

morning, in the afternoon and at nine in the evening. For these extra meals a glass of milk and a cracker are sufficient.

For consumptives, food should be as varied as possible, for too great monotony soon takes away the appetite. It should contain an abundance of all three forms of food, — proteids, carbohydrates and fats. An exclusive milk diet is not to be recommended, for it is likely to give rise to digestive disturbances, on account of the large quantities (four to five quarts) which must be taken. Alcohol is better left out of the regular treatment in institutions, for various reasons.

It is of the greatest importance that the food be properly cooked and attractively served, for if it is not, both appetite and digestion will probably suffer. It is well known how much these functions are dependent on the mental state, and it has recently been shown, by experiments on animals, that there may be even entire failure of secretion of the gastric juice, due to psychic influences. I think that the quality of the food in New England institutions is usually good, but it is frequently spoiled in the cooking, and it is here that there is room for improvement.

Patients with fever usually have some disturbance of digestion and should be fed accordingly. Fever of itself is not an indication to restrict the diet. Gastric and intestinal disturbances call for early and appropriate treatment, for if neglected they may lead to serious impairment of the digestive and absorptive functions.

The weekly weighing of the patient is an important aid to the intelligent treatment of tuberculosis, and is, perhaps, the best guide to the amount of food to be given.

The hygienic treatment of the consumptive next demands consideration. Here the underlying principles are two, — fresh air and rest. Not only should the patient be out of doors all day long, and every day, but, where practicable, he should also sleep out of doors, or at least in a room to which the outer air has free access. Recent work in this direction has shown that the night air in this climate has no injurious effects, provided that plenty of bedding is supplied. The various forms of out-door treatment are well illustrated by this exhibition, so that it is unnecessary to enter into details.

There is one point, however, which is of great importance, and frequently neglected. This is the out-door treatment of bed-ridden patients, for whom it presents almost the only hope of recovery. It can be easily carried out by providing a veranda, which connects into the ward by means of a door opening even with the floor. The beds can then be rolled out with the patients in them.

The rest treatment is equally important with the fresh air cure; with few exceptions, all patients with fever should be kept in bed until the evening temperature is normal. It is, therefore, necessary that the temperature of all patients should be taken daily; if this can be done but once, it should be between 3 and 6 P.M., the time when the temperature is most likely to rise. After the patient is free from fever, it is

still necessary to continue the rest treatment, but in a modified form. He is now to be up, but should spend most of the day in a reclining chair. The amount of exercise should be increased very gradually, as a return of cough and fever is almost sure to follow over-exertion.

The stronger patients may be given light out-door work to do, but only after they have been free from fever for a considerable time.

The drug treatment of tuberculosis is of secondary importance. The specific treatment with the various forms of tuberculin has not yet given sufficiently brilliant results to make its general adoption in public institutions advisable. Creosote and its derivatives probably act solely by improving appetite and digestion, and should be used only so long as they have this effect. Other drugs are to be employed according to the symptoms; in general, the fewer the better.

To sum up the whole matter in a few words, the treatment of tuberculosis in public institutions should aim to approach that in use in modern sanatoria, and it is only by the use of such methods that success can be attained.

#### THE SUPPRESSION OF TUBERCULOSIS IN OUR DAIRY HERDS.\*

BY AUSTIN PETERS, M.R.C.V.S.,  
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I HAVE been asked to make a few remarks upon the eradication of tuberculosis from dairy herds, more especially from herds owned by our public institutions.

Until within a few years the tubercle bacillus of cattle was supposed to be identical with that of man, but more recent researches made by Theobald Smith, Koch, and others have shown that there is a difference between the bovine tubercle bacillus and the human sputum bacillus. Evidently they are varieties of the same germ, modified by a vast number of generations of cultivation in different hosts. These changes are so marked that it is highly probable that they have become permanently fixed.

The sputum variety has but little virulence for cattle and other animals, while the bovine species seems to be very virulent towards cattle and other animals. As the sputum bacillus is virulent to humans, it is assumed that the bovine form is of little danger to mankind, in comparison to the views held a few years ago. This seems to be borne out by experience, as authentic cases where human infection can be traced directly to the use of meat and milk are very infrequent, and phthisis does not seem to be any more prevalent among men who work in cow barns than in ordinary pursuits. However, it must be remembered that the development of tuberculosis is very insidious and that a person may not show evidences of the disease for some months or possibly even years after the infection, the disease remaining latent in some remote lymphatic

\* Read at the Tuberculosis Exhibition, Horticultural Hall, Jan. 5, 1906.

gland for a long period, and developing later under favorable conditions, thus making it impossible to trace the source of the infection in many instances.

It is a well-known fact that the milk of cows suffering with tuberculous udders, or with extensive tuberculosis even when there are no lesions of the udder, is capable of conveying the disease when fed to calves, pigs, and small experimental animals, and such milk is certainly unfit for human food when used uncooked, as demonstrated by the experiments of Ernst, myself and others. While sterilized milk is safe as far as its power to convey tuberculosis is concerned, it is less digestible for infants and invalids. Hence the milk from such cows should be prohibited as an article of food.

The importance of the matter of a healthful milk supply must not be overlooked in the consideration of other matters of greater importance in connection with this meeting. Admitting even that bovine tubercle bacilli in milk make it more palatable and nourishing than it otherwise would be, and that their presence is not harmful, there still remains the commercial aspect; with contagious pleuro-pneumonia, foot and mouth disease, and rinderpest, Walley includes, among the four bovine scourges, tuberculosis, which causes a large annual pecuniary loss to cattle owners, and for this reason should be diminished to the greatest possible degree. The herd of a public institution in Massachusetts that is not infected to a greater or less extent with tuberculosis is the exception, and not the rule, there being hardly any that have not suffered to a considerable amount from this scourge.

One great obstacle to keeping them in a state of freedom from this malady seems to be a lack of fixity of purpose. These institutions have their boards of trustees and superintendents, and occasionally a new trustee will be appointed, or a new superintendent take charge, who will insist upon cleaning up the herd; but with a change in the personnel of the board of trustees, or a change in superintendents, conditions lapse into what they were prior to making the attempt, matters become as bad as before, and the money expended is found to have been simply thrown away.

Numerous instances might be given where within a few years herds belonging to some of our state and city institutions have been freed from tuberculosis, under state supervision, and at the state's expense, tuberculin-tested cows placed in new barns, or in the old barns after thorough disinfection; but in a few years because of failure to test the animals once or twice a year, and carelessness in the purchase of new cows, the infection is reintroduced and the herd again becomes a tuberculous one.

While these efforts are spasmodic and sporadic little benefit will result; it is only a continued, systematic, definite purpose that will avail. With tuberculin as a diagnostic agent, it is perfectly possible to eliminate diseased and infected animals from the herd, and with thorough disin-

fection and the purchase of only tuberculin-tested animals, and a tuberculin test every spring and fall, a healthy herd can be maintained. A practical method of immunization of cattle to be introduced into herds where tuberculosis exists or has existed is also greatly to be desired.

Koch, von Behring and others have done work in this line, and von Behring claims to have discovered a satisfactory method. So far, it has only been applied to calves to be raised in herds where tuberculosis exists. Young calves receive an intravenous injection of a certain quantity of an attenuated human tubercle culture, and in three months a second dose five times the size of the first is given in the same way. It is claimed that calves thus treated are immunized for a considerable period, two or three years; whether this immunity lasts for the natural length of the animal's life it is yet too soon to say. This method may in time prove of great value to farmers, especially to breeders of pure bred stock owning herds in which tuberculosis exists.

If a similar method can be applied to older cattle about to be introduced into dairy herds where tuberculosis is present, it may prove of great benefit. New purchases after being tested with tuberculin and found to be free from tuberculosis can be placed in a quarantine stable and immunized before being introduced into the herd. Such a plan, if it proves practicable, would be of great assistance towards the eradication of this disease from herds which depend upon the purchase of new milch cows to replenish the stock rather than raising young animals for this purpose.

Many of the cows used in Massachusetts are brought here from without the state, and the regulations of the Cattle Bureau of the State Board of Agriculture require all these animals to pass a satisfactory tuberculin test before being placed upon the market, reacting animals being killed. About twenty thousand head, equal to 10% of the milch cows in Massachusetts, are thus tested annually, but in a few years many of these undoubtedly develop tuberculosis, and are killed and paid for by the state.

As far as the public health is concerned, milk consumers in this state receive a certain amount of protection, as the Cattle Bureau kills twelve or fifteen hundred head yearly that show marked physical evidence of disease or that have tuberculous udders, and such animals are the chief sources of danger; but much of the milk used comes from New Hampshire and other states to which this protection does not extend.

A little work is done by the Cattle Bureau in assisting owners to free their herds from disease, but a great deal cannot be undertaken in this direction because of limited appropriations, and much depends on individual effort, which does not seem to appeal to any great extent to the average farmer.

At present the chief work performed by the state is confined to killing the worst cases, and insuring as far as possible a market from which purchasers can obtain healthy cows if they will

buy animals that have come from out of the state.

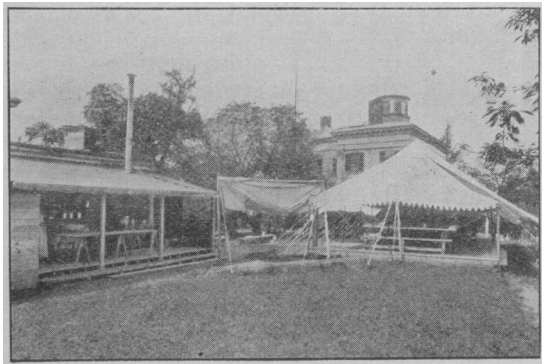
If time permitted, a word upon the sanitation of stables would not be amiss, but all that can be said here is that they should be light, well-ventilated, well drained and clean, but this alone is not sufficient without the aid of tuberculin; and, if one is discovered, a practical method of immunization. Without means of immunization, however, tuberculosis can be eradicated from a herd with the aid of tuberculin and proper methods of disinfection and management.

### DAY SANATORIUM FOR CONSUMPTIVES, PARKER HILL, BOSTON.\*

BY DAVID TOWNSEND, M.D.,  
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THE Day Sanatorium, or Camp, for Consumptives was founded by the Boston Association for the Relief and Control of Tuberculosis. The camp was modeled after similar ones in use abroad, especially in Berlin, and was, I believe, the pioneer one of its kind in this country. This camp was purely a day camp, that is, the patients came in the morning, went home in the late afternoon.

The spot chosen, which the Association was enabled to obtain through the courtesy of the Robert B. Brigham Hospital trustees, was an orchard, a part of an old estate on top of Parker Hill, about 220 ft. above the sea and within three miles of the State House. This contained about  $1\frac{1}{4}$  acres.



Dining tent and kitchen.

The equipment of the camp consisted of a large mess tent, 20 ft. x 50 ft., with a board floor, used as a dining tent and a shelter in stormy weather. In this were the tables (covered with white oil cloth easily cleaned) and settees. At one end was the staff table and a table for books, magazines and games. There were three smaller wall tents, 10 ft. x 12 ft. each, one for the care taker, who spent his nights on the premises; one for the administration tent, in which were the scales and other necessary implements; and one for a store house for the couches and reclining

\* Read at the meeting of the Suffolk District Medical Society, Oct. 28, 1905.

chairs. The kitchen was practically a "lean-to" built against a barn and open to the north, with curtains for use in stormy weather. One half of this was boarded in for a pantry and contained the ice chest, milk cooler and household stores; the other half contained the sink, boiler, range (where all the meals were prepared) and the patients' dishes. Over the kitchen was the tank which held about one hundred gallons. This supplied a sanitary, established near by, and the boiler. It was connected with the city water supply. The tank had to be kept filled by a



Administration and care taker's tents.

pump as we were above the limit of the city's low pressure service. The sanitariums and sink emptied by a drain into the city sewer, some 200 to 300 ft. away. In addition there were two benches with basins, one for the men, one for the women, where they washed, and the sputum incinerator, which was simply a cast-iron ash barrel.

The staff consisted of a matron, who was a trained nurse, an assistant nurse, a night watchman, a cook, a cook's helper and a physician. All save the physician received salaries.

The camp was opened July 6, 1905, and closed Oct. 31, 1905, practically seventeen weeks. The aim of the camp was to accomplish the maximum of good with the minimum of expense. Its chief object was the education of the patient in the care of himself and of his sputum, to prevent spread of the disease. We had as few rules as possible and tried to relieve the patients from all sources of worry. Each patient was seen alone, by the matron, every morning, and any worry or anxiety willingly listened to and the cause removed, if possible. The daily capacity of the camp was 50 to 60 patients, but on only comparatively few days did we have 50 or above.

The patients who applied for treatment came either through the various hospitals or through private physicians. Cases at all stages were taken, the only point insisted upon was that they should not be so far advanced as to be unable to walk down the hill to the cars at night. The cases were for the most part of the second and third stages. The patients came each morning by the electric cars from various parts of the city (a