



STEAM HEATING.

At this season of the year the heating of houses is a subject of interest to nearly every one. Many of the readers of our paper are especially interested in steam heating, and are now engaged in getting such appliances ready for the winter's work.

The most important part of a steam heating apparatus is the boiler, and next to that in importance is the furnace. Unless these are suitable and of sufficient capacity, all the rest of the apparatus will be found unsatisfactory, no matter how skillfully it may be done. Some steam fitters advocate the use of sectional boilers of cast iron, and containing the furnace within the parts of the boiler. These, no doubt, are cheaper and more convenient to sell and erect in place; but when that much has been said in their favour, the list of their good qualities is about complete. In some circumstances it is necessary to have a boiler in which steam is quickly raised, but it should be remembered that a boiler in which steam can be quickly raised is also one in which it will quickly go down, should the fire become dull.

For this climate, with its great variations of temperature during the winter, the boiler of a steam heating apparatus should be made large enough to give ample steam for the coldest weather, and the furnace part should be so arranged that the fire may burn slowly and yet maintain a steam pressure. The boiler should contain a considerable quantity of water, and it will be found of advantage to have the furnace brick, so as to form a reservoir of heat, which will be radiated to the boiler whenever the fire becomes dull.

The boiler and furnace should be of such capacity and so arranged as not to require the constant attendance of the man in charge. The first cost may be more, but the annual expenditure for fuel, attendance and repairs will be less when the boiler is large and the furnace made so that a slow burning fire keeps up steam. The comfort and satisfaction obtained will more than repay for the greater outlay.

In another article the size of boiler and furnace in proportion to the amount of piping to be kept hot will be discussed—at present it is proposed to say something about getting ready for winter.

The boiler, it is assumed, is all right and not requiring any repairs; what, then, should be done in order to get ready? The boiler should be carefully gone over, and all dirt and dust removed from it and from the furnace. This should be done, even though it was all cleaned out in the early summer. The next thing to do is to remake the hand hole and man hole joints. The hand hole joints should be very carefully made, as they should be absolutely tight in order to prevent the slightest amount of leakage. Corrosion of the boiler head soon follows a little leakage at the hand holes. In making these joints, it is a good plan to use moderately thick rubber, and to make a paste of black lead and oil, and put it on both sides of the rubber. The hand hole cap should not be screwed up too tightly when the boiler is cold, and should be screwed up after steam has been up or the water at the boiling point. All the valves about the boiler and its connections should be examined, and the spindles properly packed if new packing is needed. Then close the blow-off cocks, see that any check valves either in the feed or return pipes are in order, and while free to rise have not too much lift. The lift should never exceed one-fourth the diameter of the valve, and may be less. Open the valves on the steam and return pipes, and then turn on the water and fill the boiler to within a couple of inches of the level at which it is intended to keep the water when steam is up.

While the water is being run in, the gauge cocks, or safety valve, should be open to allow the air to escape from the boiler. The fire should then be lighted, and the water slowly heated until steam is raised. When steam has begun to flow through the pipes the valves at all the radiators should be opened, and any requiring packing marked for attention by re-packing. If any radiators do not heat, the air valves should be opened to allow the air to escape.

When steam is up the return pipe should soon become warm,

showing that circulation is going on throughout the apparatus. If it does not become warm, the cause of the stoppage of circulation should be searched out and removed.

ELECTRIC LIGHT AND HEAT.

It is certain that we are upon the eve of great discoveries in the field of electrical science. The perfection to which electric lighting has attained, great as it is, is but the threshold as it were of the possibilities yet to be realized. When it is considered that of the amount of energy expended not one-tenth appears as light, leaving the larger proportion to take the form of heat, it is at once seen that absolute perfection is yet a long way off. Light without heat is the dream of the scientific explorer in the realm of nature, and when it is successfully achieved our present wasteful methods will appear crude indeed. We are burning up our stoves as well as our fuel. We are like the Chinaman who invented cooked pig—we burn down our house to get roast pork. The experiments of Tesla with currents of high frequency are upon this line, and may yet take practical shape. If a medium of sufficient tenacity could be found capable of transmitting the almost inconceivably rapid vibrations of light as set in motion and maintained by the subtle force of electricity, the grosser form of caloric would be passed and left behind, and the cold and brilliant aurora glow of heatless light would be attained. But where is this medium to be found? The molecules of ordinary metals are incapable of being attuned to the rapidity required. Copper, our best conductor, would probably be too inert to transmit the vibratory force, and be dead as so much wood. Although the electric current may be weighed and measured with precision and appears to follow certain fixed laws, but little is known of its actual constitution, and in what manner it is transmitted along the most favorable path. But there are immense possibilities in it, and before long we may look for further discoveries in its application to the production of light.

A valuable paper on "Sanitary Plumbing" was read by Mr. Cesare Marani, lecturer in Sanitary Engineering, at a recent meeting of the Engineering Society of the School of Practical Science. Messrs. Burke, Curry, Townsend and Bousfield, members of the Ontario Association of Architects, were present, and took part in the discussion which followed.

It is proposed in future to charge builders in Toronto with the cost of plumbing inspection in buildings under construction. The proposal is a proper one. There is no valid reason why the cost of this work should be charged against the general expenditure of the city. If inspection of old plumbing is required, a fee of \$5 must be deposited by the person who desires the work done. There is no better reason for free inspection of new work than of old. The charge should simply form another item in the builder's estimate, and should ultimately come out of the pocket of the owner of the building.

A jury recently found the city of Toronto guilty of negligence in allowing foul-smelling refuse to be dumped in proximity to a citizen's dwelling, thereby causing an outbreak of diphtheria in his family and the death of two of his children. While the verdict was undoubtedly just, the amount of damages awarded to the plaintiff—less than \$400—was ridiculously small. It is well, however, that the courts should sound the warning that those who carelessly endanger the public health will be called to account. The comments of the judge upon the danger arising from the system of ventilating sewers into the public streets were timely. An improvement which would secure the discharge of sewer gas at such a height that it would not assault the passerby or invade citizens in their homes or places of business is urgently required.

PERSONAL.

The death has taken place since our last issue, of Mr. John T. Stokes, engineer of the County of York. Mr. Stokes held this position for twenty-five or thirty years. His life was one of great activity and usefulness, and the integrity and kindness of his character caused him to be deservedly esteemed.

The friends of Mr. Ernest Wilby, formerly a member of the Toronto Architectural Sketch Club, who went to England early in the year with the object of prosecuting the study of his profession, will be pleased to learn that since March he has been employed in the office of Mr. Calcutt, a prominent London architect.