

the advantage of this is not very clear in plants where the sand is replaced by hydraulic methods. Any film that may develop during storage is surely lost during the violent treatment it receives during replacement.

The depth to which the sand layer can be reduced by scraping before re-sanding is often determined by the capacity of the sand storage bins, but when this does not apply a minimum of 16 to 18 inches is usually regarded as safe.

Sphere of Utility.—As the color of the water is but slightly reduced by slow sand filtration, this method of purification should not be used when the color exceeds 10 to 15 parts per million. It is also unsuitable for waters which constantly contain excessive turbidities, but where the turbidity is generally low and only occasionally excessive, successful results can be obtained by the use of pre-filters as at Albany, by coagulation as at Washington, or by alterations in the design of the plant in the direction of more filter reserve and generous allowances for sand-washing appliances. Whichever alternative should be employed depends upon local conditions, and is almost entirely an economical problem.

Slow sand filtration still has its spheres of utility, and although these are much more limited than sanitarians considered them to be several years ago, it is, in these spheres, the most suitable and economical form of filtration. The prestige it lost was entirely due to the imperfections in our knowledge of its limitations, and once these are universally recognized it will probably regain at least a semblance of its former position in the science of water purification.

Unprecedented demand for high-speed steel is reported at Sheffield, England. Nothing approaching the present demand has heretofore been experienced; orders are not only numerous but they are of tremendous size and value. In addition to British sources, orders come from Russia, France, Italy and the United States. The price at present varies from 4 to 97 cents per pound. An immense quantity of tool steel is being used in the production of armaments, and every engineering shop in England is busy on this work.

According to a description in *The Engineer* (London) of a recent patent of Dr. F. M. Perkin and H. E. Fenchelle, hydrocarbon oil or liquefied solid hydrocarbon, such as kerosene, naphthalene, or paraffin wax is forced under high pressure through one or more long, narrow conduits heated to such a degree that the combined temperature and pressure produce a cracking of the hydrocarbon while still in its liquid condition. Thereupon this liquid, still under pressure, is cooled and then passes a check valve, and escapes at atmospheric or other relatively low pressure into a chamber surmounted by a dephlegmator or rectifying column, the previous cooling under pressure being such that the subsequent reduction of pressure on the liquid entering the chamber causes a separation of the lighter hydrocarbons from the unconverted portion of the liquid by spontaneous vaporization of the lighter portion. The ascending vapors undergo dephlegmation or rectification, and the residual liquid collects in the chamber. The rectified vapors are conveyed to condensers, and the residual liquid is heated by steam generated in a boiler adapted to serve as a heat interchanger between the water to be vaporized and the highly heated oil that has undergone cracking. In this way the heat abstracted from the cracked oil during the cooling of the latter is usefully employed.

THE CITY MANAGER versus COMMISSION GOVERNMENT.

MUNICIPAL journals in the United States have devoted much space during the past year or more to the city manager plan of government. It is claimed to be a decided step in advance of previously heralded and successively tried systems. Its supporters claim as many or more advantages for it over the commission form as the advocates of that now better established form had over the old mayor and council system. That either of the newer forms are slow to receive adoption in Canadian cities is largely owing to deeply rooted and tenacious ideas that the mayor and council method is the only way to govern a city. In fact the commission government has received but scant consideration in Canada while regarding its more recent rival, the city manager, the Canadian citizen has done nothing more than assume the role of dubious spectator, with a careless eye cast occasionally at the way things are turning out in the cities in the States where city managers are shouldering the responsibility of forging out a success.

A casual glance is not enough. The results are worthy of careful consideration. As for the commission form of government, the advantages claimed by its supporters over the old mayor and council system may be briefly summarized in the words simplicity and centralization of authority and responsibility. The enormous interest manifested in it and the rapidity with which it has spread over various States to the south furnish conclusive evidence that commission government met a real need in the improvement of municipal affairs. The testimony from practically all commission-governed cities, however brief their period of experiment may have been, is that city government has been improved in many respects, as compared with its former condition.

The rapidity with which the city-manager plan is supplanting the old-established system of mayor and council is certainly sufficient to warrant in its turn the attention of all students of municipal problems. There is really little new in it over the commission government form. The latter, as we know, substituted one responsible body for two, reduced the number of elective officers, fixed the responsibility for the administration of various services of the city and provided certain checks in the way of public control. The city manager attempts to interfere with or alter none of these legal or political characteristics of commission government. That is to say, the responsibility of the elective body remains and the instruments of public control are not abolished. It is on the administrative side that the departure from commission government takes place.

The principle of the new form was aptly explained by H. G. James, secretary of the League of Texas Municipalities, in a recent address on the rapid adoption in that State of the important innovation. He states that one of the chief arguments made by the advocates of commission government was that the business of a municipal corporation is much like the business of a private corporation, and that the form of organization which has proved successful in the latter might naturally be expected to prove successful in the former. The conclusion drawn was that the board of directors of a private corporation would correspond to the commission or board of directors of the city. But commission government is unlike the government of a private corporation in one very essential particular. No officer is provided to correspond with the general manager of the corporation. In other words, the