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## The Canadian Engineer.

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### THE INTERCEPTION TRAP.

BY W. M. WATSON.

For THE CANADIAN ENGINEER.

About forty years since I began to learn the sanitary trade, many private drains were built with rough stone, bricks, broken pipes and wood; they were totally void of any scientific arrangement or rule; no regard was paid to grading, and often the level turned the wrong way, which of course made the channels useless as carriers of sewage. Such private drains only distributed the poisonous sewage among the subsoil of the premises they were laid under, making the ground a cesspool of impurities that generated foul gases and contaminated the living rooms of the dwellings.

This state of things caused an appalling death rate among young children, who spent most of their time in such polluted atmospheres. To add to the leaky and unsanitary state of such private drains it was only in a few of the best plumbing jobs that either the soil pipe, the waste pipe or the head of the drain pipe line, was continued upward to above the house roof with a view of ventilating the plumbing, the private drain line and the public sewer.

To have cured this defect was simple enough, by having the drains laid with good sound pipes, tightly jointed and scientifically laid by competent workmen, and the terminating head of every drain, soil pipe and drain pipe carried up to above the highest point of the roof of the building, so as to ensure a good circulation

of air from the street sewer upward through the line of pipes. However, the usual methods of tackling such difficulties was adopted. Professional engineers and scientists made a big thing out of the sanitary cow, and meetings and lectures were many, to make a remedy for so serious an evil, and the result was that W. P. Buchan, Glasgow, got the pull and inaugurated the system in 1872 of placing an interception trap in all private drains at a point where the private drain entered private property, or buildings. His argument was that no poisonous sewer gas could pass from the public sewers to the private house, if this shut-off valve or interception trap was fixed into the private drain; but he took no note of the fact that the putrid matter that poisoned the dwelling was under the dwelling, and not in the street sewer at that time, and if the street sewers were so badly laid that they generated poisonous microbes, the very best way was to provide plenty of means to draw off the foul gases to a point of the atmosphere above the house tops, where they would at once die, for dangerous microbes can live only where there is no circulation of air, and no better carrier of air or gas can be found than the warm moistened walls of a sewer or soil pipe.

Our Glasgow friend no doubt was a thinking man, but he evidently was not sufficiently well informed to know that when public sewers are scientifically laid, they are self-cleansing and self-aerating. When that is accomplished the sewage is kept moving until it reaches the sewage outfall, on that ground the foul matter entering the sewers cannot breed or incubate microbes, nor generate foul gases of any kind, because such putrefaction can only take place in very sluggish streams and cesspools, two things that are not admissible in a well laid drain. Then with regard to aeration of the sewers, if both the sewers, the private house drain, and the plumbing be scientifically designed, and worked out, every pint of sewage discharged from the house fixtures into the drain will carry with it into the main sewer about one quart of fresh atmospheric air, about sufficient to clean out and purify it. When the time arrives that a reasonable amount of common practical knowledge is used when constructing sewer drains and plumbing, the sewers themselves will do a great deal towards cleaning and purifying, by the help of bacteria, the foul liquid that is put through them. The system of Mr. Buchan prevents all this good work by placing the interception traps on all private drains, because the drains cannot have the proper and natural ventilation, nor can the sewage carry air into the sewers; moreover the sewers cannot be self-cleansing, in fact, it turns the whole system of sewers into a poisonous gas making machine, that has already sent many to a premature grave and will send many more before the fad works itself out.

The time is ripe for reliable statistics to be published showing the sickness and death rate of the inhab-