

TYPHOID AND DRAINAGE.

We publish an article by Mr. Hilder Daw, of Montreal, on the subject of typhoid epidemics. The writer again reiterates his contention, previously recorded in the "Sanitary Review," that much typhoid is the result of unsanitary drainage. By unsanitary drainage special stress is laid upon sewers in which the hydraulic depth of flow fluctuates, causing alternate conditions of wet and dry pipe surface. The typhoid germs are held to be susceptible to dissemination by means of sewer air. Quoting the article: "Now there is always an up-draft in our sewers whereby sporing pathogenic and nonpathogenic germs are wafted to the outer air. It is permissible to imagine that the B. Typhosus, which is of a sticky character, can attach itself to the floating spores." Sewer flushing is pronounced the panacea or remedy for the above condition.

That sufficient attention is not paid to sewer flushing is unquestionable. This especially applies where the combined system of sewerage is in vogue. Where selfcleansing gradients cannot be obtained in sewers, they should be artificially assisted by automatic flushing. Unsanitary sewerage systems are probably more dangerous to public health than the old-fashioned method of no sewers, by which slop water was simply emptied direct into the roadway or street.

In the former we have ideal conditions for the propagation of disease infection. Filth is collected out of sight, and consequently out of mind. An underground sewer, which is incapable of carrying off solids in dry weather, presents an even, warm temperature charged with moisture, excluded from sunlight and fresh air.

By the latter primitive method sewage was exposed to the two most powerful of natural disinfectants, viz., fresh air and sunlight. Any nuisance made itself apparent, and was kept within certain limits.

A sewerage system is without doubt the most important factor in a city's health.

In Canada a sewerage system receives the minimum of attention. We wash our streets, and oil the dust down. We quarantine zymotic diseases, and fix a sentinel on the steps of the infected house; but the sewerage system being out of sight, takes the place of the space under the mat provided for the careless housemaid into which she can hide the dust, and so save the trouble of removal. That sewers internally should present a maximum of cleanliness, and a mimimum production of foul gases, receives little or no attention. That which is a matter of conscious satisfaction, and cannot be paraded in the open, is liable to neglect.

Enteric, or typhoid fever, as it is generally called, is one of the most difficult of zymotic diseases to contend with. There are various channels by which it can be conveyed to the human system. One thing, however, appears certain, and that is that the germs must be absorbed into the food system in order to give rise to the disease. It is primarily an intestinal affection, and the general fever and sickness appear to be due to poisons absorbed by the blood system. These poisons are ptomaine in character, and are the by-products of the bacterial life in the intestinal canal. The infectious media of typhoid is given off with the excrement from the patients, and may be so given off for several years after the patient has quite recovered from the effects of the disease. This latter fact is of great importance, bearing as it does upon the necessity for rapid and thorough removal of sewage, without any chance of food contamination.

Typhoid generally makes its appearance in the autumn season; that is, at that time of the year when there is generally the least amount of rainfall, and consequent sewer flushing, and also when there is a greater amount of vegetable decay in our midst. Epidemics are often carried well into the winter, on account of general carelessness in isolation and protection of food supply. Numerous epidemics have been traced directly to contaminated water and milk. Washing milk utensils with fouled water is the more general cause of an outbreak.

It is impossible, however, to name any one generative source of typhoid outbreaks. The disease is endemic; that is, the infection is constantly with us, and may become epidemic at any time, if the required favorable conditions are provided for its propagation. Favorable conditions must be summed up by the term, general unhygienic. Flies are suspected of being one of the chief carriers of infection. The eggs are incubated in filth collections. There the larvæ obtain their sustenance. The fly proceeds direct from filth to the food pantry, plants its excreta emanations on butter and meat. The removal of decaying vegetable matter and stagnant water means the removal of flies. So much of the preventive measures are, however, impracticable, after we have done our individual all, there remain general conditions with which it is difficult to deal. The excuse that we cannot obtain the ideal is no excuse, however, for leaving undone that which can be satisfactorily accomplished.

There is no excuse whatever for the abominable conditions which exist in such sewerage systems as those of Montreal, Winnipeg and many of our large cities, which, instead of serving as means for the rapid removal of filth, are simply filth collectors.

TYPHOID EPIDEMICS.

By Hilder Daw, A.M.C.S.C.E., M.L.E.S., M.C.M.I., A.I.N.A., etc.

From time to time, so-called "epidemics" of typhoid devastate residential (isolated and crowded) and business locations. Much disputation as to the proper remedial measures ensue in the various council chambers. Doctors are divided into warring factions that through failure to agree to differ, combine in failure.

The question has been thrust upon my unwilling attention by reason of its laying me up in hospital. I then had enforced liberty to review past history and formulate the basis of this article.

The history of European cities makes illuminative many points of obscurity, and it is doubtful if many of our municipal authorities' sanitary experts and medical officers of health have given the close attention to latter-day history that is necessary if one attempts to trace the cause of a