

May one not, however, base on this fact for the purpose of removing the reproach that the Le Chatelier is excessively severe? It would be sufficient to examine merely whether the delay of 24 hours after mixing is adapted for all eventualities, or whether it is not too strict, and that by altering the period to 36 or 48 hours one would still meet with the inconvenience of eliminating the cements that are stable in cold water. Moreover, in our opinion, the period allowed to elapse previous to the immersion in hot water has nothing to do with the value of the test. It should be left for each user to fix for each class of cement the period that should be allowed to elapse before the Le Chatelier test is applied.

On the other hand, the results obtained having revealed the slight influence of the method of keeping and of immersion of the test pieces in hot water, and the complete concordance of the tests performed with moulds of one and the same origin, it is in our opinion justifiable to regard the Le Chatelier test as being sufficiently accurate in practice and convenient for use. As regards the shape of the needle shoulders, nothing is easier than to contract this by regulation, in the same manner that one can fix the number of times the moulds may be used before being discarded.

WASTE DESTRUCTION.

Writing in the Municipal Journal, C. E. Crichton, M.D., Commissioner of Health, Seattle, Wash., has the following to say concerning waste destruction in the city of Seattle:

The term waste, as used in the city of Seattle, includes everything on earth that is wasted, deposited or thrown away as being of no further value to the person or persons producing the same.

The city of Seattle, after an exhaustive investigation made, has seen fit to divide this subject into three headings: 1st, Collection; 2nd, Removal; and 3rd, Destruction. The commissioner of health of this city spent one year in visiting the principal foreign nations, the different cities of Canada and the United States and made an exhaustive study of the methods of collection and disposal of waste material.

He believes that by far the most dangerous substances which should be collected and destroyed by the ordinary American city, are those which as a rule receive the least attention. Most cities attempt to make a regular collection of what is generally known as garbage, decaying vegetable and animal tissues. Many American cities collect only at convenient times, and some only once or twice a year, other wastes, which in Seattle are considered the most dangerous. We refer to old mattresses, sheets, soiled bedding, wall paper, carpets, rags and handkerchiefs which have been soiled by direct contact with the evacuations and secretions of those sick with typhoid fever or other communicable diseases, more particularly tuberculosis.

In visiting 28 of the leading cities last summer we found some of those classed as progressive and modern collecting this most dangerous waste only twice a year. It can be seen at a glance that, while table refuse or true garbage may become annoying to the special senses, the material is as harmless as it was before it passed through the kitchen. It is, of course, a feeding ground for flies and rats and to a certain extent furnishes a breeding place for the former.

We adopted the single can collection, into which every known substance is thrown and same collected regularly, because by so doing we cause an immediate destruction of the dangerous wastes and because it gives a mixture of ashes and other wastes with true garbage. It has been found by actual experience to limit the smell from the garbage can and the ashes, being a good absorbent, keep the insides of the cans comparatively dry. This step also enhanced the beauty of the city, since rubbish and refuse are never in

evidence for more than a week's time. First of all, let us say that the collection and destruction of garbage was considered as a sanitary measure, and that the cost of collection, removal and disposal was subordinated to that of sanitation. After we had decided upon the most sanitary plan, we then sought to procure the most economical method of collection, removal and destruction.

We have given the matter of removal separate treatment because this city introduced the method of removing its waste by auto truck two years ago and to-day is removing nearly 30 per cent. of its waste in this manner. It is believed that within sixty days more than 50 per cent. will be removed by the auto truck. The removal of a city's waste is much more important than is conceded by most city officials. In removing the same by auto truck the material is taken through the streets of the city in about one-fourth or one-fifth of the time consumed by horse-drawn vehicles. Seattle is a city of hills and it is therefore safe to say that this material is removed as a matter of fact in one-fifth of the time consumed by horse-drawn vehicles. Six tons are removed in one truck bed built for this purpose. It is more easily covered by tarpaulin than would be the same tonnage in three vehicles. It is dumped once instead of three times, thus saving the blowing about and dissemination of disease-bearing germs. Not as many garbage-laden vehicles pass through a given community nor are they repugnant to the people as are horse-drawn vehicles. The collections are more regular because our hillsides are slippery during certain seasons and we were occasionally delayed a day or so at a time, as the case might be, by the use of horses.

In considering the great question of disposal, the one idea dominating at all times was that purification and destruction by fire was far and away superior to any other method. As a consequence, we early adopted the Meldrum Brothers furnace, of Liverpool, England; which is a forced draft, high temperature furnace and did what every American city should do, provided it adopts such a furnace, and that was to buy the right to the patents to build these plants, as many as desired within our corporate limits. This foresight has enabled the city to have in operation to-day three of these destructors, capable of consuming slightly more than 200 tons of mixed waste daily. Right here let it be thoroughly understood that not one pound of fuel is used in our destructor other than the waste itself—no coal, no wood, no oil. We have in the treasury to-day funds for the building of two more units. A unit has a guaranteed capacity of 65 tons of garbage daily. The Heenan & Froude incinerator now operating in Milwaukee is a type of furnace very similar to the one used here. Such furnaces turn out a clinker, or more properly speaking a slag, which we run through regular rock crushers and which is used for practically the same purpose as is crushed rock. We find a steady market for this material for use in paving and sidewalking, and especially for floors in fireproof structures. We sell at the bunker, receiving 75 cents per cubic yard. We also grind the clinker still finer when it is used for many purposes like the manufacture of stationary wash trays, etc.

The wagon which Seattle has adopted for general waste collection is the old type of European rear dump with large hind wheels and small front wheels which allows for turning within the length of the wagon. The rear wheels being high gives us ample opportunity for dumping large bulky material without annoyance. In one single can collection are boxes, barrels, shrubs, limbs of trees and other matter, and as a consequence there must be considerable clearance from the wagon-bed to the ground or there will be difficulty in dumping. Where we are dumping into the bunkers this is not quite so important, although it has its advantages.