Editorial

ACTIVATED SLUDGE PROCESS.

The papers read by Messrs. Ardern and Lockett on May 30th and December 15th, 1914, and by Mr. S. E. Melling on December 15th, 1914, before the Society of Chemical Industry, on the experiments conducted by them at the Manchester and Salford sewage disposal works, have directed great attention to the possibility of treating sewage by aeration and producing results superior to those ordinarily obtained by the usual bacteriological treatment.

Experiments are now being carried on in Milwaukee, Wis., Chicago and Urbana, Ill., Washington, D.C., Brooklyn, N.Y., Baltimore, Md., Brockton, Mass., Houston, Tex., Cleveland, O., Regina, Sask., and Toronto, Ont. As might be expected, all of the preliminary experiments are on a small scale and it is advisable they should be so, for in a new process it is essential that everything should be noted and investigated, as the characteristic changes in color flocculency and volume of sludge will doubtless have their influence on subsequent developments.

The activated sludge treatment is the intensified application of the oxidizing and nitrifying processes which take place in well aerated and carefully managed percolating filters. The colloidal matter contained in, and the flocculent matter carried by, the tank effluent adheres to the filter media. It is oxidized, becomes inoccuous and later on loosens and is washed away by the filtrate.

The method that is now being tried is to pump air into raw sewage until nitrification takes place, remove the clarified liquid and add more raw sewage. The air not only causes oxidation and nitrification, but also keeps the whole content of the tank in a state of ebullition, and solid matter absorbs or takes to itself the impurities contained in the water.

The latest information is that given by Mr. Chalkley Hatton, on Milwaukee experiments, published in the Engineering News for July 15, 1915. According to the figures published, and they are more or less confirmed by those obtained at Urbana and other places, the bulk of the free ammonia is oxidized to nitrate and 99 per cent. of the bacteria in the raw sewage are taken up by the activated sludge, so that the effluent is practically sterile. Mr. M. N. Baker, the Editor of the above journal, describes in the issue of July 22 the various activated sludge experiments he visited. It is evident that the process is being tried by different engineers and chemists in a variety of ways, and in due time we shall be informed of what has been achieved.

There are many problems, however, which are deserving of consideration by Canadian authorities. If there is a potential advantage to the public in the adoption of new and improved methods of surmounting our civic troubles, it is highly desirable that they should be carefully investigated. Sewage treatment is one of the civic problems which will be ever present with us. The city of Toronto and other cities as well, have big problems to solve. The provincial governments have also their responsibilities to discharge in this regard, for the final word rests with them as to the approval or rejection of schemes devised to treat sewage. The science and art of sewage treatment is changing from period to period, or more correctly expressed, the knowledge on the subject is constantly increasing and this inevitably means improved designs. Broad irrigation has given way to bacteriological filters; the design of tanks has changed many times during the last twenty years; standards as to the quality of the effluents have been revised; and the requirements with respect to chemical analyses have been re-drafted. Having regard to these conditions, it is to be hoped that the Canadian sanitary authorities will be so enterprising as to take a place in the front ranks in these important investigations, for in the immediate future they will be called upon to adjudicate on the merits of schemes submitted to them for their adoption or approval.

A MUNICIPAL PROSPECTOR AND HIS FIND.

A few weeks ago the engineer of an industrially thriving Canadian town laid on the council table a sketch of a water connection of considerable size leading from the town mains into a manufacturing plant extremely well known throughout Canada. The management of the plant changed several years ago and the new officials knew nothing whatever of this water service, as there happened to be another connection upon which the supply had always been checked by meter. The discovery created surprise first in the company management and later in the town council. Apparently no one knew that such a connection existed, and it was very evident that this particular plant had received the greater part of its supply for a good many years without charge. Town engineers with investigative dispositions must certainly be an awful nuisance.

In excavation for foundations for new buildings, in the installation of water distribution systems, and in many works of a similar nature the engineer or contractor often encounters pipes and mains concerning which the city or town officials have little or no knowledge. An instance is in mind where a fair sized job was delayed a matter of weeks during a single season as a result of encountering unrecorded water, gas and sewer pipes and waiting for the proper officials to take them in hand.

The Canadian Engineer has referred several times to the present inactive stage of municipal development as being opportune for underground surveys which provide civic officials with an accurate knowledge of what their utility systems really comprise, and which prevent loss of valuable time when stray lines are encountered in the course of a hurried construction job. A careful record of pipes and conduits saves the municipality a good deal of expense in this respect, and it is certainly appreciated by the contractor. Further, it assists the engineering departments in a more judicious consideration of extensions of the various systems involved.

One favorable feature of such a survey is that it costs practically nothing in the way of equipment, while it familiarizes the engineering department of the city or town with essential details, a clear knowledge of which would ridicule the instance referred to above. It is safe to say, in this particular case, that neither the engineer, the manufacturing company nor the present town officials had any knowledge or intimation of the fact that the greater