

the Swamscot Machine Co. of New Market, N. H., who display a 9-horse horizontal engine; the Boston Blower Co., of Boston, who show their blowers, and improved adjustable window-shutter; the Peet Valve Co., of Boston, who exhibit their valves; the Allen Governor Co., of Boston, who display their governors; and A. F. Upton, of Boston, who exhibits the Jarvis patent furnace for setting steam-boilers.

The next department of interest is the display of electrical apparatus, which surpasses all former attempts in this direction, as might be expected from the great advancement made in this department of science.

One side of the large hall is lighted by five lamps which are run by the Wallace-Farmer machine, and the opposite side is lit by four lamps run by the Brush machine. The Wallace-Farmer lights have plate carbons two inches by five or six in area. The voltaic arc plays across the smaller side. Three to five lamps are run upon one circuit by this machine.

The Brush lamp shown makes use of what may be called the pencil carbon points in contradistinction to the Wallace-Farmer carbon plates. Each of the Brush machines furnishes four lights, which are fed by four different currents running on two conductors to each lamp. In the Art Gallery the two rival lamps confront each other, and one can judge better there of the relative brilliancy of the two. The details of the pictures are clearly seen in the brilliant lights, which are softened by heavy ground glass or opal shades.

The next important invention, and by some considered the most important, is the telephone. Both the Bell telephones and the telephones of the Western Union and Gold and Stock Company are placed on exhibition. In the Gold and Stock Company exhibit can be seen and heard the various forms of Phelps' telephones and also Edison's carbon transmitter. The latter, in connection with a Bell or Phelps telephone, gives the best effect of any telephone combination.

Edison's electric pen has a liberal space devoted to it. An ingenious apparatus for lighting street lamps and gas jets in fire engine houses is shown. The direct current to turn on the gas is made use of, and also of the spark produced by the extra current to light it. Many forms of hotel electric annunciators and burglar alarms are exhibited. The exhibition building is protected from fire by the automatic electric fire signal company. If electricity could be used to heat the buildings, it could be said to afford in itself the means of preservation and destruction of the fair.

There are in the other departments many curious, novel and interesting exhibits, including a handsome display of stoves, grates, lamps, gas fixtures, furniture and many other articles of utility.

The committee of judges on philosophical instruments made a critical test of the electric light on October 23d. Their report on this subject will be awaited with much interest in view of the popular attention which the subject of electric light is receiving at the present time.

From a financial point of view the fair has been an immense success, the receipts being far in excess of expenses. It is calculated that \$85,000 will be netted.

Erratum.

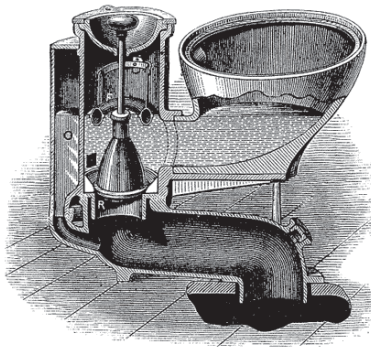
One of the unfortunate accidents occasionally happening in a printing-office, and not discovered in time to correct, occurred in our journal last month, namely, the adding of the latter part of one article to the end of another on a very different subject. Those of our readers who reflect on what they read, and we know their number is very large, will have observed that in an article entitled, "Cooling a Journal," on page 226 of our last number, all that was necessary was said in six lines, and that then followed this sentence: "In order to bring it to a horizontal position, the sheet-iron cylinder is provided with trunions. A lip of the crucible," etc. Now, this read in connection with the method of cooling a journal as described, is perfectly unintelligible; but it becomes all clear when it is read in continuation of another short article entitled "A New Crucible Furnace," on page 220. It is, in fact, the con-

tinuation of the latter, which became displaced in making up the pages.

The Latest Improved Water-Closet.

Very few persons sufficiently realize the danger there is in keeping the old water-closets, with pans attached, in their houses, and the fatal results in regard to the health of the inmates, consequent upon their use. We have lately been consulted by various parties as to how to remove the bad odors from their bath-rooms and water-closets, or how to prevent them from penetrating other parts of the house. Expensive plans had been made for this purpose and partially executed. We invariably advised these persons to attack the evil at the root, and simply remove their old, defective, and odor-diffusing basins, with always impure and insufficient pans, and substitute Jennings' closets, as described in our columns in previous numbers.

We now have the pleasure of putting before our readers the latest improvements in these closets, as brought out by Jennings' Sanitary Depot, A. G. Myers, manager, 94 Beekman street, New York. We see with satisfaction that now even the very slight and really insignificant objection formerly made against this system, has been entirely done away with. By this latest modification this closet becomes at once the



Improved Water-Closet.

cheapest to adjust in places from which it is desired to remove the old style of pan and other unsanitary water-closets which have for the last fifteen or twenty years been in such general use, and to the use of which may be attributed the ever increasing number of malarial and typhoid attacks to those who, but for the effect of these deadly vapors, would form the strong and healthy portion of humanity, it being a well-known fact that the poisonous exhalations from sewerage through defective closets, baths, wash-basins, etc., affect those who, by the possession of fine residences and the comforts of wealth and luxurious ease, should be most exempt from disease. "Use is second nature," and the man of the poorer class passes unscathed through atmospheres heavily laden with noxious gases, while a man of wealth, through a slight escape of sewer-gas from defective sanitary mechanism, of conveniences in his dwelling, loses strength, health, and oftentimes the most merciful gift of a kind Providence—life.

Besides the numerous advantages possessed by the Jennings style of closets, this one has the advantages of a solid iron plunger and a bowl filled with water between the drain and the room in which it is set. The overflow is trapped by the whole body of water in the bowl, and to unseal its inlet without stopping the supply to the water-closet is an impossibility. The entire mechanism of this closet seems to be as perfect as anything of its kind can be, and its progress should be rapid and its merits fully appreciated by the public, especially by sanitary boards of our cities and towns.

COMPARATIVE STRENGTH OF WOOD AND CAST-IRON.—Prof. Hirn has been conducting a series of experiments in Germany on the comparative strength of wood and

cast-iron in their different applications, and finds that in a great number of cases the former has the advantage. He found the strength of wood to be in direct ratio to its density, and this strength is increased by immersing the pieces of wood in linseed oil, heated from 185° to 212° Fah., and letting the wood thus immersed remain for two or three days, or until partially saturated.

The American Institute Fair.

The chief feature at the Fair of the American Institute the past month has been the electric light, the Brush and Wallace machines being employed to light the building. The lights are very intense and brilliant, and throw the gas jets so completely in the shade as to give the latter in comparison the appearance of so many candles.

The attendance has been excellent from the start, and on the increase as the fair nears its close. Some few additions have been made during the month, and there seems to have been no space left unoccupied. Exhibitors complain in some quarters that the results have not been so satisfactory to themselves in a business point of view as ordinarily, although some sales have been made.

A horticultural and floral display are new attractions, and both have been very good and have added not a little to the general attractiveness of the fair.

Among the prominent exhibits is that of George Hayes, of 71 Eighth avenue, New York, who displays his celebrated sky-lights and ventilating appliances, the superiority of which is so well known as to need no comment here.

Lyons & Bunn, of 406 East 29th street, this city, show their patent fire-proof building material and portable balanced derrick. The former consists of a new fire-proof material for ceilings, partitions, filling between iron floors and roof beams, filling for mansard and flat roofs, etc. They also have a tessellated brick pavement, which seems to us to be a very valuable improvement in this line. They furnish these pavements in any desired pattern. Lyons' concealed window-guard is also another of the exhibits of this firm. It is especially intended for insane asylums, securing the patients against escape through the windows, and at the same time hiding the bars from their sight.

One of the objects of attraction in the machinery department is a machine for decorating moldings, exhibited by W. A. McDonald, of this city. It is for producing figured moldings, and exhibits great mechanical ingenuity. The saws are so arranged that they can be made any figure that may be desired, so that in cutting the moldings the serrations represent a return of its members.

There are some good sanitary displays, and one of these is the Pitt sewer-trap, exhibited by W. A. Pitt, of this city, who also shows Krause's porous stone filters. In this line there is also a good display made by the Brooklyn Lead Trap Co., of Brooklyn, N. Y., who exhibit their Paragon trap. Stewart & Co., of this city exhibit their admirable sewer-trap, a description of which was given in our March number of the present year.

In the machinery department there is exhibited an ingenious seed-planter which promises to be a useful adjunct to the sower.

Of household articles there is no end. The display in this line is, we think, a little above the average. A very neat contrivance exhibited in this department is a lamp-chimney cleaner, by which chimneys of any shape can be cleaned perfectly in every part of their inner surfaces. There is the usual number of stoves and refrigerators on exhibition, also of furniture and china, and gas and lamp fixtures. For people who want something for nothing, (and of these there are always plenty), pan-cakes made with self-raising flour, spool-cotton, perfume, extract of beef, and other gratuities, are provided, many exhibitors exercising generosity in this respect, thinking no doubt that "the proof of the pudding lies in the eating."