

for of all the steam-heated schools visited we found the Queen Victoria School, Hamilton, Canada, the No. 10 school, Buffalo, and the Irving Avenue School, Detroit, by far the best. These are placed in their order of merit. Two of these schools are in some respects as well heated and ventilated as some of our own under the Smead-Dowd system, yet in no respect are they superior, and their cost was fully twice that of the latter system.

In both Hamilton and Detroit they are now using the Smead system in preference to steam.

The principal defect from a sanitary point of view in all the steam-heated school buildings we visited is in regard to the fresh air supply, which is entirely insufficient.

The method adopted for this purpose is to admit the air through perforated plates placed beneath the sills of windows in each room. Having passed through this plate, the air is supposed to go downwards through a narrow passage in the wall, and to enter the room at a level with the floor and then pass up through a steam radiator which is placed against the window. The sum of the area of the clear opening in the external plate of each window is from 22 to 25 square inches, so that the area of clear opening for the supply of pure air to the room is from 80 to 10 square inches, giving an average of about two-thirds of a square foot to each room. When it is remembered that this is intended to supply fresh air for 60 children, each of whom should have as a minimum 20 cubic feet of air per minute, it will be seen that it is simply impossible to obtain such a supply through the opening provided, which in fact, will hardly furnish 5 cubic feet per minute, for each pupil. In most of the rooms at the time we visited them, a large number of the fresh air openings were found closed, and even when opened in the majority of cases very little air was entering them. In very cold weather, when they are specially needed, they are kept closed, in order to prevent the freezing of the condensed water in the radiator and to avoid draughts upon the children sitting near them. The greater part of the supply of air for the school rooms in cold weather, comes directly through the walls, especially on the windward side of the building, and from halls, the doors and transoms, which from the several rooms are usually kept open. Examination showed that in most cases a strong current existed in the lower part of the open doorways. In but very few of the schools was there any provision for diminishing the incoming air without cutting off the supply of heat, and when the rooms become overheated, as appears to be not unfrequently the case, the only method of cooling is to shut off the heat and open the windows, thus creating draughts.

Our examination of the school buildings heated by steam showed them to be almost all in a very unsatisfactory condition. In those that made any pretensions

to have a system of ventilation, the provision made was mainly for the removal of foul air. Sufficient attention was not given to the amount and location of the fresh air supply.

Your Committee are unanimous in the opinion that in no one of all the schools visited did we find a system of heating and ventilation superior to the Smead,

Dowd & Co's, such as we have in our recently built schools, nor one equal to it in the facilities for the admission of large volumes of fresh air.

Since the return of the deputation from the United States the Toronto School Board have awarded Smead, Dowd & Co. contracts for placing their system complete in fifteen buildings and additions to buildings.



FOOT-POWER MACHINERY.
COMPLETE OUTFITS FOR CONTRACTORS AND BUILDERS.

Machines for ripping, cross cutting, scroll-sawing, mortising and planing, forming doors, grooving, gaining, rabbeting, cutting dados, and turning. Builders use our Hand Circular Rip Saw for the greater portion of their ripping in preference to carrying their lumber to a mill five minutes drive from their shops. The same is true in regard to scroll-sawing, mortising, tenoning, cutting girders for drawers boxes, etc. Builders using these machines can do lower and save more money from their contracts than by any other means.

Read the Following Letters from Builders:

CLARENCE F. LEE, carpenter and builder, Morristown, N. J., says: "I have had one of your Hand Circular Rip-Saws for about three months, and am much pleased with it. Have done the ripping for 16 houses in that time, which is over forty miles through inch boards. Have ripped as high as 8-inch plank. Table is also good for rabbeting; having rabbeted all joints and saved all drips for 150 windows."

ALEX. SARGENT, Lima, Ohio, says: "A few days since we had some 150 small drawers to make for a drug store; the steam power mill wanted 50 cents each for making them. With my foot power machinery I made them, and saved above good wages on the job. If desired, these machines will be sold ON TRIAL."

The purchaser can have ample time to test them in his own shop and on the work he wishes them to do. Descriptive Catalogue and Price List Free.

W. E. & JOHN BARNES CO., No. 743 ... Reuby St., Rockford, Ill.

THE HIBBARD ELECTRIC MFG. AND SUPPLY COMPANY, Ltd.

MANUFACTURERS OF

Telephones, Annunciators, Electric Bells,

FIRE ALARM, BURGLAR ALARM

and GAS LIGHTING APPARATUS.

Electrical Supplies of Every Description.

OFFICE AND FACTORY:

36 and 38 St. Dizier Street, MONTREAL.

**FOR LIGHTING CHURCHES, HALLS, STORES,
STATIONS, STREETS AND PRIVATE RESIDENCES.**

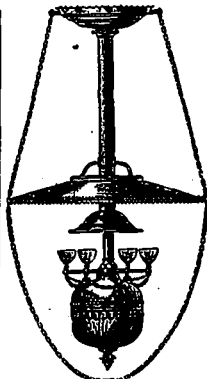
**CRYSTAL
CARBON
GAS
FIXTURES
COST
CONSUMERS
NOTHING**

A system of increasing the illuminating power of gas by the use of a cheap, solid hydro-carbon, whereby a dull, flickering flame is rendered intensely white and steady. It affords the means of saving one-half the consumption of gas, besides giving a better light than the common burner.

The lamp is a cheap and ornamental gas-fixture, is simple in operation, and cannot get out of order.

* RESULT OF TESTS.

With a consumption of but three feet of gas per hour the photometer registered twenty-seven candles, or nine candles per foot! (Ordinary gas burning gives from two to two and a half candles per foot.) The above shows an increase of from 360 to 450 per cent. over the common burner:



For particulars, address

KRITH & PITZSIMONS,

109 King St. West, TORONTO.