In Peace and War—Railway Signals.

We have received a pamphlet from the goodly city of Cork, in old Ireland, which (the pamphlet) bears the above caption, surmounted with an engraving of one of the signals. The inventor is J. Norton, with whom we are not acquainted, but he, it seems, knows the "Scientific American." His pamphlet describes his signals for railroads thus: "I would propose as the means for the guard of a train to call the attention of the driver of the engine—either to draw up, go slow, fast, or backward—to shoot from a steel cross-bow—or the ordinary long bow—an arrow without feathers, and having fixed on its blunt head, a paper case charged with an ounce of powder; this charged case is made to explode on falling to the ground by friction or percussion." This plan, he says, he tried on the 7th of last month, on the Cork and Bandon Railroad, having shot the signal from a bow, when the arrow fell on the right side of the road, thirty yards in front of the engine, and made a loud report.

In reading this pamphlet we could not help exclaiming in surprise, "is it possible that the civil engineers in the *old country* are yet ignorant of the simple American plan of the conductors communicating with the engineers, and which has been in general use since our first railroads were built? But it seems they are, and that there is no such plan of communication employed on the British and Irish railroads, or else such a railroad signal as that proposed by Mr. Norton would surely never have been brought before the public. We must tell our Irish engineers for their enlightenment that the simple plan in general use here, is to have a gong or bell secured on the locomotive, close to the ear of the engineer, the hammer to operate which is secured to a cord which passes along the tops of the cars, (being jointed between each pair of cars) so that the conductor can communicate with the engineer from the platform of every car, and by different strokes on the gong or bell, inform the engineer to stop or go forward, &c. This plan is immeasurably superior to the clumsy plan of shooting an explosive signal from a cross-bow. Let the English railroad companies throw aside their prejudices and fogyism and adopt our simple plan; the cost is but a trifle—not so much as that of a good cross-bow.

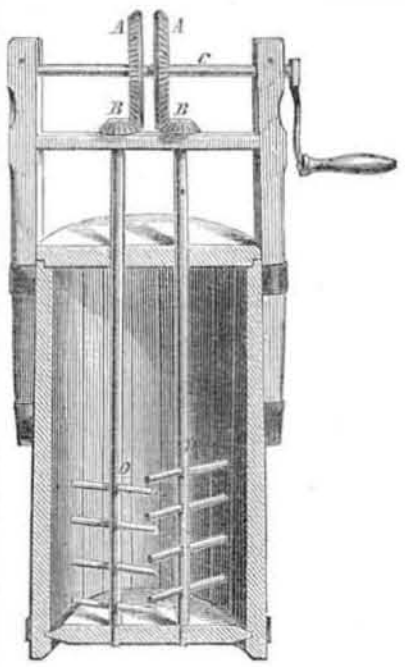
In England, instead of adopting the simple American signal, we perceive by some of our London cotemporaries that an electric telegraph signal, put in operation by a Prof. Gluckman, has recently been tried on one of the express trains of the London and Northwestern Railway. It is thus described:—

"The conducting wires are inclosed in gutta percha, and attached to each carriage in a wooden case under the frame of the carriage. The bands enclosing the wires at each end of the carriage are elastic, and can be hooked and unhooked, as occasion requires, with great facility, thus continuing the communication from carriage to carriage in the train. The battery is fixed in the guard's van and a bell is on the engine. The guard can give the signal to the engine-driver by placing his finger on a button, which causes the bell on the engine to strike or ring continuously or at intervals."

Now why is it that such an expensive and complicated apparatus is even thought of, when a rope or chain and bell can accomplish the same object.

Mr. Norton, as we are informed by his pamphlet, has also invented an explosive hand percussion shell, and a percussion shell for rifle cannon. He may have invented improved shells of this description, for which he should receive just praise, but percussion explosive shells for artillery are not new; they have been long known in this country, and we know that an American inventor carried some of them to Europe nine years ago. Of this fact, however, we believe that Mr. Norton is ignorant, and to him the invention is new—he is an original discoverer, but not the first. We have seen it stated in a number of our foreign exchanges that the British fleet is well provided with these destructible missiles, and that one of them from a large gun will, when it strikes another ship, explode with such terrific force as to open a rent in her sides ten feet wide. These may be mere reports, but we personally know something about the destructive effects of percussion shells, having witnessed some experiments with them in 1845, we think. Our present Secretary of State, (Mr. Marcy) witnessed the same experiments.

Double Dasher Churn.



The annexed figure represents the double dasher churn of S. Hewett, of Seneca Falls, N. Y. A A are two bevel wheels on the shaft C, and B B are two bevel pinions on the dasher shafts, D D. It is not necessary for us to give any further description of this churn, as its action and construction will at once be comprehended by every person. The dashers so placed in conjunction with one another, it is claimed, agitate the milk so as to produce two conflicting currents, and by this means bring the butter sooner than a churn with only one set of dashers, however rapidly they may be operated.—Measures has been taken to secure a patent. More information may be obtained by letter addressed to Mr. Hewett.

Proposed Railroad Bridge Over the Hudson.

A model for a bridge to be erected over the Hudson at Albany, so as not to obstruct navigation, has been exhibited at Albany, by H. Waterman, and examined by a committee appointed by the Senate.

It is proposed to locate the bridge at a point where the free channel is 750 feet wide, and to support it by two piers, which shall divide the space into two equal parts—the central one to be the draw.

The piers are to be each formed by two rows of cast-iron cylinders, or piles, eight in each row, ranging up and down the river, firmly embedded in masonry at the bottom, and so framed together as to form an impregnable ice-breaker—being a modification of what is known as screw piling.

The draw is to be 200 feet wide, and the permanent bridges connecting with each bank of the river, to have a clear span of 235 feet.—These are to be of the railroad grade, and twenty-feet above the ordinary water mark, admitting the passage of the minor class of vessels, canal boats, &c.

The carriage way is to be on top of the railroad bridge, and by an easy grade is to attain an elevation of fifty feet at the middle of the bridge.

The draw or platform (which can be raised and depressed to or from the carriage way or railroad grade elevation at pleasure; and when necessary far above the carriage way) is to be suspended and supported by flexible wire ropes depending from a light span of bridge resting on two towers, 116 feet high, built upon the piers—the ropes passing over drums to the center of the towers, where there are balance weights attached, which descend as the platform rises, and vice versa. Besides these perpendicular wire ropes or supporters, there are others extending from each cross support of the platform to the top of each tower—which are at their extreme tension when the platform is down to the railroad grade, and requires the greatest support—but which are relaxed when it attains the higher elevation and assumes an easy position on the platform.

The platform is raised by adding the weight of water to the balance weight—the water being raised into tanks at the top of the tower by a steam engine of 10 horse power—which will raise the draw every minute during the day.—These motions are entirely at the command of the attendant, and can be performed with great rapidity.

It is proposed to hold the platform generally at the carriage way, fifty feet from the water—which is high enough to permit the free passage of seven-tenths of the navigation—and to lower it to the railroad grade only when a train passes—which will interrupt the carriage transit and navigation, only two minutes. The carriage transit may be interrupted perhaps four or five minutes when a larger steamer or sail vessel is to go through.

Thus it is estimated, the transit of 30 trains daily will interrupt navigation only about one hour out of 24—and that the navigation will be free all the rest of the time, with little interruption to the carriage transit.

A bridge at Albany over the Hudson has been a subject of great solicitude with the inhabitants of that City, for quite a number of years. It is a point where the railroads of the east can very favorably connect with those running through the Mohawk Valley and the interior of this State. A good railroad bridge over the Hudson is a desideratum, so that cars may be run through from Boston, and New York, to Buffalo. There is no such a bridge over the Hudson at present. The construction of one, in this age of engineering skill, we should think, would not be a difficult task. A draw bridge, which would provide for the passage of vessels, would be sustained by the U. S. Supreme Court, as a perfect legal structure.

Amorphous Phosphorus.

BY A. PUTTFARCKEN.

The author has examined some amorphous phosphorus obtained from England. He received it in the form of a brownish-red, shining, coherent powder, the peculiar odor of which powerfully affected the eyes.

By long washing with pure water, the phosphorus lost 13 per cent. in weight. The wash-water contained phosphorus and phosphoric acids, and a small quantity of phosphate of lime. The powder, when exhausted by water, was put, when dry and neutral, into well-stopperd vessels; it had however again become acid in a very short time.

15 grms. of the so-called amorphous phosphorus were oxydized with nitric acid; this was readily effected without the assistance of heat, merely by the gradual addition of the phosphorous to the nitric acid. 135 grms. of fluid phosphoric acid, of spec. grav. 1·13, were obtained. Sulphuretted hydrogen, however, threw down so much sulphuret of arsenic from this phosphoric acid, that the quantity of that metal in the phosphorus must have been equal to ½ per cent.

For the sake of comparison, 15 grms. of common phosphorus were converted into phosphoric acid of the same specific gravity.—The quantity of acid was 160 grms.

Exposure to a temperature of 392°–437° F. for three days, left the amorphous phosphorus unchanged, so that even the microscope could detect no globules of ordinary phosphorus.—When heated in a glass tube drawn out to a capillary point, it became black, with the evolution of a strong odor of phosphuretted hydrogen, which probably arose from the decomposition of the moist phosphorus acid. It did not fuse during the operation, and on cooling re-acquired its original color. After the tip of the glass tube had been sealed up, the tube was inserted into another a little wider, and then strongly heated for a considerable time with the blow-pipe. No sublimate was produced, nor had the substance undergone any change by its exposure to a red heat. Boiled with a solution of caustic potash, the substance evolved no phosphuretted hydrogen. Oil of turpentine dissolved much less of it than of ordinary phosphorus.—[Archivder Pharm.

[From this the author concludes that the so-called amorphous phosphorus does not deserve this name. It is rather a low oxyd of phosphorus. This is the phosphorus now used in making matches in England, and which is said, does not injure the health of the operatives, like free phosphorus. The amorphous quality is imparted to it by submitting it to a high degree of heat in a closed vessel under pressure.

The Osage Orange for Hedges.

The osage orange is highly estimated for making hedge fences. The extensive gardens of Nicholas Longworth, in the suburbs of Cincinnati are fenced with this plant. It has proved to be an effectual barrier to intruders, who have endeavored to plunder his choice fruits—grapes, peaches, &c., owing to its armor of large pointed thorns. The seeds are sown in May, in beds like those of beets, and are set out next spring in hedge rows, six inches apart, and the tops cut off to the ground. It is a native of Texas and Arkansas, and will grow well in our northern climate, except on very wet and cold soils. Large quantities of the seed have been planted during the past two years in Ohio and other western States, and immense tracks of land in those States will soon be protected and adorned with this valuable plant. J. W. Thorburn & Co., John street, this city, and others have the seeds for sale, and those persons who are inclined to protect their gardens and fields, and beautify the same, can now effectually do so with the thorny barricade of this hedge. Its full height is 16 feet; in four years it attains to a hight sufficient to fence out persons and cattle. The Cherokee Rose is also extensively cultivated and used for hedge fence at New Orleans, and the southern climate is favorable to its growth, but the osage orange cannot fail to thrive in our climate, particularly about New York City, Long Island, and New Jersey. Why do not those of our citizens who have seen and admired the hedge fences in England, introduce this kind of fence in this vicinity? The Illinois Central Railroad Company have contracted with James Sumpter & Co., of Montgomery Co., Ohio, to hedge with the osage orange, both sides for one hundred miles of this railroad, commencing fifty miles north of Chicago; this will require about two millions of plants. The ground along the line is to be cleared, levelled, broken up, and prepared this ensuing summer, and the plants are to be set out next spring. As an evidence of the extreme hardiness of this plant, we would state that they have been grown successfully for the last six years in the Union Nurseries of the city of Schenectady, N. Y., from seed gathered in Columbia, S. C. It has stood the severe winters well, and seems to be the very material for live fences in any climate where the Isabella grape can be cultivated successfully.

Illinois Central Railroad.

We have received a copy of the Reports of the Directors and the Chief Engineer (R. R. Mason) of the above named Railroad. The total expenditures have been nearly twelve million dollars. The total quantity of rails required for the Road and its branches will amount 72,000 tuns.

There have been delivered to the Company cars, up to the present time, as follows:

Thirty Passenger Cars, ten Baggage Cars, about six hundred eight-wheeled Freight Cars, and fifty Gravel Cars. Further contracts will be made so as to insure, by the time of the completion of the Road, a sufficient supply to accommodate its business.

They have made contracts for one hundred and six locomotives, of which there have been already delivered forty-two. The remainder will be delivered from month to month, so that the whole number will be received as rapidly as the exigencies of the business will require them.

The entire length of the road is 704 miles, of which 270 are now laid with rail, and 601 graded and finished. The route of this road is very favorable, 90 per cent of it being nearly a straight line. Our Western States are exceedingly favorable to the construction of railroads, and this one, when completed, will be one of the most profitable and important in our country.

The yearly boot and shoe manufacture of Massachusetts amounts to $37,000,000.

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