

Trial of Breech-loading Arms.

It will be recollected by most of our readers that Congress, at the last session, made an appropriation of \$25,000 for the purpose of altering the government muzzle-loading firearms to breech-loading, and authorized a trial to be made of all breech-loading arms susceptible of adaptation to this change, whose owners were willing to compete, with a view of ascertaining their relative merits. The Board of Ordnance officers, consisting of Col. Ripley, Captain Maynard, and Major Ramsay, detailed by the Secretary of War to examine and report on such plans as might be submitted by inventors, have lately concluded their examination, and it is presumed will soon furnish their report to the Secretary. The programme of the recent trial, which took place at West Point, was as follows: 20 rounds for accuracy, at 100 yards; 80 rounds more, to make 100, for endurance; 20 rounds for rapidity; 20 rounds for accuracy at 600 yards; 3 rounds for penetration.

The competing guns, named in the order in which they were filed before the Board, were Morse's, Joslyn's, Mt. Storm's, Merrill's, Maynard's, and Sharp's; and all of them had been altered from muzzle to breech-loading, Storm's having been altered from an old U. S. rifle, and although, in consequence, somewhat rough in appearance, elicited marked evidences of approval from the general ease and facility with which it was handled throughout the trial. The following is the tabular statement, as prepared by the correspondent of the *New York Times*, the guns being placed in the order of their apparent superiority in each branch of the trial:

TWENTY ROUNDS FOR ACCURACY, AT ONE HUNDRED YARDS.

Mt. Storm.....	1	Morse.....	4
Joslyn.....	2	Maynard.....	5
Sharp.....	3	Merrill.....	6

FOR ENDURANCE—ONE HUNDRED ROUNDS.

All the guns stood the test in this respect, but Sharp's evidently worked hard, and Morse had twenty-eight miss-fires.

RAPIDITY—TWENTY ROUNDS.

1. Mt. Storm.....	2	10	4. Joslyn.....	2	55
2. Merrill.....	2	25	5. Morse.....	3	49
3. Sharp.....	2	45	6. Maynard.....	4	15

TWENTY ROUNDS FOR ACCURACY—SIX HUNDRED YARDS.

1. Mt. Storm.....	11	4. Joslyn.....	5
2. Sharp.....	7	5. Maynard.....	3
3. Morse.....	7	6. Merrill.....	3

PENETRATION—INCH BOARDS, INCH APART, THIRTY YARDS.

Mt. Storm.....	1	Joslyn.....	4
Morse.....	2	Sharp.....	5
Merrill.....	3	Maynard.....	6

This result being estimated by allowing for different weight of powder and ball, and not merely for the number of inches passed through, which were in the order of firing first named, to wit:

THREE ROUNDS EACH.

Weight of ball.	Weight of powder.	Penetration.	Total.
grs.	grs.	inches.	inches.
Morse.....	74	12 1/2	37 1/2
Joslyn.....	550	60	32 1/2
Mt. Storm.....	500	60	34 1/2
Merrill.....	744	70	39 1/2
Maynard.....	744	70	33 1/2
Sharp.....	550	70	31 1/2

After these results were obtained, Storm proposed that all the guns should be immersed in water for a stated period, and afterwards tried, to see what effect this exposure, to which they are likely to be subjected to in practice, would have, but this was objected to. He also proposed that they should be thrown against rocks, or down precipices, to further test their powers of endurance, but all refused compliance to this course, except Sharp. Four of the guns tried were loaded with the usual cartridge, and Mt. Storm's had the additional advantage of capability of being loaded with loose powder and ball.

Cast Steel for Ordnance.

Charles Sanderson, in a paper recently read before the British Society of Arts upon the subject of Iron, remarks that much has been advanced in favor of the manufacture of ordnance from cast steel, but he does not think that good and serviceable pieces of artillery can be manufactured from such metal. There is no great practical difficulty in casting a mass of steel two or even three tons weight, but the irregular crystallization of so large a body of steel, melted in parcels of fifty pounds in a crucible is unfavorable to that uniform molecular structure which such castings should possess, since upon their excellence often depends the issue of a siege or action.

Although wrought iron ordnance cannot be depended upon, they are better than cast steel, but their perfection is much impaired by the necessity of piling masses of iron together. He admits that a weld can be perfectly made, but two surfaces when oxydized can never become one amalgamated body, without the oxygen be reduced at the moment when the union is effected. Wrought iron guns have given excellent results when fired at slow intervals, but if a continuous quick firing were kept up, he doubts their being able to withstand the shocks; they would, he thinks, after each round become gradually weaker through the welded surfaces.

Steel Ships.

The superior lightness, durability, and elasticity of steel over iron renders it more suitable for many of the uses to which we put that metal, and one of the last substitutions that has been made is the construction of ships of steel. It is a well-known fact that within certain limits crank ships sail better than steady ones, because of their superior elasticity, and they give to the impact of the waves, and glide through the opposing forces, when a steadier and safer ship would inflexibly receive the whole force, and not move an inch. This fact having been considered, the homogeneous metal, which is a sort of half-way house between steel and iron, is being largely employed in ship-building, and there are now in England many in the course of construction. The first vessel ever built of steel was the small steam launch for the Livingston Expedition up the Zambesi river, and another one, the *Rainbow* of 160 tons has just been launched from Mr. Laird's works on the Mersey, which is intended for the navigation of the Niger.

The Successful Laying of the Atlantic Telegraph Cable.

On the afternoon of the 5th inst. the Associated Press of this city received a telegram from Cyrus W. Field, informing them of the above startling and pleasant fact. It was as follows:—

“TRINITY BAY, August 5, 1858.
 “TO THE ASSOCIATED PRESS.—The Atlantic telegraph fleet sailed from Queenstown on Saturday, July 17th; met at mid-ocean on Wednesday, the 28th, and made the splice at 1 P. M. on Thursday, the 29th, and then separated—the *Agamemnon* and *Valorous* bound to Valentia, Ireland, and the *Niagara* and *Gorgon* for this place, where they arrived yesterday, and this morning the end of the cable will be landed.

It is sixteen hundred and ninety-eight nautical, or nineteen hundred and fifty statute miles from the telegraph house at the head of Valentia harbor to the telegraph house, Bay of Bull's Arm, Trinity Bay; and for more than two-thirds of this distance the water is over two miles in depth.

The cable has been paid out from the *Agamemnon* at about the same speed as from the *Niagara*.

The electrical signals sent and received through the whole cable are perfect.

The machinery for paying out the cable worked in the most satisfactory manner, and was not stopped for a single moment from the time the splice was made until we arrived here.

Captain Hudson, Messrs. Everett and Woodhouse, the engineers, the electricians, and officers of the ships, and, in fact, every man on board the telegraph fleet, has exerted himself to the utmost to make the expedition successful, and by the blessing of Divine Providence it has succeeded.

After the end of the cable is landed and connected with the land line of telegraph, and the *Niagara* has discharged some cargo belonging to the Telegraph Company, she will go to St. John's for coal, and then proceed at once to New York.

CYRUS W. FIELD.”

The next day he telegraphed the President, the Mayor of New York, and other officials, all of whom sent corresponding answers of

congratulation. The telegram of Captain Hudson, of the *Niagara*, to his family is good. Here it is:—

“TRINITY BAY, August 5, 1858.

“God has been with us. The telegraph is laid without accident, and to Him be all the glory. We are all well.

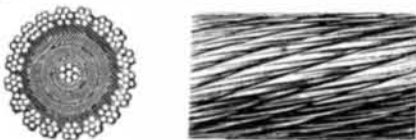
Yours, affectionately,

WM. L. HUDSON.”

There is now no doubt that both ends have been successfully laid, but owing to the vessels having no instruments for transmitting messages on board, it may be several days before the Queen's message to the President can be sent through.

Up to the hour of our going to press there was no further news, as the land line on Newfoundland had stopped working from some unforeseen cause, which, however, was quickly being repaired.

As many of our readers may not remember the illustration we published on page 216, Vol. XII, we now give another engraving of



a section and side view of the cable which stretches from Valentia Bay, Ireland, to Trinity Bay, Newfoundland, of the actual size, and another showing the method of its construction.



1. Wire.—Eighteen strands of seven inch wire.
2. Six strands of yarn.
3. Gutta percha.—Three coats.

Telegraph wires.—Seven in number.
 The flexibility of this cable is so great that it is as manageable as a small rope, and it is capable of being tied around the arm without injury. Its weight is but 1,860 pounds to the mile, and its strength such that it will bear in water over six miles of its own length if suspended vertically. Some doubts being entertained as to its sinking to the bottom, it is enough to know that it is heavier than those shells which have been taken up from the bed of the ocean by Commander Berryman while engaged in sounding along the line of the telegraphic plateau.

Thus the great work of the nineteenth century is accomplished, and hourly it nears a perfect completion; and ere this paper gets into the hands of many of our readers, we expect that the Royal Message and Presidential reply will be in every one's mouth throughout Britain and America.

The Climate of Fraser River.

This new district, to which all classes are now turning their attention, possesses a mild and genial climate, and a fertile soil awaits the labor of the agriculturist. All our upper Pacific coast has a range of temperature something like the west of England, though somewhat hotter in summer. The gold excitement will turn the world's attention to this land as a field of emigration, and will do much for developing the resources of what may prove to be one of the richest portions of the continent.

FRUIT AND VEGETABLES.—At the present time New York market is well supplied with apples, peaches, plums, blackberries, water-melons, tomatoes, and green corn. Consequent upon the abundance of all these luxuries, the usual mortality among children prevails, otherwise our city is healthy.

PONDEROUS MACHINERY TO GO ABROAD.—The Novelty Iron Works have finished a lathe, to fill the order of a foreign government. Its weight is over 140,000 pounds, or about sixty tons.

GRAY HAIR.—Some English writer has recently asserted that an undue proportion of lime in the system is the cause of premature gray hair, and advises to avoid hard water, either for drinking pure, or when converted into tea, coffee, or soup, because hard water is always strongly impregnated with lime. You may soften water by boiling it. Let it become cold, and then use it as a beverage.

VALUABLE PAPER MONEY.—Judging from the following notice of a Minnesota Bank, the money in that State must be below par: “It may be proper to add, that a bushel of notes are traded for an iron spoon at the place issued, and gradually lose their value while traveling to remote sections of the country.”

THE AMERICAN INSTITUTE FAIR will be held at the Crystal Palace, as usual, this year, and will commence on the 15th of September next. The managers are making every exertion and sparing no expense to make the coming fair as fine an exhibition of American skill and invention as we have ever had in this country. Inventors from the country who wish to compete for the prizes had better begin making their preparations at once.

LIGHT.—The celebrated *savant* Niewentyl, is said to have undertaken to count the number of particles of light that escape from a burning candle. By his computation, there are thus evolved at every second of time, “ten millions of millions times more than the number of grains of sand computed to be contained in the whole earth.” If any mathematician can make a more nice and accurate calculation, it will be best for him to begin pretty soon.

AN EXCELLENT WHITEWASH for ceilings of walls can be made of Paris white, 33 pounds, costing \$1, and Cooper's white glue, 1 pound, costing 50 cents. Put the glue to soak in cold water over night; in the morning slowly heat until dissolved in the water. Stir Paris white into a small quantity of hot water. Then mix both, and add hot water to reduce to a proper milky consistency, and apply with a brush. It is probably better to keep the liquid warm over a fire, or by the occasional addition of hot water. A single coat of this is described as being equal to a double coat of lime whitewash, while it is far more brilliant and pure, and will not rub off.

THE EFFECTS OF TOBACCO.—The Dublin *Medical Press* asserts that the pupils of the Polytechnic School in Paris have recently furnished some curious statistics bearing on tobacco. Dividing the young gentlemen of that college into two groups—the smokers and non-smokers—it shows that the smokers have proved themselves in the various competitive examinations far inferior to the others. Not only in the examinations on entering the school are the smokers in a lower rank, but in the various ordeals that they have to pass through in a year the average rank of the smokers had constantly fallen, and not inconsiderably, while the men who did not smoke enjoyed a cerebral atmosphere of the clearest kind.

A NEW SLEEPING CAR.—The Great Western Railroad of Canada are engaged in building an experimental sleeping car, to combine the two desiderata necessary to insure comfort in day and night travel. We have not heard the nature of the plan upon which this car is constructed. But in connection with this fact we may mention that since the publication of our article on the subject of sleeping cars we have had fifty different plans of seats, designed to embrace the objects desired, presented for inspection, and have applied and secured patents for a large number of them. We shall in a few weeks present to our readers an engraving and full description of Woodruff's patent seat and couch car, in the form in which it is now being constructed for many of the western railroad companies.