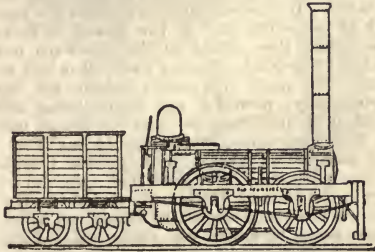


The maintenance of locomotive power is, besides, attended with the least possible inconvenience and delay. I could notice in course of progress many different kinds of engines. One especially I could not help noticing. It was a four-cylinder compound engine, outside cylinders, with both piston rods connected to the same crosshead, and the slide valves being round like a piston working in cylinders. Some engines of this class have been running for some time, and are said to give great satisfaction, both for strength and speed. The men are all on piecework, and work very hard. They work a ten-hours day, commencing at 7 a.m. and stopping at 6 p.m., with one hour for dinner. Their average pay amounts to—Machinists, boiler-makers, moulders, from 8s to 12s per day; labourers, from 5s to 6s. Boys over sixteen years of age start at 2s per day, and when two or three years in the

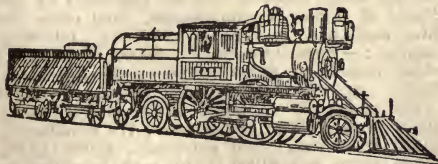


THE "OLD IRONSIDES," 1832.

employment they get a machine. That is how they work up. One very good thing I saw in connection with this work was an eating-house large enough to accommodate 170 men. I learned the man that looks after it gets it rent free, providing he supplies diets for the men at a price from 7<sup>d</sup> to 1s. About 1000 of the workmen in this work own their own homes.

### A Journey on the Locomotive.

I was invited by the Baldwin Company to have a trip on one of their compound express engines from Philadelphia to New York, which offer I accepted, and I started on Monday morning the 24th July, with the 7.30 a.m. express by the Reading road, which is a distance of 90 miles. We had six stops, and were slowed several times by signals. The time occupied was 1 hour, 55 minutes, with a train of six heavy load cars. The fastest mile run was done in 48 seconds, and for 12 miles on end we ran it in 10 minutes 35 seconds. The road was pretty level and in good order although a rather stiff head wind was blowing. This engine



was 6 feet 6 inches, four coupled compound with small wheel leading and trailing, large firebox, and engineer's cab on side of boiler. The fireman was alone with two firebox doors and a steam gauge to look after. All the rest of the handles were wrought by the engineman from his cab.

## PHILADELPHIA TO NEW YORK.

THE GREAT CITY DESCRIBED.

NEW YORK POLICE FORCE.

THE WORKING MAN'S SCHOOL.

BAKERS AND CIGAR-MAKERS.

THE ELEVATED RAILWAY.

(From the Dundee Weekly News of Jan. 20, 1894.)

### Philadelphia Factories.

Mr Mungo Smith writes:—I visited the Star Crescent Mill Company in Philadelphia on 21st July. They make all kinds of Turkish towels, tidies, cloakings, dusters, &c. I was very well received, and shown over the place. It will not compare with our own weaving sheds at home. The looms are too closely huddled together, not giving room to go about the work with ease. The girls are paid by the piece, and the yarn stands the loom very well, and doesn't seem to bother them very much. One girl or woman holds on two looms, with two towel widths in each loom. Loom bosses (tenters) have a busy time keeping the looms in order, as I saw they were very apt to go wrong. Every boss has forty looms to attend. There are two yarn beams in the loom at one time, and they are twisted on. The cloth is taken from the loom, a woman puts it up in two towel lengths, and it is taken to the packing house if it is green, and if white it is put through a process of bleaching in a tub, then run through the drying machine and done up in small parcels. One side of the towel has no woven selvage, and it is put through a hemming machine driven at very great speed—about 60 yards per minute. They also make up some of the goods on the premises. I saw them shaping and sewing Turkish clothing for gentlemen to wear. The employés work 60 hours weekly, commencing 6.45 to 12, and 12.20 to 6 for five days. The works shut on Saturday at 11.45. The hands are paid fortnightly, and the rates of wages are:—Loom bosses (per week), £3; loom bosses helpers, £2; weavers (per week), 36s; winders (per week), 28s 6d. Other hands in the work are paid in proportion, a good many ranging from 20s to 25s. No one is employed below 16 years of age.

### Manufacturers Who Work.

I also visited Sykes Brothers, manufacturers of carpet yarn, and these yarns are principally made from jute waste. I saw the jute waste gathered in Dundee and elsewhere teased up and spun into yarn of various sizes for carpets. One curious thing about this firm is that the four brothers were all working at the roughest work in the mill with shirt sleeves rolled up to the shoulders and faces black with sweat and dust. I said it was quite uncommon in Scotland to see men in their position working so hard. The answer was that that was the only way to make the thing successful, and it was good for them.

### Brussels Carpet-Making.

I then called at the factory of Bromley & Sons, manufacturers of Wilton and Brussels carpets and Smyrna rugs and lace curtains. This is a very large building forming a complete square block of brick, five storeys in height.

The firm employ 2500 hands. The work is all done here in large and airy rooms or flats. The most of the workers are paid by piecework, and make splendid wages, so much so that Mr Bromley told me the competition with Britain in this class of goods would compel them to have a revised pay-list. I was shown the running weekly pays of a number of the workers. Women weavers vary from £2 to £4. Some weeks they would not be fully employed, which accounts for the variation. Some of the men weavers run as high as £5 to £5 15s per week, another class of young men earning £2 10s to £3 5s. In a large work like this there must be hands paid at various rates, but the general pay of the women employed at various other works is from 30s to 40s. Mr Bromley said he would not grudge their making that, but when they went up to £3 he thought it was too high. Philadelphia has outstripped New York, and ranks to-day as the leading manufacturing city in the United States. This position has been gained by the number and variety of its manufactures and by their commercial value. The city turns out over one-half of the carpet products of the entire country.

### The Cost of Living.

Mr J. Sinclair writes:—I dropped into a stone-cutter's yard, and the boss at once gave me the wages that were being paid in Philadelphia. Stone-cutters' wages were 15s per day, 9 hours and 8 on Saturday; granite-cutters, 14s 3d a day. The Society in both of these branches was very strong. In reference to marble-cutters, he said there had been great trouble with their Society, and at present there was no Union of marble-cutters in Philadelphia. The result was that marble-cutters were as low paid as 10s per day. I next asked him in reference to the cost of living, and he told me it cost him £3 a month for rent. He had four children and it took 32s a week to keep his house not speaking of clothing or any other extras. Then he told me he only wrought about seven or eight months in the year. I asked him how he got along in the winter. He said he picked up any job he could get, and that was very difficult, as the municipality here imported Italians by the ship load, and they did work for very little, and five or six families grouped together living in squalor. Thus, through the importation of these Italians, the labouring work of Philadelphia is hard to get, and if you do get it you get very little for it. He also said if I wanted to see Philadelphia proper I ought to come round about the month of December, and I would see plenty of poverty and privation.

### The Delegates in New York.

Leaving Philadelphia in a Royal Blue Line train at 9.40 a.m. on Monday, July 24, the delegates,



DOUBLE STEAM FERRYBOAT.

after being ferried across the Hudson River, were landed a few minutes after midday at the foot of Liberty Street, New York. New York proper is situated on Manhattan Island, which is 13½ miles long, and varies in breadth from a few hundred

yards to 2½ miles. There are in addition, however, about 12,500 acres of the city on the mainland to the north of the Harlem River. The present resident population is estimated at about 1,800,000, but several thousands of men in business in the city live in Brooklyn or New Jersey. It is said that when Manhattan Island was bought from the Indians in 1626 all that was paid for it was only £5, but it would be difficult to estimate its value now. The older portion of the city below Fourteenth Street, which is the active business centre, is somewhat irregularly laid out, but the plan of the upper or newer part includes several broad avenues running northwards with streets running across them at right angles from river to river. Broadway is the best known thoroughfare in the city and is its leading artery, but its name belies it, as it is only about 70 feet in width. There is a system of cable cars in it, and the traffic which passes over it is something unprecedented. It runs straight north from the Battery Park at the south end of the Island to Eleventh Street, and then slants to the westward until it reaches Fifty-Ninth Street, where it is lost in the Plaza. The more frequented streets are lighted by electricity—powerful arc lamps being usually placed at the intersections—and the quieter ones by gas. The Corporation, which has no works of this kind, contracting yearly with private Companies for this purpose. New York has splendid waterways in the East or Harlem River and the Hudson River on the other side of the Island, up which the largest ocean steamers can easily sail. Little or no tide is experienced, and there are no docks, the vessels being moored to the numerous wharves or piers which project into both rivers.

### The New York Police.

The police force of New York compares in a general way very favourably with that of any of the large cities of the Union, but in some respects it is behind Chicago and other large centres. This is more particularly the case with regard to the signal and patrol waggon system which has not yet been adopted in the city, the policemen still conveying their prisoners to the nearest of the 36 precincts or district stations, from which they are removed twice a day by a van, popularly designated the "hurry-up waggon." Almost every race is represented on the force, but the line is drawn at negroes and Chinamen. The great bulk of the force consists, it is said, of Irishmen, and it is generally understood that before a man can secure an appointment he has to place from \$500 (£100) to \$1000 (£200) into the hands of the philanthropic (?) gentlemen connected with Tammany Hall. The government of the force is in the hands of four Commissioners—three Democrats and one Republican—appointed, usually for a term of six years, by the Mayor, and each of these is paid \$5000 (£1000). All the other officials, who are appointed by the Board of Police Commissioners, hold office for life, and are in receipt of the following salaries:—Superintendent, \$6000 (£1200); chief inspector, \$5000 (£1000); 3 inspectors, \$3500 (£700) each; 15 surgeons, \$2250 (£450) each; 38 captains, \$2750 (£550) each; 168 sergeants, \$2000 (£400) each; 176 roundsmen, \$1300 (£260) each; 3237 patrolmen, \$1000 (£200), \$1100 (£220), and \$1200 (£240) each, according to class; 82 doormen, \$1000 (£200) each; and 40 detective sergeants \$2000 (£400) each. In addition, there is a clerical staff, with telegraph and telephone operators, &c., costing \$112,140 (£22,428), and there are also park and river and harbour police, the latter being equipped with steam boats



THE POLICE.

and steam launches. The park police, numbering about 500, are uniformed in grey, in order that they may be distinguished from those on street duty, and several of them are mounted.

### The Working Man's School.

This is an institution whose special merits were brought under the notice of the Messrs Thomson and the Conductor by a member of the Dundee School Board previous to the departure of the Expedition from this country. It was accordingly resolved that a visit should be paid to the School during the residence of the delegates in New York. Although it was closed at the time for the summer vacation, a good deal of information was obtained with regard to the objects of the school and its methods of working. The school, which is situated at 109 West Fifty-Fourth Street, was founded in 1878, and was started as a free kindergarten for the children of the poorer classes in the tenement house district of the city. Beginning with 33 it has now about 450 pupils, divided into 5 grammar, 3 primary, and 5 kindergarten classes. The substantial five-storey building in which the school is located contains more than twenty large rooms, a lecture hall, a machine shop, &c., and besides the ordinary branches the course of study embraces manual and art work, a complete course in elementary natural science, gymnastics, music, &c. There is in addition a kindergarten normal department for young ladies, who study the system both theoretically and practically. When the free kindergarten had been in successful operation for two years it was decided to attempt the development of the kindergarten principle, "learning by doing" in such a way that it might become the basis for a complete course of work and study in a regular school, covering the age from the sixth to the fourteenth year. German educational science, from which in other respects many suggestions and fruitful ideas have been borrowed, is only now beginning to erect schools for the people on this plan. The aim of the school is to give the pupils, whether rich or poor, an education calculated to bring all their faculties into harmonious play. Trades are not taught, but shopwork, modelling, needlework, &c., have



A CLASS IN MECHANICAL DRAWING.

been introduced as so many aids in the development of skill in the education of the eye and the hand. Experience has clearly shown that the standard of education hitherto universally accepted, which made the literary progress of a pupil the principal test of his intellectual capacity, is altogether false, as many a man, who in his boyhood found it difficult to adapt himself to the literary standard of a school, has broken his way to fame and success by means of talents of which his pedantic teachers had not the faintest inkling. It will be readily inferred from the foregoing that the use of text books has been almost entirely discarded in this school. The pupils learn from the objects themselves as far as practicable, and where objects are out of the question they learn from their teachers, who methodically bring down to the level of their understanding what their own sense or reason cannot grasp. Less attention is paid to the number of facts which a boy observes and of names he remembers, and more to the way in which he directly makes his observations, and intelligently describes them, even if untechnically. Great importance is thus given to natural science, but moral education proper also occupies a prominent place in the school. Once a month the parents of the pupils are invited to meet the teachers in order that they may familiarise themselves with the methods pursued in the school, and have the opportunity of freely talking over with the teachers all matters that may come up regarding their own children and their life in school. These meetings have done much towards furthering an intelligent co-operation of the home with the school. Mr Maximilian Groszmann is the superintendent of the school, and his staff consists of five other male teachers for



A CLASS IN CLAY MODELLING.

giving instruction in mathematics, natural science, art work, mechanical drawing and shopwork, and history and geography, twelve females being employed to instruct the pupils in English, German, designing, penmanship, music, gymnastics, &c. The school, which is carried on at a cost of about \$25,000 (£5000) a year, is supported by the United Relief Works of the Society for Ethical Culture, an organisation chartered by the Legislature for charitable and educational purposes, and entirely unsectarian in character. Since 1890 a limited number of paying pupils, children of well-to-do parents, have been admitted into the school in order to bring out more clearly the fact that the system here adopted is applicable alike to the rich and the poor, to those who later on will obtain college education, and to those who will graduate directly from the school to the active pursuits of life.

### Manhattan Elevated Railways.

Mr Watson writes:—The system of elevated railroads which carry trains of cars drawn by steam locomotives through the City of New York consists of four double main lines and a few short branches. In some streets they run up the one side and down the other about level with the second storey windows. At some points they rise to a height of five storeys, and at others they run along the centre, both lines close together, with tram cars running underneath on the street. The railway is constructed of longitudinal girders resting upon pillars of wrought iron firmly fixed in the street. At first sight one is apt to think they look rather too heavy with a wide base at the top and only one pillar underneath, and without the aid of any stanchions or other side support. They are very disagreeable in a street, for they are noisy and shut out the light. But they are certainly a great benefit to the travelling public, and are highly appreciated by every one I came in contact with. Every four or five blocks a station is placed, with a stair leading from the street at both sides. When you enter at the top of the stair you pass the ticket office, pay 5 cents, and get your ticket, then enter on to the platform. A man is there seated with a hopper-shaped box in front of him, in which you place your ticket. When a train comes up you step in, and go as far as you please without any more trouble. The conductors are very good in calling out the number of the streets at which the stations are placed. Travelling is far quicker with the elevated than the street cars, and every precaution is adopted for the safety of the public. There are block towers wrought with lock and frame, and along the outside of the rails is placed a beam of wood, so that if any vehicle should leave the rails this beam will guide it until it comes to a stand. I called at 71 Broadway, and had a talk with Mr Hain, who supplied me with a pass to the engine shop. Mr Hain is general manager for the Manhattan Railway. He sent me all the plans and time tables belonging to his railway, also a statement of the number of passengers carried in a year on all lines as follows:—

FISCAL YEAR ENDING JUNE 30TH, 1893.	
Second Avenue Line, .. .. .	33,685,165
Third Avenue Line, .. .. .	83,297,044
Sixth Avenue Line, .. .. .	78,086,146
Ninth Avenue Line, .. .. .	20,470,974
Suburban Line, .. .. .	5,867,543
Total, .. .. .	221,407,197

Total number of passengers carried on all lines up to and including July 13th, 1893, 2,000,000,000

The Manhattan has 36 miles of roads in all, and the total number of engines is 305. These locomotive engines are all about the same dimensions—four coupled tank engines with four-wheeled

bogie under, trailing end, outside cylinder 14-inch diameter, with large comfortable cab. They are fitted with vacuum brakes throughout. The total weight of an engine is 22 tons. Drivers and firemen work an eight hours day, and are paid—Drivers, 14s per day and firemen 8s per day. Cleaners work ten hours a day and are paid 6s per day. I also had a look through the repairing shops, and met a number of Dundee men. Mr Kennedy, who had been twenty years in America, informed me they were going to get three days off duty owing to the trade being so slack. The average wage in this shop paid for time working 58 hours per week was—Machinists, 10s per day; carpenters



THE ELEVATED RAILROAD.

and painters, 10s per day; blacksmiths, 10s 9d per day; hammermen, 6s 6d per day; labourers, 6s per day.

### The Conditions of the Cigar-Making Industry.

In America nearly every man and youth has contracted the habit of smoking, and a very large number of cigars are therefore consumed in the country every year. Cigar-making is one of the most important industries of New York, and as the result of the organisation of the operatives employed in it a decided improvement in their condition has been effected. Previous to 1879 the hours of work varied from ten to thirteen a day, the truck system was in full force, and wages were only about one-half of what they are now. The members of the International Cigar-Makers' Union obtained the eight hours day in 1886, but not before several strikes had been resorted to. Operatives are paid by the 1000 cigars, receiving from \$11 (£2 4s) to \$17 (£3 8s) for first-class work, and from \$7 (£1 8s) to \$10 (£2) for cheap goods. Employers state the average weekly wages at from \$8 or \$9 (£1 12s) and (£1 16s) to \$11 and \$12 (£2 4s) and (£2 8s). Unorganised cigar-makers often work on the tenement house system, and are for the most part Bohemians. They are paid from \$3 (12s) to \$4½ (18s) per 1000, and have to work sixteen hours a day. A large number of women and children are employed in this industry.

### Bakers' Hours and Wages.

According to the report of the New York Labour Bureau for 1883, the condition of the journeymen bakers in the city had long been exceedingly bad. Nearly all bakeries were in basements, and their sanitary arrangements were most defective. The hours of labour were also excessive and included a large amount of night work. The Bakers' National Union was formed in 1886, and it has succeeded in reducing the hours of work in many cases to ten or

eleven on five days, and thirteen on Saturday. Wages vary greatly in different establishments. The Union gives them as from \$15 (£3) to \$18 (£3 12s) for first hands; \$10 (£2) to \$13 (£2 12s) for second hands; and \$8 (£1 12s) to \$10 (£2) for third hands. Further, the Union prohibits men from boarding with their employers, as was the custom formerly, and has introduced a label, sanctioned by the American Federation of Trades, to be put upon all loaves made in shops where their regulations are observed. The result has been a considerable change for the better in the character of the workmen.

ready fashion as that adopted by Justice Martin. The Justice, at whose side was a clerk or legal adviser, was seated on a raised platform at one side of the room. Between him and the prosecutor and witnesses, who were chiefly policemen, was a narrow wooden bench, and a railing separated the latter from the prisoners. The prisoners were conducted into Court by the policemen who had apprehended them, and the two classes filed up at one end of the bench, parallel to each other in their respective lines, ready when their turn came to have their cases disposed of. About one-half of the courtroom was reserved for the public, of whom there was a fair number present, and this portion was divided off from the other by an iron fence, having a gate attended by an officer. The court officer stood close to the judicial bench, directly facing the prosecutor or witness in the case under trial. Justice Martin did not appear

ARTISANS AT NEW YORK.  
 NEW YORK POLICE COURT.  
 CRIME OF THE CITY.  
 FEDERATION OF LABOUR.  
 FALL RIVER FACTORIES.  
 WEAVERS' WAGES.  
 HOW TO BECOME AN  
 AMERICAN CITIZEN.  
 ST ANDREW'S SOCIETY.

(From the Dundee Weekly News of January 27.)

The Delegates at a Police Court.  
 How Justice is Dealt Out in the States.

On Thursday July 27th Mr Bennett and Mr Murray, the Conductor, attended the Tombs Police Court. It is hardly necessary to mention that they went there not as offenders against the laws of the great Republic, but as spectators desirous of witnessing how justice was administered in the States. The Tombs, it may be explained, is in possession of a history, and its popular title is not without a dread significance. The building, officially known as the City Prison, was erected



A NEW YORK NEWSPAPER'S REPRESENTATION OF JUDGE MARTIN.

altogether an unbenevolent-looking gentlemen, but the delegates when in New York frequently heard it stated that no man was considered properly qualified to act as a police justice unless he had himself committed almost every crime in the calendar. The prisoners were a motley as well as a large crowd, and included Greeks, Chinese, Italians, Poles, Germans, and French, while there were not a few whose features and speech indicated that the Emerald Isle was the land of their birth. As will be readily understood, the services of the interpreters on the police staff of the city were repeatedly called into requisition. The windows of the courtroom were open, and so great was the noise coming from busy Centre Street that very little of what passed could be heard by the auditors on the other side of the bar. It could be made out, however, that the Italians were chiefly charged with peddling without the necessary licenses, and the common fine was \$2 (8s). One man was accused of assaulting his wife, a wretched, broken-hearted looking creature, and he had to find security of \$500 (£100) not to break the



THE CITY PRISON.

in 1838, and occupies the site of what a century ago was a fresh water pond. It is in the Egyptian style of architecture, and is considered the best specimen of that school in the whole of the country. Criminals awaiting trial, and not out on bail, are confined in the Tombs, and in it, before electrocution came into effect, all murderers sentenced to death by the New York Courts met their doom. Hence it has been in reality the tomb of not a few of its inmates. The delegates were prepared, from what they had seen of America and its institutions in the course of their tour, to witness the business of the Court conducted on lines somewhat different from those followed in the old country, but they hardly expected to see it run through in such a rough and

law against her for six months, illustrating that offences against females are smartly punished in the States. Another man, a young rough, devil-may-care sort of fellow, presented indications of having suffered some severe physical punishment before his interview with the Justice. Should prisoners prove obstreperous after their apprehension the officers have power to employ the clubs which they always carry in their right hand ready for any emergency, and that this particular prisoner had come in for a good share of clubbing was evident from the fact that all the covering he had on one whole side of his head consisted of two or three large pieces of sticking plaster. Amongst the prisoners were a few women. One of these was a girl young in years, but from whose cheeks the bloom of virtue and innocence had entirely faded. She was accused of disorderly conduct, but she spoke so eloquently to the Judge, promising to keep from drink and work steadily that she struck a soft place in his heart and he dismissed her with an admonition. The most of the prisoners had been guilty of drunkenness and disorderly conduct, and all that usually took place in their case was this:—Court officer (to accused)—You are charged with being drunk. Have you got anything to say? Nothing to say (this to the Judge). Judge—\$5 (£1). And then the prisoner was hustled aside to make room for the next. In the case of a man guilty of theft, the Judge asked—Why did you steal the complainant's watch? Prisoner—Because I wanted to know the time. Judge—You did. Well, the time is twelve months on the Island (Blackwell's Island in the East River, opposite Central Park, where the Penitentiary, Workhouse, Lunatic Asylum, &c., are situated.) In this way, and notwithstanding that evidence was led in several cases, about forty prisoners were disposed of in the short space of one hour. Several of the witnesses and also some of the prisoners were busy chewing tobacco during the sitting of the Court, but Justice Martin was not thus employed, and did not ask any of those before him to oblige him with a plug, although it was represented to the delegates that this was no uncommon request in some of the police courts of the States. A short time before the visit of the delegates, a man named Smith, who stated that he was an English army captain, caused some little stir in New York. One morning he was convicted of drunkenness, and fined at a Police Court, and before the Court had risen he was back once more in a state of intoxication. On seeing him the Judge said—Here again! Prisoner—Yes, but on a new charge. Judge—What brought you here? Prisoner—I came over to see the country and experiment on the jags (drinks, otherwise known as cocktails). Judge—They have got one jag on the island, and you can experiment on it for six months. The Police Courts in New York (fifteen in number) sit from 9 a.m. to noon, and again from 2 to 4 p.m. One can thus have some idea of the great number of persons dealt with daily by the police in the Metropolis of the North American Republic.

### Crime in New York.

Crime is greatly on the increase in New York, but, considering the character of its population, the sources whence many of its "free" citizens are drawn, and the jobbery which seems to exist almost everywhere, it is perhaps not surprising that public morality should be so loose as it appears to be. Indeed, the surprise rather is from what one hears that about one-half of the whole population is not always fast by the heels. In 1891, 91,073 cases were disposed of by the police justices, being an increase of 3009 compared with the total in

1890, and of that number as many as 19,330 were females. Americans say that their laws are good, but that the difficulty is to get them enforced. In order to provide to some extent for this it is proposed to add this year 100 patrolmen to the force of the city. The men are six hours on duty and six hours off, but they are required to be in readiness for service at all times. In Broadway, the various avenues, and the leading thoroughfares generally the duties of the policemen are as a rule simple and easy, these consisting merely in answering appeals for direction by strangers, and in protecting persons at crossings. There are many "rough" places in the city, however, and it is necessary that the police should possess considerable powers, consequently when a person accused of any crime continues to seek refuge in flight after being ordered to stop by an officer the latter can shoot him, although, if all tales be true, it may be the minor offender who is brought down by the greater. The pension regulations provide that officers may retire on half-pay on attaining sixty years of age, and after twenty years' service, and there is also a special fund, with a capital of about \$50,000 (£10,000), established by the late Leonard W. Jerome, a prominent banker; Mr James Gordon Bennet, of the *Herald*; and other gentlemen, for meeting cases in which policemen may be suddenly carried off. The total appropriation for the Police Department for 1893 amounts to \$5,309,886 (£1,061,977), New York spending \$800,000 (£160,000) more per annum on the prevention and detection of crime than on education! Such a fact requires no comment.

### American Federation of Labour (New York).

Mr D. Brown writes:—I called at the office of the above, and saw Mr Samuel Gompers, president, and also Mr Christopher Evans, secretary. They informed me that the names of those composing the Board of Arbitration were Messrs Edward Feeney, Gilbert Robertson, William Pursell, and that their address was in each case Albany, New York, and for the State of New Jersey, Mr J. P. Macdonell. The Federation had been the means of bringing both employers and employed together



MR S. GOMPERS. to several conferences, and had been successful in many instances in avoiding conflicts and in bringing not a few cases forward for arbitration which were settled amicably. It had also been successful in getting the first Monday of September (Labour Day) established as a public holiday by legal enactment in no less than thirty-eight States out of the forty-four States of the Union. The Board seems to be doing much good, and is much appreciated by the different unions which have affiliation with it. Its roster of national and international trades unions contains such influential and diverse organisations as these:—Bakers' National Union, International Boiler-Makers' Union, Cabinet-Makers' National Union, Beer Brewers' National Union, International Boatmen's Union, National Union of Coopers, German-American Typographers, Brotherhood of Carpenters and Joiners, Cigar-Makers' International Union, National Federation of Miners and Mine Labourers, Miner and Mine Labourers' Amalgamated Association, Coal Miners' Protective Association, Horse Collar-Makers' National Union, Tailors' National Progressive Union, Furniture Workers' National Union, American Flintglass Workers' Union, Granite Stonecutters' National Union, Iron-

moulders' National Union, Amalgamated Association of Iron and Steelworkers, Journeymen Barbers' National Union, Metal Workers' National Union, Brotherhood of Painters and Decorators, Shoelasters' National Union, Custom Tailors' National Union, Textile Workers' Progressive Union of North America, International Typographical Union, Umbrella, Pipe, and Cane Workers' Union of America, and the Woodcarvers' National Union.



MR C. EVANS.

The revenue of the Federation is derived from a *per capita* tax of one quarter of a cent per month of each member in good standing. The American Federation of Labour is numerically the strongest labour organisation in the world, even surpassing the Knights of Labour, possessing as it does an aggregate membership of 618,000, while that of the Knights of Labour is set down officially at 535,000.

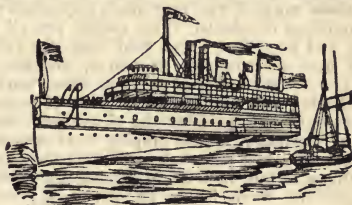
### St Andrew's Society, New York.

Mr Brown writes:—The above society is the oldest society in the State of New York, having been founded in the year 1750. It is thus upwards of 143 years old. It is composed of members who must be either Scotsmen or at least grandsons of Scotsmen. There are over 500 ordinary members on the roll. They pay \$10 (£2) at the beginning and \$5 (£1) annually afterwards. There are also over 100 life members, who are so named because they have paid *at once* £20. The office is at United Charity Buildings, corner of 4th Avenue and 22d Streets, and is open from 10 till 12. There is also another place, which is always open, at 287 East Broadway. Mr John Grierson is secretary, and Mr Geo. Calder, of Aberdeen, almoner. The revenue is derived from the annual payments of each member. There is also another source, namely, the centennial fund. This is a fund which was created when the Centennial Exhibition was held at Philadelphia, and is contributed to by such gentlemen as Mr Carnegie. It provides what may be called extraordinary income. The society exists for the purpose of assisting cases of need. The total number of applications for relief for last year was 2297. Male applicants, 1503; female applicants, 794; resident applicants, 1027; non-resident applicants, 1270; unworthy applicants, 196. The society, besides assisting poor widows and orphans, &c., of whom they have some 70 or 80 on the roll, who get about \$4 or \$5 a month, are in the habit of granting passage money home to those who, being in failing health and not soon likely to recover, wish to return to their native land. The society is also good for assisting some em-

ployers to find employés and *vice-versa*. The number of those who were assisted to find employment last year was 159; placed in permanent homes, 2; sent to hospital beds, 15; buried in the society's plot, 5; buried in other cemeteries, 7; persons aided from centennial fund, 119; persons who have repaid loans, 35; amount of repaid loans, £85; of persons aided medically, 61; provided with passages to \*Scotland, 68; forwarded to other places in United States and Canada, 110; of lodging tickets furnished, 1929; meal tickets furnished, 4369. The permanent beneficiaries all receive useful presents at Christmas, consisting of coal, blankets, or wearing apparel. The funds invested amount to over £15,000. The annual banquet of the society is one of the best of its kind in the City of New York. The names of office-bearers and committees are as follows:—President, John Sloane (of W. & J. Sloane, carpet manufacturers); Vice-Presidents, George A. Morrison and J. Kennedy Tod; Managers, William Lyall, Alex. King, William Coverley, John F. Thomson, John Reid, and John Jardine; Almoner, George Calder; Treasurer, Alex. Laird; Secretary, John Grierson; Assistant Secretary, D. Macgregor Crerar; Chaplains, Rev. W. M. Taylor, D.D., and Rev. R. S. MacArthur, D.D.; Physicians, S. B. W. Macleod, M.D.; R. A. Murray, M.D.; and Andrew G. M'Cosh, M.D.; Standing Committee—William Wood and John S. Kennedy (of Glasgow), James Brand and Walter Watson (of Edinburgh), and Bryce Gray; Committee of Accounts—John Paton (Edinburgh), Alex. Maitland, Richard Irvin, James Callender, A. M. Stewart (of the *Scottish American Journal*); Committee of Installation—Robert Maclay and W. F. Cochran.

### Run Up to Fall River.

Mr Mungo Smith writes:—The steamers that run up from New York to Fall River are described as

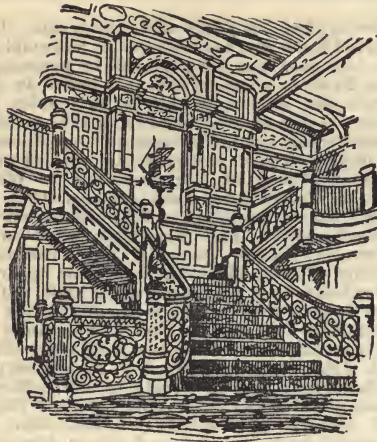


THE PURITAN.

the largest and the most costly in the world. On board the Puritan boat I thought myself a lord on looking around the tremendous floating palace. There are two saloons from end to end of the boat richly carpeted, the Turkey red being in fine contrast to the white, panelling shaded with salmon colour. The cornices and beading are done up with gold, and the chairs and settees are done up with plush. Electric light is all through the boat. I counted over one hundred lights in one saloon. The effect was something grand. A band of twelve performers discoursed splendid music to the very gay and fashionable assembly. The Puritan has a splendid appearance from the outside with her three decks. The second engineer showed me the powerful engines, and gave me a few particulars about their strength and power. For his services he receives £5 per week. He has two Dundee men as firemen, and he gives them a very good character for being steady good workers. They were on duty at the time so I did not see them, but they get the *Dundee Weekly News* and know all about the

\*These passages to Scotland alone last year cost the Society over a thousand dollars.





A STAIRCASE ON THE STEAMER PURITAN.

Expedition. The Puritan is built of steel and iron with watertight compartments and bulkheads. She is unsinkable and practically indestructible. Length over all, 420 feet; length at water-line, 404 feet; breadth of hull, 52 feet; tonnage, 4500; width across guards, 91 feet; depth of hold, 21 feet; engines, 7500 horse-power.

### Fall River Factories—The Wages of Weavers.

With letters of introduction kindly provided by Mr J. L. E. B. Willard, 47 Leonard Street, New York, I was enabled to visit some of the works here and at Providence. This is the Manchester of America, and there are large works all around, but all are complaining about bad trade. In going round these works I was very much impressed with the conditions of labour. The rooms are all well lighted and airy, but I was told that the fabrics worked here are common or coarse, and the employes are not so well paid as some other workers. The following statements give an idea of some of the different wages paid by the Merchants' Manufacturing Company. They employ 1200 operators, who work 58 hours per week. This is the case in Massachusetts, but it is 60 in surrounding States. Weavers earn from 32s to 40s per week; section hands average 44s per week. The majority of weavers tend eight looms. Millspinners 42s to 52s according to length of mules; women on roving frames 28s to 32s per week. Warp is all spun on frames by girls at about 28s per week. Machine shop about 32s to 46s per week; eight men with boss, 11s per day. The above all refers to average 32 yarn and plain weaving, and represents fairly three-fourths of the Fall River.

### The Manville Spinning Co., Providence.

Having a letter of introduction to the Manville Spinning Company, I proceeded to their work, which is 15 miles above Providence. It is the only work in the village. The proprietors have built hundreds of houses for the workpeople, and rent them to the hands at rents varying from 2s to 6s per week. A great many of them are in tenements, but for some time they have been putting them up singly; they are all wood. It is rising ground, and they are all scattered over the face of the hill. Ground here is very cheap. The rooms in this work are the largest ever I was in, and the work produced is very fine. It is nearly all figure work, and some very pretty patterns. It would rather astonish Dundee workmen to see it. I believe it is

something like Paisley. The kinds of work done are nearly all ladies' dresses, and I believe they hold a patent for finishing some kinds of goods. They work 60 hours, while in Fall River they work only 58 hours. There are 80,000 spindles, and the hands number 1400. Millspinners earn from 28s to 32s, and weavers average 31s per week.

### How to Become an American Citizen.

Mr Logan supplies the following copy of the form of declaration made by an alien who intends to become a citizen of the United States:—

#### STATE OF NEW JERSEY.

Be it remembered, that on the 7th day of February, in the year of our Lord, one thousand eight hundred and ninety-three, before me, Dennis M'Laughlin, clerk of the Court of Common Pleas, in and for the county of Hudson (the said Court being a Court of Record, having common law, jurisdiction, and a clerk and seal) personally appeared \_\_\_\_\_, an alien, a native of Scotland, aged about 23 years, who, being duly sworn, according to law, on his oath, doth declare and say that he arrived in the United States on or about the 23d day of June, in the year of our Lord, one thousand eight hundred and ninety-two—That it is *bona fide* his intention to become a citizen of the United States of America, and to renounce for ever all allegiance and fidelity to any and every foreign prince, potentate, State, and Sovereignty whatever, and particularly to the Queen of the United Kingdom of Great Britain and Ireland, whose subject he has heretofore been.

Subscribed and sworn before me this day and year above written,

DENNIS M'LAUGHLIN, Clerk.  
(Signed) \_\_\_\_\_

State of New Jersey, Hudson County.

I, Dennis M'Laughlin, clerk of the Court of Common Pleas, in and for the county of Hudson aforesaid, do hereby certify that the foregoing is a true copy of the "Declaration of Intention to become a Citizen of the United States of America," of \_\_\_\_\_, as the same is filed on record in my office. The testimony whereof I have hereunto subscribed my name and affixed the seal of the said Court in the county aforesaid, this day of February, A.D., one thousand eight hundred and ninety-three.

DENNIS M'LAUGHLIN, Clerk.

VISIT TO ORANGE.  
EDISON'S LABORATORY.  
HIS EXPERIMENTAL WORKS  
THE GREAT INVENTOR'S  
CAREER.

NEW YORK FIRE BRIGADE.  
DOLPHIN JUTE WORKS.  
PATERSON SILK MILLS.

(From the Dundee Weekly News of February 3.)

### Edison Works at Orange.

Mr E. Bennett writes:—I had the pleasure of visiting Mr Thomas A. Edison's Laboratory at Orange. It is a place so unique and interesting that it is really worth description, and will, I have no doubt, be very interesting to the readers of the *News* as it was to me. The main building of the group is 250 feet long and three storeys high. There are also four smaller buildings 100 by 25 feet one storey high, the whole, with its grounds and outbuildings, constituting an establishment of most impressive proportions. On entering I was first



taken into the library, a magnificent hall, all lined with timber and varnished its natural colour. This hall rises some 40 feet, and is very little short of 100 feet square. Around the walls are deep bays containing books, and these bays are repeated on the gallery floors that come round three sides of the hall. At one end is a large open fire place filled with logs, before it stands an easy chair and a long reading table. Above the fireplace is a clock with a dial several feet in diameter. At the other



end of the room Mr Edison has his desk, which he had left only a few minutes before I arrived, so that I didn't have the pleasure of seeing him. Close to his desk he has a phonograph which he uses in dictating letters. The central space on this floor is occupied by a bank of flowers and palms, not far from which stands a fine marble statue of the Genius of Light, a figure with wings open, poised on the broken shaft of a gas lamp, and holding aloft a brilliant incandescent lamp. Lying on a lounge or couch in a snug corner of this room, I found Mr Edison's father, an old gentleman over 90 years of age. My guide told me that he was taking his afternoon nap and he didn't care to disturb him, or I would have been very pleased to have exchanged a few words with him. He seems to have been a very powerful man in his younger days. He is tall—I would say over 6 feet in height—and strongly built, and my guide told me that he is as straight as an arrow when on his feet, having no stoop as we very often find in old men. The book shelves contain between 30,000 and 40,000 volumes of reference. Here and there stand terrestrial globes, models of dynamos, &c. In one of the recesses is the exquisite Tiffany collection of minerals and gems exhibited at Paris in 1889, which was bought by Mr Edison. Around the walls are hung portraits, drawings, views, and other interesting objects. The air of the place is that of repose, yet it has a stimulating influence, and now and again as the doors were opened I could hear the hum of machinery. I am told that many a visitor never sees any further than this room, but I had the pleasure of being shown through the whole of the establishment. In leaving the library, we next visited the store rooms; here is a collection of nearly all the organic and inorganic substances under the sun. I am told that in carrying out his experiments Mr Edison was often hindered in bygone days by lack of materials that necessity demanded. When he came to make his incandescent lamp he worked through everything that it was possible to carbonise, and then explored the two hemispheres

in search after the bamboo that would yield just the homogeneous fibrous structure that he required. He first tried making filaments of platinum and other rare metals, then threads rubbed with plumbago, coal tar, and similar substances. Then he turned his attention to vegetable fibres, and amongst them he found in the bamboo the material he had been searching for. There are no less than 1200 varieties of bamboo, but only 300 of these are useful for any purpose of experimenting. He discovered from these a form of bamboo which grows only in a certain district of Japan which gave him just what he required. This has to be gathered at certain seasons of the year and seasoned in a certain manner. In a very large nest of lockers or drawers are to be seen ores, gums, resins, metals, fibres, fabrics, chemicals of all sorts, hairs, feathers, skins, bones, teeth, oils, inks, hooks, quills, needles, shells, &c., anything and everything that one could think of, and in quantities large enough to last for years.

### The Machine Shop.

The machine shop is a model of its kind. There are some very fine machines which do very delicate work. The watch is not to be compared with some of the parts of the phonograph, they are so delicate. This wonderful instrument, which has done so much to add to Mr Edison's fame, was invented by him in 1877, and was the outcome partly of his experiments with the telegraph repeaters, and partly of his extensive researches in telephoning. The original phonograph, which is now in the British Patent Office Museum, at South Kensington, consists of a brass drum with a fine spiral groove running its entire length, over which is placed a sheet of tinfoil to receive the indentations made by the needle attached to the diaphragm. On the shaft carrying the drum are mounted two heavy fly-wheels to secure uniform speed, as hand power only is employed to turn the instrument. In the present form of the phonograph a small composition wax cylinder takes the place of the brass drum and tinfoil, and the needle forms the record by engraving or scooping out minute particles of the wax cylinder instead of merely indenting it, and it is run by a small electric motor, and the adjustments of the diaphragm have been greatly simplified, rendering the phonograph almost entirely automatic in its action. In these works are employed over 100 men and boys, and one of the most interesting features in connection with the laboratory is that nothing is manufactured for sale. All the capital employed, and all the expert ability or industrial skill at command is devoted to experimental work alone. The commercial stage is reached later on. Many an experiment is doomed to failure, and many a promising clue when followed up leads nowhere, but each and every line of work has a definite object. It may be said that failures have their lessons of value.

### Mr Edison's Mansion.

Mr Edison has a bedroom in the laboratory, and many time he never goes to his house for days and nights together, although his house is situated not very far from the laboratory. It is a fine mansion, which he calls the Queen Anne, and stands on the top of a hill. It is supplied with the electric current that is generated at the laboratory. One of Mr Edison's most laudable ambitions has been that of creating new fields of work, and to-day thousands of artisans of all kind find employment in the industries he has established.

### The Inventor's Career.

A brief account of the life of Mr Edison may be

interesting to the readers of the *News*. He was born on February 11th, 1847, in a quiet little town called Milan, Ohio. His father, Samuel Edison, is a Dutchman, and his mother, Mary Elliott, was a Massachusetts woman of Scottish lineage. When Edison was only seven years of age his parents left Milan and went to a place called Port Huron, Michigan.



AT THE AGE OF TWELVE

his quick intelligence had secured him a place as newsboy on the Grand Trunk Railway running between Port Huron and Detroit. He had only two months' regular schooling, but his mother, who had been a teacher in a Canadian High School, saw to it that his education was not neglected. Besides, he took to books like a bird to the air. Whatever came in his way he read and all that he read he remembered. Like a big sponge his mind drank up every fact and like a magnet his memory held to it all. His trips to Detroit gave him the opportunity to resort to the Free Library of that city, and he immediately devoted his enforced leisure to the task of reading the collection through. As an offset to these studies, young Edison gave himself up to commercial affairs at Port Huron, where he carried on a book-store, a news-stand, and a vegetable market, and employed eleven boys as his assistants. Early in 1862 he conceived an idea of publishing a newspaper on a train, and accordingly he started. He bought some old type and stereotypes from the proprietors of the *Detroit Free Press*. A smoking car served as his publishing and printing office. He did all the work himself. He devoted the paper, which he called *The Grand Trunk Herald*, to local and railway news, and built up a large circulation, and could count no fewer than four hundred subscribers. Edison began to combine chemical experiments with his journalistic enterprise, and the result was his summary ejectionment from the car after setting it on fire with a bottle of phosphorus. Telegraphy was the next thing which claimed his attention. He bought books and apparatus and tried a little private line. About this time he saved the son of the station-master at Mount Clement from being run over, and the grateful father offered to teach Edison practical telegraphy. This offer was eagerly accepted, and in a very short time he was proficient, and within five months he had obtained an appointment as operator in the telegraph office at Port Huron. Edison thus entered the ranks of a humble profession that has given us a great many leaders of men. It was not, however, with an idea of becoming rich or famous that Edison enrolled himself as a member of the telegraphic fraternity. He was in love with the art,

and probably saw in it a means of gratifying the passion for experiment that had gradually been developing in him, and that has been such an extraordinary element in his intellectual growth. No sooner had he settled in one locality than some mishap or trouble, or the quick-silver of curious youth in his veins impelled him to move on, and we find his peregrinations extending all the way from Canada to the Far South. At one time his imaginative mind was full of glowing pictures of South America, and he made up his mind to leave his native shores, and but for the fact that the ship in which he was to have gone had sailed before he reached the port of embarkation he would have carried out his intention and proceeded southward with companions who went, and of whom nothing has been heard since. We next see him at Indianapolis inventing an automatic repeater to transfer a message from one line to another without the intervention of operators. At Memphis he uses his repeater in placing New York and New Orleans in direct communication with each other for the first time. There also he experiments with duplex telegraphy, on which he took out no less than eleven patents. The point aimed at in duplex telegraphy is securing a method of multiple transmission, doubling the capacity of a single wire, enabling two messages to be sent over the same wire in opposite directions at the same time without any confusion or obstruction to each other.

### Ups and Downs.

Edison had a great many ups and downs in his early life. At Louisville he woke up one chilly morning in the fall of the year walking through the icy streets in boots without soles, and protecting himself from the severe weather with an old straw hat and a faded dust coat, but through all these trials his brave young heart buoys him up, and beats a march to victory. Here he obtains a situation, and here again his experimenting and inventing go on. Here he managed to collect books and instruments in a modest laboratory; he also took a small printing office, and issued a treatise of his own on the subject of electricity. Unfortunately, however, he spoiled the upholstery of the new telegraph office by upsetting a carboy of sulphuric acid, and, of course,



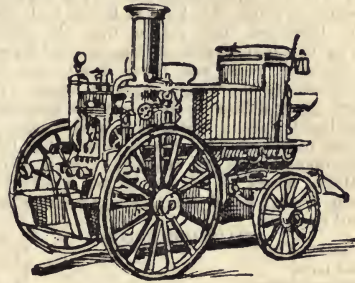
21 YEARS OF AGE,

was dismissed. He then proceeded to Cincinnati, where he built a miniature locomotive and some of his first duplex sets, and gave himself up to reading the scientific books at the Mechanics' Library, and then tired out he drifted home again to Port Huron. At this time he was only 21 years of age, and was called upon by the Grand Trunk Railway Company to increase the capacity of a short submarine cable, and then an appeal to a friend of his called Adams, in Boston, secured him employment in that city. This appeal was embodied in a letter written in his peculiar hand, which was the principal cause of his getting the situation. In Boston he opened a small workshop and put into practical shape many of the ideas with which his busy brain was teeming. He took out his first patent—that on a vote-recording machine. He built dial instruments for private lines, and put them in operation. He was called upon to lecture here on telegraphy before an academy of young ladies, but the modest young inventor could only conduct the experiments, leaving the oratorical part to his friend Adams. From Boston he naturally made his way to New York, and it was not long after he had reached that city that an accident in the transmitting mechanism of the Law Gold indicator system, upon which several hundred instruments depended, gave him the opportunity he needed. His skill in adjusting the damaged apparatus secured him a position and reputation and a salary of \$200 per month. He set out and improved the whole of the instruments in use, and before long was not only engaged in the service of the Gold and Stock and Western Union Companies at a high salary, but had made a contract at a high rate to give them the option of all his telegraph inventions. In order to carry out his arrangements with the above Company he started a large factory at Newark, where he employed as many as 300 men, and sometimes worked upon no fewer than 45 inventions at a time. After a while, however, Edison found that the combined work of manufacturing and inventing was too much for his strength. If a new idea struck him it had to be tested at once in a thousand different ways, and this could hardly do in an ordinary workshop that was expected to yield an immediate return for every shilling. He therefore relinquished manufacturing

in 1876, and started his laboratory at Minto Park, New Jersey. Here he brought out very many of his inventions till, only a very few years ago, he built the fine new laboratory at Orange, which I have mentioned above. Some idea of the inventions and discoveries of Mr Edison may be formed from the fact that he has taken out over 500 patents in America alone, and has applications pending for over 300 more.

### The New York Fire Brigade.

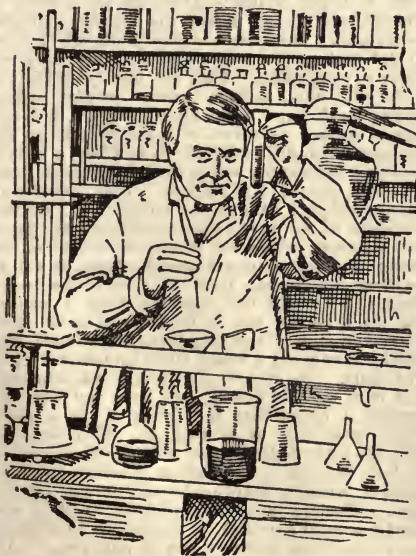
The Fire Brigade of New York is in a very efficient condition, and having regard to the number of fires which occur daily in the city, this is absolutely required. Indeed, the delegates during their short tour in the States witnessed so many fires and so many more turns out of fire brigades that they formed the opinion that if the country



were not so very large all the property in it would be burned in the course of a year or two. Some of the New York newspapers publish daily lists of the fires which occur in the city, and from one of these it appeared that there were no fewer than fourteen on July 28, the day previous to the departure of the members of the Expedition. The Fire Brigade of New York consists of 57 engine companies, 22 hook and ladder companies, and 2 fireboats for the purpose of protecting the harbour and river front. The system in operation is the same as that in use in Chicago and some other large centres, all the firemen residing at their respective stations, and the horses standing ready to move underneath the harness resting over the shafts of the engines the moment the electric bell is rung. The department, consisting altogether of about 1000 men, is under three Commissioners, who are paid \$5000 (£1000) each annually during their short term of office. The salaries are as follows:—Chief, \$6000 (£1200); deputy-chiefs (2), \$4200 (£840) each; chiefs of battalions (13), \$3300 (£660) each; and firemen, \$1000 (£200) each. The total cost of the department for the current year is estimated at \$2,223,135 (£444,627). As was demonstrated to the delegates at the fire in the World's Fair buildings and elsewhere, the firemen are brave and courageous, freely risking both life and limb in the discharge of their dangerous duties, and they well earn the pension to which they are entitled after 20 years' service or after meeting with a serious accident.

### Dolphin Jute Mills, Paterson. The Calling House of Dundonians.

Mr Mungo Smith writes:—I called on Mr Brown, Dolphin Jute Mills. He showed very great kindness to me, and went round the mills with me. There are a great many people here from Dundee, Lochee, and Forfar, and I find that heads of all the departments are from these towns. They have got settled down here, and



are very well. This seems to be the house of call for Dundee people coming out here, and the mill is nearly filled with them. But a great many of them find their way to the silk mills, where, after a short time, they earn far better pay, and won't go back to the jute mills. The work done here is jute-spinning, twine-making being one of their principal things. Their looms are entirely filled, making girthing of from 2½ inches to 4 inches, all jute used for upholstery work. In conversation with Mr Brown he said they cannot compete with Dundee in making burlaps, even although we have to pay tariff in getting our goods here, owing to the exposure of the material, and the higher wages having to be paid here. He also complains of the different length of day worked in the several States. They work 55 hours in Paterson; Massachusetts, 58 hours; Providence, 60 hours; New York, 60 hours. He seems to think this kind of Home Rule should not be tolerated, but rather that the different States in the manufacturing line should have the same working week, and there would not be so much discontent about the length of hours. There is a very great difference between the service in a jute mill and that in a silk mill, and a very great difference in the workers' appearance. The following statement shows the wages earned in Dolphin Jute Mills; hours of labour, 55 per week—7 a.m. till noon, 1 p.m. till 6 p.m.; and on Saturdays, 7 a.m. till noon:—

CARDING-ROOM.		s.	D.
Shifter boys, .. .. .		11	6
Card boys, .. .. .		16	6
Card and drawing, .. .. .		21	0
Single drawings, .. .. .		17	0
Two drawings, .. .. .		21	0
Back of rovings, .. .. .		21	0
Rovers, .. .. .		24	0
Back of roving and front of drawing, ..		23	0
Breaker-feeders, .. .. .		22	0
Batchers and labourers, .. .. .		35	0
SPINNING-ROOM.			
Shifters, per week, .. .. .		11	6
Shifters and piecers, .. .. .		16	6
Single spinners, .. .. .		21	0
Double spinners, .. .. .		25	0
Heavy spinners, .. .. .		27	0
Shifting mistresses, .. .. .		27	6
Truck boys and band sewers, .. .. .		15	0
Mill foremen (good men), .. .. .	£3 12s to £4	0	0
Other foremen, .. .. .	£2 8s to £3	0	0
Mill mechanics (general), .. .. .	£3	0	0
Reelers, average, .. .. .	£1	10	1

The cost of living here seems to be rather cheaper than in some other places. I would not advise people to come out to America at present, as they are very unsettled, and a great many workers are going idle.

**The Silk Mills.**

I found on visiting a silk mill that this is the best paid of all the works. The mill I visited is an old-established one. They weave all sorts and sizes of ribbons and silk dresses. Most of the looms are wrought by men, but there are a good many women, and they make splendid pay. Men make from £3 16s to £5 per week, and women make from £3 8s to £4 4s per week. Warpers also make big wages. A good many young girls are employed in folding ribbons. It is a treat to see the different processes of silk twisting, winding, warping, and weaving. I got into conversation with a Fife man hailing from Kirkealdy. He came to this country about five years ago. He acts as a porter and timekeeper, and gets for his work £2 12s per week, and pays £2 per month for house rent. He said he never advised any of his friends to come out. Although he had £3 per week he would prefer to live at home with 30s, and would be happier every way. He had no vote

for municipal or State matters, and could not have one until he became a citizen. "You can purchase many articles of both food and clothing," he said, "as cheaply as in the Old Country, but a great many are dearer. House rent and coals take a big slice off in the year. You can have board here for 22s per week, but there are a great many things you have to provide yourself with even at this figure." I also met a young woman from Stirling. She was a dressmaker when she came over here, but finding the work confining and not too well paid, she went to the factory. She is mistress over the packers, and has £2 8s per week. She pays for her board 17s, and sends £1 every week to her mother. She finds she is more comfortable and better paid than at the dress-making, but she said it was the money that made her stay, as her people at home required a little help. When I saw this lady, she was asking leave for herself and the others in her department to get home for the rest of the day, as the heat was 86 degrees and unbearable. It seems they have to go home on very warm days.

**COST OF LIVING IN NEW YORK.**

**CHILD LABOUR IN AMERICA.**

**PITTSBURG TO NOVA SCOTIA.**

**DESCRIPTION OF NEW GLASGOW.**

**A MODEL TEMPERANCE PROVINCE.**

(From the Dundee Weekly News of February 10.)

**Cost of Living in New York.**

Mr T. Logan writes:—Although the artisan in America receives big money his ordinary expenses are big also. The houses in New York are built on the flat system, somewhat after our own, only not nearly so substantial. They are mostly all built of brick, with slim, rickety, narrow wooden stairs, regular death-traps in the event of fire. A three-roomed house, with two or three tenants on the flat, costs from \$12 to \$16 (£2 8s to £3 4s) a month according to location, and a flat of five rooms costs \$30 (£6) a month, or £72 a year. That includes all taxes, which are paid by the landlord. I noticed that some of the better class tenements are fitted with elevators, which the people use instead of the stairs; in others there are speaking tubes as well as the usual bell leading from the close to the houses above. I thought the speaking tube a capital idea, as a person can in many cases do all their business by simply speaking through the tube, and thereby save many a weary climb up two, three, or four stairs. As regards the food, it was admitted that it is a little dearer, and from my own experience I found that the living is on a more liberal scale than it is with us. There was one thing that struck us all, that was the crudeness of the table utensils. No matter whether it was in hotels or common boarding-houses, it was all the same. Teacups are made without handles, are about a quarter a pound in weight, and for thick-ness resemble our common jam or jelly-pots. All

the delf is the same, heavy and coarse; even the knives and forks have a pot-metal look about them. It is well seen there is no Staffordshire or Sheffield in America. As to clothing I am informed that it is from 20 to 30 per cent. dearer than our own. In the cheap class of goods there is not much difference in the prices; it is in the better class that one sees the difference. A suit of clothes that would cost £3 5s in Glasgow would cost £6 in New York, and an overcoat at £2 10s would cost £5. The average artisan in America dresses very flashily, and requires more clothing than we do. It is absolutely necessary for them to wear different clothing in summer and winter owing to the extreme heat and cold. Then there are other things that run away with the big pay, for instance, haircutting, 1s; shaving, 7d, and the average Yankee no more thinks of shaving himself than we at home do of cutting our hair. A glass of beer costs 2½d; glass of whisky, 5d; lowest cab fare, 2½d, but it is only fair to state that it takes you any distance; lowest cab fare, 4s. In America you have either to brush your boots yourself or get them polished on the street, which costs 2½d. Some places the delegates had to pay 5d for "a shine," while at Niagara one of our party had to stump up 1s for a shave. There are other articles that are just as proportionally dear, and soon mount up the expenses.

### The Climate of America.

[If a person could live the same here (New York) as he could in Scotland, he could save plenty of money, but the climate demands a different and more expensive mode of living, because if a man does not live well in three months of extreme heat his blood becomes so poor and thin that it would stand hard with him in the severe winter; and if he does not live well in the winter it would be all the worse for him in the summer. The climate of America is very severe on the human system. Such a thing as a red cheek is scarcely to be seen amongst the children.) They have just the same pale, sallow complexion as their elders. I noticed also a marked absence of old people; in fact, it was a common remark of our party that they had failed to notice what they could really call an old person in the whole course of their journey. As to the general question—"Do you think I ought to emigrate?" I have no hesitation in saying that if you are comfortably placed, with anything like steady work, and yourself and family in fair health, I would say, don't emigrate. If you wish to emigrate because you would like to live an easier and less oppressed life, stay where you are, for it is as hard, and at the present time much harder, to find work than it is here, whilst the temptations to break away into dissipations are infinitely greater across the Atlantic than they are in this much-abused, but still possibly happier, land of mountain and flood.

### Child Labour in America.

When in America the delegates made particular inquiries into the question of the employment of children, with the result that they collected a considerable amount of interesting information. Child labour has greatly increased, especially in some of the States, during the past twenty years. It is employed principally in the cotton mills and in the cigar industry carried on in tenement houses. Amongst the operatives in the cotton trade there is one child to every six adults, and in New York city alone no fewer than 24,000 children are employed in cigar-making. The age at which children are allowed to commence work varies in different States. In Connecticut, Massachusetts, Pennsylvania, and Wisconsin no child under thirteen may

be employed; in New York the minimum age is fourteen; in Maine and Ohio it is twelve; and in New Jersey it is twelve for boys and fourteen for girls. Illinois and Indiana allow no children under fourteen to be employed in a mine, and in Iowa, Kansas, Missouri, and Tennessee the age in the same case is twelve. The laws in several States also require that children must have attended school for a certain period in the year preceding their employment. Eighteen States limit the hours of children to ten a day, and three States—Connecticut, Alabama, and Wisconsin—have an eight hours limit, while in Massachusetts they must not exceed 58 per week. In the last-mentioned State the Acts are enforced with encouraging results, the number of working children under 14 years of age having decreased fully 70 per cent. in eight years; but in the other States very many of the regulations concerning child labour are ineffective owing to a lack of competent inspectors. It would also be easier to prevent the employment of children below the legal age if the compulsory education laws were amended and enforced. In the New York report for 1887, complaint is made that many children who had been dismissed from factories did not go to school, and that the law was practically a dead letter, because, although School Boards were empowered to cause the arrest of any parent or employer known to violate it, there was no money provision made for the expenses of its enforcement. It is said that it is only in Massachusetts and Connecticut that the laws in this connection have been strictly enforced. Child labour under its worst aspect is to be found in the sweating shops of New York, Brooklyn, Chicago, and other large cities. These workshops are often small, confined rooms in the tenement houses, which, according to the report of a New York Factory Inspector, reproduce in an intensified form, all the horrors of dirt and overcrowding to be found in European cities. Young persons in America, as soon as they go to work, are usually made by their parents to pay a certain sum every week for board and lodging, and in this way they quickly attain a state of personal independence.

### The City's Commerce.

More than one-half of the foreign commerce of the United States is carried on through the customs district, of which this is the port, and about two-thirds of the duties are here collected. In 1890 the exports of New York were of the value of \$347,500,252 (£70,000,000), and the imports \$542,366,800 (£108,500,000). The manufactures of New York, although secondary in importance to its commercial and mercantile interests, are varied and extensive. In the value of products of 1890 it was the first city in the Union, the whole number of manufacturing establishments being over 14,000, employing 351,757 hands, and producing goods valued at \$763,833,923 (£152,770,000).

### From Pittsburg to Nova Scotia.

Mr R. Dunlop writes:—On Tuesday night, the 18th July, Mr Muir and I left Pittsburg for Nova Scotia via Buffalo, Toronto, Montreal, and St John, N.B., engaging a sleeping berth in the night express. Morning found us running along the shore of Lake Erie, with a cool, refreshing breeze blowing off the lake, very pleasant to us after the great heat experienced at Chicago and Pittsburg. Reaching Buffalo at seven o'clock, we dined at the railway station, where there is every accommodation for travellers, resuming our journey at eight o'clock for Toronto via Niagara Falls and Hamilton. The run from Buffalo to Niagara Falls is through a veritable garden. On each side of the railway can

be seen fruit of all kinds growing in abundance, in some cases whole fields given up to the cultivation of grapes. Changing carriages at Niagara Falls Station, where the Customs officers examine your luggage, we cross the Niagara river by the railway bridge, and again we gaze with a strange fascination at the mighty fall, where the rushing waters make the plunge over the ledge, the noise reminding one of the distant roar of a vast city. We were now on British soil, and reached the thriving and busy town of Hamilton at 11.30. It is finely situated at the end of Lake Ontario, peopled mostly by Scotsmen, and as a good many people told us, it has a future before it, and intends to keep in the front as an industrial and manufacturing town. I may here mention that on our way through Toronto to Chicago I noticed in the Toronto papers that a company intended starting smelting works in Hamilton. They were asking the town for a bonus to assist them in putting down plant and establishing the works. On coming back through the town to-day I find by the papers that the vote of the town of Hamilton has been taken. A bonus of \$35,000 has been granted for the smelting works,



C.P.R. STATION, MONTREAL.

with an additional bonus should the company spend a certain amount in laying down steel works. This also includes exemption from taxation for a certain number of years. These means are taken to assist the young country in developing its own natural resources. We reached Toronto at one o'clock, and having some hours to stay we again called at Walker House, where the traveller can find every comfort and attention. The pleasure steamers on the lake are as fine a fleet as any one could wish to see, and the constant traffic to and from the little island in the bay makes an attractive scene of rare beauty. Toronto is celebrated for its aquatic sports. Hanlan and O'Connor, the renowned scullers, have made Toronto Bay famous throughout the world. At Hanlan's Point various amusements are to be found, and the city bands play every evening during the season. The Sunday car question seems to be agitating the public mind at Toronto. By a small majority it has been decided not to run the cars on Sunday. Leaving Toronto on Wednesday night we arrived at Montreal on Thursday morning. During our stay in Montreal we paid a visit to the beautiful R.C. Cathedral of St Peter's not yet finished. It is built after the plan of St Peter's Church in Rome. The interior vault and the cornices are painted in

white and gold. The walls are fireproof. It is 330 feet long and 150 feet wide. The paintings of the principal cupola represent the four evangelists and their emblems. Besides the angels painted above the evangelists there are beneath the keys of St Peter, the arms of Archbishop Bourget, second bishop of Montreal, who began the church; the arms of Archbishop Fabre, under whose patronage the church is being continued; the emblems of Pope Leo XIII. The building will cost one million dollars. An electric organ of great power will be installed in October, 1893. We also visited the docks, where the large steamers were being loaded with the produce of Canada for conveyance to all parts of Britain. In the dock we saw the unfortunate steamer Lake Nepigon, whose ship crew we encountered on our way out to Montreal. Lying alongside was the Thomson Liner Hurona almost ready for despatch home, dockers being busy loading amidst a scene of bustle and excitement. At 9 o'clock at night we left by the C.P.R. for Nova Scotia via St John, N.B. For a great part of the way we ran through bush and unbroken land, with here and there a little town of wooden shanties, where young settlers were making for themselves a home. It was Friday at one o'clock before we steamed into the station at St John. Spending the afternoon there we resumed our journey with the night train on the Inter-Colonial Railway via Moncton and Truro. At Moncton there are extensive works, but trade there is dull at present. A young mechanic in the train stated that the tradesmen pay in the engineering shops was from \$2 to \$2.75 (8s to 11s) a day. Car builders about the same. Labourers from \$1 to \$1.25 (4s to 5s) a day. All the castings are imported. Their hours are ten per day, and they work till three on Saturdays. Holidays—Queen's Birthday and 1st July. A good many of the workmen own their own houses. A lot 50 feet by 100 could be purchased for \$200 (£40). We reached Truro at five o'clock on Saturday morning, and after a stay of five hours on a train we arrived at New Glasgow at twelve o'clock. Before coming into the town the smoke from the coal and iron mines can be observed a long way off. Shortly before reaching New Glasgow we pass the large new blast furnace at Ferrona, where they are busy smelting iron with their own native ores.



ROUTE TO NOVA SCOTIA.

New Glasgow is a busy thriving little town of between 4000 and 5000 inhabitants. It is built on the banks of the East River, the tide running up past New Glasgow as far as Stellarton. It is the centre of the mining and manufacturing industries, which make Pictou County famous through Canada, and here are quietly working away the present pioneers of the iron and steel trade, and what may yet prove formidable rivals to our manufacturers at home. Eight miles from New Glasgow the river flows into the sea at Pictou, the shipping port and county town.

### New Glasgow.

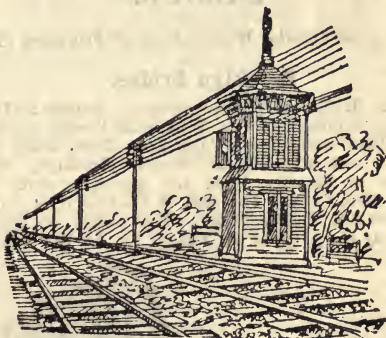
With the exception of three or four buildings, the entire town of New Glasgow is built of wood. The Government Post Office is a very nice stone building, but all the hotels, churches, and every kind of residence, from the rough shanty to the handsome villa, are built with timber, but all the same, the houses have a tasteful and handsome appearance, the ornamented woodwork being nicely painted, giving them a pleasing appearance. The residential streets are nicely shaded with trees. From the hills above the town you can see in the distance Prince Edward Island and the shores of Cape Breton, five or six towns, five collieries, the blast furnace at Ferrona and the Nova Scotia Steel and Forge Company. The river, with its sharp turns winding down to Pictou, reminding one of the Forth, as seen from the Abbey Craig at Stirling. The original settlers here were a party of Scotsmen from the North of Scotland, and the names of Fraser, M'Donald, &c., are plentiful. A great number of the people are natives, while others have come recently at the opening up of the coal and iron fields. This town was famous at one time for the splendid wooden ships that they built, but the trade declined with the advent of iron and steel steamers. It was here the Hamilton Campbell Kidson, a ship of 1400 tons, was launched. It created quite a sensation at that time when it sailed up the Clyde to Glasgow, as it was one of the largest wooden vessels afloat. And just a week previous to our visit they launched their first steel steamer built in the province. It was lying in the river, and Mr Muir and I went on board, and learned that it was built for the Inter-Colonial Railway for touring purposes at the Straits of Canso. It is a handsome little steamer, built by Mathuson & Co. It is named the Mulgrave, and has a total length of 125 feet. Having a letter of introduction to Mr Graham Fraser, managing director of the steel works, I made some inquiries as to where I would find him, and I soon learned that his name was almost a household word, and everyone seemed to speak of him with respect. Mr Fraser is a native of New Glasgow, a skilled mechanic, having served his time when young. He owes his present position to his own abilities. The Nova Scotia Forge Company (the work of his creation) and the Steel Company were worked as separate undertakings till 1889, when they were amalgamated, the works are situated at Trenton, about two miles from New Glasgow.

### The Temperance Question.

As we spent the Saturday night in New Glasgow, we were struck with the air of quietness pervading the town, so different from what we are accustomed to see on Saturday afternoons in some of our coal and iron-producing districts at home. On making inquiries we found that we were living in a county where the sale of drink was entirely prohibited except by a doctor's prescription. The county have voted themselves under the Scott Act. This Act prohibits the sale of drink except by druggists, who sell it under a doctor's prescription, which costs the purchaser half a dollar. There are

twenty-two sections or polling-places, and a bare majority places them under the Act. The druggists get the license from the local Government. This Act has been in force here for ten years, and although a poll can be demanded after three years the temperance sentiment seems to be so strong that no steps have been taken to overturn the existing state of things. On making inquiries if drink could not be got in an illicit manner, we were told that only a very few of the lowest class tried to get it by these means. The penalties attached to selling it were also severe. Anyone selling drink without a license was fined for the first offence \$50 (£10), for the second offence \$100 (£20) and for the third offence was sentenced to three months' imprisonment. As a result of the entire absence of public-houses, there is little or no crime, and as a consequence only a few policemen are required, and their services are little needed. There is only one policeman in New Glasgow, and he has nothing to do. Within a radius of a few miles there is a population of 20,000, a large number of them in connection with coal mining and iron and steel making, and only four policemen are necessary—1 in Pictou, 1 in Westville, 1 in Stellarton, and 1 in New Glasgow. Some of the smaller towns have none. The existing state of matters ought to prove beneficial to the whole community, as so many young people are growing up free from the temptations that usually surround the liquor saloon. There are eight or nine places of worship here, the Presbyterian being the most popular, as there are no less than four churches belonging to that denomination, the ministers of which are mostly from the old country. A few miles from New Glasgow, at Ferrona, the new blast furnace is situated. It is capable of turning out from 80 to 90 tons a day. They get the ore, lime, and coal all within a radius of five miles from the furnace. We left New Glasgow with pleasant memories of the nice little place, and the kindness of the people we had come in contact with during our visit.

### Block Signal Stations.



Along the track of some American railroads at the end of every few miles are placed signal towers, the object of which is to ensure the passengers as far as possible from the risk of collisions. These are the block signal stations. As soon as a train has passed one of these towers there appears in a target placed right above the line a red disc by day and by night a red light. This tells a driver that between the tower he is approaching and the next further along the line there is a train, and the driver may not go past that signal station until the red signal has disappeared, and left only the white disc to show that the preceding train is beyond the next tower.



At various points along some of the railroads the passenger may observe between the rails a narrow trough filled with water. These troughs, which are called track tanks, are made of iron, and are of an average length of 1000 feet. They permit a train to travel long distances without stopping to take water. The 117 miles between Pittsburg and Altoona are traversed several times every day without a single stop, the engine being provided with a spout by which, while running at full speed it takes up water at the rate of several hundred gallons a minute. In winter the water in these tanks is heated by steam to prevent it from freezing.

## BROOKLYN BRIDGE.

### THE PRATT INSTITUTE.

### MINING IN NOVA SCOTIA.

### WAGES AND HOURS OF LABOUR.

(From the Dundee Weekly News of February 17.)

#### Brooklyn Bridge.

Mr J. Sinclair, Cambuslang, reports:—The bridge connecting New York and Brooklyn over the East River from Park Row, New York, to Sands and Washington Streets, Brooklyn, was begun in January, 1870, and opened to traffic on May 24th, 1883. The cost of the bridge was over £3,000,000. The tolls are:—Foot passengers, free; railway fare, 1½d, or ten tickets for 1s 1d; horse,

1½d; horse and vehicle, 2½d; two horses and vehicle, 5d; each extra horse above two attached to vehicle, 1½d. The width of the bridge is 85 feet; length of river span, 1595 feet 6 inches; length of each land span, 930 feet; length of Brooklyn approach, 971 feet; length of New York approach, 1562 feet 6 inches; total length of carriageway, 5989 feet; total length of the bridge with extensions, 6537 feet; size of New York caisson, 172 by 102 feet; size of Brooklyn caisson, 168 by 102 feet; timber and iron in caisson, 5253 cubic yards; concrete in well holes, cambers, &c., 5669 cubic feet; weight of New York caisson, 7000 tons; weight of concrete filling, about 8000 tons. The New York tower contains 46,945 cubic yards of masonry; the Brooklyn tower contains 38,214 cubic yards of masonry; depth of tower foundation below high water—Brooklyn, 45 feet; depth of tower foundation below high water—New York, 78 feet; size of towers at high water line, 140 by 59 feet; size of towers at roof course, 136 by 53 feet; total height of towers above high water, 278 feet. The clear height of the bridge in the centre of the river span above high water is 135 feet; height of floor at towers above high water, 119 feet 3 inches; grade of roadway, 3½ feet in 100 feet; height of towers above the roadway, 159 feet; size of anchorage at base, 129 by 119 feet; size of anchorage at top, 117 by 104 feet; height of anchorages, 89 feet front 85 feet rear; weight of each anchor plate, 23 tons; number of cables, 4; diameter of each cable, 15½ inches; length of each single wire in cables, 3578 feet; ultimate strength of each cable, 12,000 tons;



SECTION OF THE BRIDGE.

weight of wire, 12 feet per pound. Each cable contains 5296 paralleled (not twisted) galvanised steel oil-coated wires, closely wrapped to a solid cylinder 15½ inches in diameter. Permanent weight suspended from cables, 14,680 tons. The whole number of car passengers during the year ending December 1st, 1892, was 41,672,898. This is one of the busiest thoroughfares I have seen in America. When I crossed the bridge between five and six o'clock in the evening it was one continual pour of people. The cars were running as close as they possibly could. Brooklyn has been called the bedroom of New York, and, judging from what I saw, I think it justly earns the title.

#### Pratt Institute, Brooklyn.

Mr Thos. Logan, Glasgow, reports:—The Pratt Institute, Brooklyn, is generally acknowledged to be the most complete technical school in America. I made a special visit to Brooklyn for the purpose, if possible, of seeing through this school. On calling I was received with the utmost courtesy by a young lady, Miss Bird, who conducted us through the educational department, while a gentleman, Mr Black, interested us by showing us through the manual labour department. Like all the other schools that I visited, this one also was closed for the summer vacations, which generally lasts from the end of June till the beginning of September, but for all that the stroll through the different departments was highly interesting. The Pratt Institute was established six years ago after many years of investigation in Europe and America on the part of its founder, Mr Charles Pratt, of Brooklyn. Its object is to promote manual and industrial education, as well as cultivation in



BROOKLYN BRIDGE.



literature, science, and art, to inculcate habits of industry and thrift, and to foster all that makes for right living and good citizenship. The Institute is composed of four large buildings—three, four, five, and six storeys high. The buildings are all heated by steam and lighted by electricity. The whole school is thoroughly equipped with workshops and laboratories, which are supplied with every modern appliance that can in any way enlarge the scope and promote the value of industrial and technical education. The buildings are also provided with passenger elevators, which run at all hours when classes are in session. With all this splendid accommodation every department is taxed to the fullest extent. Last year the number of pupils that received instruction in the different departments was about 4090, of which 2969 were females and 1121 were males, the whole being presided over by 120 instructors. By next year these figures will be considerably increased, as the trustees are having a handsome building erected on the opposite side of the street, which is to be used exclusively as the art department.

### The High School

of the Pratt Institute aims to fit boys and girls, as far as possible in three years, for an industrial and useful life. To be admitted to the High School the student must be at least fourteen years of age, and have passed through the public grammar schools, or has to pass an equivalent examination. In addition to an excellent academic science and art training, the boys receive instruction in benchwork in wood, woodturning, pattern-making, foundry moulding, tinsmithing, forging, vice work, machine tool work, clay modelling, &c., while the girls receive instruction in sewing, dressmaking, millinery, cooking, hygiene and home nursing, and woodcarving, &c. The other departments of the Pratt Institute aim at a much higher and broader



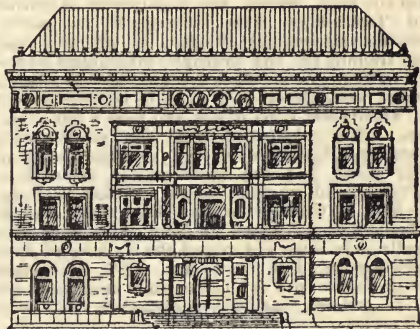
THE PRATT INSTITUTE.

training than what is given in the High School, and the various classes are conducted quite independent of the High School department. The aim of the kindergarten department or the "new education," as it is sometimes termed, is to give general and special training to all those who expect to have the care of children, such as school teachers, kindergartners, and mothers who realise the necessity for greater insight in the training of their children, and also for young women who desire larger opportunities for general culture, and who feel that the kindergarten training meets their needs. Any person wishing to enter this department must be at least eighteen years of age, and must have some knowledge of music and geometrical drawing, as well as be able

to present a certificate of high school training, or pass a satisfactory examination. The object of the Department of Industrial and Fine Arts is to provide thorough and systematic instruction in the industrial and fine arts. The students must be at least sixteen years of age, and must pass an examination in freehand drawing, arithmetic, spelling, &c., and as the training qualifies students to fill positions as teachers and supervisors of drawing in public and private schools, each candidate is also expected to present a letter testifying to general ability and moral character. The following are a few of the branches taught:—Freehand and instrumental drawing, sketching and composition, anatomy, painting in oil and water colours, painting from life, architectural and mechanical drawing, historic ornament, wood carving and clay modelling, and art needlework, &c. In addition to the above subjects, lectures are given on design, colour, composition, artistic anatomy, and the history of art and architecture, &c., the whole of them being fully illustrated by lantern photographs. Students in technical design classes last year sold original designs for tiles, bookcovers, wallpapers, rugs, carpets, &c., to the aggregate amount of £200. The number of students instructed in this department last year was 1049, and as this department will be located in their new building by next year these figures are sure to be considerably increased. The

### Domestic Science Department

includes all the branches of cookery, laundry work, and household economy, &c. To enter these classes the student must be at least sixteen years of age, and be a first-rate scholar. The cookery classes are



THE NEW ART DEPARTMENT.

conducted much after those in the High School, only on a much more extended form. I was informed that the number of students that received instruction in cookery last year was 871. The instruction in laundry work is both theoretical and practical. Soaps, starch, washing powder, bleaching powders, and blueing are chemically and practically considered. Visits to the manufactories of these articles form a feature of the work in these classes. In the practical work every variety of article, from bed linen to the most delicate-coloured embroidery, is laundered. It is quite a common thing for ladies to send their servants to these classes for instruction in laundry work. The classes in connection with hygiene and home nursing are meant to give a sound if limited knowledge of the laws of health, so as to enable women to care intelligently for sudden illness or accident, and to perform the duties of nurse where trained service is not employed. The domestic art department provides comprehensive and systematic study in those branches which are related

to healthful and appropriate clothing of the body. The subjects taught are physical culture, sewing, dressmaking, millinery, and drawing in connection with dressmaking and millinery. The classes are just a continuation of those connected with the High School, and before taking dressmaking and millinery the student must pass an examination in sewing and be at least 18 years of age. The number that was instructed in sewing and dressmaking last year was 1296, and the total number of garments made during that time was 1199. A large number of the students study in these classes with the intention of becoming professional workers. Last year 450 young women were instructed in the art of millinery. Like the dressmaking, applicants must be over 18 years of age and be able to do neat hand sewing. Physical culture for women is under the management of this department. The exercises consist of calisthenic drill with dumbbells, barbells, wands, dancing, &c., as well as exercises in Swedish gymnastics.

### Department of Commerce.

Recognising the fact that business transactions enter into every phase of modern life, and that this is essentially an age in which great commercial activity prevails, the department of commerce was organised by the Institute for the purpose of giving more thorough instruction in studies pertaining to business and commercial operations. The subjects taught embrace languages, history, geography, chemistry, accounting, arithmetic, and penmanship, political economy, shorthand, and typewriting, &c. Besides the science and the manual training that I referred to in connection with the High School, the department of Science and Technology gives instruction in various scientific and technical subjects, as well as a practical training for the principle mechanical trades. The outline given below applies only to evening classes, while the student must be between sixteen and twenty-five years of age, and have a fair education. The subjects taught are mathematics, geometry, physics, chemistry, electrical construction, steam and the steam-engine, strength of materials, and machine design. What interested me most particularly in this department was the "Trade School," where the instruction aims principally to broaden and extend the training of those already engaged at the trades. The school does not profess to turn out journeymen mechanics, but gives a training that further practice in active work will perfect.

### North Sydney Mines.

Mr R. A. Muir writes:—The coalfield of Sydney occupies an area of about 200 square miles, and is the most extensive, and is said to be the most valuable in the Province of Nova Scotia. It is 31 miles wide, and extends a long way under the Atlantic Ocean. The exact distance has not been proved yet. The principal seam in the Sydney district is known as the Six-Foot or Sydney Main Seam, which averages about 5½ feet thick. The first operations were commenced in this seam in 1785 by Governor Lieutenant-Colonel Desbarres on Government account. From 1785 to 1826 the mines were under lease to various individuals or companies, and on the 1st January, 1827, the mines came into the possession of the General Mining Association, who are the present owners. The amount of royalty at that time was 4s 3d per ton, but a new agreement made with the Government of Nova Scotia in 1858 fixed the amount of royalty at 4 8 10d per ton on all large coal up to 250,000 tons per annum, and 3 2-10d per ton on all coal sold over 250,000 tons and an annual

rent of £3000. The first steps taken to open out the works on an extensive scale was in 1830 when a shaft 200 feet deep was sunk, which continued to supply the trade until 1834 when another shaft 320 feet deep was sunk 400 yards further to the dip. This shaft continued in operation until 1854 when it was lost by a heavy influx of water which overpowered the pumping engine. In the meantime a new shaft had been sunk and equipped in anticipation of such a disaster, and was brought into operation. This shaft is 400 feet deep, and now forms the upcast shaft for the present workings. This shaft is known as the Queen Pit. In 1865 a lease, five square miles in extent of



PRINCESS PIT, CAPE BRETON.

mineral under the sea, was obtained, and for the purpose of working this area the sinking of the present shafts were commenced in 1868. These shafts are situated near the shore at the north-west entrance to Sydney harbour. They are placed 22 yards apart. One is 13 and the other 11 feet in diameter, and they are 680 feet deep, and known by the name of Princess Pit. In the course of sinking heavy feeders of water were met with at a depth of 300 feet, which were successfully tubbed off with cast-iron tubing, both shafts being lined to a depth of 300 feet. Within the last two years another shaft, 8 feet diameter, has been sunk close beside the other two, and tubbed for a distance of 300 feet also. The other two have been tubbed to the bottom at an enormous expense, but as these shafts are sunk as close to the sea as is possible, and are expected to win about 5 square miles of area of working under the sea, so that first cost is not so much consideration as in some other positions. The largest shaft is used for winding the output, the 11 feet diameter shaft for winding men, wood, &c., and pumping, and the small shaft for pumping only. The winding engine is 160 h.p. nominal, and has two cylinders 36 inch diameter, with 5 feet stroke drum 20 feet diameter. These engines are capable of raising about 1000 tons per day of ten hours. The engine raises two tubs at a time, standing end to end in the cage. Each tub carries 14 cwts. of coal. Four slides are fitted to each cage, but the cages run on the wall slides only with shoes, the inside of the cage being fitted with bevelled iron which run on the slides. The winding ropes are of steel, 4½ inches circumference, imported from England. A very simple and effective means is employed to break the fall of the cage on the bottom, which consists of a bed of spruce boughs, and forms an excellent cushion on which the cage alights, and so effectually breaks its fall that after having been renewed the cage rests without the slightest shock. Two hauling engines are placed near the bottom of the shaft, the steam being taken from the surface in 10 inch diameter pipes. The north engine has two cylinders 18 inches diameter, 3 feet stroke, geared 1 to 3, with 4 feet drums for main and tail rope. The empty trips descend by gravity, the tail ropes being used only on the level; the dip

varies from 1 in 10 to 1 in 14, and trips of 26 to 30 tubs are hauled at a time. The south engine has two cylinders 16 inches diameter, 2 feet 9 inches stroke, geared 1 to 3, with 4 feet and 5 feet drums for main and tail rope respectively. This deep or dook is about a mile and a half long; the dip varies from 1 in 14 to 1 in 50, and the rake consists of 40 to 45 tubs. The hauling of the coal from the faces to the engine roads is done by horses, from forty to fifty of them being usually employed. The stables are large and well ventilated, and afford accommodation for sixty horses, and in going along them I was much struck by the cleanliness of the stalls. Each horse has its name printed in large black letters on its own stall.

### The System of Working

is a modification of the stoop and room method, but none of the pillars are taken out, the workings being all under the Atlantic Ocean. The main levels and deeps are driven in pairs 8 feet wide and 10 yards apart; the rooms are 16½ feet wide, and are parallel to the levels. At intervals of 70 to 80 yards single deeps and headways are set off as they advance, and are again broken off as the deeps and headways win them midway. Between these deeps and headways cross cuts are driven between the rooms almost always downhill from the higher to the lower room. These single deeps, headways, and cross-cuts are driven 9 feet wide, and the pillars are 12 yards thick. The rooms are broken off 12 feet wide and put through the same width. The ventilation of the workings is effected by means of a gubnal fan placed at the top of the Queen Pit. The fan is 30 feet diameter by 10 feet wide, and at forty revolutions per minute puts into circulation about 80,000 cubic feet of air, which is ample for the whole workings, because wherever we went the air was always pure and sweet. There is a large Cornish pumping engine for the purpose of keeping the mine clear of water, but about 8 hours pumping in the 24 hours is sufficient to keep it down. All the pit bank screens and engine-houses are lighted by electricity and electric signals are in operation underground on the engine planes. Steam is supplied at Princess Pit by six egg-end boilers, 35 feet by 5½ feet, and three multi-tubular boilers and four egg-end boilers same size at Queen Pit. The colliery is also fully equipped with large workshops, including waggon and tub shops, smithies, steam hammer, pattern and carpenters' shops, foundry, sawmill, fitting shops with large turning lathe, planing, drilling, screwing-machine, and screw-cutting lathe, also boiler and locomotive shops, and while I was there they were making a new locomotive. The miners work in pairs, and all the working places are what is termed cabled once every three months; that is, all the men's names are put on a small slip of paper and rolled up and put into a box, then the name of the place is called out, and the manager puts his hand into the box and draws a slip, and whoever has his name on that slip gets that place for the next three months, and the same process is gone through until all are provided with places. The miners' average wage is about \$2 (8s), and good workman can make about \$60 (£15) per month; shift men get from eighty cents (3s 4d) to \$1.25 (5s) per shift bottomer; 80 to 90 cents (3s 4d to 3s 9d), and 2 cents per 100 tubs extra; enginemen (underground, \$1.10 (4s 5d); boys, 35 cents (1s 6d); drivers, 2½ to 3 cents per tub, and average \$1 (4s); winding enginemen get 9½ cents per 100 tubs, and earn about \$1.50 (6s); firemen a little less. Boys do not get to work at the face until they are about 20 years of age, because so many of them are required to drive the ponies, &c., but they are

allowed to get there by their turn. There is very little idle time, as they work every day the weather permits. Miners are fined for making wide places—that is, if they make them over 18 feet 6 inches, fine 2s; 19 feet, 3s; 19 feet 6 inches, 4s; 20 feet, 6s; 20 feet 6 inches, 8s; 21 feet, 10s; 21 feet 6 inches, 12s. The correct width is 16 feet 6 inches, and they can be fined every time the oversman gets them too wide until they reach the maximum fine of 12s for one month. Workmen are provided with free coal, but require to pay for the cartage, which is 8d per cart of 10 cwt. All tools, except picks, are provided by the Company, and all are sharpened free. Miners pay 25 cents (1s) for justiceman in summer and 20 cents (10d) in winter. Most of the miners are in the Provincial Workman's Association. There is also a friendly society. Men pay 25 cents (1s) per month, and the Government and masters pay so much per ton extra. Householders pay 40 cents (1s 8d) per month for doctor's fee, and all boys over fourteen years 25 cents (1s).

## THE TAILOR TRADE IN AMERICA.

### THE COST OF CLOTHING.

### THE COOPER INSTITUTE.

### AMERICAN FURNITURE.

### MECHANICAL WOOD CARVING.

(From the Dundee Weekly News of February 24.)

### The Tailors' Union of America.

Mr E. Bennett reports:—In our visits to the various cities in the United States and Canada I made special inquiries into the tailor trade to find if the sweating system existed there in anything like the proportion that it does in this country, and I was informed everywhere that I inquired that it did not exist at all in the bespoke trade, the Union looking so strictly after the trade as to prevent any such system taking root. In the ready-made trade, however, it exists to a very great extent. I have seen in several American cities both men and women carrying great bundles of garments of various kinds partly made up. Whether they were carrying them home to do their part of the work or *vice-versa* I cannot tell, but they seemed to have the work on these goods divided, one to do one part and another to do the other. I paid a visit to a gentleman in New York who is corresponding secretary for the Union, and he told me that it was utterly impossible to estimate anything like the extent of the sweating system in the ready-made trade, but, like all others, he is perfectly certain that no such system exists in the bespoke trade. The Society or Union pays a man for doing nothing else than looking into this and keeping it from taking root. Still there is no restriction to the hours a tailor works, nor can there be so long as the system of taking work home to be made is allowed to go on. The master tailors do not find work room for their men except perhaps for one or two, who may be employed as day's wage men, for making alterations and doing repairs. In one shop I visited they had three day's wage men, and they were paid £3 per