Important to Manufacturers of Fire-arms.

The following circular is addressed to manufacturers of breech-loading guns, and will explain itself on perusal:—

CONSULATE-GENERAL OF SWITZERLAND,
WASHINGTON, D. C., July 26, 1865.

SIR:—Your attention is invited to the inclosed circular of the Honorable War Department of Switzerland inviting competition in breech-loading fire-arms suitable for infantry service. As a considerable portion of the circular is devoted to technical points, intelligible only to those familiar with the fire-arms now in use in Switzerland, I would here extract from the circular in question the essential points of interest for the manufacturer of arms in the United States. The main object of the prize offered by the military authorities of Switzerland appears to be to secure the best system of breech-loading arms which could be adapted for the use of infantry. It is stipulated that metallic percussion cartridges are to be used, and the barrel of the arm is to be connected securely with the stock, and not require to be moved when loading. The further stipulations named in the circular are as follows:—

9. The outward shape of the arm shall not present any obstacles which might prevent its easy handling.

10. The ignition of the charge shall be perfectly regular and sure.

11. The arm shall possess all the important advantages of a breech-loading weapon, such as simplicity, durability, solidity and strength of mechanism, facility of handling it after long-continuous firing, and to be easily cleansed and kept in good order, especially as to the complete and durable closing of the breech.

12. The War Department of Switzerland invites manufacturers of arms, and inventors who may be disposed to submit models of arms which will comply with the required conditions, to make their proposals at the earliest date.

13. The time appointed for the delivery of the arms to be tried ends October 1, 1865.

14. A special officially selected commission will examine the various models, experiment with them, and ascertain their efficency.

15. The Government of Switzerland has decided to award to the inventor of a system or style of breech-loading fire-arm which can be introduced and adopted into the Swiss army, a premium of 20,000 francs.

16. In case that no model should be submitted which answer all the requirements mentioned, the Government reserves the privilege to divide, wholly or partially, the stated amount among those who have forwarded the most effective models of the arm.

Should you desire to compete for the prize offered, and thereby perhaps succeed in introducing your system of breech-loading fire-arms into the Swiss service, it will secure to your arm a most enviable reputation; for no manufacturers of arms on the continent of Europe are more expert than the Swiss, and no government is known to devote more zealous and discriminative attention to the introduction of the best fire-arms into the military service.

Arms intended for competition should be well packed, and provided with at least one thousand rounds of cartridges. They must be sent to this Consulate by the 1st of September, and all expenses of shipment from Washington to Switzerland will be borne by the undersigned. If desired, after trial, the unsuccessful arms will be returned free of charge, or purchased, if a price can be agreed upon. Full description of each arm should accompany it, and also the price at which the arms could be furnished per piece or by the quantity.

JOHN HITZ,
Consul-General of Switzerland.

The First Defect in the Cable, and How it was Repaired.

The following interesting account of the first accident to the Atlantic cable is given by a correspondent of the *London Times*, writing from Valentia, July 27, 1865:—

At last the mystery of the breakdown of the cable is known in all its details. The master of the *Hawk*, which returned here this evening, having left the great ship last night, brings full particulars, both of the extraordinary nature of the accident and the still more curious manner in which it was discovered, its place ascertained, the cable hauled in and the piece cut out. When about eighty miles off land, with dead calm weather, the ship going six knots, and the cable, we are told, running out as softly as a "silk rope," the usual test signals were being sent through, when suddenly both those to and from the shore gave most serious indications of faulty insulation. The utmost alarm was felt on this discovery. The connections of the instruments were cartully re-examined and the most rigid exactness observed in the final tests. All gave the same result, and what was a still more certain and ominious proof, the return currents from Valentia showed an equal loss. Notice was instantly given to Mr. Canning and Captain Anderson, and the speed of the *Great Eastern*, which was then in 300 fathoms, was reduced almost to a standstill. It must be remembered that all these signals were sent and received through the whole length of 2,300 nautical miles, or about 2,700 statute miles of wire.

LOCALIZING THE DEFECTIVE POINT.

Valentia was instantly communicated with, and the whole electrical staff under Mr. De Sauty set to work to ascertain by resistance tests whether the fault was in the ship or in the eighty miles that had been paid out. Trials of so delicate a nature and of such vital importance to the success of the undertaking were, of course, conducted with the most vigilant caution, and the calculations based upon their data made and re-made to insure certainty. The result of all was a unanimous decision that the fault was not on board, but in the eighty miles of submerged wire. When this decision had been arrived at, the cable was at once cut on board the *Great Eastern*, and the length under water tested by Mr. Saunders. With wonderful skill his tests at once "localized" the spot where the fault existed—eleven miles from the stern of the ship, and within a quarter of a mile from where it actually was.

WINDING IN THE CABLE.

Instantly preparations were made for getting the *Great Eastern* round and employing the winding-in apparatus fixed forward specially to be used in case of such mishaps. It was hoped, of course, that its use would never be required, and very many believed that, whether required or not, it would never accomplish what it was intended to achieve. The result proved the fallacy of both hopes and fears. The severed portion of the cable was passed into this machine, and, the *Great Eastern* steaming back over the rope's course, the work of reeling-in at once began. The cable came up with singular ease. The strain on the dynamometer of the machine never exceeded eighteen hundred, which was nothing to a cable guaranteed not to break under seven tuns, and equal, from its specific gravity, to support eleven miles of its weight in water, or through a deeper sea than soundings have ever yet been found in the world. As we have said, within a quarter of a mile of the spot indicated by Mr. Saunders the fault was found; and nothing can more strongly indicate the endless perils with which successful submarine telegraphy is beset than the trivial and almost unavoidable accident which had caused it.

THE ORIGIN AND NATURE OF THE DEFECT.

As the lengths of wire of one hundred or one hundred and fifty miles were manufactured at Messrs. Glass & Elliott's, they were taken down in barges and coiled away in the tanks on board the *Great Eastern*. Each as it arrived was, of course, spliced up to that which had preceded it, and this was often done in the tanks themselves. The operation of splicing not only means joining the conductor, but also joining the outside wires, the junction of the latter being made at different lengths—the bits of wire cut out being thrown away. It seems, however, that one of these atoms of wire, about two inches long, and as thick as a stout darning needle, fell on the coil unnoticed, as, indeed, who would notice it, or for a moment think of the consequences which this disregarded presence in such a spot might surely occasion? The weight of the layers of cable laid above this fragment—as insignificant as a shaving in a carpenter's shop—pressed it firmly into the tarred hemp which forms the outside coverings of the cable. To this it adhered. While in the tank it did no harm, but when this portion came to be paid out the small diameter of the eight leading wheels which give access to the paying-out machine, and the weight of the jockey pulleys over those which keep the rope in its place, bent the stout iron wire so sharply that it passed between the hemp, pierced the gutta-percha through at least two or three of its four folds, and there remained. In this state it was found, and instantly recognized as a piece of wire from a splice joint.

HOW IT WAS REPAIRED.

A short length of cable was at once cut out, a new splice made, vigilantly tested, and gradually sunk. When on the bottom it was again retested for some hours, and the signals were shown to be absolutely perfect.

HOW THE "GREAT EASTERN" BEHAVED DURING THE TIME.

During all this time the *Great Eastern* remained quietly hove to. The sea was calm, and even the throbbing swell of the Atlantic had died away into the mere undulations of a wave. The motion in her, therefore, was barely perceptible to the feeling, and could certainly not be detected by the sight, save by watching the little arc of a circle which her topmasts now and then described. The whole accident caused a delay of nearly twenty-four hours, during which the drift of the vessel was almost nothing.

SPECIAL NOTICES.

Jacob Constant, administrator of the estate of Isaac Constant, deceased, of Dawson, Ill., has petitioned for the extension of a patent granted to him on the 4th day of November, 1851, for an improvement in cultivators.

Parties wishing to oppose the above extension must appear and show cause on the 23d day of October next, at 12 o'clock, M., when the petition will be heard.

Thos. J Sloan, of New York City, has petitioned for the extension of a patent granted to him on the 21st of October, 1851, for an improvement in machinery for shaving, nicking, and re-shaving wood screws.

Parties wishing to oppose the above extension must appear and show cause on the 2d day of October next, at 12 o'clock, M., when the petition will be heard.

Wm. Kenyon, of Steubenville, Ohio, has petitioned for the extension of a patent granted to him on the 14th of October, 1851, for an improvement in machines for making nuts, washers, etc.

Parties wishing to oppose the above extension must appear and show cause on the 25th of September next, at 12 o'clock, M., when the petition will be heard.

Louis S. Robbins, New York City, has petitioned for the extension of a patent granted to him on the 4th day of November, 1851, for an improvement in lubricating oil from rosins.

Louis S. Robbins, New York City, has petitioned for the extension of a patent granted to him on the 4th day of November, 1851, for an improvement in distilling acid and naphtha from rosins.

Louis S. Robbins, New York City, has petitioned for the extension of a patent granted to him on the 4th day of November, 1851, for an improvement in tanner's oil from rosins.

Newton Foster, Gilbert Jessup, Hiram L. Brown and Calvin P. Brown, of Palmyra, Chapinsville, and Shortsville, N. Y., have petitioned for the extension of a patent granted to them on the 4th day of November, 1851, for an improvement in seed planter.

Parties wishing to oppose the above extensions must appear and show cause on the 23d day of October next, at 12 o'clock, M., when the petition will be heard.

THE New England Agricultural Society will hold its second annual fair at Concord, N. H., on the 5th, 6th, 7th and 8th days of September next. The society offer the large sum of eight thousand dollars in premiums. Among the novelties to be exhibited will be a locomotive steam plow, invented by a New England mechanic.

MISS MARIA MITCHELL, of Nantucket, Mass., is to be Professor of Astronomy at the Vassar College, Poughkeepsie, N. Y., which is to be opened in September. Miss Mitchell has a world-wide reputation among astronomers.