THE
# Sanitary Review
SEWERAGE, SEWAGE DISPOSAL, WATER SUPPLY AND WATER PURIFICATION

## HYDROPHOBIA.

Although the subject of hydrophobia does not come under any of our headings of Sewerage, Sewage Disposal and Water Purification, we may be excused for saying something on the subject in view of the present interest taken in the Ontario Provincial muzzling order.

The exciting cause of rabies is supposed to be a poison whose probable source is a vegetable organism, although the specific germ has not been isolated. Pasteur, Chamberland and Roux all made most careful search for organisms in the various tissues of animals affected by hydrophobia, and, although they at first imagined that they had been successful, they eventually concluded that the small, round micrococcus-like bodies that they found were not associated with the disease.

It was very early demonstrated that rabies does not arise spontaneously, but that each case could be traced to a specific date of implantation. With the human subject the outbreak always bears a definite relation to the bite of a rabid dog, wolf, or cat, or it might be to the licking of an abraided surface by a perfectly healthy animal, which afterwards developed symptoms of hydrophobia.

Although the disease is commonly associated with dogs, wolves and cats, it has been observed that rabbits, deer, guinea-pigs, and even horses may be similarly affected.

It was not until 1880 that Pasteur set himself to study the virus of this terrible disease. He took a little of the saliva from a child in whom the disease was developing as the result of a bite of a mad dog. A rabbit died in two days after being inoculated with this saliva under the skin. The saliva from this animal produced the same result with another rabbit treated in a like manner.

The fact that the symptoms of hydrophobia, especially in the latter stages, are very similar to tetanus have led many people to believe that the bite is not the actual cause of the disease, but that the septic poisoning is an after contact from outside poison.

After the bite there may be no symptoms for a month or six weeks, or even for twelve months. This is known as the period of incubation. The first symptoms are merely those of discomfort and itching, succeeded by intolerable heat, accompanied by stinging pain. On the second or third day the patient becomes excited, followed by rambling delirium. Muscular tremors are then noted similar to those in tetanus. Finally, the patient dies of suffocation.

Pasteur's treatment consists in obtaining an attenuated or weakened virus. It is known that the virus or poison of certain diseases become gradually weaker after successive struggles with the protective properties in animal tissues.

Inoculation of this attenuated virus, if applied in time, appears to prepare the system to successfully combat the more virulent virus. The highly organized cells of the nervous system are, as it were, acclimatized to the presence of the stronger poison.

Pasteur obtained inoculation material of various degrees of virulence with which he inoculated twenty dogs, three-quarters of the number being found protected from virulent hydrophobia. The first series of experiments were an extraordinary success, and eventually the results he obtained were even more remarkable.

On the 26th of October, 1885, Pasteur described his method to the French Academy of Sciences. He showed that by inoculating animals on ten successive days, commencing with the weakest virus, and continuing until he had used an emulsion from a cord that had been exposed only two or three days to the dried air, they were protected against hydrophobia, even when extremely virulent virus was afterwards injected into the membranes of the brain. Of fifty dogs so treated, everyone was refractory to the disease in proportion to the theoretical degree of protection given.

The first human being inoculated against hydrophobia was a boy, Joseph Meister, aged nine, who was bitten by a mad dog on July 4th, 1885. Pasteur resolved, after consultation with Professors Vulpiau and Grancher, who agreed to share the responsibility, to treat the boy as he had treated the dogs.

During the following ten days he made thirteen injections of attenuated virus, when on the tenth day the boy was inoculated with a virulent virus from a rabbit which had died on the same day. The boy never developed the slightest symptoms of hydrophobia.

One of the most convincing proofs of the efficacy of this system of inoculation is given by Babes. Thirteen men and thirty animals—cattle, horses, pigs and dogs—were attacked by rabid wolves; of the thirteen men so attacked, twelve came to Bucharest for treatment, and all of them recovered except one, whose head was fearfully torn and lacerated by the fangs of a wolf. The thirteenth man, who would not present himself for treatment, died of hydrophobia. Another significant fact was that every one of the thirty animals succumbed to typical hydrophobia.

That such a specific disease as hydrophobia exists, that it is always fatal if not attended to, are facts which are undeniable. Those who know anything of the disease and have followed the history of outbreaks and its method of transmission, have not the slightest hesitation in backing up the Government in any drastic measures they may think fit to take to reduce the risk of transmission.