small trucks containing two and a-half or three tons each, and these are tipped as required from an overhead gantry into a large hopper suspended from the gantry, centrally, between the up and down line. This hopper is so constructed that it will shoot the coals into the tender of any engine either on the up or on the down line requiring a supply of fuel.

The Pennsylvania Railway are now engaged in furnishing a continuous break for their freight cars, more simple than that on the passenger vehicles; the existing arrangements for applying the breaks in the freight trains being found objectionable.

The whole of the break blocks used by that Company are of cast iron; they have entirely abandoned wood blocks, and they are adopting a patent material called phosphor bronze (copper phosphorized) in lieu of brasses for the axles, a saving of \$50,000 per annum being effected by its use.

The lathe shop at Altoona is lighted by electric light, which burned very steadily. With 16 electric lights a saving in cost over gas of 38 per cent. was reported to be made, gas costing \$1.80 per 1,000 feet.

The electric light is now adopted at many large stations in the States. During our visit to Montreal the first attempt was made to use it both for external illumination and also for sub-distribution at the Montreal terminus. It seemed likely to be a success, for the lights in

the large shed were as easily lowered or increased as gas taps might have been.

At Philadelphia we observed an ingenious arrangement called the "Clamshell Pattern Dredge," for dealing with the mud which finds its way into the docks, an adaptation of the American "Navy," and consisting of a double scoop, working down on perpendicular guides; on reaching the bottom the two sides of the scoop close tightly up like a bivalve shell, and when raised the dredge brings up its full quantity of mud to be discharged into the trucks or flats ready to receive the contents.

Some of the expressions used in America in connection with railway appliances are peculiar:—

Where two lines of rails verge towards a single track, the two lines hugging each other without forming a junction (in the same way as exists through Dinmore Tunnel), the line is called a "gauntlet."

A railway station is called a depot, pronounced deep-o.

A bank engine is called a "helper," or "pusher."

Diamond crossings are called "frogs." Sleepers are called "ties."

The engine-driver is called the "engineer."

The marshalling of trains is spoken of as "switching." The tipping of waggons as "dumping."

A train off the line is spoken of as a "derailment."

A level crossing is called a "crossing at grade."

Fish plates are "splice bars," and notice boards are called "bulletin boards."

The ganger of platelayers is called the "track foreman." Fog signals are "torpedoes."

If rapid transmission is required for any package, instructions are given to "*rush this parcel.*"

The expressions "bogie" and "cow-catcher" are not American; the former is called the "truck," and the latter the "pilot."

A punctual train is said to be "on time."

The extent to which puffing announcements are made by the railways is remarkable. The American time-tables, in the shape called "folders,"

are to be met with at all hotels, containing exaggerated notifications of the advantages of each line, some calling attention to the excellence of their roads, some to the beauty of the scenery; one specially directs attention to the liberal supply at their dining car tables, announcing that the "squarest of square meals" can be obtained on the line; perhaps the most boastful is that of the Hannibal and St. Joseph Line, which advertises its route as the "Old Reliable! Always on Time!" An enviable position for any Railway Company to maintain!

GEORGE P. NEELE.





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