

(Editorial—Continued from Page 836.)

sewage with the filtering media. The time allowed for rest or recover and the number of times applied per day. Any experimental information in contact beds without this essential information is next to useless.

Continuous Filters.

The bed was made 2 square yards area and 4 feet deep. It was fed with septic sewage from the large septic tanks continuously in a rain at the rate of 5,000,000 gallons per acre per day.

Continuous Filter.

(Parts per 100,000.)

Averages August 8th to Sept. 4th.

Affluent.			Effluent.		
Free Ammonia	Alb. Ammonia	Oxygen Consumed	Free Ammonia	Alb Ammonia	Oxygen Consumed
2.538	1.069	30.52	2.151	1.191	29.12

Run at the rate of 5,000,000 gallons per 24 hours per acre.

Is this experiment a joke, or what is it? It is very difficult to take it seriously.

The rate of 5,000,000 gallons has up till now been unheard of, undreamed of. It is about equal to 1,000 gallons per cubic yard per day. Whereas the rate at present allowed in Great Britain for continuous filters may not exceed 168 gallons per cubic yard per day. In fact, with ordinary average sewage good results can not be obtained by any greater rate than 168, and then only with very careful filtering and with the use of the dosing tank discharging at each dose not more than 2 gallons per super yard of filtering area. It is not difficult to understand that with the result of such an experiment as this continuous filtration was condemned at Berlin. In fact, the effluent was worse than the affluent. See increase of alb. ammonia.

However, these experiments have persuaded the people of Berlin that it was necessary to go in for a broad and extensive scheme of sewage disposal, whereby they have about an acre of sandy land to about every 40,000 gallons of sewage which, with good management, should prove ample.

The experiments, however, do not prove that with either properly sized contact beds or continuous filters equally good results might not have been obtained.

Sewage of as strong a character as that of Berlin has been treated successfully in the past by means of continuous filters, but no doubt with an ample quantity of natural filtering land available, Berlin has probably been led into a proper and advisable course of action.

BOILER SCALE AND ITS PREVENTION.

It is seldom that information regarding the cause and formation of boiler scale, its effects and the best means of its prevention are more clearly presented than in the following extract from a report rendered some time since by Arthur D. Little, Chemist, of Boston.

"All water, especially surface waters, contain more or less mineral matter in solution which remains in the boiler as an encrustation when the water is boiled away or converted into steam. The mineral ingredients most commonly found in water and which cause the formation of boiler scale are the salts of calcium and magnesium. When the water is converted into steam those substances gradually separate from the solution in the form of deposits and coat the inner surface of the boiler with scale.

"Scale formation is detrimental in several ways. It is a non-conductor of heat and the fires must therefore be driven harder to accomplish the same results. The water becomes separated from the boiler plates and these latter become overheated and are gradually burned out. The tubes and feed-pipes of the boiler become more or less clogged and consequently become less efficient. Some of the scale-forming ingredients, especially magnesium chloride, also exert a corrosive action upon the iron.

"The aim of a boiler compound is to convert these substances into insoluble compounds which settle in the form of sludge or mud and can be removed from the boiler by blowing or washing.

"We could prepare a list of nearly two hundred materials which are known to have been used for boiler cleaning purposes, but there are only four of these which are worthy of mention. They are:—

Soda Ash, or Sodium Carbonate.
Caustic Soda.
Tannin.
Kerosene.

"Soda ash is an alkali and will neutralize any acid in the water, and also precipitate salts of lime, magnesia, iron, and alumina, in the form of soft sludge which can be easily removed when the boiler is cleaned.

"Caustic soda is also an alkali and neutralizes acids and aids in the precipitation of the various salts.

"Kerosene is used in connection with the above to prevent foaming or priming.

"Tannin is also used to prevent foaming or priming, and will precipitate certain mineral matters, although it is not so efficient in this report as soda ash or caustic soda."

STATEMENT OF ACCIDENTS DURING SEPTEMBER, 1908, BY INDUSTRIES AND TRADES.

Trade or Industry.	Killed.	Injured.	Total.
Lumbering	2	3	5
Mining	9	16	25
Building trades	4	19	23
Metal trades	5	30	35
Railway service	23	12	35
Navigation	7	2	9
General transport	7	10	17
Miscellaneous	9	6	15
Unskilled labor	11	5	16

MARKET CONDITIONS.

Toronto, Nov. 26, 1908.

Advanced freights, consequent on Montreal navigation, puts pig iron prices here a dollar a ton higher for British, but Hamilton can still be had at a smaller advance. Iron and steel prices are for the most part steady or indeed firm, but no special activity is to be remarked. The other metals as remarked last week.

Other building materials do not offer much field for comment, activity in them is now slackening off. Cement has been flat and weak in price for a long time, and any change must be for the better, one would think. Bricks have kept up well in price and are even yet active. Lumber moves in small parcels, with a preference shown for cheaper grades.

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