

from the affected animal. This points to the same disease, in the human subject, of phthisis. It is a well-known, undisputed fact that mother and children, with perhaps one exception, will succumb to this malady, and the husband, who has been living in close cohabitation, be immune. How can this be explained unless on the theory of non-susceptibility. It is hereditary. It has been proved that bacilli or spores can pass in the blood from parent to offspring. It cannot be directly produced by weakening the system. It is a disease due only to the specific organism; and if that organism be not present in the animal economy, no amount of weakening by over-feeding or milking, or in-and-in breeding (certainly a predisposing cause), can produce this disease. The bacillus can only be obtained from an existing case, thus proving it to be an infectious disease transmissible from animal to animal by any means other than contact. It is of two kinds, local and general; local, affecting particular glands and organs; systemic or general, attacking the lungs, and through them the most remote parts of the body. It principally affects the lungs and bowels of cattle, and about 20 to 25 per cent. of the cattle of this country are affected by this disease.

The use of milk from tuberculous animals has directly been proved to be a source of infection to the human subject, and it has come under our immediate notice of pigs being inoculated and die from this source, and the more tuberculosis spreads the greater is the danger from milk infection. The following cases are authentic and remarkable for the direct evidence in the human subject, and are taken from a French work on the subject:—

Mon. Auguste Ollivier presented a report on the transmission of tuberculosis by cows' milk. Two months previous to the report, dated Feb. 24th, 1891, he was called to a girl, aged twenty, at Chartres, who was suffering from acute tubercular meningitis (inflammation of the meninges of the brain.) Her parents were both robust, and she herself had had no previous illness, and lived under excellent hygienic conditions. On December 14th, 1890, she first complained of headache, which gradually became worse; on the 25th she was restless during sleep; on the morning of the 26th coma supervened. There was paralysis of the limbs, with squinting in both eyes upwards and to the right; the coma gradually deepened till death, which occurred at nine o'clock the same evening. The girl had been educated at a convent in Chartres, where within a few years tuberculosis had attacked twelve pupils, five of whom had died. It appeared that on November 26th, 1889, the veterinary inspector appointed to the abattoir had condemned the flesh of a cow between nine and ten years old, which had been slaughtered that morning in the Chartres abattoir. The animal seemed to be in good condition, but there were tubercles in the lungs, the peritoneum and the paunch, while the udder was completely filled with them. This cow had belonged to the convent where the patient had been educated, and its milk had for nine years been consumed by the pupils and others in the house. Between October, 1887, and the date of the slaughter of the cow one of the pupils died of tuberculous peritonitis, one of general tuberculosis in the mesenteric glands, and three of pulmonary phthisis; another pupil developed

tuberculosis disease of the elbow, and six others showed evident symptoms of tubercle of the lungs, but on being removed from the school and kept for considerable period in the country recovered. In none of these cases was there any family history of tubercle. The patient that Mon. Ollivier reports had left school for years before the onset of her fatal illness, but he nevertheless disposed to trace the infection to the milk of the diseased cow, which she had drunk during her stay in the convent. The moral of the whole story of the death of these young ladies: "It is prudent to use milk only after it has been boiled." As there is no doubt that milk from tuberculous cows contains the tuberculi bacilli, and even the muscular structure when fed to guinea pigs has produced the disease, it behoves the government, and more especially the health authorities of our towns and cities, to thoroughly examine and periodically inspect our dairies and cow-sheds, to supervise and examine the milk, not only for adulteration, but for the disease in particular. A remarkable case came under our immediate notice of detection by means of the milk test.

Mr. —, farmer, of Waterdown, near Hamilton, supplied milk to the city. In the course of the inspector's monthly round, a quantity of milk was taken which showed a very low percentage of butter-fat (2½ per cent.). Our opinion was asked if we could detect any latent disease, or whether disease would cause so low a percentage. We replied that disease would be manifested first in the milk, which would be somewhat increased in quantity and decreased in quality, accordingly an inspection was ordered by the health authorities. In company with Inspector Nixon, to whom all credit is due for locating this supply, we visited the farm, and were shown a fine herd of thirteen milch cows, and expressed an opinion that none of the cows present were suffering from disease. On counting the cows one was absent, and on searching found her secreted in a dense piece of underbrush; we had her removed to the barn, and examined her as follows: A rather fine-looking cow, about 700 lbs., horns and muzzle fairly healthy, though rather dry; enlargement of the sub-maxillary glands adherent to the under jaw about the size of a hen's egg; the hairs of neck could be freely pulled; back slightly arched, and peculiar appearance of nodules on the spine of the bone of the tail; a slight enlargement of the glands of the flank; hard condition of udder, more especially the hind quarters. Temperature taken at rectum, 104° Fahrenheit; cudging and appetite good. She was a deep milker, and gave 10 to 12 quarts night and morning, rather pale in color; tested by Lactascope, gave 2½ per cent. butter-fat. This cow was ordered to be destroyed by the health authorities, on pain of forfeiture of milk license to the city. To the farmer's credit, it must be said, he readily consented. A post mortem examination of carcass revealed a large deposit of tuberculous matter in the lungs, and they were fixed to the sides of chest by bands of fibrine; a small quantity of straw-colored fluid (serum) was found in the cavity, a few nodules in the mesentary, and three large patches of consolidation in the udder or mammary glands. This proves, if anything can, that by rigid supervision and periodical examination by qualified inspectors the disease could be detected, and should be made; for this farmer, a fairly good judge of cattle, confessed that he had not seen

the lumps under the cow's jaw, although milking her twice a day. Another form of this disease, known in the North of England parlance as "crooked," as near as can be expressed in writing, is often considered by farmers to be of a rheumatic origin, but it is really a tubercular arthritis of the joints, made manifest by enlargement of all the joints; when lameness supervenes, they then become veritable "piners."

We will relate one case as seen in pigs, out of many that have received attention. A few days after calving a cow was noticed to have contracted a slight cold, which passed away; at the end of six weeks after calving one quarter of the udder became affected with garget; the cough, loss of appetite, etc., continued, and after three months the cow had become a typical "piner," and she was ordered to be destroyed without delay. The farmer was loathe to act on the suggestion (as he happened to have a litter of pigs about five weeks old, rather backward on account of the mother's lack of milk, although perfectly healthy accordingly), until the young pigs were fit to sell in about three weeks. They were fed from a trough three times daily on the milk of the tuberculous cow. They were all sold with the exception of one, which was kept on the farm for breeding purposes. When about three months old, a debilitating diarrhoea set in, and in spite of attention, suitable food, and good housing, her cough became more or less chronic; she was put to the boar, with the object of promoting a thriving tendency; she conceived and farrowed a week before her time, the litter consisting of four dead pigs and one living, which shortly afterwards succumbed. She had a husky cough, and when hustled about the sty for a little while the respiratory distress was very marked. When she was slaughtered, the intestines, lymphatics and mesentary were principally affected, both lungs were extensively diseased, being, in the words of the butcher, "one mass of grapes." If anything further were needed to confirm the conviction that these pigs contracted the disease by imbibing the milk of the tuberculous cow, the same sow, mother of this one, had a previous litter all healthy; she was perfectly healthy, well grown and lusty; she reared third and fourth litters by the same boar, which were uniformly free from unthriftiness, or taint of disease; when she was fattened and slaughtered all the organs were found to be quite normal. To that we may say a larger proportion of cases than in the ox have their starting point in connection with the stomach and alimentary canal of the pig. In the horse tuberculosis almost invariably has its starting point in connection with the intestines and mesenteric glands, indicating that in that species the agents of infection are generally introduced with the animal's food and water. The number of cases of tuberculosis hitherto observed in the dog and cat is scarcely large enough to enable one to judge of its frequency, one case only coming under our notice in the dog. It is not at all uncommon in fowls; the lesions of tuberculosis are in the majority of cases confined to the abdominal organs, intestines, liver, spleen, etc. To sum up the whole, tuberculosis, according to our present knowledge, is an incurable disease, but it is an eminently preventable one, and its present alarming prevalence is the natural result of almost universal neglect of measures of prevention that are indicated in the cases of every infectious disease. It is the province of veterinary surgeons and the agricultural papers to diffuse among stock owners a knowledge of the true nature of the disease, and to point out what are the rational means of prevention. True it is, that there is an Act in existence, but it is not enforced, and there is no machinery for its obedience, and it is only the good sense of the farmer and stock keeper (and to their credit, it must be said,) that we do not see more fatal evidence of it than we do. The whole system of cattle inspection requires organization, the districts should be marked out and a special system of sanitary police inspection instituted by the government, for there are laws enacted especially against cattle disease, but so far as we can enquire never enforced.