COMMUNICATIONS BETWEEN RAILWAY PASSENGERS AND DRIVERS.

Mr. C. Batty, of Manchester, England, has gazetted a patent which appears to be at once simple, inexpensive of application, and efficacious. It has, besides, the merit of being unobjectionable to railway directors, who have justly feared placing too much power in the hands of passengers, lest it might lead to a greater evil than that sought to be remedied. Mr. Batty's invention is to place in the weather-board, on each side of the engine and driver, a mirror or looking-glass, in which the whole of each side of the train will be reflected, and which of course will be accessible to either driver or stoker. Many engines have at present a weather-board, in which is inserted a piece of plain glass, through which the driver and stoker can look ahead with protection from the weather; and in such cases this mirror would be placed outside this plain glass, flush with the footboards of the carriages. All the railway directors and officials who have yet seen the invention applied, appear to have been struck by its admirable adaptation to the requirements of the service by day, and this alone, considering how many accidents occur by day, should be sufficient to secure its adoption extensively. The inventor, however, has provided for its application by night. He accomplishes this by attaching a lamp on each side of the last carriage of a train, and the reflection of the lamp in the mirror readily exhibits any irregularity in the train that may occur after darkness has set in, whilst the hand or handkerchief of the guard or a passenger put out of a window between the light and the mirror is reflected in the latter as clearly as by day. A great advantage of this invention is that it does not, like some previous ones, get deranged upon curves, and it is easy to see that a series of signals might be used by the guard, so that he could communicate with the driver without the train being stopped. In the case of a train getting on fire, that greatest of all evils dreaded by passengers, the driver or stoker must be almost certain to see the smoke or flame reflected in the mirror, and put in a position to stop the train. Mr. Batty proposes colored lamps and flags in the hands of the guards as a means of communicating with the drivers—the former by night and the latter by day.—*Exchange.*

IRON HOOPS FOR BALING COTTON.

A correspondent of the Providence *Journal* writes as follows on the advantages of iron hoops as substitutes for ropes in baling cotton:—

"Under the present management, where bales are bound with rope, and no allowance is made for tare, the purchaser is compelled to pay for some nine pounds of rope to each bale, which is worth to him but two cents per pound; so that the manufacturer who buys his cotton at 13 cents per pound suffers a loss of about one dollar on each bale that he buys; while the planter, who bought the rope at 10 cents per pound, makes a profit out of its sale of 27 cents on each bale of his cotton. Now, with the best inventions for fastening, the iron bands can be furnished weighing but six pounds to the bale, and costing but 50 cents, thus leaving to the planter a still larger profit on its sale than in the case of rope, while the purchaser will have to pay for but six pounds of banding instead of nine, as before; thus effecting a saving of more than 20 cents on each bale, even allowing the iron to be worthless to him after its removal. But such would not be the case, as the iron bands, even though a little rusted, could be applied to many useful purposes, such as hooping pails, tubs and other woodenware, or in baling the coarser descriptions of manufactured goods. This calculation is based on a grade of iron which, while it is suitable for the above purposes, possesses 50 per cent. more strength than the ropes commonly used in binding cotton, and which, to say the least, would be worth quite as much as the waste rope. So that, in reality, when this kind of banding is used, the purchaser would have less reason to claim an allowance for tare than when rope is used. In addition to this, as the iron binding does not stretch like ropes, the bales are much more compact, the cost of freight should be proportionately diminished, and there would be less waste by handling and transportation, as the bales cannot be torn open without great effort. And, again, the risk of loss or damage by fire would be considerably less, as cotton will not burn as long as it can be kept closely compacted."

NEW YORK WATER.

The unpleasant taste and odor of our Croton water still continues, but the health of the city does not seem to be the least affected by it, in fact, this is perhaps the most heathly summer ever experienced in it. An analysis of the fœtid water, together with opinions on the subject, has been published by Professors Boeck and Adelberg, of New York. Their chemical investigation was made with water taken from the lower reservoir; they state, that they found the water charged with organic matter in a state of chemical transformation, yielding geic and humic acids, in combination with alkalies. They also found sulphurated hydrogen gas, and some iron and alumina.

Their views as to the causes which produced this state of the water are rather funny. As far as we can understand them, it required a dead horse, or some other decaying animal, near the Croton Lake, to mix with the vegetable matter in the water to produce incipient fermentation. This is an entirely erroneous view of the question. Decomposition of a like character can be produced without decaying animal matter, as vegetables contain azote (which is necessary to cause decomposition), as well as animals. Let the Water Commissioners run out the reservoirs clean from the bottoms, so as to carry off all the heavy deposited organic matter, and the infamous taste of the water will quickly disappear.

ARSENIOUS GREEN PAPER

Messrs. Editors:—You have frequently spoken of the bad effects resulting from the green colors of paper hangings containing arsenic. Those evils can be prevented by simply coating the paper with a white transparent varnish, which can be done by any practical house-painter or paper-hanger. By so doing the poison is hermetically sealed, consequently the air, &c., cannot act upon it; neither will washing injure it.

James Quarterman.

New York, Aug. 27, 1859.

Treatment of Gunpowder Burns.—When a charge of powder is fired near an exposed part of the body, a portion of the unburnt powder is deposited in the skin, proportionably to the imperfection of the combustion and the coarseness of the granules. The inflammation which results is not sufficient to procure the elimination of the grains, and the person remains tatooed for life. Hitherto the only means for preventing such a deformity has consisted in the picking out by the fine point of a knife or needle each separate granule. This, although a very tedious and painful process,, answers well enough in burns of a limited size; but in a recent case in which the whole side of the face was completely blackened, Professor Busch resolved to try a plan he had seen Hebra adopt for the removal of freckles, viz: exciting an eczematous inflammation by means of a solution of five grains of corrosive sublimate to eight ounces of water. This was kept applied during several hours, for five days, with the effect of exciting a smart eczema, and detaching the granules. The burn was quite recent, and whether the means used is applicable to burns of an older date remains to be tried.

Gilding on Glass.—Dissolve in boiled linseed oil an equal weight of copal or amber, and add as much oil of turpentine as will enable you to apply the compound or size thus formed, as thin as possible to the parts of glass intended to be gilt. The glass is to be placed in a stove, till it is so warm as almost to burn the fingers when handled. At this temperature the size becomes adhesive, and a piece of leaf gold applied in the usual way, will immediately stick. Sweep off the superfluous portions of the leaf; and when quite cold it may be burnished, taking care to interpose a piece of india paper between the gold and the burnisher. It sometime happens, when the varnish is not very good, that by repeated washing, the gold wears off; on this account the practice of burning it in is usually had recourse to. For this purpose, some gold powder is ground with borax, and in this state applied to the clean surface of the glass by a camel's-hair pencil; when quite dry the glass is put into a stove heated to about the temperature of an annealing oven; the gold burns off, and the borax, by vitrifying, cements the gold with great firmness to the glass; after which it may be burnished.

A New Source of Ammonia.—Mr. Alexander Williams, of Neath, England, in a letter to the *Journal of the Society of Arts*, has suggested a means of economizing the waste nitrogen products escaping from the oil of vitriol chamber, by effecting their conversion into ammonia. This is done by passing the escaping gases, mixed with steam, over heated charcoal, and then into dilute sulphuric acid, by which sulphate of ammonia is obtained. The following is Mr. Williams' description of the arrangement he employs, and which has been tried on a large scale at the Pontardawe Vitriol Works:—

"The apparatus fitted up was of the following description: A furnace was built above the exit-tube of one of their vitriol chambers, and a brick gas-retort, about 14 inches in diameter, 8 feet long, and open at both ends, was passed through its whole length. This retort was filled with charcoal, and kept at a red heat; the exit-tube of the chamber and a steam-jet to supply the hydrogen were attached to one end, whilst at the other end was an upright leaden cylinder filled with coke, and moistened with diluted sulphuric acid. On passing the waste gases and steam through the retort containing hot charcoal, both were decomposed, the oxygen of each uniting with the charcoal to form carbonic acid, the nitrogen and hydrogen combining to form ammonia; then, together, probably forming carbonate of ammonia, which was again decomposed by the diluted sulphuric acid, the sulphate of ammonia being found remaining in solution. This solution was then evaporated, and, in July, 1857, I first had the pleasure of obtaining any quantity of crystals of sulphate of ammonia, by this process, from a vitriol chamber in actual work."

Trial of Steam Fire-engines.—The steam fire-engine built for Lee & Larned, of this city, at the Novelty Works, was recently tried in Philadelphia, and found to be an excellent "machine." She drew water from one of the large Birkenbine plugs, and forced it through 50 feet of hose. With 145 pounds of steam, she played two streams at once, through $\frac{7}{8}$ nozzles, 189 feet 9 inches each. She then played, respectively, one stream through 1 inch nozzle, 231 feet; $1\frac{3}{8}$ do., 228; and $1\frac{1}{4}$ do., 227 feet. At these throws she was run with about 150 pounds of steam, as indicated by the gage. The measurements were made by a committee of Philadelphia firemen, namely, Tobias Huber, of the Philadelphia Hose; H. A. Cook, Hibernia Engine, and Mr. Rudolph, of Schuylkill Hose. The weight of the machine is about 5,000 pounds. It generates steam rapidly, having 225 square inches of fire-surface in the boiler. It has a cylinder of nine inches diameter, with a powerful and quick stroke of $8\frac{1}{2}$ inches, making over 200 revolutions per minute.

Lightning-rods.—As we have inquiries almost every week about putting up lightning-rods, we will therefore give a general answer to all who are in pursuit of such information. In putting up a rod, care must be observed to have all the joints perfectly connected; for it has frequently happened that the lightning has passed from ill-jointed rods into buildings. The rod should be clamped to the building with brackets of varnished dry wood or glass insulators, and its lower end should always be carried down into damp soil. Care must be exercised that no masses of metal in the building be situated near the conductor, because if such a mass be greater than that of the rod, the lightning is liable to pass from the latter to the former. The point of the conductor should be carried about four or five feet above the highest chimney, and if it is of iron, it should be one-half an inch diameter for a building 40 feet high.

Steel Electrotypes.—Messrs. Salmon and Garnier place the newly-engraved copper plate in the bath, where, by their recently discovered process, it is duly coated with steel without the least hurt to the engraving. In this way is produced a steel plate for a copper plate, and steel being much harder than copper, a much greater number of impressions can be printed from the improved surface than from the simple plate. As soon as it shows signs of wear the surface of steel is dissolved, and a new surface formed by the means previously employed. This process will tend to reduce the price of really fine engravings, and if carefully followed up, the last impression will be scarely less beautiful than the first.—*Exchange.*

Pure white lime, with about one ounce of dissolved glue to the gallon, is one of the best kinds of whitewash.