



AN ECONOMICAL METHOD OF HEATING AND VENTILATING.

THE following valuable paper on the above subject was recently read before the American Society of Mechanical Engineers, by Mr. Henry J. Snell, of Philadelphia.

Various methods have been devised and are in use for heating large rooms, manufactories and public buildings. Some of them take into consideration the ventilation of the buildings as well.

I will describe briefly a method I have had in use in my store at 135 North Third street, Philadelphia, Pa., for the past two winters, which has been very satisfactory. It has been very economical, and dependence could be placed upon its efficiency at all times, no matter what the condition of the weather might be.

A reference to the accompanying sketch will clearly give a correct understanding of the arrangement.

An exhaust fan driven direct by a small upright engine is connected with a "patent air-heater" placed in the basement at the front of the store by an 18-inch galvanized pipe.

An upright boiler in the basement furnishes steam to run the engine; the exhaust steam from the engine is delivered through the exhaust pipe into the base of the air-heater on one side, and the drip and condensed steam is conveyed away through a pipe at the other.

The exhaust steam of the engine furnishes all the heat usually used, but as a precaution, and for use early in the morning, in extremely cold weather, or for use in very moderate weather, in the middle of the day, when it is unnecessary to run the engine, a small live steam pipe is connected with the base of the heater. The fan runs at a very low speed, and is perfectly noiseless. In my case, no conducting pipes for the distribution of the air are necessary, and the variations of temperature in different parts of the store are not observable with the ordinary commercial thermometer. By examining the sketch, it will be seen the store itself becomes one large conducting tube—and the air is used over and over again, enough fresh air coming in through openings under the windows and through doors constantly being opened. An opening near the bottom of the heater has been provided, and three-fourths of the wall surface of the back end is composed of glass; the rest of brick.

The building is five stories and basement, and I only occupy and heat the first and second stories and basement, but I think I could easily heat the whole with my apparatus at a very little increase of cost in fuel.

The engine that drives the fan is three inches in diameter, and has three inches stroke. The wheel in the fan is 36 inches diameter, and 13 1/4 inches wide at the outlet of wheel; the area of discharge of blower 1.76 square feet and the inlet is same size. The heater is about three feet wide, 6 feet 6 inches high and 20 feet deep, and filled with 588 feet of one-inch steam pipe. I am so well satisfied with the results I get from this apparatus that I have not made any close and accurate experiments of what I can do with it. I know from the cost of my fuel that the expense of heating all I occupy is about the same as I formerly paid when I only heated the offices which were partitioned from floor to ceiling and heated with open grate. I might return the condensed water from the heater to the boiler and make a greater saving. This is not done at present.

Possibly before the meeting of the society we may have some cold weather, requiring the use of the apparatus, and if this paper produces any discussion by the members some careful experiments upon its performance may be laid before them; but at present I can give only the results of one imperfect and incomplete observation made during December, when the outside temperature was 45°.

* This floor I only heat occasionally, as it is used principally for the storage of machinery. When necessary to heat it, I open the damper shown directly over the blower, and sufficient heated air will be driven through the opening to heat it comfortably in a few minutes.

Temperature of the air on its return and just before entering the heater, 90°.

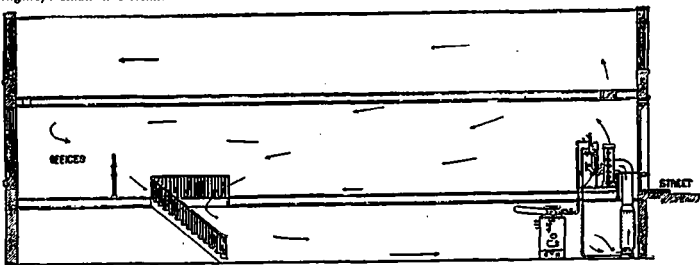
Temperature of air issuing from the blower after passing through the heater, 112°.

Average temperature of air in room of main store, on first floor, 75°.

Pressure of steam in the boiler by gauge, 40 pounds.

THE NEW TORONTO PLUMBING BY-LAW.

THE new plumbing by-law adopted by the Toronto City Council a week ago, differs in many particulars from the by-law which it is designed to supersede. Journeymen plumbers as well as master plumbers will hereafter be required to pass an examination and obtain a license. No person is entitled to a license who is not a Canadian by birth or naturalization. The fee to be paid for a license by master plumbers has been increased from one to ten dollars. The fee to be paid by journeymen plumbers is one dollar. The Superintendent of the Toronto Water Works takes the place of the Medical Health officer as judge of the fitness of applicants for licenses. If an applicant have not the necessary qualifications; he must agree to employ continuously a regular educated practical and experienced plumber. The amount of security required for compliance with the by-law on the part of master plumbers is reduced from \$1,000 to \$100. Such security is to be approved of by the City Treasurer instead of the Medical Health Officer as formerly. All private drains laid by the city are to be taken to the inside of the wall where buildings are on the street line. The time for approving or rejecting plans and specifications is six days instead of ten days from date of filing, and the certificate of the City Engineer or Assistant City Engineer and Superintendent of Water Works shall be valid for six months from date of issue. No alteration in or re-construction of existing plumbing arrangements will be allowed until plans of same have been approved of, and a permit issued as in the case of new work, and work of re-construction or alteration must be inspected



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and approved same as new work. Every water cock, bibb, tap or hydrant must have the name of the plumber attaching the same stamped thereon. One of the clauses added to the new by-law provides that every master plumber who shall himself, or by his apprentices, agents or employees, make any extensions of or alterations to, or shall remove any tap, pipe or any other fixture attached to the pipes of the water works shall, on the last day of the month in which such extension, alteration or removal is made, report the nature and extent of same in writing to the Superintendent of the Water Works Department upon printed forms to be supplied by said department, the correctness of which report shall be attested by statutory declaration to be made by the master plumber making such report.

Another clause provides that no plumber shall be allowed, without having first obtained a permit from the department, to open or shut off the street stop-cock connected with the service supplying any premises or buildings unless in case of urgent necessity to prevent loss or damage from flooding, or to make necessary repairs, or to test their work, and shall in every such case leave the stop-cock open or closed as they may find the same; provided always that any plumber who shall commit any damage or injury to said stop-cock or the service pipes of the department in so doing shall become responsible for the amount of such damage.

In future no pan closets will be allowed to be put into any building. Air pipes may be of standard wrought iron with steam fittings. Sheet metal will not be allowed. Plumbing work found on inspection to be satisfactory will be certified to at the expiration of 30 days from inspection, unless in the meantime it shall have become faulty or defective. Each member of the Board of Examiners who is not an official of the city will be paid a fee of five dollars for each session of the Board.

The above includes all the important changes in the new by-law as compared with the old.

THE TORONTO SANITARY ASSOCIATION.

"ARCHITECT" writes in the April number of *Medical Science* as follows: Some few years ago a Sanitary Association was organized in Toronto, and though we have not observed any notice of its meetings during this winter, we trust that this is not to be taken as an indication that members have become discouraged and allowed it to collapse. They did some good work during their first two sessions. A committee of the association gave valuable assistance in drafting the plumbing by-law, and a considerable number of papers were read and lectures delivered at their meetings, which were not only interesting, but valuable. Work of this kind has a double value, it not only benefits the members by putting into concrete form the result of their individual studies and enabling them to interchange ideas, but it affords a means of educating the general public on sanitary questions. There is no reason why a sufficient number of the general public should not be got to attend these meetings to fill a good size room. Indeed this was frequently the case during the first session. Has there been any falling off in the public interest in sanitary questions? If such is the fact there is surely no justification for it. We have not yet got a trunk sewer, the bay is a reeking cesspool; we have no garbage crematory; our water supply is insufficient in quantity and, at times, by no means above suspicion as to quality. Diphtheria and typhoid are much more frequent visitors in our homes than they should be were our sanitary arrangements—not to say perfect—but reasonably good. The condition of our streets is at all times a disgrace to the city and a blot upon its fair fame.

These are but a few of the more glaring abuses which such an association should work at unceasingly until they are wholly suppressed. When that work is done it will be found that the horizon of its field has only widened, and that other work scarcely less important lies ready to its hand. Everything that in any way affects the public health comes within its sphere. We merely indicate the

direction in which its efforts would naturally be turned: compulsory ventilation of manufactories and public buildings; the effects upon health of the gas supplied for our use; the providing of parks and recreation grounds; the proper placing and management of cattle markets; the provision of proper abattoirs; the prevention of adulteration of food and drink, the inspection of dairies; the question of public baths and wash-houses; teaching

the poor to cook; the dissemination of correct scientific ideas on the subject of vaccination, suitable dress, preventive medicine and the care of the body generally. The list might be enlarged indefinitely, but enough has been said to show that there is work enough in sight to keep a sanitary association busy for a long time to come, and we may be sure that while human nature remains what it is, careless and indifferent about many vital questions, it will never be able to say that its work is done.

CHICAGO PLUMBERS AND SANITATORS.

THE Sanitary Committee of the Chicago Master Plumbers' Association included in one of its recent reports the following resolutions:

Resolved, That the aim of the Master Plumbers' Association will be to provide appropriate furnishings and perfect workmanship for its patrons, since it is acknowledged that plumbing and sewerage are no longer considered luxuries but necessities, and the increased population of our city demands that they be well and properly done.

Resolved, That the old style of plumbing be supplanted by a new and perfect system which will require the latest improvements in sanitary fixtures, which, added to good workmanship, will prove that the members of this association use only the best materials and employ none but skilled artisans to perform work in this line of business.

Resolved, That owners of buildings, or those having the construction of buildings in prospect, be requested to discourage the cheap contract work now so universal since we can vouchsafe no protection while this system remains in vogue.

Resolved, That periodical inspection of plumbing is necessary, since constant use of sewer soil and waste pipes engenders the rapid decay of even the strongest and best of any of our sanitary appliances. Renovations, watchfulness and cleanliness are necessary re-