

When such provision for the tuberculized becomes possible through public benevolence and Governmental sanction and support, we may very properly demand that municipal supervision of the places where the tuberculized are employed, shall be exercised. Where aggregation in workshops in any degree existed, it would be then reasonable to expect that such authority would regulate employment in such cases in the interest of the public health.

In order that municipal authorities be placed in a position to take systematic action toward the supervision of the tuberculized it is apparent that householder and physician should notify the town clerk or other proper officer of cases whenever they exist in any house.

That such homes as we have spoken of, if established, would be popular, may be concluded from the success of such private or semi private institutions in Germany and elsewhere—notably one in Westphalia, for epileptics—and that in this direction we may expect results greatly more beneficial both to the patients and the public, must be the strongest reason why such a scheme as outlined herein, should receive the heartiest endorsement of this Society.

BACTERIOLOGICAL NOTES.

BY E. B. SHUTTLEWORTH.

Numerous methods have been proposed for the differentiation of the typhoid bacillus, but, after prolonged trial, they have generally been found untrustworthy. The invisible growth on potato has been most relied upon, and is commonly accepted as sufficiently diagnostic. On an exposure of three or four days, after inoculation, there does not appear to be any visible growth, but, if a little of the moist, shining surface is removed and examined under the microscope, it will usually reveal the presence of the bacilli, with their characteristic motility. Unfortunately, however, under certain conditions not yet perfectly understood, this invisible growth does not take place, and, to make matters worse, it has been found that some bacilli, other than that of typhoid, will grow on sterilized potato in a precisely similar manner.

Mr. Geo. W. Fuller, S.B., biologist in charge of the Lawrence Experiment Station, Mass., has

given several months' close study to this matter, and, in the report of the State Board of Health for last year, details the results of his experiments. Having fully assured himself of the unreliability of the potato test, he sought for other means of differentiation, and, according to his statements, succeeded in discovering several methods which, taken together, may be accepted as trustworthy and conclusive.

The water of the Merrimack River, from which the City of Lawrence derives its supply, was found to contain at least five species of bacteria capable of forming the invisible growth on potato. The methods given are sufficient for the differentiation of the typhoid bacillus from these, but, as the author rightly observes, there may exist forms in other water to which the tests would not apply.

The modes of diagnosis referred to are, after non-liquefaction, (1) non-coagulation of milk; (2) non-formation, or production of only a very slight amount of acid in milk; (3) production of a turbidity, without gas, in the test originally proposed by Dr. Theobald Smith, of Washington. In applying the first method, the tubes, previously charged with milk of proved sterility, are inoculated and allowed to grow for two days, at 38° C., or four days at 20° C. They are then examined for coagulation, after which they are placed in boiling water for five minutes, and the coagulation, if any, again noted. This treatment with boiling water renders the diagnosis more certain. The confirmation, by direct estimation of the same sample of milk, by titration for acid, using phenolphthalein as an indicator, constitutes the second test. The method of Smith is carried out by the use of a gelatine medium, alkaline, of course, and containing two per cent. glucose, one per cent. peptone, and five-tenths per cent. of common salt. This is placed in U tubes, similar to those used for the fermentation test of urine. The tubes are plugged and sterilized, all air collecting at the top being removed. They are then inoculated, and development allowed to proceed. If the typhoid bacillus is the organism present it will grow into the closed arm of the tubes, producing turbidity, without the formation of gas.

These methods are particularly applicable in distinguishing *B. typhi abdominalis* from *B. coli communis*. The latter organism produces coagulation of milk, and forms an appreciable amount of