TUBERCULOSIS.

The Destructive Disease Which Affects Domestic Cattle.

No Remedy Yet Discovered—Tests Made in Canada with Tuberculin.

The term tuberculosis is applied to a disease commonly known ia the human family as consumption. It is one of the most terribly destructive and fatal of all the diseases to which humanity is subject ; one seventh of the entire death rate of the world is said to be due to it. It is also the most widely distributed and destructive disease found among cattle ; but it is much more common in some countries than in others. It occurs in cattle wherever they are kept in domestication, but seems to be most prevalent where consumption is most common in the human family. It is a disease entirely distinct from pleuro-pneumonia. Tuberculosis is also prevalent among swine, but it is rare in the sheep, goat, dog and horse, although all these animals are more or less subject to it. Fowls also are sometimes attacked by it, and occasionally the poultry yard is decimated by its ravages.

Tuberculosis is the most common disease among wild animals in captivity, and sometimes under such circumstances affects captives, representing species which are not known to suffer from this disease in their native haunts, a result no doubt partly due to confinement, and the lack of outdoor exercise and pure air so important to the preservation of the health of animals.

It has long been known that tubercle contained a virus or poison which if injected into the tissues of animals was capable of producing tuberculosis, but the exact nature of this material was unknown until 1882, when Professor Koch of Germany announced his discovery of the germ of tuberculosis, known as the bacillus tuberculosis, which is now admitted by all scientific investigators to be the sole cause of this disease. This germ is a vegetable parasitic micro-organism which under a high magnifying power, appears as a fine rod, often slightly bent or curved, about one-tent has broad as long, and measuring about one seven-thousandth of an inch in length. When this bacillus finds lodgment in an animal under favorable conditions it multiplies with great rapidity. Within this minute organism small oval spores are formed which are fast liberated and developed into mature forms like the parent. As a result of the multiplication of these bacilli in any of the internal organs small nodular bodies are formed called tubercles. These in their early stages are about the size of a millet seed, but soon increase in number and size, and uniting form larger diseased masses. As these grow older a process of suppuration takes place, the tubercle becomes yellow, gradually softens and forms a cheesy mass. This mass of cheese-like consistence may soften still more and become of the consistency of cream, or from the disposition of lime salts in it, the mass may become quite hard. When present in any quantity in the interior of such organs as the lung or liver, tubercle is most frequently soft, or fluid, forming what is known as tubercular abscess, but where the disease affects the surface of an organ, or attacks a membrane the growth is usually harder and nodular.

Those tubercles or portions of tubercle near the surface of a diseased area contain the largest number of active bacilli and these are thus in a favorable position to invade the surrounding healthy tissue, or to be carried by the circulation to other parts of the body and begin there the formation of further tuberculous masses.

DEVELOPMENT AND SPREAD OF THE DISEASE.

When the germs are introduced into the system, and become established there, the disease may become general, or may only develop locally by attacking a single organ. Sometimes when introduced into the blood the bacilli multiply very rapidly, and become distributed over the whole body, producing what is called general or acute tuberculosis, and occasionally known in human beings as rapid or "galloping" consumption. Such attacks usually terminate fatally in a very short time. In other cases the disease affects for a considerable period only those parts of the tissues adjacent to the starting point, and in such instances the progress of the disease is slow and the symptoms often obscure.

In cattle the lungs, the glands in the thorax, the pleura and the serous membrane which covers the walls of the thorax and abdomen, are the parts most usually affected by this disease. The liver also in many cases becomes seriously involved, and sometimes the udder of cows, the bowels, brain and other parts of the body. The glands in the chest located behind the lungs are very commonly diseased and often much enlarged, and in post mortem examination will frequently be found filled with solidified tubercle. If the udder is affected the disease usually manifests itself there by small yellow tuberculous spots discernible on the cut surface. The bacilli are seldom found in the muscular tissue or flesh of animals, still the chance of their being present there or in the blood, is a risk too great to allow of the flesh or milk of an animal known to be tuberculous to be used as food unless it has been heated for some time above the point known to destroy the life of these disease germs, which is considerably under the boiling point of water, or about 160° F.

The tubercle bacillus is contained in very large numbers in the matter expectorated by individuals suffering from this disease, also by cows who are said to discharge this material through the nasal organs, and these bacilli remain actively virulent for a very long time. Experiments have been tried by drying such expectorated matter for many mouths, and also by alternately wetting and drying the material; the bacilli have also been exposed for a considerable time to cold, as low as 18 degrees of frost, and to temperatures as high as 108° F. without affecting their vitality. When animals have been inoculated with material so treated, the bacilli have shown unimpaired vigor, and have rapidly brought about diseased conditions. It is evident then that such discharges when allowed to dry on a handkerchief or on the floor of a sick room, or in the stalls or sheds of animals suffering from the disease, become a source of danger to all about them, both men and animals. When rooms or buildings, where such material has been deposited and dried, are swept these microscopic bacilli will often rise with the dust and may thus be taken with the air into the lungs.

No reliable remedy has yet been discovered for this disease, and the only way known of freeing a herd of cattle from it is by prompt destruction o fall affected animals. From the absence of outward symptoms the detection of tuberculosis in its early stages by the ordinary methods of examination is very difficult, and in many cases practically impossible, and by the time the disease has progressed far enough to be readily detected there is danger that the affected animal has already conveyed it to others. This is often the case with the local and slowly developing form of the disease, even when it occurs in the lung, and frequently an animal may be so affected when to all appearance it is in excellent health and condition. When, however, the disease is general, or when it has so advanced as to involve a considerable portion of the lungs, symptoms of emaciation occur, there is a gradual wasting away with more or less cough, attended with some difficulty of breathing, and where animals are so affected the disease soon proves fatal. A cow attacked by tuberculosis may die in a few weeks, or may live for many months, and sometimes for several years, depending upon the ogans involved and the rapidity with which the disease progresses. The percentage of milking animals affected is usually greatest in the neighbourhood of cities where they are housed for the greater part of the year, and is much less in those herds fed for the greater part of the time in the open air. Hence the importance of sanitary measures, such as proper ventilation, pure water supply, adequate disinfection of stalls where tuberculous animals have been kept, and prompt isolation of all suspected cases. All conditions which tend to lower the vitality and impair the vigour of the system are predisposing causes of this disease both in human beings and in cattle. Among these are deficient nourishment, ill ventilated and over crowded apartments and exhaustive secretions. There is little doubt that the reason why milch cows are more subject to the disease than steers arises from the fact that the secretion of milk is more or less exhausting to the system of the animal.

The diagnosis of this disease by ordinary means being in many cases almost impossible a more trustworthy method has been sought and found. In 1890 Professor Koch who discovered the bacillus, the true cause of the disease, published a paper detailing some experiments he had made with a fluid—the composition of which was a secret—on guinea pigs, and on people suffering from tuberculosis which led to the hope that this might prove a remedy for the disease. The fluid became known as Koch's lymph or tuberculin. After extensive trial as a remedy for consumption physicians have failed to realize the results hoped for and its use for that purpose has been almost discontinued. Recent experience has, however, shown the usefulness of this fluid as an indicator of this disease in cattle, and a large demand has arisen for it for that purpose.

PREPARATION OF TUBERCULIN.

Tuberculin is prepared by first making artificial culture of the disease germ known as the bacillus of tuberculosis and allowing it to stand until the material has become highly charged with bacilli. A proportion of glycerine is added with a little carbolic acid. It is then filtered through porous porcelain to separate the germs and the filtered fluid raised to a temperature high enough to destroy any remaining germs which may be in the fluid. 70 degrees Centigrade equal to to 158° of Fahrenheit is about the temperature used for this purpose. An exposure of ten minutes to such heat is said to destroy all traces of vitality in these germs. The sterilized fluid is next evaporated at a low temperature in a vacuum until it is sufficiently concentrated, when it is put up in small bottles each containing five cubic centimeters, equal to about 80 minims. When finished this fluid may be said to be a glycerine extract containing the products formed during the life of the bacilli. The preparation of tuberculin requires much skill and care, and hence it is expensive. The small bottles referred to cost at wholesale in Germany, in lots of ten, about $5.25 per bottle, while they are usually sold in New York at about $10 each.

HOW TO USE THE LYMPH.

To prepare this fluid for use it is diluted with nine times its volume of a one per cent solution of carbolic acid in pure water. When a small quantity of this diluted tuberculin is injected under the skin of a tuberculous animal the temperature of the body rises considerably, while in animals animals free from this disease no such effect is produced. The rise in temperature does not take place immediately, but occurs at different periods from 3 to 20 hours after the injection has been made. The reaction occurs in the large proportion of cases in from 9 to 16 hours. The duration of the high temperature also varies. Neither the length of time after injection before the reaction takes place nor the length of the high temperature period, affords any positive evidence of the extent or virulence of the disease. The special value of the tuberculin lies in the fact that the increase of temperature takes place even in very early stages of the disease, and that it is equally effective no matter where the disease is located. In the tests conducted at the Central Experimental Farm the quantity of the diluted tuberculin used for each animal has varied from 40 to 80 minims (equal to 2½ to 5 c. c.) according to size and apparent strength. On this basis the material for each injection would cost from 27 to 54 cent. The injection is made under the skin usually just behind the shoulder blade with a hypodermic syringe, and care must be taken to disinfect the syringe before using it. For this purpose we have used a four per cent solution of creolin in water, in which the syringe should be immersed for some time before using. Where several animals are to be treated in succession the needle of the syringe should be disinfected after each time of using by dipping it in this fluid. The hair and skin where the injection is to be made should also be disinfected by wetting it with the same fluid shortly before the injection is made. The normal temperature of each animal is taken several times by inserting a clinical thermometer into the anus and leaving it there for about three minutes.

Marie Antoinette's lace shawl, which she gave on the scaffold to her father confessor, the Abbe de l'Orme, is still in existence at the church at Neuendorf.

FATE AGAINST HIM.

A FRENCH LEGEND.

There is a tradition in Marseilles that on a particular night, many years ago, all the clocks in that city were put forward an hour—a tradition which is said to have had its origin in the following story :

There lived in the vicinity of that city a M. Valette, a gentleman of ancient family and of considerable fortune. He had married Marie Danville, daughter of the Mayor of that city, and, with their two sons and two daughters, dwelt in a beautiful villa near the city—a seat which had been the favorite residence of his ancestors.

As his children grew up, however, he was induced to move to Paris, which place both he and Mdme. Valette conceived to be more suited to the education of their family. The removal of M. Valette and of his family was deplored by his tenantry, to whom he had been a father, but particularly as M. le Brun, whom he had left factor on his estate, was, though a just man, of harsh and unaccommodating temper.

M. Valette found it necessary in Paris to adopt a mode of life which but ill accorded with the moderation of his fortune. He made frequent demands for renewed remittances upon his factor, and the latter was forced to use rigorous and oppressive measures to procure for his master the necessary means. The scanty vintage of the preceeding year had made such demands doubly hard to obey, and Le Brun became as odious to the tenantry as M. Valette had been respected and beloved.

These circumstances were but little known to M. Valette, or he would have revolted from a manner of life which wrung from his tenants almost all their hard-earned substance. One night, as he slept in Paris, the form of his father appeared to him, covered with blood, informing him that he had been murdered by the tenantry on M. Valette's estate for rigour in collecting his revenue, and that his body had been buried under a particular tree, which it minutely described. The ghost of Le Brun requested, moreover, that M. Valette would immediately hasten to Marseilles, and deposit his remains in the grave of his ancestors. To this request M. Valette assented, and the apparition at once disappeared.

The morning came to dissipate the gloom which the vision of the night had occasioned ; and though he had been for some time astonished at the unusual silence of Le Brun, yet he could not help considering the whole as a mere illusion. Stories of ghosts he had always considered as fit only for the nursery. To take so long a journey on such an errand he knew would be regarded as the height of superstition ; and so he made no mention of the incident.

"You are more thoughtful than usual, father," said one of his daughters to him next morning at breakfast.

"I am thinking, my dear," said M. Valette, "why I have been so long in hearing from Le Brun. I need money, and my demands have not been met."

Night came again, and about the hour of midnight Le Brun again appeared. There was an evident frown on his countenance, and he inquired of Valette why he had delayed in fulfilling his request. M. Valette again promised immediate obedience, and was no longer disturbed by the unwelcome intruder. Morning came again.

"It must still be a dream," said he to himself, "though a remarkable one, certainly. To-day will probably bring me the expected letters from Le Brun."

The third night the vision appeared with a terrible frown on its countenance. It reproached Valette for his want of friendship to the man whose blood had been spilt in his cause, and for disregarding the peace of his soul.

"If you will grant me my request," said the phantom, "I promise to give you twenty-four hours' warning of the time of your own death, to arrange your affairs, and make your peace with God."

M. Valette promised in the most solemn manner that he would set off next morning for Marseilles, to execute the commission, and the apparition of Le Brun disappeared.

Valette rose early next day, and, alleging to his family that business of the most urgent necessity called him immediately to Marseilles, departed for the seat of his ancestors, after an absence of ten years. There he found the narration of the murder of Le Brun was but too true. Under the tree that had been so minutely described to him he found the mangled remains, which he caused to be decently interred in the family vault. In vain, however, he made search for the murderers. The same causes which occasioned the death of the unfortunate Le Brun led the tenants to the most obstinate concealment of the manner of it, and M. Valette saw, with horror and regret, the misery they had suffered that he might be furnished with the means of extravagance.

"Had I imagined," he exclaimed, "that my unsatisfactory pleasures would have cost so dear, I would long since have retired from Paris. I shall return to my estate immediately, that my children may learn to relish its tranquil pleasures."

M. Valette no sooner returned to Paris than he communicated his resolution to his wife. Mdme. Valette, having accomplished the principal object of her residence in Paris—the education of her family—assented with pleasure to a return, and in little more than a year they found themselves again in the chateau of their ancestors.

About eight years after their return from Paris, the family mansion demanding repairs, they found it necessary to remove for some time to Marseilles, where they resided in the house of M. Danville, the father of Mdme. Valette.

Time had effaced the impression of his dream from the mind of Valette. Sitting one night after supper in the midst of his family, a loud and sudden knocking was heard at the gate; but when the servant went to open it he found nobody without. After a short interval the same loud knocking was again heard, and one of Valette's sons accompanied the servant to the gate to see who demanded admittance at so unseasonable an hour. To their astonishment no one was to be seen there. A third time the knocking was repeated, still louder and louder, and a sudden thought darted across the mind of Valette.

"I will go to the gate myself," said he; "I believe I know who it is that knocks."

His presentiment was too truly realised. As he opened the gate Le Brun appeared, and whispered to him that next night at the same time—for it was now the twelfth hour—he must prepare himself to leave the world. Then, waving his hand, as if to bid adieu, Le Brun disappeared.

M. Valette returned, ghastly at the phantom he had seen, to the family circle; and, upon their anxious and urgent inquiries as to the cause of his uneasiness, related for the first time the incident of the dream and the promised warning he had just received. A sudden gloom and melancholy was spread over the faces of all present. Mdme. Valette threw her arms around the neck of her husband and embraced him with tears. M. Danville, however, obstinately declared his incredulity, and considered the whole as one of those unaccountable illusions to which even the strongest minds are sometimes liable. He declared his son-in-law must be the victim of some delusion, and, although he could not account for his dream, said that this last vision must be mere imagination.

No sooner had M. Valette retired to his apartment than M. Danville endeavoured to impress the same opinion on the family of his son-in-law. Apprehensive lest the very presentiment of the event might occasion it or at least be attended by disagreeable consequences, he thought of a device which, as Mayor of the city, it was in his power easily to accomplish. This was to cause all the clocks of Marseilles to be put forward one hour, that they might strike the predicted hour of twelve next night when it should be only eleven ; so that when the time set by the ghost should be believed by Valette to have passed over without any event supervening, he might be persuaded to give up the fancies with which he was so deeply impressed.

Next day the unhappy Valette made every effort to arrange his worldly affairs, had his will executed in due legal form, received the sacrament and prepared himself for the awful event he anticipated. As the evening approached, from a large open window which looked into a beautiful garden, he saw the sun go down, as he believed, for the last time.

The lamps were now lighted in the hall, and he sat in the midst of his family and partook of the last supper which, he believed, he was ever to eat upon earth. The clocks of Marseilles tolled the eleventh hour

"My dearest Marie," said he to Mdme. Valette, "I have now only one hour to live. There is but one hour betwixt me and eternity."

It approached. There was an unusual silence in the company. The twelfth hour struck, when, rising up, he exclaimed :

"Heaven have mercy on me ! My time is come."

He heard the hour distinctly rung out by all the bells in Marseilles.

"The Angel of Death," said he, "delays his coming. Could all have been a delusion? No, it is impossible !"

"The ghost," said M. Danville, in a tone of irony, "has deceived you. He is a lying prophet. Are you not yet safe? The whole thing is the illusion of an unhealthy imagination. You should banish, my friend, a thought which so completely overwhelms you."

"Well," rejoined Valette, "God's will be done ! I shall retire to my chamber and spend the night in grateful prayer for so signal a deliverance."

After having been nearly an hour in his chamber, M. Valette recollected that he had left unsigned in his library a document of importance to his family, to which it was necessary his name should be affixed. In passing from his bed-chamber to the library he had to cross by the head of a flight of stairs which led immediately down to the wine cellar. At this spot he heard a faint murmur of voices below, and instantly ran down to the bottom of the stairs to ascertain the cause. No sooner had he descended than an unseen hand stabbed him to the heart. At this moment the clock in Marseilles struck one in the morning, or, as it really was, twelve midnight—the exact time predicted by Le Brun.

The cellar of M. Danville had been broken into by robbers, who, perceiving themselves discovered, saw no other means of escape than by murdering the ill-fated Valette, by whom they had been surprised. These men were unconscious instruments in the hand of Fate.

The phenomenon known as lightning, followed by a rolling, reverberating report, recognized as thunder, is common to a wide zone of the earth, but it is not generally known that there are localities where the vivid flashes and the deafening peals are incessant. The most notable of these continuous lightning districts is on the eastern coast of the island of San Domingo, a leading member of the group of the West Indies. It is not meant that the lightning is here continuous the year round, but that, with the commencement of the rainy season, comes this zig-zag feature of electric illumination, which is then continuous day and night for weeks. The storm centre is not continuously local, but shifts over a considerable area, and as thunder is seldom heard over a greater distance than eight miles, and the lightning in the night will illuminate so as to be seen thirty miles, there may be days in some localities where the twinkle on the sky is in a continuous succession while the rolling reports are absent. Then again come days and nights when the electric artillery is piercing in its detonations; and especially is this the case when two separate local cloud centres join as it were, in an electric duel, and, as sometimes occurs, a third participant appears to add to the elemental warfare. Then there is a blazing sky with blinding vividness and stunning peals that seem to pin the listener to the earth. Long before the echoes can die away come others, until the auricular mechanism seems hammered into chaos.

SNOW-BOUND IN A BLIZZARD.

A Dakota Experience.

I spent the winter of 1887-8 with some relatives in northern Dakota. It was Christmas when I arrived and a more beautiful day cannot be imagined. The sun shone with a splendor peculiar to that latitude at that season of the year. After three weeks of enjoyment I concluded to make a trip to a town twenty-five miles distant, where was the nearest bank. My friends advised me to take my dog, Shep, with me, and it is well that I did, for he saved my life.

I started about ten o'clock, riding a faithful little pony, and Shep following. I kept the pony on the lope till I got within about eight miles of Ford Station, where the country became too rough, and I slowed down to a walk. Before reaching Ford's the way became smoother and I started on the gallop again. Suddenly my pony stepped into a prairie dog hole and I was thrown forward upon my head with such force as to render me unconscious.

I lay there for about two hours before consciousness returned. I was chilled to the bone. I sat up and looked around. I was alone, no human habitation in sight, and my pony and dog both gone. The sun had disappeared and it was quite dark. I looked at my watch. It was twenty minutes after noon. A dark leaden bank of clouds hung over the distant mountains, and I at once realized that a blizzard was soon to break upon me: Was I to be frozen to death, alone on the prairie ? A gust of wind answered me—the herald of the storm.

A few yards from me there was a small mound, or cave, or dug-out, evidently prepared by some hunter years before. If I could reach it I might save my life. I could perhaps stand it two days with the lunch I had along with me, but if the blizzard was a bad one several days must elapse before any one could get out and find me.

While I was considering and gathering my stunned faculties together, the storm came, and in a blinding snow driven by prairie winds. I stumbled to the cave or dug-out and crawled in. I at once fell into a deep sleep, troubled by feverish dreams. I dreamed of gold. The cave seemed to be lined with it.

I awoke cold and hungry. It was dark. I struck a match and lighted a pocket lamp that my friends had provided before starting. In one corner of the dug-out I found wood, and I soon started a fire. The storm raged without, and I found the mouth of the cave blocked with snow. The night passed, and when the day came I dug my way out. The snow was over two feet deep and it was still snowing and blowing furiously. I went back to the cave and ate sparingly of the lunch. The cold increased as night approached, and I had to walk the floor of my prison to keep warm.

In the night some time I sank down with exhaustion and benumbed with cold, and was awakened by a warm tongue licking my hand. It was Shep. Pretty soon I heard voices, and a moment later men from Faro station came in, and we were soon on the way to food, warmth, and safety.

Shep had gone with the pony direct to the station. The men there knew thas some accident had occurred, and as soon as the storm would permit, they let the dog out and followed him. He had led them straight to the cave, and thus saved my life, for with all traces of travel covered up with snow, it would have been next to impossible to find me without Shep's aid. I soon returned to my friends none the worse except slightly frozen face, hands and feet.—[Geo. H. Townsend in Ohio Farmer.

Murphys in the Majority.

A special Parliamentary report on "Surnames in Ireland" has been issued, with notes as to numerical strength, derivation, ethnology, and distribution. The volume is full of curious information, gathered together evidently at very considerable pains. It shows among other things, that "Murphy" is the commonest surname in Ireland, there being no fewer than 62,600 persons (or 13.3 per thousand of the population) so called, and the next in order of numerical strength are "Kelly" (55,900), "Sullivan" (43,600), "Walsh" (41,700), "Smith" (33,700), "O'Brien" (33,400), and "Byrne" (33,300), [In a chapter on the derivation of surnames) there are examples like the following:—Mc Fadden, derived from Mac Paidin (Irish son of little Patrick; O'Toole, from O'Tuathaill, the descendants of Tuathal; Kilbride, from Giolla Brighid, the servant of St. Bridget; Gilchrist, from Giolla Chriosd, the servant of Christ; Mc Intyre, from Mac-an-t-Saoir, the son of the workman; while the usual peculiarities occur in surnames derived from locality, personal peculiarities, etc. In many cases the descendants of the ancient families are still domiciled in the same tracts as their forefathers, and on this point we learn that the MacCabes were a warlike clan originally from County Monaghan; the MacCarthys were ancient kings and princes of County Cork and elsewhere; the MacDermotts were ancient princes, their chief fortress being on an island in Lough Key, near Boyle; the O'Doghertys were a powerful sept in County Donegal, and so on with many others.—[London Times.

Perfectly True.

Bings—They seem to lead a hand-to mouth sort of existence, do they not?

Bangs—Who?

Bings—Babies.

"Weere yer been, Chimmy !"
"A bloke sent me ter buy a dozen postage stamps."