

MUNICIPAL DEPARTMENT

THE PURIFICATION OF WATER BY ELECTRICAL PROCESSES.

The more recent systems of water purification, in which electricity plays a part, involves the electrolytic decomposition of a solution of common salt. The London Electrical Review thus briefly describes the principle underlying the system:—When a solution of salt (chloride of sodium) is decomposed by electricity, sodium is liberated at one pole and chlorine at the other. The sodium is immediately oxidised, and combines with the water present, and a solution of caustic soda results. By suitable mechanical contrivances the chlorine gas may be conducted away from the other pole as fast as it is liberated. But if instead of separating the caustic soda and the chlorine from each other they are allowed to combine, a complicated series of reactions takes place common salt is not reformed again, but various other products result, which depend, as regards their nature and amount upon the concentration of the liquid, as well as upon its temperature. Under ordinary circumstances the principal product is sodium hypochlorite, and this is the substance which is relied on for rendering innocuous the organic matter of any water with which it is subsequently mingled in the form of an aqueous solution.

As we have already observed, when dealing with a system for purifying sewage (*vide* Electrical Review, August 31st, p. 250), there is nothing new in the application of electricity to produce hypochlorites, nor is there anything novel in the use of sodium hypochlorite as a disinfectant or germicide. The so-called electrical purification of water by treating it with an electrolysed solution of salt is simply a process of disinfection by sodium hypochlorite. Electricity as such has nothing to do with it; its function is merely to bring about the formation of the chemical, and there is nothing to be gained by christening plain, honest, hypochlorite, with some fancy name of mysterious import, such as "electro-this" or "electro-that."

We now reach the question whether it be desirable to treat a city's water supply with a powerful and soluble disinfectant like sodium hypochlorite. To this question Dr. Thomas M. Drown (to whose paper in *Technology Quarterly*, 1894, Vol. vii., No. 1, p. 51, we acknowledge our indebtedness) would evidently give an unqualified negative, and is of opinion that where a water supply has got into such a hopelessly bad condition that nothing will render it safe but disinfection by means of hypochlorites or other chemicals of that order, it is high time to abandon that supply. The idea of chemical disinfection is repellant to Dr. Drown, and he considers it to be a foolish blunder to permit the

pollution of water sources and then systematically to disinfect them.

For our own part, we confess to entertaining no sentimental objection to the chemical disinfection of a water supply, especially if it be the only supply available, provided that the operation of disinfection leaves nothing behind it. Can this be said of sodium hypochlorite? We think not; and that it comes under the category laid down by Dr. Frankland, F. R. S., in a book entitled "Micro-organisms in Water," published a month or two ago. This category includes substances which, being soluble, are chemically active, and are added in such quantity that a direct bactericidal effect is produced. Such treatment cannot, as a rule, be employed for the purification of drinking water, but is extremely useful in the disinfection of sewage. If those who propose to purify water by such means are ready with a system of precipitation which shall eliminate from the water every trace of hypochlorite after the latter has done its work upon the deleterious organic matter and germs, then these arguments fail to carry any weight. It matters not a little bit to the consumer what operations the water is subjected to, so long as he receives it eventually in a pure condition. Surely such a consummation is not beyond the range of possibility?

The purification of potable waters is, from the hygienic standpoint, of the same order of importance as the disposal of sewage. Given a good water supply and an efficient sewage system, and the death rate in our large cities never fails to fall. For years sanitary experts and faddists in hygiene have been wreaking their own sweet will upon the conditions under which we live; the resources of chemistry and of engineering have been tried to the uttermost, and yet the call is for more improvement. Electricity has proven so cosmopolitan in its applications, that it is at least reasonable to suppose that the great water question is not beyond its influence, whether it be used as a direct or an indirect agent. And the degree of success so far attained by those who have sought to apply it to the problem is certainly not discouraging. The lines upon which electrical engineers have hitherto sought its solution may not give promise of much result, or be desirable in their issue; but that is no argument for giving up the attempt. It remains for those who are interesting themselves in hygienic matters to follow up other lines of research; the subject is sufficiently interesting and important; whilst regarded from a purely sordid point of view, it presents every inducement.

LEGAL DECISIONS AFFECTING MUNICIPALITIES.

HODGINS v. CITY OF TORONTO.—Judgment of Mr. Justice Street at Toronto, on motion to quash certain parts of by-law No. 3,239 of the city of Toronto, passed 9th April, 1894, which recited that the corporation had constructed certain plank sidewalks in the city, set forth (with the price of each) in the schedule issue of local improvement debentures to pay for

them, and to levy a rate during two years upon the assessable real property fronting upon the streets on which the sidewalks were laid, sufficient to pay the debentures and interest. There was no recital of any petition for the by-law, and it was supported as having been passed under the authority of sec. 623 (b) of the Municipal Act, 1892. There was no recital that two-thirds of the members of the City Council present at any regular meeting were of opinion that the sidewalks in question were desirable in the public interest, but an affidavit stated that the Council had unanimously so resolved. No notice of the intention to pass such a resolution or to consider the question was given save by advertisement in a newspaper, which had not been seen by the applicant. Held—That the determination under sec. 623 (b) by the Council of the question whether the sidewalks are desirable in the public interest is a judicial act, and, before a conclusion is reached upon it, the persons affected by it should have notice that it is under consideration, and be permitted to show, if they can, that they are not desirable; and the application having had no notice, and being entitled, in the absence of any provision to the contrary, to actual notice, the by-law, so far as it purported to affect his property, should be quashed. Order accordingly.

Bags for removing ashes from buildings have been tried recently in New York City by Col. George E. Waring, Jr., the Street Cleaning Commissioner. The object in using them was to prevent the annoyance occasioned by dumping the ashes from the metal cans formerly used into open carts, whose progress through the streets on a windy day was attended with a cloud of dust floating off to leeward. The bags are made of heavy canvas and are kept distended while in the houses by a metal cylinder open at each end. When the ashman comes along he pulls this metal cylinder out of the bag, ties up the mouth of the latter, and puts it in the open, two-wheeled metal cart in which New York ashes are removed. Then a fresh bag is taken from a pile carried by the cart and the metal cylinder is placed inside it ready to be taken into the building again. This method of collecting ashes has proved satisfactory on the single street where it has been tried, so far as the prevention of dust is concerned, but there was some trouble on account of ashes and garbage being mixed together. Some years ago the Health Board required these classes of refuse to be kept separate, and although this order is still on the books it has been disobeyed since the householders saw the ashes and garbage thrown together in the same cart.

The Town Clerk, mentioned in Acts, as addressing the mob at Ephesus, according to the Plumbers' Trade Journal, held an office equivalent to mayor.

Worthington & Garrett, plumbers, Toronto, recently had a narrow escape from fire. Flames were discovered in the vicinity of a large gasoline tank in which the spigot had been partially turned on.