

PROGRESS OF AMERICAN TELEGRAPHY.

According to the recent annual report of the Western Union Telegraph Company, this great corporation has now in operation 72,833 miles of telegraph line, 179,294 miles of operating lines, and 6,565 offices. Its receipts for the past year were nine and a half millions of dollars, expenses six and a half millions, nearly—net profits over three millions. Over seventeen millions of messages were transmitted, the cost of which to the company was 37 cents per message. This is rather cold comfort for new companies that would like to compete with the Western Union by a reduction of the rates. Rather dismal, also, for the advocates of government telegraphy, who propose a uniform charge of 25 cents for each message, being the rate now in vogue in England, where the telegraphs are worked by the government at a great annual loss.

Our British cousins are a little apt to think that what they don't know about telegraphy isn't worth knowing. But the truth is they have not as yet learned the A B C of rapidity in the business. In this respect the American telegraph engineers are in advance of other nations; nor in this very surprising, since both the telegraph works and telegraph experiences of individual nations are diminutive when compared with those of the United States. For example, the length of all the telegraph lines in the United Kingdom is only 23,878 miles, while, as shown above, a single company in this country is now working more than three times that length.

Another reason for the advanced situation of telegraphy in this country is the fact that there are thousands of telegraph operators and electricians here who, under the stimulus of our patent system, are constantly studying how they may improve instruments or make discoveries by which the operation of the line and adjuncts can be improved, quickened, or made more economical. Their success is astonishing, and in one branch is illustrated by the report of the Western Union Company, which shows that, by the employment of the new duplex and quadruplex instruments, they have greatly reduced the expense of transmission, besides increasing the capacity of the lines.

If our telegraphs were in the hands of government officials there would be less striving or competition for excellence, and little encouragement, we fear, would be offered for the discovery of new improvements.

The recent invention of Elisha Gray, heretofore described by us, by which sixteen or more messages may be transmitted each way, at one time, over one wire, promises wonderful results in the future. It indicates that the time is coming when household and private telegraphic lines will become as common as the existing method. It is one of the peculiarities of Mr Gray's remarkable method that, while sixteen different persons may use the wire, none of their messages need interfere with or become known to any of the other users, save the sender and his designated correspondent.

A new organization entitled the National Telegraph Company, with a capital of \$25,000,000, has been organized in California, and it is to be hoped that it will meet with success. But this it can only hope to achieve by improving the existing service. If it can send messages as promptly, at no greater prime cost than that now paid by the present companies, it may secure a share of the business. But this will be up-hill work in the face of the admirable management of companies like the Western Union, which are constantly striving to improve every branch of their service, and quick to adopt every practical improvement that inventors present.

FOREIGN PATENTS—REDUCTION OF COSTS.

We would direct special attention to the announcement, published in another column by Messrs. Munn & Co., of an important reduction in the costs of foreign patents.

Throughout all Europe there is a large and increasing demand for American inventions, and those of our ingenious countrymen who neglect to secure foreign patents, if their improvements are good, simply throw away golden opportunities.

Many millions of dollars are already invested in Europe in the manufacture of American inventions, introduced there by enterprising adventurers, who are always on the alert to pick up and patent abroad, for their own benefit, all new American devices of any account, the foreign patents for which have been neglected by the original authors in this country.

American patentees have it entirely within their power to put a stop to this species of piracy. They can always, if they desire, file in their applications for foreign patents in advance of others, because the invention remains unknown abroad until the patent issues here.

Indeed, one of the provisions of the American law is intended for the special convenience of our inventors in securing their foreign patents. After the official examinations have been made here and the patent allowed, the inventor then possesses good *prima facie* evidence that his improvement is equally good and patentable in all other countries; and after such allowance, the patent need not be issued under six months, if the patentee so elects, or for such less period as he wishes, thus giving him abundant time to take as many patents in foreign countries as he desires.

Our patentees are not sufficiently alive to the importance and value of this excellent provision of law. It should be their aim, in all cases where the invention is of probable value, to secure European patents promptly, before they are deprived of the privilege by interlopers.

Where the original author is unable to meet the necessary expenses, he can generally, by a little perseverance, find partners to assist him: one of whom, for example, would pay

for the English patent, and share in its proceeds; another for the French patent, and so on.

The facilities of business, steam, postal, and telegraphic connections between this country and Europe are now so great that patents may be taken and handled in the chief European States with almost as much ease and promptitude as in this country; and, we repeat, it is a folly for our patentees to overlook the matter.

THE KEELY MOTOR DECEPTION.

By a special invitation of the managers of the Keely motor, Vice Admiral Wellesley, of the great ironclad Bellerophon, and a party of his associate officers and friends, were lately admitted to a private exhibition of this *rara avis*. The admiral was attended by several of the original promoters of the scheme, among whom, according to the Philadelphia *Times*, were Professor B. Howard Rand—who, it will be remembered, certified in effect that, while he did not know actually anything about the wonderful gas, he did know that its nature and generation were totally unknown to Science—by W. H. Rutherford, Chief Engineer U. S. Navy, by the learned counsel of the company, who so adroitly managed to get a hundred thousand dollars in cash out of the New York capitalists, by Keely himself, and several of his best helpers.

Keely went through the juggle in the usual manner. The boiler was suspended by chains from a beam overhead, to satisfy the visitors that there was "no humbug." Water was then run through the boiler, which visitors were allowed to smell and taste, indicating no chemicals present. Keely then blew his breath into her as usual, turned the cocks, and lo! the gage indicated 1,750 lbs. pressure per square inch. This was allowed to escape for half an hour, more or less, through a pipe having the bore of about the size of a horse hair, during which time the gage went down to 500 lbs. One of the British officers suggested that this didn't look like a constant force, or capability of doing actual work. To which Keely made the old reply, originally given three years ago and repeated at every performance, to the effect that the new machine was not quite done, would be ready in about two weeks, and then, etc. The sum total of information gained by the British officers, if we may judge from their reported expressions made after the exhibition, was that they saw the gage go up; but how it was done they were not shown, nor was anything of a practically useful nature developed in their presence.

THE FAIR OF THE AMERICAN INSTITUTE.

That telegraph wires in cities will eventually have to be laid underground is a fact which is beginning to force itself upon the popular mind. It is only necessary to recall the wholesale destruction of the aerial wires by the accumulated ice during last winter, and the danger in which the city was placed for the time owing to the consequent rupture of the fire alarm system, to perceive the importance of the change, without considering other reasons which militate in its favor. Inventors consequently are turning their attention to the devising of means for enclosing the subterranean lines, and one new mode of so doing we find among the exhibits at the fair. Copper wires are drawn through glass tubes of a somewhat larger diameter. These tubes are in turn enclosed in iron pipe and held firmly therein by paraffin, which is poured in in a melted state. For lateral connections, as well as for convenience in laying, traps are used, into which the pipe is screwed, the wires passing over non-conducting bridges, so that any wire may be taken out and replaced without interfering with the working of the others. The pipes are made in suitable lengths and are connected by couplings, the joints being faced with paraffin. The inventor states that the device has been tested over considerable distances with success.

THE AQUOMETER

is a new steam pump now in operation in the machinery department. It bears a strong resemblance both in shape and in construction to the similar apparatus known as the pulsometer. There are two working chambers combined with an interposed pressure chamber. Steam enters one chamber or the other according to the position of a steam valve, and presses upon the surface of water in the chamber, forcing the same out. As soon as the live steam reaches the discharge port, its free escape produces a reduction of pressure in the working chamber. The discharge valve then closes, the steam valve cuts off further entrance of steam, and the body of water in the central pressure chamber opens the suction valve and causes an instantaneous condensation of the entire volume of steam within the working chamber, so as to produce a vacuum therein, which causes said chamber to fill with water. The suction valve then ceases, and the momentum acquired by the water flowing up the suction pipe operates to fill the pressure chamber. As the one chamber is thus filling, the steam current operates to force the water out of the opposite chamber, so that a constant flow is produced in the discharge pipe. The steam valve is balanced in its chest, and means are provided to prevent injury by the entrance of grit or dirt.

Any farmer who possesses a manure heap, according to the inventor of

A NEW INCUBATOR

on exhibition, is provided with the essential means of artificially hatching chickens. The idea is to utilize the natural heat of the manure, to produce and maintain the requisite temperature for the incubating process. The apparatus, which is quite simple, consists of a cask or cylinder of wood, near the bottom of which is a door for convenient access to the interior. On the bottom is placed a sieve for the recep-

tion of the eggs. In the head is made a kind of chimney covered with an adjustable sliding piece. A bed of horse manure about a foot thick is prepared, and on this the cask is stood. Then manure is heaped about the sides of the latter, flush with the top. A thermometer is placed upon the sieve; and when this shows the interior heat to have reached 104°, the eggs are inserted. Nothing further remains to be done, but to watch the thermometer during the usual hatching period. If the heat exceeds 104°, some of the manure is removed and a portion of the circumference of the cask left exposed; if the mercury falls below the above point, manure fresh from the stable is substituted for the older material. When the chickens appear, the interior of the cask is cleaned, and an artificial mother, composed of a disk covered on its under side with buffalo hair, is inserted and adjusted to a proper height from the bottom, by means of a threaded rod passing through a nut in the cover of the cask. The manure is still left around the latter, the heat being necessary for the young chickens until they have grown sufficiently to warrant their removal. The chimney on top serves for ventilating purposes. The inventor says that any number of eggs that can be conveniently disposed on two sieves, if need be, can be thus hatched.

The manufacture of

AMERICAN CORDIALS.

is interesting as the starting pointing of a possible new industry. The visitor will find in a small room adjacent to the main hall a large variety of these liqueurs, and will also have an opportunity of witnessing the preliminary operation of their distillation. It is proposed, of course, to compete with the maraschinos, chartreuses, and other cordials of foreign make; and to this end the manufacturers confine themselves, as far as possible, to herbs and other ingredients of American production. The distilling apparatus now in operation is worked by steam. The ingredients, moistened, are placed in a vessel which is contained in a larger receptacle, into which the steam enters. The effect of the heat of the latter is to vaporize the materials, the vapor first passing to a drum above and thence through a high arched pipe to a cooler, which is simply a receptacle enclosed in a cold water bath. The high pipe prevents the passing over of the heavy oils, so that only the fine aromatic essence is condensed, and afterward, in liquid form, drawn off from the cooler. Subsequent distillation is carried on with California brandy or native wine, which supplies the spirituous principle; and the result is a cordial of fine flavor, in many respects equal to that of foreign production.

Mr. L. W. Pond.

The death of Mr. L. W. Pond, the well known machine tool manufacturer of Worcester, Mass., recently occurred in a very sad and unlooked-for manner. He took passage in the night steamer Providence from this city for Boston. The weather was quite stormy, and the vessel had considerable motion, owing to the rough sea. When last seen Mr. Pond had quitted his state room, partially undressed, and probably was suffering from the effects of the rolling of the boat. His apartment in the morning was found empty with the exception of a few articles of clothing, and no traces of its occupant could elsewhere be discovered. From the fact of Mr. Pond being known to have a considerable sum of money about him, together with the circumstance of his having occupied a state room in a very quiet and retired portion of the vessel, a suspicion of foul play was engendered; but this has since given way to the more probable assumption that the unfortunate gentleman, while near the side of the boat, lost his balance, and was thrown over the rail by a heavy lurch.

The terrible death which he thus met, while it will awaken a deep feeling of sympathy among all, cannot add to the sorrow with which those who knew Mr. Pond will regard his loss. He was one of those persevering, enterprising men such as are naturally fitted to be leaders in great industries, and such as the country can least afford to part with, an inventor and a patentee of celebrity and of marked genius and ability, and beyond all he possessed a personal character untinged, through a busy life, with the faintest shadow of reproach.

Rise and Progress of Trademarks.

"Examples of the practice of using marks to show the workmanship of various manufactures have been discovered at Herculaneum, such signs having been in vogue among bakers and others. In modern times similar tokens have been adopted in textile and various other fabrics, though the earliest extant are those of paper. After the invention of paper (15th century) from pulp of linen rags, water marks were introduced into the fabric, doubtless to show the manufactory from which the paper was issued. The process has since become general, and the trademark a recognized part of the system of commerce, by which a guarantee is given to the purchaser and a legitimate protection afforded to the manufacturer. The legislation of 1862 is a step in the right direction, and has already done service to trade and morality. It is upon the uniform good quality of manufactured commodities that any foreign trade depends for its continuance, and the obligation of the legislature to secure the purchasing public from fraud, whether the purchaser be a home or foreign consumer, is more and more stringent when the goodness or badness of the object cannot be readily detected by ocular inspection. It is in such cases that the use of trademarks is most useful."

The above, from so good authority as the London *Stationer*, applies with equal force to our manufacturers. There are some things in which the slow Britishers excel the more rapid Yankee. In the matter of securing trademark protection on their products, and the extent of advertising their goods, they are far ahead of our people.—EDS.