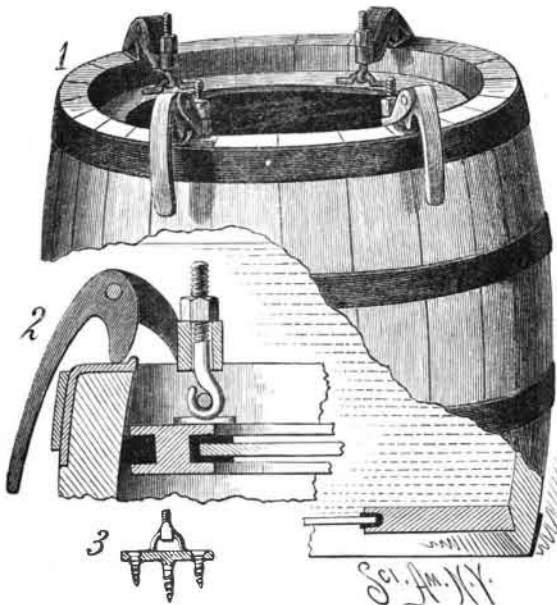


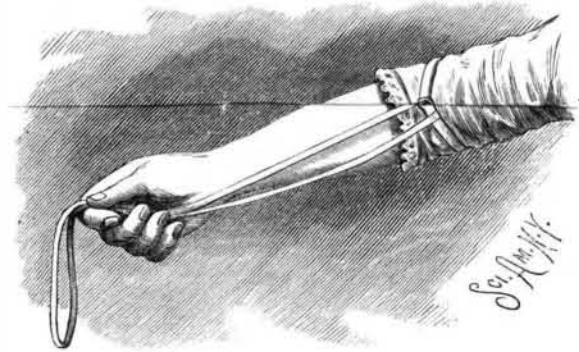
AN IMPROVED REMOVABLE BARREL HEAD.

An efficient barrel head and fastening, which may be locked air and fluid tight in the barrel, the barrel having a smooth inner face where the head fits it, is shown herewith, and has been patented by Mr. Robert C.



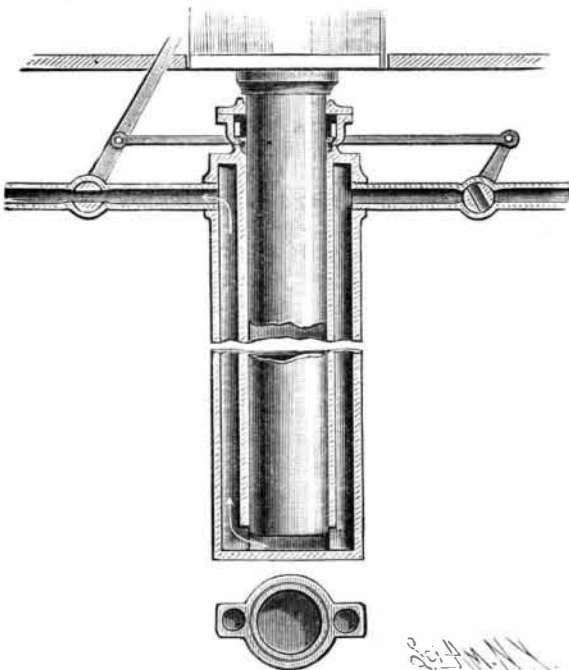
BOEKLER'S BARREL HEAD AND FASTENING.

Boekler, of Mankato, Minn. A removable barrel head is made with an outside frame or rim of wood or metal, with packing fitted in a groove in the outside edge of the frame to bear on the dressed staves, the inner edge of the frame being grooved all around to receive a glass or other transparent plate, with an interposed packing. The head is held to the barrel by cam lever clamping devices, their attachment being shown in section in Fig. 2, a lever with a cam head being pivoted to a link which has at its inner end an eye through which passes loosely the threaded end of an eyebolt, the loop or bent end of which incloses a cross bar or staple of a fastening plate, screwed or otherwise fastened to the upper face



NICHOLS' SLEEVE STAY.

of the barrel head frame. Fig. 3 shows another form of plate for holding the cam clamp. To prevent the toe of the cam lever head from indenting the end wood of the barrel stave, an angular metal plate is let into the stave to form a stop. By adjusting the nuts on the threaded end of the eyebolt connected with the link pivoted to the cam head, any required purchase may be given the levers to assure their effective operation in drawing the head tightly to place. With this construction there is no metal necessarily exposed to rust or corrode, and when the head is removed there is no flange, groove, or rabbet left in the barrel to hinder the free discharge of its contents and thorough cleaning of the barrel.



McDONALD'S HYDRAULIC ELEVATOR.

AN IMPROVED AIR SHIP.

A vessel for aerial navigation, which is designed to be a light and yet strong and roomy structure, capable of easy ascension and being readily steered, is illustrated herewith, and has been patented by Mr. Charles H. Morgan, of Gunnison, Col. It is constructed with a series of longitudinal tubes, adapted to hold concentrated gas, and bent to assume a generally spherical shape. These tubes are secured at their extremities to reduced end ribs, and to transverse circular or oval ribs, between which and the longitudinal ribs is an inner inclosing silk or metallic wall. An outer smooth metallic wall is also provided, having a sharp forward point, in which is a sight opening, a steering apparatus being mounted near by. In the central portion of the ship is a compartment, in subdivisions of which are electric motors to furnish propelling power, the wings being designed to partake somewhat of the appearance of a bird's wing, the upper row of wings propelling the ship forward and slightly upward, while the dip and stroke of the wings may be adjusted within certain limits. The rudder is made somewhat in the shape of a fish tail, and consists of two fans arranged side by side in the same plane. The ship is elevated principally through the introduction of the concentrated gas in the longitudinal tubes into the gas chambers, and ascension may also be facilitated by exhausting the air from other small chambers, and filling them with gas, while the ship may be lowered by external valves arranged with connecting cords within easy reach. The strength and character of the walls allow for great expansion of the gas, and automatically working valves are arranged to accommodate the varying internal and external pressures in upper and lower strata of air.

AN IMPROVED SLEEVE HOLDER.

A simple device for holding a sleeve in place on the arm when another sleeve is being drawn over it is shown herewith, and has been patented by Mr. Fred H. Nichols, of No. 24 Market Street, Lynn, Mass. It consists of a string or tape having a ring or loop fastened at one end, through which the tape freely passes, the other end being fastened to the tape adjacent to the ring. With this holder an adjustable loop may be readily formed at either end of the folded tape and drawn tight upon an arm, when, after holding the sleeve in position until the garment has been drawn over it, the hold is readily released.

AN IMPROVED HYDRAULIC ELEVATOR.

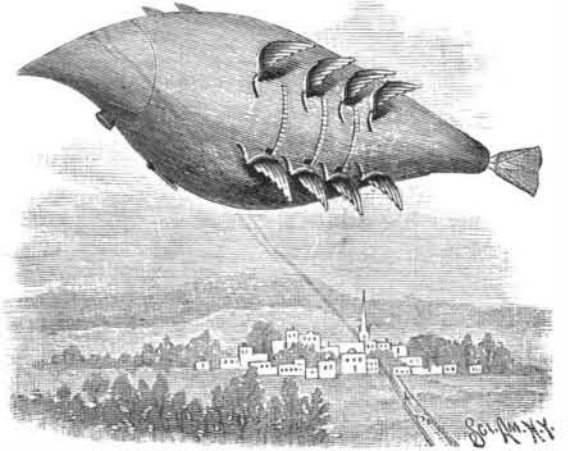
A hydraulic elevator, in which water is used as a motive power, has been patented by Mr. John S. McDonald, of No. 42 Decatur Street, New Orleans, La., and is illustrated herewith, the larger view showing a longitudinal sectional elevation and the smaller one a plan view midway through the cylinder. In a cylinder which is closed at the bottom and open at the top operates a plunger, supporting the carriage on its upper end, outside the cylinder. On the sides of the cylinder are two channels, connected near their upper ends with the water inlet and outlet pipes, each having valves connected with each other by a single rod, so that they are operated simultaneously to close one and open the other. The lower ends of the side channels have openings into the bottom of the cylinder, the plunger, when in its lowest position, resting a short distance above the bottom, so that the openings are never closed. As water enters the inlet valve, the outlet valve being then necessarily closed, it passes by one of the side channels to its opening in the bottom of the cylinder, thus operating to raise the plunger, with its load. When the plunger reaches its extreme upper position, by the reversal of the valves, closing the inlet and opening the outlet pipe, the downward movement commences, the weight of the plunger, its carriage and load, forcing the water from the cylinder, through the outlet pipe, with a strength of current sufficient to carry away any sediment it may have contained. The side channels are in this way so connected with each other, through their bottom openings into the cylinder, as to make a passage in which the sediment is prevented from settling, but will be carried out by the rush of water each time the cylinder descends.

A METHOD AND APPARATUS FOR HEATING CARS.

An improved method and apparatus for heating cars by utilizing the waste products of combustion, conveying them beneath the cars of a train, and supplying air heated thereby to the interior of the cars, is illustrated herewith, and has been patented by Mr. Thomas R. White, of No. 33 Wellington St., Boston, Mass. A hand lever in the cab of the locomotive is connected with a lever pivoted in the smoke box, which controls a double damper, whereby the products of combustion may be directed through an aperture in the bottom of the smokebox, and thence through a jacketed flue consisting of an inner and outer pipe extending beneath the locomotive and cars, or said products may be

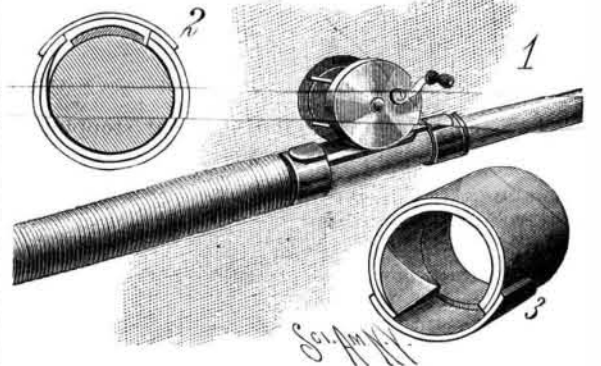
allowed to escape through the smoke stack in the regular way.

Two blowers are mounted in the locomotive cab, operated by a small engine, and when sufficient steam has been raised by the natural draught of the fire, with



MORGAN'S AERIAL SHIP.

the usual opening to the smoke stack, and it is desired to divert the products of combustion into the jacketed flue, the double damper is turned, and one blower operated to supply a forced draught to the fire while the other supplies air to a pipe which surrounds the one carrying off the products of combustion under the cars. These pipes extend longitudinally beneath each car of a train, and are adapted to be coupled to each other and to the pipes of the engine in any suitable or approved manner. At regular intervals smaller semi-circular pipes are made to radiate from each side of the outer longitudinal pipe, as shown in the small figure, and pass up through the floor of the car, through a suitable register. Upon the outer end of the longitudinal pipes, at the rear of a train, is fixed a screen through which the smoke and gases pass off, the ashes and cinders dropping through an aperture in the under side of the tube. By this means the heat ordinarily wasted and passing off through the smoke stack is

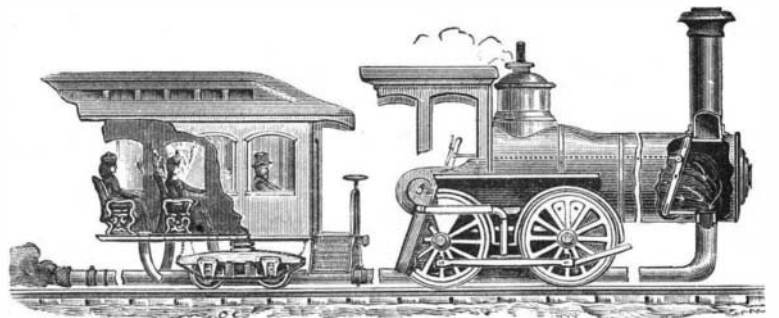


PRITCHARD'S WEDGE FERRULE.

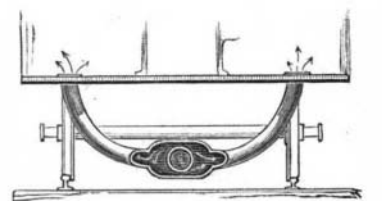
utilized to heat the air supplied to the cars, fresh air being constantly forced through the outer tube by one of the blowers. The smoke and cinders from the engine, ordinarily so great a discomfort in traveling, and frequently necessitating the closing of windows and ventilators, will be, by this method, carried to the rear of the train, so that they cannot be of any annoyance to the passengers, and the danger of fires caused by locomotive sparks will be removed.

WEDGE FERRULE FOR FISHING-ROD REELS.

A simple and effective device for readily and securely attaching a fishing reel to a rod is shown herewith, and has been patented by Mr. Henry Pritchard, Fig. 1 showing the device in use, and Figs. 2 and 3 sectional and perspective views of the wedge ferrule. The ferrule has the usual recess for the reception of one end of the



reel bed plate, the recess being formed by cutting away a portion of the body of the ferrule and covering the opening with a cap. A



WHITE'S CAR HEATING APPARATUS

strip secured to the inner face of the ferrule extends from edge to edge of the recess, the strip being preferably rectangular in cross section, except that at one end it is cut away upon a double incline. After the reel bed plate has been introduced, by turning the ferrule, the double inclined face of its strip is brought to bear against that edge of the upper face of the bed plate that is beneath the ferrule, the strip acting to wedge the bed plate firmly to the rod and preventing all longitudinal as well as lateral motion of the bed plate.

For further information relative to this invention, address Messrs. Abbey & Imbrie, 18 Vesey Street, New York City.

Paris as a Seaport.

In answer to a series of questions drawn up by the Minister of Public Works, the Societe Civile des Etudes de Paris de Port de Mer, the president of which is Admiral Thomasset, has drawn up a report which is most interesting. It may be stated that the Society was formed to carry out the project of M. Bouquet de la Grye, a member of the Institute. This project solves the problem of the canalization of the Seine by means of a canal in the bed of the river having a minimum depth of 6.20 meters and a width sufficient to allow of two large vessels passing each other in contrary directions without danger and without slackening speed. It is the only project regarded by M. Guichard, reporter of the sixth municipal commission, as feasible and likely to settle a question of so much interest to Paris and the whole of France. By those competent to judge, the plan has been regarded as comparatively inexpensive and easy of execution. As to the advantages offered in perspective, they will be best appreciated when we say that the cost of transport of the freight of a sea-going vessel from Rouen to Paris will be reduced one-half, that the voyage can be made in seventeen hours, that the vessels will be able to steam by night as well as by day, the canal being lighted by electricity, and that the whole undertaking will only require three years for its completion.

A few figures may be here given as proof of its economy. Let us take as an example a vessel of 1,000 tons coming from the sea. Its freight is bound for Paris, but its draught of water forces it to discharge at Rouen into barges. This would cost 500 francs per day for the location and maintenance of a vessel of 1,000 tons. This stated, it is easy to show the cost of two vessels of that tonnage: one transshipping its freight into barges at Rouen for transportation to Paris, the second going straight on to Paris without stopping at Rouen. The figures are as follows:

Two days employed in disembarkation at 500 fr. per day.....	1,000
Expenses of transshipment.....	800
Rights of tonnage at Rouen.....	550
Transport from Rouen to Paris per barge.....	7,000
Total.....	9,350
Vessels going direct to Paris:	
Duration of the voyage, 17 hours (one day).....	500
Discharge into wagons at the quay.....	750
Length of time of discharge, one day.....	500
Canal dues.....	3,000
Pilotage dues.....	50
Total.....	4,800

These figures showing, therefore, a saving of nearly 50 per cent, which for a number of industries is a serious consideration. The canalization of the Seine is of vital importance to French commercial prosperity and the defense of the country. The report already mentioned concludes as follows:

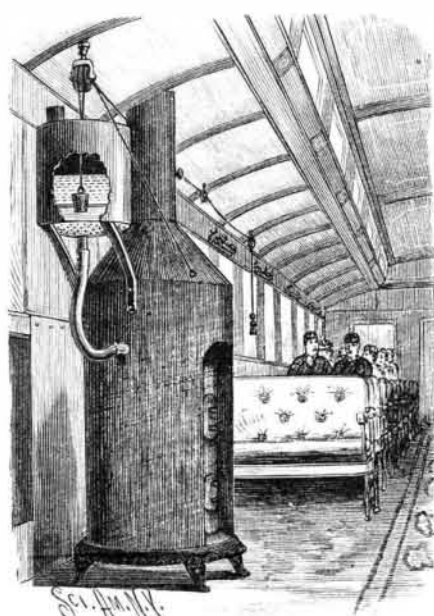
"Our honest enemies, instead of seeking to enter France by forcing the entrenched camps and the fortresses which we have built at Belfort and in the Ardennes, cynically violating neutral countries, intend to enter Belgium, thence to advance upon Paris. In these circumstances, it is evident that the Seine would become of major importance. To excavate the canal to a depth of 6.20 meters, immense quantities of earth would have to be taken therefrom, and the author of the project, M. Bouquet de la Grye, has seriously considered how to dispose of that earth. Among other uses to which it might be put is the erection of small forts, which, built on the right bank, and armed with field guns, would interdict the entry of the river to the Germans, while day and night ironclads and torpedo boats would cruise up and down, thus rendering the passage impossible. It would then become necessary for the Germans to make themselves masters of Rouen before advancing upon Paris. As to the food supply of Paris, on the declaration of war the necessary flotilla would be able to continue its services without fearing the intervention of the Germans, protected as it would be by the ironclads and the forts on the right bank of the canal. From another point of view, we have already stated that the canal would be of importance to Parisian commercial interests. The Paris merchant is satisfied at present with drawing his supplies from Rouen and Havre, without troubling whence they come in the first place. It will be different when, placed in communication with the original shippers, he will appreciate the advantage of doing without burdensome middlemen. He will be induced to study com-

mercial geography, which would lead the way to his becoming a real merchant, and perhaps eventually a shipowner himself."

We take the foregoing from *Engineering*, and have but this comment to add: When this ship canal is extended to Paris, it would not be very much of a job to carry it completely around the city, and then a constant patrol of ironclads and torpedo boats could be maintained as above described, and the Parisians might laugh at the terrible Germans. The question now is, Can the French keep quiet until the canal is constructed?

IMPROVED FIRE EXTINGUISHER FOR CAR HEATERS.

A simple device for extinguishing fires in car heaters, when the latter are upset by collision or other accident, is illustrated herewith, and has been patented by Mr. Edward Maguire, of Lemont, Cook County, Ill. A tank is supported by suitable braces above the heater, the tank having a false bottom and a lower perforated bottom, and holding, above the false bottom, a fire-extinguishing liquid. From an aperture in the center of the perforated bottom a flexible tube leads to the fire box of the heater, and in the center of the false bottom is an opening adapted to be closed by a plug or stopper, to the upper end of which is attached a wire or cord, extending upward through the top of the tank, over a pulley in the car roof, and having its outer end secured



MAGUIRE'S CAR HEATER FIRE EXTINGUISHER.

to the heater. Another cord from the stopper in the false bottom is extended over the pulley and along the side of the top of the car, its end hanging down in convenient reach of the passengers. An accident sufficient to overturn the heater would cause the stopper to be withdrawn from the opening in the false bottom, thus allowing the fire-extinguishing liquid to flow into the fire box, and to be distributed around the heater from the perforated bottom of the tank, or, if there were danger of the heater setting fire to the car when not upset, the stopper could be withdrawn and the extinguishing liquid allowed to escape by means of the other cord extending along the side of the car.

"Wind and Weather Permitting."

This condition, painfully familiar to the last generation of travelers by sea, but almost forgotten since the days of steam power afloat, ought to be adopted as a general provision by all who are not of the very strongest and healthiest type of humanity, in respect to out-door engagements at this most trying season of the year, more particularly in large cities. A glance at the obituary column in any leading newspaper will suffice to prove that the risks of life, especially to the weakly and the aged, at this season of the year, are out of all proportion to the apparent natural vicissitudes of the spring. The truth is, that the changes of personal temperature are so sudden and severe that few constitutions can suffer them with impunity. What we mean by personal temperature is this: The atmosphere generally may, as shown by the thermometer, be fairly mild, or at least not remarkably cold, but owing to the strong currents of icy wind which rush through doors and under archways, out of courts and alleys, round corners and across main thoroughfares from side streets, a pedestrian not able to bear being almost instantaneously deprived of a large proportion of his caloric, and endowed with such vigorous powers of heat production as to be able to compensate for the loss with extraordinary rapidity, must in a walk of very short duration be thoroughly chilled. Take, for example, says the leading medical journal of London, the *Lancet*, any ordinary main street in that great city, of some quarter or third of a mile in length. It will probably have fifteen or twenty side streets on each side; so that, unless the wind chance to blow parallel with the main thoroughfare, a person walking through it will encounter, say in

twenty minutes, fifteen or twenty blasts of cold air, which will catch him suddenly. Each of these blasts will do two things to him. First, it will rapidly take from his body as much heat as can be abstracted in the period occupied in crossing the side street, which is considerable; and, secondly, it will give an appreciable depressing shock to the nerve centers through the nerves of the skin. These fifteen or twenty successive abstractions of heat and nervous depressions, following each other at intervals of a minute or a little over, will produce an aggregate impression on the vital state—that is, the heat and the energy of the organism together—at the end of the twenty minutes which cannot fail to be felt by a weakly or susceptible person. There is no time to recover between the attacks. When a man takes his bath in the morning, he gets a reaction following the depression of the chill; but if he no sooner got out of one bath than he plunged into another, instead of benefiting his health, the "tubbing" would do him harm. It is far worse for the pedestrian to walk along such a main thoroughfare as we have supposed than it would be for him to walk on a cliff exposed to the steady blow of the same wind. The organism can much more readily accommodate itself to a prolonged low temperature, if it be not a crippling cold, than it can sustain without injury a rapid succession of little chills and shocks. These are like the rain of knock-down blows that exhausts the boxer. He has no time "to get breath" between the attacks of his opponent. We have not exaggerated this matter, and we venture to think it is one which the dwellers in cities will do wisely to bear in mind. It is often difficult to tell how a "cold" has been "caught;" but this we know too well, that what seem to be very slight colds are often productive of the most serious results. It is not heroic, but rash, to risk taking cold. The most robust and apparently the strongest may succumb to the consequences of such an attack. Healthy and hardy country folk, and even mountaineers who "live in the open," frequently take cold in some large city. It is the fusillade of deadly little chills they cannot bear, and it is this exposure which produces pneumonia, so prevalent at this time of year.

Francois Lacharme.

The announcement of the death of this celebrated rosarian will be received with great regret, as few men have done so much in the improvement of the rose. He was born on the 28th of January, 1817, at St. Didier sur Charony, Aix, France, and died at Lyons. His father was an agriculturist, and wished his son to follow the same business, but at an early age the roses in his father's garden had already inspired him with a desire to become a cultivator of them. At last his father yielded to his desire, and apprenticed him to M. Poncet, a horticulturist at Lyons, where he made the acquaintance of M. Plantier, the well known rosarian, who advised him to go to Paris, and gave him an introduction to M. Pirolle, the founder of the "Bon Jardinier." This gentleman obtained him a situation in a large horticultural establishment in the neighborhood of the Palace of the Luxembourg, where M. Hardy, a great amateur of roses, was director of the gardens. In 1840, M. Plantier, desirous of retiring from business, offered M. Lacharme his rose establishment, which he accepted, and returned to Lyons. He soon began to cultivate roses, and, assisted by M. Plantier's advice, he quickly obtained a very fine variety, which he called Madame Ernestine de Barante. It was one of the first hybrid perpetuals, and was sent out in 1843. From that date he continued to raise seedlings, and with great success, as nearly all of them are still in collections of roses.—*The Garden.*

Bridge Travel between New York and Brooklyn.

A recent test made by the bridge management of the number of passengers crossing the structure by hours shows that, from 12 M. to 1 A. M., of a Tuesday morning, 389 passengers crossed from New York to Brooklyn, while 197 went from this side to New York. From 1 to 2 A. M., 249 came from New York and 62 went from Brooklyn. From 2 to 3 A. M., from New York, 211; from Brooklyn, 80. From 3 to 4 A. M., from New York, 111; from Brooklyn, 128. From 4 to 5 A. M., from New York, 469; from Brooklyn, 2,894. From 5 to 6 A. M., from New York, 841; from Brooklyn, 9,366. From 6 to 7 A. M., from New York, 712; from Brooklyn, 10,068. From 7 to 8 A. M., from New York, 1,087; from Brooklyn, 4,589. From 8 to 9 A. M., from New York, 1,345; from Brooklyn, 1,618. From 9 to 10 A. M., from New York, 2,109; from Brooklyn, 1,897. From 10 to 11 A. M., from New York, 9,402; from Brooklyn, 1,580. From 11 to 12 P. M., from New York, 8,519; from Brooklyn, 1,121. From 12 to 1 P. M., from New York, 2,251; from Brooklyn, 1,402. From 1 to 2 P. M., from New York, 1,373; from Brooklyn, 652. From 2 to 3 P. M., from New York, 1,314; from Brooklyn, 562. From 3 to 4 P. M., from New York, 1,211; from Brooklyn, 667. From 4 to 5 P. M., from New York, 1,307; from Brooklyn, 480. The total number of passengers during twenty-four hours was 91,130.—*Brooklyn Eagle.*