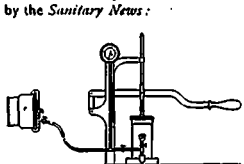
The boiler that is most successful for heating a building, is the one that supplies all the heat needed in the coldest day and gives the least trouble at all times. It will be impossible to do this if the boiler requires a strong fire to be kept up in order to keep up its supply of steam. Hence no matter what form or design of boiler be used, it will not give thorough satisfaction unless it be of sufficient size to keep up steam with a slow burning fire; and a slow burning fire is more efficient in a brick furnace than when the fuel is in contact with the iron of the boiler.

## TESTING HOUSE DRAINAGE SYSTEMS.

IN the proposed law governing the erection of buildings in cities in Illinois, recently before the legislature, Section 13 provides that "Every soil and every waste-pipe hereafter constructed and placed as such in any such city or village, shall be of cast-iron, or brass, or porcelain (except subordinate, lateral and connecting pipes not exceeding eight feet in length, which may be of lead,) and when such pipe is put up for use, it and the joints thereof shall be capable of sustaining an internal pressure of not less than fifteen pounds to the square inch of surface."

At the various conferences which were held to consider this bill, this section was abundantly discussed, and particularly the manner in which the test should be applied. It was stated that a column of water in the soil-pipe might, in some cases, give too great a pressure at the foot and not enough at the top, while an air test would give an equal pressure throughout the system, but defects would be difficult to discover. The committee which prepared the bill stated that it would be satisfied with any test which would secure the required result and did not care to specify how the result should be applied.

The inspector of plumbing in the city of Minneapolis, Minn., Mr. Hazen, has designed a pump and gauge for applying the air pressure test to systems of plumbing, and the *Northwestern Architect* gave illustrations of its construction and use which we herewith reproduce, giving in addition some particulars of the apparatus supplied by the *Sanitary News*:



The test pump devised by Inspector Hazen is not patented and any mechanic is at liberty to construct one like it. In making the pump, brass pipe is used, and the joints may be soldered after having been screwed together. The guage is an ordinary steam-gauge, and costs about $2. The other cup, B, is a simple engine oil cup with cap, but the appliance (clasp, etc.,) connecting with the fresh air inlet pipe has to be made to order. The total cost exclusive of plump is but $10 or $12. Several plumbers of Minneapolis have made them for their own use, using an ordinary well-pump cylinder, which they find works very well.

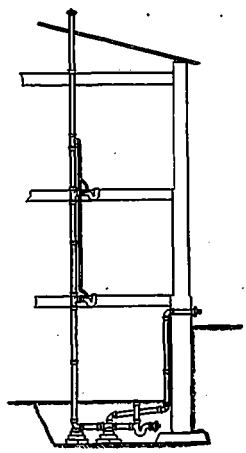


FIG. 2 shows the iron system of house-drainage complete, including the running trap and fresh air inlet; traps for water-closets and wastes for fixtures are all calked in, the traps wiped on to wastes and the wastes pinched together at top and soldered. A piece of heavy sheet-lead is soldered on top of the water-closet traps, the vent-pipes are connected with the crowns of trays, and the top and bottom of the soil-pipe are tightly capped, leaving the fresh air inlet open for attaching the pump. By this arrangement the whole of the system is under test, while, if the soil-pipe only was tested, there would still be two or three joints to be made for every fixture; this plan only requires one joint to be made after the test, and the danger of open work is much lessened.

In using this apparatus to test a system of plumbing it is necessary to have a two-inch, or a four-inch, iron plug with rubber gasket to fit on the shoulder of the fresh air inlet pipe, held in place by a clamp over the end of the hub, with a set screw in the center to screw down on the plug. Into one side of this plug is screwed a short nipple and cock to attach to hose from the pump. Cocks are arranged to prevent a loss of air from the pump, and show a loss of air through some leak in the plumbing if the indicator does not stay at the required point, fifteen pounds. If a leak is shown, a little soap and water applied to the pipe or suspected place, will show the position of the leak by the formation of a bubble.

Two New York plumbers were recently fined $750 each for defective work.

The Kingston Electric Light Company have ordered 650 incadescent lights to be used for lighting stores and private houses.

Winnipeg contemplates the construction of an extensive sewer system and other sanitary improvements calculated to reduce there.

Mr. Michael Hurley, Quebec, the patentee of an invention for heating railway trains by steam, has received an order from the government to introduce his patent into one of the Intercolonial trains.

Natnral gas has been conveyed into dwelling houses in the vicinity of Petrolea, Ont., and is said to afford a steady uniform heat for cooking. The method of using the gas is said to be to throw it on the wood and ignite it.

By request of the Dominion Government, Dr. Montizambert, guarantine officer at Grosse Isle, on the St. Lawrence river, recently paid a visit to New Orleans and made an inspection of the very excellent guarantine service maintained at that point.

Carefully framed by-laws similar to that now in operation in Toronto, regulating the manner in which plumbing shall be done, will serve to develop reading intelligent class of workmen, and weed out of the business the inferior men whose carelessness has destroyed the health and lives of many residents in large cities.

According to Dr. Hunt, secretary of the New Jersey State board of health, diphtheria is largely due to damp cellars which are suddenly heated in the fall, and his theory is verified by various reports where the disease has raged. It is chimed that during the summer in many cellars a good deal of vegetable matter is allowed to decay, and when the fires are started in the fall this decayed matter is stirred up and mingled with a peculiar dampness, which must be in the cellar, and it pervades the entire house.

One of the recommendations urged in favor of the use of electric lights in the interior of buildings is its great superiority in point of cleanliness over gas. It certainly does not coat ceilings and pictures with the grimy layer which gas burned in large quantities is sure to do. However, it is remarked at Washington that the use of the electric light has led to an enormous increase in the number of spiders' webs in public buildings of the city. The light attracts flies and moths, and insects, of course, attract the spiders. It is complained that in many cases the cobwebs cluster so thickly as quite to hide the ornamental details and to obscure the architectural outlines in the interior of the edifices.

## BUILDING MATERIALS.

| | | |
|---|---|---|
| ***Foundation:*** *(Wholesale Prices.)* | | |
| Dimension | | |
| Block | | |
| Rubble | | |
| ***Bluestone:*** *(₱ sq. ft.)* | | |
| Sidewalk | 30 @ | 5 00 |
| Planed | 50 | 6 00 |
| ***Sandstone:*** | | |
| Longmeadow | | 80 |
| Kibbe | | 90 |
| Brown, Connecticut | 1 00 | |
| Amherst | 90 | 95 |
| Beren } Ohio, | 75 | 1 00 |
| Berlin } | 75 | 1 00 |
| McNeville | 80 | 1 25 |
| New Brunswick and Nova Scotia | | 1 00 |
| Caen | | |
| ***Marble:*** *(₱ cu. ft.)* | | |
| Lee, Mass. | | |
| Rutland, white and blue | | |
| Sutherland Falls | 1 25 | 1 75 |
| Glen's Falls, black | | |
| Italian, blue-veined | | |
| " sienna | | |
| Tennessee, red | | |
| " Knoxville | | |
| Pennsylvania, blue | | |
| Vermont, white | | |
| ***Slate:*** Roofing *(₱ square).* | | |
| " green | 5 00 | 6 00 |
| " " unfading | 5 00 | 6 00 |
| " purple | 5 00 | 6 00 |
| " red | | 10 00 |
| " black, Lehigh | 3 50 | 4 00 |
| " " Chapmans | | |
| " unfading black, Monson, Me | 5 50 | 8 00 |
| " black slate | | 7 50 |
| Tiles, American, ₱ M | | |
| N. Peach Bottom, warranted unfading | | |
| ***PAINTS.*** *(In oil, ₱ lb.)* | | |
| White lead, Can | 6 | 6 50 |
| " zinc, Can | 6½ | 8 50 |
| Red lead, Eng | 5½ | 6½ |
| " venetian | 6½ | 7½ |
| " vermilion | 90 | 1 00 |
| " Indian, Eng | 10 | 12 |
| Yellow ochre | 6½ | 12 |
| Yellow chrome | 15 | 25 |
| Green, chrome | 7 | 12 |
| " Paris | 30 | 40 |
| Black, lamp | 17 | 25 |
| Blue, ultramarine | 15 | 25 |
| Oil, linseed, raw *(₱ imp. gal.)* | | 56½ |
| " " boiled, " | | 59 |
| " " refined, " | | 60 |
| Turpentine, " | 55 | 59 |
| Varnish, coach, " | | |
| Shellac, " | | |
| Putty | 3½ | 3½ |
| Whiting, dry | 75 | 1 00 |
| Paris white, Eng., dry | 1 25 | 1 50 |
| Litharge, Am., " | 6½ | 8 |
| Sienna, burnt | 15 | 20 |
| Umber, " | 8 | 12 |
| ***BRICK.—₱ M.*** | | |
| Canadian, common (half and half) | | 8 00 |
| " face | | 10 00 |
| " hard (sewer) | | 8 00 |
| " pressed | | 18 00 |
| " moulded | | 30 00 |
| ***Common:*** *Cargo afloat.* | | |
| Pale | | |
| Jersey | 6 00 | 7 00 |
| Long Island | 7 50 | 8 00 |
| Up River | | |
| Haverstraw Bay, 2nd | | 7 50 |
| " 1st | | 8 00 |
| Hollow | | 13 00 |
| ***Fronts:*** | | |
| Croton, brown | 10 00 | 14 00 |
| " dark | 11 00 | 15 00 |
| " red | 11 00 | 15 00 |
| Chicago pressed | | |
| " moulded | | |
| Baltimore | 37 00 | 41 00 |
| Glen's Falls, white | 30 00 | 35 00 |
| Philadelphia | 27 00 | 28 00 |
| Trenton | 25 00 | 26 00 |
| Milwaukee | | |
| ***Moulded:*** | | |
| Clark's Glens Falls, red | 25 00 | 27 00 |
| " white | 30 00 | 35 00 |
| White " mold | 45 00 | 60 00 |
| Fire Brick, Ramsey T. Carr & Bate | 25 00 | 28 00 |
| ***Enamelled:*** *Imp.* | | |
| Enamelled (edge) | 85 00 | 100 00 |
| Enamelled (edge and end) | 90 00 | 115 00 |

| | | |
|---|---|---|
| ***CEMENT, LIME, etc.*** | | |
| Portland Cement | | |
| Walsend, per bbl., | | 2 75 |
| Francis & Son, "Vectis," " | | 2 75 |
| Johnson's " | | 3 00 |
| White's Cement, " | | 2 75 |
| Queenston Canadian Cement, " | | 1 50 |
| Grey Lime, per 2 bush. barrel, bulk | | 35 |
| White " " " | | 55 |
| Hair, per 40 lb. sack | | 1 00 |
| Plaster Paris, N. B., per bbl. | | 2 25 |
| ***LUMBER.*** | | |
| CAR OR CARGO LOTS. | | |
| 1½ and thicker clear picks, Am. ins | $34 00@ | 35 00 |
| 1¼ and thicker, three uppers, Am. ins | | 40 00 |
| 1¼ and thicker, picklngs, Am. ins | | 30 00 |
| 1 x 10 and 12 dressing and better | 20 00 | 22 00 |
| 1 x 10 and 12 mill run | 15 00 | 16 00 |
| 1 x 10 and 12 dressing | 14 00 | 15 00 |
| 1 x 10 and 12 common | 12 00 | 13 00 |
| 1 x 10 and 12 spruce culls | 10 00 | 11 00 |
| 1 x 10 and 12 maple culls | | 9 00 |
| 1 inch clear and picks | 24 00 | 26 00 |
| 1 inch dressing and better | 18 00 | 20 00 |
| 1 inch siding, mill run | 13 00 | 15 00 |
| 1 inch siding, common | 12 00 | 13 00 |
| 1 inch siding, ship culls | 10 00 | 11 00 |
| 1 inch siding, mill culls | 8 00 | 9 00 |
| Cull scantling | 8 00 | 9 00 |
| 1½ and thicker cutting up plank | 22 00 | 25 00 |
| 1 inch strips, 4 in. to 8 in. mill run | 14 00 | 15 00 |
| 1 inch strips, common | 11 00 | 12 00 |
| 1¼ inch flooring | | 14 00 |
| 1½ inch flooring | 24 00 | 26 00 |
| XXX shingles, sawn | $2 40 @ | 2 50 |
| XX shingles, sawn | 1 30 | 1 50 |
| Lath, sawn | | 1 80 |
| YARD QUOTATIONS. | | |
| Mill cull boards and scantling | | 10 00 |
| Shipping cull boards, promiscuous widths | | 10 00 |
| Shipping cull boards, promiscuous widths, stocks | | 13 00 |
| Scantling and joist, up to 16 ft | | 13 00 |
| " " 18 ft | | 14 00 |
| " " 20 ft | | 15 00 |
| " " 22 ft | | 16 00 |
| " " 24 ft | | 17 00 |
| " " 26 ft | | 18 00 |
| " " 28 ft | | 19 00 |
| " " 30 ft | | 20 00 |
| " " 32 ft | | 21 00 |
| " " 34 ft | 22 50 | 23 00 |
| " " 36 ft | | 24 00 |
| " " 38 ft | | 27 00 |
| " " 40 to 44 ft | | 30 00 |
| Cutting up planks, 1½ and thicker, dry | 25 00 | 26 00 |
| " " board, | 18 00 | 20 00 |
| Dressing stocks | 14 00 | 15 00 |
| Picks, American inspection | | 30 00 |
| Three uppers, American inspection | | 40 00 |
| Cedar for block paving, per cord | | 5 00 |
| Cedar for Kerbing, 1 x 14, per M | | 11 00 |
| B. M. | | |
| 1½ inch flooring, dressed | 25 00 | 30 00 |
| 1¼ " rough | 14 00 | 15 00 |
| 1¼ " dressed | 23 00 | 25 00 |
| " undressed | | 14 00 |
| " dressed | 16 00 | 20 00 |
| " undressed | 12 00 | 14 00 |
| Beaded sheeting, dressed | 18 00 | 20 00 |
| Clapboarding, dressed | | 12 00 |
| XXX sawn shingles, per M | 2 75 | 3 00 |
| Sawn lath | | 2 25 |
| Red oak | 20 00 | 25 00 |
| White " | 25 00 | 30 00 |
| Basswood, No. 1 and 2 | 25 00 | 30 00 |
| Cherry, No. 1 and 2 | 50 00 | 60 00 |
| White ash, No. 1 and 2 | 25 00 | 30 00 |
| Black ash, No. 1 and 2 | 20 00 | 25 00 |
| ST. JOHN, N. B. | | |
| ***Iron, etc.*** | | |
| Refined, ₱ 100 lb or ordinary size | 2 25 | 2 00 |
| Common, 100lb | 2 10 | 2 00 |
| Patent nestals, ₱ lb | 0 00 | 0 11 |
| Anchors, ₱ lb | 0 00 | 0 00 |
| Chain cables, ₱ lb | 0 03 | 0 06 |
| Rigging chains, ₱ lb | 0 03 | 0 3½ |
| ***Lime.*** | | |
| Casks | 1 10 | 1 15 |
| ***Lumber.*** | | |
| Spruce deals, Bay Fundy Mills | 8 00 | 8 25 |
| Spruce deals, City Mills | 8 50 | 9 50 |
| Aristook P. E. Nos. 1 and 2 | 40 00 | 45 00 |
| No. 3 | 30 00 | 35 00 |
| No. 4 | 15 00 | 20 00 |
| Aristook P. E. clapping | 15 00 | 18 00 |
| Common | 12 00 | 13 00 |
| Spruce boards | 7 00 | 8 00 |
| Spruce scantling (unsel'd) | 7 00 | 8 00 |
| Spruce, dimensions | 12 00 | 14 00 |
| Pine clapboards, extra | 35 00 | 40 00 |
| No. 1 | 0 00 | 30 00 |
| No. 2 | 0 00 | 20 00 |
| No. 3 | 11 00 | 12 00 |
| Laths, spruce | 1 25 | 1 35 |
| Laths, pine | 5 50 | 6 00 |
| Palings, spruce | 5 50 | 8 00 |
| ***Nails.*** | | |
| Cut, 3dy, ₱ 100lb | 3 75 | 0 40 |
| Cut, other sizes | 3 74 | 3 50 |
| Ship Spikes | 3 50 | 3 00 |
| Galvanized | 5 25 | 6 50 |