MUNICIPAL DEPARTMENT

SEWER VENTILATION.

Mr. H. N Ruttan, City Engineer of Winnipeg, sends the following facts with reference to sewer ventilation to the Free Press:

The necessity for ventilation arises from the fact that noxious gases are formed in the sewers, which if allowed to find entrance to dwellings are extremely disagreeable and dangerous to health. While there is no case on record where specific disease germs have been formed in sewer air, the inmates of houses to which it has access are "liable to be affected with various forms of distended digestion, loss of appetite, slight headache, and a depressed state of vitality." (Dr. J S. Billings.)

In order to prevent as far as possible the danger of sewer air being forced into houses, it is necessary to provide outlets into open air of the street. The most convenient and effective measures known to provide for the escape and dilution of the sewer air is the open manhole. Various means have been tried from time to time, by the use of high chimneys or ventilating shafts, attached to furnaces, to discharge the sewer air at points where it would not cause annoyance to the people who live on or use the streets. All special devices hitherto tried have proved failures, and to-day the open manhole, notwithstanding its disadvantages, is the universally approved and adopted system of sewer ventilation.

The chief cause of the formation of gas in sewers is the decomposition of a thin film of sewage, which is deposited on the walls of the sewer by the fluctuation of the water level in the sewer. As it is impossible to keep a uniform water level in the sewers it is impossible to prevent the formation and decomposition of the film. The only thing to consider is how to prevent the annoyance caused by escaping gases without interfering with the sufficient ventilation of the sewers, and the protection which such ventilation affords to the inmates of houses connected with the sewers. It is a mistaken idea to suppose that flushing will prevent the formation of sewer gas. As stated above, the formation of the gas would be reduced to a minimum by keeping the flow in the sewers at a uniform level, which level should be such that the sewer flow would be at least quarter its capacity To maintain this rate of flow in the Winnipeg sewers at present would take about 100 cubic feet of water per second or fifty-two million gallons per day, or at least twenty-six times more water than our present water system is capable of pumping. As a matter of fact the Winnipeg sewers are as well flushed as those of any city on the continent, using the combined system. See comparison with city of Toronto in report of sanitary condition of Winnipeg, 1893.

The complaint about smelling manholes is not confined to Winnipeg. It is universal. In Europe and America the experts of all large cities have been engaged for some years past in making bacteriological examinations of sewer air in order to determine its exact nature and what danger, if any, is to be expected from its discharge into the streets. Without going into particulars it may be stated that more bacteria were found in the air of the street than in the sewer air, and the "deadly manhole," of which so much have been said by the press of the country, has gradually assumed its proper place of a comparatively harmless, if intolerable, nuisance.

TO STRENGTHEN ASPHALT PAVEMENTS.

A novel experiment in street paving is about to be made in South Park avenue, between Sixty-third and Sixty-sixth streets, Chicago.

Some time ago an inventive genius produced what is called "expanded steel." This is simply a thin sheet of metal with slits cut in it and expanded lengthwise by forcing these slits into diamond-shaped apertures. It was at first used only as a substitute for lathing in the construction of buildings, but now it is to become part of a new method of laying asphalt pavements, and will be given its first trial on South Park avenue. It is proposed to have steel sheets of one-half inch in thickness cut into large-sized strips and then expanded under powerful pressure. These sheets will be inserted flatways in the concrete base by first laying four or five inches of the stone and cement mixture and then covering the entire surface with steel, and over this steel in turn will be put the rest of the concrete. When partly dry the base will be compressed by ten-ton rollers and the concrete mixed forced into the interstices in the steel sheets, the whole, when solidly set, forming a foundation which will not only afford a much greater weight-resisting surface than the old system of asphalt paving, but furnish as well an effectual barrier to the picks and axes of the vandals.

Damage to the top coating of an asphalt pavement causes but small expense or annoyance nowadays. Time was when repairs to the top could only be made by tearing up a good sized section of the pavement and relaying it entirely, and even then the job was seldom satisfactorily done, as it was almost impossible to get an even surface on the patch.

Now, when the top coat needs fixing a man comes along with an ingenious gasoline contrivance something on the principle of a plumber's blow furnace, except that it is mounted on wheels. He shoves it along over the spot to be repaired and the fierce heat, directed downward, quickly softens the asphalt so it can be readily smoothed over by the rolling machine's weight, and an even surface secured.

It is only when the base or foundation of the pavement is cut through in replacing an even surface, and this, it is expected, will be obviated by the use of the combined steel and concrete base. The difficulty of cutting through the mass will force the making of water, sewer and gas connections before the pavement is laid, and where this is not done it will be cheaper and easier to tunnel under the street from the sidewalk than to tear up the pavement.—Exchange.

POWER FROM REFUSE.

Garbage and town refuse disposal is one matter where the cities of Europe are far ahead of those of this country. An ideal plant of this kind is that at Rochdale, England. Investigators have all agreed that burning is the best way to dispose of the accumulations. This preference is due to the fact that by this method not only is all organic matter liable to putrify and become a menace to the health of the community, destroyed, but it has been found by actual trial that the heat derived from the burning of this refuse may be used for the production of steam, which can be utilized for commercial purposes, and the revenue received from this source may be sufficient to more than pay for the cost of burning. There are no less than fifty-five such destructors in different parts of England. The Health Committee of Rochdale, a manufacturing town of 73,000 inhabitants, recently adopted the method, with the idea of ultimately using the steam produced for electric lighting purposes. It has been found that this rough, unscreened refuse, running as much as 35 per cent. of clinker and ash, will evaporate 1.6 pounds of water for every pound of refuse burned, under boilers built to produce steam at 120 pounds pressure. Coal burned under the same boilers evaporated 7 pounds of water per pound of coal. The two boilers have a grate surface of 45 square feet each. In building the two destructor cells a large combustion chamber, common to both, was provided between them and the boilers, so that the gases could intermingle, and that time should be allowed for the combustion of gases before they came in contact with the comparatively cold surface of the boiler, noting the fact that if once the organic matter in the fumes were heated sufficiently high, no amount of subsequent cooling down could again make them malodorous. It is interesting to note that it is not necessary to use coal to aid in the burning of this refuse. The plant has been able to produce 340 brake horse-power, burning two tons of refuse per hour. This high efficiency is obtained with ordinary boilers by using a forced draught. The weight of the refuse is reduced two-thirds, and the volume three-fourths. The author says in conclusion: "The disposal of two-thirds of the refuse completely is an important matter, but when to this is added the fact that the remaining third is rendered quite free from any organic matter whatever, it is past conception that corporations and local companies will continue to tip such immense quantities of putrefactive matter away, when, if they put in suitable appliances and used the steam which can be produced, the refuse might be burned and a profit made on the transaction."—Cassier's Magazine.