

NEW YORK TELEGRAPHIC OPERATIONS.

The heart of the American electric system is situated at No. 21 Wall-street, this city. In this building, the once-divided telegraph companies are now united in a grand combination of operations, and great economy we understand has been secured by this arrangement. The basement is occupied by the Delivery Department, in which a large number of messenger-boys are employed for delivering dispatches in those parts of the city below Canal street, while those for places above this street are telegraphed to the nearest station on the "City Line," and delivered thence.

The Receiving Office is on the first floor, where all messages are taken in and forwarded to the appropriate room for transmission by a "dumb waiter," which, together with a speaking-tube, communicates with all the operating rooms above.

On the second floor is the office of the "City Line," which has two wires terminating respectively at Madison-square Post-office and at Fort Hamilton, L. I. This line uses the "Combination" printing instrument (illustrated in our last issue), and has 11 different stations within the city, at the principal hotels and other places. It has also offices at Brooklyn, Williamsburg, and Forts Lafayette and Hamilton. The communication across the East river is effected by a cable at "Hell Gate." This room also contains the office of the "Sandy Hook Line," which is worked by Morse's instrument and is used to report the movements of vessels.

The third floor is occupied by the Southern lines, which formerly entered the "Magnetic" office at No. 43 Wall-street, but since their recent consolidation with the "American" company, have been removed here. They work one wire to Washington, which has often been operated in single circuit to Augusta, Ga., 900 miles; and even to New Orleans. For way-business they have one wire to Baltimore and three to Philadelphia. The "National Line" has an instrument in this room, connecting direct with Pittsburgh, Pa., and which has often been worked in direct connection with Louisville, Ky., in the same way. All these wires use the Morse instrument.

The fourth floor is occupied by the "New York, Albany, and Buffalo" company, with two wires in single circuit with Buffalo, via Troy and Albany, 530 miles, and three others terminating respectively at Albany, Troy and Greenbush, N. Y. The latter is used mostly for the Hudson River Railroad business. There are also two other wires owned by the Erie Railroad Co., extending via Piermont to Port Jervis, and via Jersey City to Dunkirk, 465 miles in one circuit. All messages are received by sound alone, on the Morse instrument, in this room.

On the fifth floor are the remaining lines of the "American" company. Here are eight wires connecting direct with Boston, 250 miles, five of which use the Morse instrument, and "receive by sound." These are the lines owned by the "Union" company, before its recent consolidation with the "American," whose office was at 23 Wall-street. The other three wires use the "Combination" instrument, but have, until very recently, used the "House," by which it was necessary to re-write all business at Springfield. There are also two House instruments in connection with Baltimore and Washington, and a Morse line communicating directly with Montreal, via Troy, a distance of about 500 miles.

The sixth floor contains two or three hundred cups of Grove's and Avery's batteries, which supply all the lines with the necessary amount of electric fluid. In this Battery Room, 45 cups of Grove's or Avery's battery are employed on one line. The latter has two strips of platinum in each cup; and an amalgam of mercury, lead and tallow is employed for the zinc cylinders. Telegraph messages are sent with any machine by a single wire; the ground forms the return conductor, and for this purpose, the battery is connected at one end to a thick copper rod which is attached to a plate of copper, 2 feet square and half an inch thick, buried in the moist earth underneath the basement floor. The positive plate of the battery is connected with the wire which forms the air-line. The electric circuit, and its phenomena still baffle the most ingenious casuists to explain satisfactorily. No person knows why an electric current prefers one substance to another in traveling, or why it always moves in a circuit.

One large battery of cups works an entire long line and all the way-lines; either 12, 14, 20, 30, 40 or

45 are employed according to the distance. Copper wire, although a most excellent conductor, expands and contracts so much with atmospheric changes of temperature that it is very subject to breakage, and is not therefore used on our lines. "No. 8" galvanized iron wire is the kind that is now employed, and is found to answer admirably, especially on the inland lines. Near the sea-shore, it is liable to be affected with saline matter, by which the chloride of zinc is formed and the zinc coating very soon corrodes. In passing through such cities as Pittsburgh, where there is much sulphur in the coal smoke, the galvanized wires are attacked by the sulphuric acid, and the sulphate of zinc is formed, and thus the coating is also soon removed. We believe that Bain was the first person who employed galvanized zinc-coated iron wire in telegraphing, and we are surprised that one of his simple chemical telegraph instruments is not used at all the stations, because it will work with a lower battery, and in cases when none of the mechanical instruments can operate, for want of a sufficient current, such as when part of the line has been torn down by a storm. There are 1,300 telegraph stations in the United States, in which 3,500 persons are employed.

The whole number of instruments at present in daily use in this building is twenty-eight, twenty-one of which are Morse, five Combination, and two House. The Board of Brokers also have a Combination instrument in the Exchange, connecting with Philadelphia by a separate wire belonging to the "American" company.

By far the largest number of lines in the country are worked under Morse's patent; the printing telegraphs not being employed nearly as much as is supposed; they never have been used to any extent, except on the lines between this city, Boston and Washington. The extreme cheapness and simplicity of the Morse instrument have always prevented its being superseded by the more costly printing instruments. The "Combination" printing instrument is the best adapted for through lines doing a large amount of business.

Adjacent to the office is a supply store, where every article necessary for the building, repairing and operating the various lines is kept on hand, subject to the order of the superintendent.

The Southern lines formerly crossed the Hudson by two high masts at Forts Washington and Lee, but after their destruction by a high wind sometime since, they have crossed by cables from the foot of Thirteenth-street to Hoboken, N. J.

By the consolidation of all these lines into one great central office, a great saving of expense and increase of business facilities are obtained; and the officers of the consolidated company seem determined to increase, by every means in their power, the efficiency of this most invaluable means of communication.

There are in England, four principal lines of electric or magnetic telegraphs. The longest of these lines extends over a distance of 6,193 miles, the next longest 3,656 miles, the third 308 miles, and the fourth of 119 miles, making an aggregate of 10,276 miles. The length of the wires used on these lines amounted, in the year 1858, to 48,990 miles; the number of stations opened for the public was 953, and the number of instruments was 4,085.

It would seem as if efforts were about to be made to lay a new Atlantic telegraph line; as, by the late news from Europe, Mr. Milner Gibson had introduced Mr. T. P. Shaffner to Lord Palmerston, and he explained to the premier his plans for laying short Atlantic cables from Scotland to the Faroe Isles, Iceland, Greenland, and thence to the continent of America.

TRADE TRICKS UPON TEXANS.—A correspondent (M. B. R.), writing to us from Price's Creek, Texas, states that all the people in that region are exasperated by the frauds perpetrated upon them in the coarse shoes sent from the North. The welted shoes have their outer soles formed of split leather, and the space between the outer and inner soles is filled with paper and shavings, cemented by paste. The single-soled shoes, for which they have paid \$1.60 per pair, have thin outer soles sometimes pasted upon thick paper. The Texans are making efforts to manufacture their own shoes. Our correspondent considers it a very suicidal policy for manufacturers to make such trash, and merchants to sell it. So think we!

OUR MODERN HOUSEHOLD CONVENIENCES—MINERAL POISONS.

Messrs. Editors:—I will not encroach upon your pages by a lengthy article upon the above subject, but I would respectfully inquire of those who make chemistry a speciality, of the medical profession, and of the public at large, if, in the middle of the nineteenth century—this boasted age of scientific advancement and artistic skill, it is not disgracefully humiliating that so many in the community must be prematurely consigned to the grave by daily swallowing poison introduced into their food by the unsafe arrangement and ignorant and careless management of what are termed "modern conveniences?"

Having recently been called to attend several cases of severe colic, induced by eating cranberries and apples stewed in copper and bell-metal vessels, and more recently having discovered that the members of a family in one of the finest residences in Boston had been slowly and seriously poisoned by the cook (who was ignorant of the danger) having, for a long period, been using the water from a copper boiler connected by a lead pipe to a lead reservoir, in preparing the tea and coffee and boiling the vegetables, and knowing this to be a common occurrence, I cannot but envy our ancestors who, although they were sometimes made sick by the use of the bell-metal, drank pure water from the "Old Oaken Bucket," and were blessedly ignorant of "modern conveniences" by which we are so luxuriously poisoned, and finally die, under the scientific cognomens of "gastritis," "entritis," "carcinus" and "paralysis."

But, surely, some method can be devised by which we can enjoy the benefits of modern improvements, without such risk to health and life. Let water be introduced into kitchens only through iron, glass, wood or gutta-percha. So arrange the hot-water apparatus (if composed of copper or lead) that it can only be drawn in the chambers where it is required for bathing, &c., and once a week, or more frequently if necessary, let on the water in the wash-room by a lock faucet, the key of which can be kept in a secure place. Banish for ever, from the kitchen, lead pipe, copper vessels and copper covers (if the copper is tinned, the tin will soon wear off), and families may feel comparatively safe from domestic poisoning.

One suggestion more, and I have done. Should an individual prefer to take lead and copper with his sustenance, perhaps it might be considered rather oppressive to deny him the privilege. Yet it would seem but just that those who do not admire these paralyzing conditions should be protected by the legal appointment of 'udicious inspectors, whose duty it should be to examine the culinary apparatus in all our public institutions, hotels, confectioneries and restaurants. A sanitary provision of this nature, if rigidly enforced, would (I sincerely believe) materially diminish the records of mortality.

CHAS. M. WINDSHIP, M.D.

[We copy the above important article from the Boston *Medical and Surgical Journal*. The water used in the family referred-to was analyzed by Dr. A. A. Hayes, Massachusetts State Assayer, exhibiting a fearful result. Dr. Windship justly recommends, as a substitute for lead, the use of pipe made of glass, iron, wood or gutta-percha. The latter article is now attracting considerable attention, as we learn from an extensive manufacturer, Mr. Samuel C. Bishop, of No. 181 Broadway, this city.—Eds.]

APPLICATIONS FOR THE EXTENSION OF PATENTS.

Machinery for Dressing Screw Heads.—H. A. Harvey, administrator of T. W. Harvey, late of New York, deceased, has applied for the extension of a patent granted to said T. W. Harvey on the 18th of August, 1846, and re-issued on the 4th of January, 1859, for an improvement in the above-named class of inventions. The testimony will close on the 17th of July next, and the petition will be heard at the Patent Office on the 30th of that month.

Truss Bridge.—Joseph Stone, administrator of W. Howe, late of Springfield, Mass., has applied for the extension of a patent granted to said Howe on the 28th of August, 1846, for an improvement in the above-named class of inventions. The testimony will close on the 31st of July next; and the petition will be heard at the Patent Office on the 18th of August.