ST. MARTIN'S CHURCH, MONTREAL.

(See page 133.)

St. Martin's Church was completed in the Fall of 1874. It stands in a part of Montreal's "beautiful situation," and which a few years ago was quite suburban. This neighbourhood is now being rapidly built upon, and opened out into streets and terraces. The growth of the city in this direction has been so decided as to demand the erection of an Episcopalian Church. To meet this want, St. Martin's was built. It is capable of sitting 500. It has an elegant rectory house attached, and underneath the church is a lofty and well-lighted basement, divided into class rooms, and where the Sunday School and other congregational meetings are held. The whole is well equipped to do its good work in this growing neighbourhood. The parish assigned to the new church of St. Martin's extends from Sherbrooke street to the city limits on the north, and from Durocher street to St. Lawrence Main street. The church stands well nigh in the middle of the parish, and is sufficiently removed from any other Anglican church to show its necessity at once to the eye of the beholder looking down on the parish from the neighbouring mountain. The Rev. J. Philip Du Moulin, M. A., one of the Bishop's chaplains, was chosen as its first Rector. The Church-wardens are C. J. Brydges and John Molson, Esqrs. The organist s M. Herbert Oldham. Mr. W. T. Thomas, architect.

SANITARY ARCHITECTURE AND ITS APPLIANCES.

Since commencing this series of articles on the above subject, we have received several communications from correspondents on the importance of the ventilation of sewers, but which our space will not admit of publishing *in extenso*. We will, however, treat of the views furnished and plans suggested 'ere we close the subject, but take advantage of the present time to tender, our best thanks for all contributions, none of which but contain some useful hints. Mr. A. W. Clifford, of Kingston, in particular, has furnished some excellent suggestions for which he will receive full credit hereafter. At present, however, we have only space to bring to the notice of our friends and subscribers a drain trap and foul air extractor patented by Mr. Banner, of England. Although there are some excellent points in connection with this method of ventilating and trapping drains, the system is not such, we conceive, as suitable for this climate, nor is it one which from its cost can be brought into general use; however, we consider it our duty to lay it before the public. Mr. Banner speaks very strongly against the D traps, which he says, "from their conformation, are in point of fact miniature cess pools."

The following on the subject is from the London *Builder:*

BANNER'S PATENT DRAIN TRAP AND FOUL AIR EXTRACTOR.

(See page 137.)

C is the inlet of a horizontal tube leading external air to a vertical shaft or shafts, having the cowl on each, fixed above the roof, by the action of which vitiated air will be drawn from any room in the house, and may be regulated as desired by a throttle valve in each room.

D is the inlet of a horizontal tube leading external air into the "contained," or the soil-pipe immediately above the patent drain-trap (B), (seen at the bottom of the diagram in the centre), and thereby causing a constant current of fresh air throughout the whole system of soil-pipes within the house from the inlet (D) to the cowl fixed on the top of the soil-pipe carried above the roof of the house.

E shows the same plan adopted for the sewer, by means of which the present road or street "ventilators," so called, would become inlets, whereby a constant current of fresh air would be created and—accelerated by the action of a cowl mounted on the top of the pipe—would be constantly maintained throughout the sewer and street drains and up the pipes, carried outside each house above the roof.

The trap is peculiar. It consists of an air-tight chamber of cast iron (enamelled) or some other material, fitted with an inlet pipe, which projects several inches into its interior; the lower part of this inlet, surrounded by an india-rubber band sprung on, and slightly projecting beyond. The end of the pipe is closed and made air-tight by a copper cup pressed up to it by a suitable weight mounted upon a lever, having its fulcrum on an air-tight centre, and its outer end bent upwards at a right angle. The weight is suspended by a link on the raised end of the lever, and it is so arranged that, when the pan is in the act of tilting, the centre of gravity of the weight is brought nearer to the fulcrum, thus reducing the load, and allowing the pan to remain open till it is thoroughly flushed, yet retaining sufficient power to close the trap again after flushing. A series of holes in the raised end of the lever permit of a proper adjustment of the weight, and the bend in the soil-pipe, just above the trap, breaks the force of the water reaching the latter from above. The lower part of the chamber is formed with sloping sides, terminating in an outlet of communication with the drain. The box, in which the axle is fitted in gun-metal bearings, is air tight. The soil-pipe is 4 in. in diameter inside where it is flanged and fixed to the upper side of the chamber, and tapers to 3 in. diameter inside at its point; 2 in. from its point is another flange to keep the india-rubber band in its place. For practical use, instead of any iron pipe above the chamber, there is a flange only, and then a few inches of leaden pipe, in order that a perfect joint may be formed with the leaden or other soil-pipe to be continued up from it. The cup is made of copper, tinned inside; it is 10½ in. long, 12 in. wide, and from the base or scoop or bottom to the top of the hood or hopper, it is 5 in. deep, except in front, where it is only 4¾ in. deep, so that it discharges in front, and any clogging is said to be avoided. When the cup falls and is thoroughly flushed, there is an opening of 3 in. between the lowest point of the india-rubber buffer and the bottom of the cup, and also between the foremost point of the buffer and the inside of the cup in front of it, as well as between the front lip of the cup and the inside of the chamber. The cup, when full, holds five quarts of water with the tube immersed in it; this (or less, according to the "weight" opposed to it on the end of the lever) overbalances the weighted end of the lever. Until the moment when the cup falls the soil is kept in the pipe, while the valve has been sufficiently opened for water to pass into the cup and fill it; but it is not till the cup falls that soil passes into it, and when it does so, the water, nearly a gallon, rushing forward from the heel to the front of the cup (with the addition of a down-flow of water from the closet several feet above), carries all impure matter before it into the sewer; the front of the cup falls 4½ in., and in this way its whole contents are immediately swept away, excepting sufficient clean water retained in the scoop to seal the end of the soil-pipe while flushing. While the cup in the trap is down, there is a water-seal of ½ in., which is increased to 3 in. immediately the cup is brought to its normal position, and further increased by the overflow which the weight on the lever will permanently retain in the pipe, to the extent of 6 in. The efficacy of the trap thus formed cannot be destroyed by either pressure or suction. Besides, the area in the chamber for air being large, the water in the cup in its normal position is 2 in. or 3 in. below the top of the cup, which is open all over; and even if the cup could be unsyphoned, the pressure—the increased pressure—which the weight on the lever will exercise in forcing the bottom of the cup up to the india-rubber, will always keep several inches of water in the soil-pipe, and effectually prevent any gas from the sewer getting up into the house.

In this manner, the patentee maintains, the house will always be effectually trapped against sewer gas; and he is able to dispense with D traps, which, from their conformation, are, in point of fact, miniature cesspools. One of Banner's traps at the basement of the house, which may be placed above the level of the basement, like a gas meter, is considered sufficient for all the closets in a house.

We must not omit to mention another valuable appliance devised by Mr. Banner. Every one knows that ventilating-shafts communicating with the soil-pipes are recommended by leading authorities upon the subject. Although the theory upon which they are constructed is good, they are not always of practical utility. There is a difficulty in getting sewer-gas to ascend a long perpendicular pipe, while in some conditions of the atmosphere there may be a down-draught instead of an upward current; and it is to overcome this that the cowl is introduced. The benefit that would result to the community from their general adoption would probably be great, as each would contribute to the ventilation of the sewers as well as for the pipes of the houses where they were fixed.

A branch pipe, led from outside the house to a little above