

From eight to ten years old the changes occasioned by the wear to which the teeth have been subjected are not sufficiently regular to enable anyone to speak positively as to the exact age, but during this period the cavity in each lower central incisor and the centre circle of enamel remains to indicate its position, and a groove on the outside appears which is the mark of the fang or root of the tooth. After this the age of any animal becomes a matter of opinion, and the evidence of the teeth is not definite enough to warrant a positive opinion as to the animal's age.

The next illustration, Figure 13, indicates the appearance of an animal at nineteen years old. The teeth form an acute angle, but so many differ that no accurate signs can be pointed out.

Many men profess to be able to accurately judge the age up to twenty, from the evidence of the length of groove on the outside of the incisor teeth. To distinguish the difference between the length of this groove from ten to eleven, which would be about an eighth of an inch, is possible, but it will take a lifetime of observation. One must devote himself especially to the study of the subject, and have numerous opportunities of correcting his observations, to judge the age at such an advanced period of life.

Anthrax and Blackleg.

BY GEORGE P. WELLS, D. V. S., CALGARY.

This disease has become of such an alarming nature of late years in the Northwest, and particularly in some localities during the last year has it assumed such a serious aspect, that a short account of its history, characteristics and preventive measures should be directly interesting to stock-raisers.

I find that erroneous ideas exist as to its cause, etc., and it is a common remark among cattlemen where Anthrax exists: "Your stock must be too fat"—the idea being that the disease is caused by the extra good condition of the animal.

Now, while we find that it is a general characteristic of the disease to attack young stock, and it usually seems to be the best, it would be well to eradicate from our minds the idea that these conditions are essential to the disease, for they are not.

Anthrax will attack young and old, lean and fat, in any season of the year, although its ravages in this country have been nearly confined to young stock.

Anthrax under different names has one of the oldest histories; it has been studied more than almost any other disease, and can be traced in ancient history for centuries.

At different periods it was attributed to different causes, but it was not until about the middle of the present century, after it had been studied by many of the eminent scientists of Europe, that a very minute microscopic germ was observed in the blood of animals which had died of the disease; since which time this small individual, which is the cause of so much loss and is known as the "*Bacillus Anthracis*," has probably occupied more of the time of such great pathologists as Pasteur, Koch, Sanderson, and a score of others, than any other disease germ. From the observations of these men the following conclusion has been arrived at, and is now generally accepted:

"That Anthrax (and diseases of an Anthracoid nature) consists primarily in a special alteration and change in the blood, brought about by the extremely rapid development of a small organism known as the *Bacillus Anthracis*."

Now, the question will be asked, "Where does this germ come from?" This is unanswerable, except that we know it exists, and under conditions which favor its development will propagate the disease.

In opposition to the germ theory, other observers maintain that the disease, in cattle and sheep, is due solely to errors in feeding, either from a poor diet to a rich nitrogenous one, or *vice versa*; but, whereas this may have an influence in causing changes in the blood favorable to the reception and development of the germ, it is not now accepted as the source of the disease.

The other influences which favor the spread of anthrax are climatic changes from great heat to coldness and humidity, persistent rains and fogs.

Low-lying lands, morasses, the beds of dried-up lakes, along river banks which overflow, and low surfaces of land which may be inundated, all seem to be the places best adapted to the existence of the *Bacillus*, and the history of the disease demonstrates that it is in such localities it is most frequent.

Anthrax assumes a variety of forms, those not being Anthrax Fever proper being termed "*Anthracoid Diseases*."

It may be divided into two classes, viz.:

1. Anthrax or Splenic Fever—Without any external eruptions.

2. Those forms which are characterized by tumors and other eruptions for the outlet of the poison from the system, and which are not so rapid nor fatal as the first form.

To the latter class are given many names in different localities, such as Blackleg, Blackquarter, Quarter Ill or Evil, Gloss Anthrax (attacking the throat), Trembles, Texan Fever, Braxy in sheep, etc.

SYMPTOMS.

In the first form (Anthrax Fever), the disease is very rapid, and the animal rarely recovers. Indeed, the first intimation that is received is very often the dead carcass, but death is generally preceded by the animal going off its feed, standing apart from the others, rough staring coat, glassy eyes, shivering and gradually becoming weaker until it assumes a staggering gait, and finally lie down and is with great difficulty made to move.

Stringy saliva will run from the mouth, breathing will become short and panting, very often bleeding from the nostrils, and within a few hours after noticing anything wrong with the animal it will succumb during a convulsive fit or in the quietude succeeding one. In a few cases they may linger for even two or three days, but almost invariably die.

Shortly after death, and often before, the animal will become bloated and the skin will be found crepitous, giving a crackling sound when pressed, caused by the accumulation of gas underneath.

If opened, the *post mortem* signs will be numerous and distinct enough to leave no apprehension as to its being Anthrax. The spleen and liver will be found very much engorged with dark colored blood, the former often attaining a size three or four times its normal one. The whole intestinal tract is congested, with dark colored spots of various sizes on the mucous membranes, mesentery, etc.

This is the form of the disease which has carried off a great many young stock in the Northwest during the last summer and fall, confining itself almost entirely to calves and yearlings.

In the external form, known as Blackleg, etc., the disease is not so fatal. The first observable sign will often be the appearance of the tumor itself on the surface of the body and on almost any of the fleshy parts, although if noticed the animal will be dull and listless and off its feed for some days before. It will often become lame and stiff in some particular.

If the tumors are felt they are found to be hot, hard, and cause pain when touched; the skin will soon become crepitous as gas is evolved, and if the tumor be then punctured it will emit a dark-colored fluid and a fetid smell.

When the tumors occur in the mouth or throat, as is nearly always the case with pigs, the tongue becomes very much swollen, of a dark bluish color, and usually covered with ulcers. The swelling generally causes death by suffocation.

It would take up too much space to enumerate the symptoms and peculiarities of the disease in the different animals, and I will conclude by giving a few hints on preventive measures and care of the sick.

TREATMENT AND PREVENTION.

In Anthrax proper, the form so prevalent here lately, the animal is not amenable to treatment, for after the symptoms are first noticed it is but a short time until death occurs, and all that can be done is to take preventive measures if the disease is known to be in the locality.

In Blackleg it is often days and even weeks before the patient either dies or recovers. In this form the sores may be kept as antiseptic as possible, but as they are merely the outward manifestation of the existing fever, it is toward the latter that any treatment must be directed.

The chlorate of potash in three dram doses, twice daily, has been found the most successful agent, as it tends greatly to keep the blood viscid. Soft, easily digested and nutritious food should be given, and if the patient convalesces, tonics such as iron, gentian, etc., can be given.

However, in nearly all cases, treatment is of secondary consideration, and it is toward the prevention of the spread of the disease that every effort should be made. In nearly every case that came under my notice, I found that the animals were feeding on low ground or around the beds of lakes which had but recently dried up. The first thing to be done in such cases, and in every case where it is possible, is to have their grazing land changed. If possible, bring them into a new pasture, where they can be watched and goethrough every day.

Examine them all thoroughly, and if any show the least symptoms, isolate them entirely, the best plan really being to kill the animals and burn the carcasses as soon as satisfied of the existence of the disease. Setons inserted deeply in the dewlap have been found beneficial as a preventive, as they set up an artificial inflammation, which increases the coagulating properties of the blood—a condition greatly reduced by the disease.

Remedies such as the hypo-sulphite or sulphite of soda may be given with benefit: they are not expensive, and act on the blood as antiseptics or purifiers. Where there is a large bunch to attend, I have found that the only way of administering the medicine is to dissolve a sufficient quantity in the drinking trough.

The following is an instance of the measures taken on one ranch, with the result:—

When the disease was first discovered, it was found that about forty calves had already died on the range, and this must have occurred within a short time. As it was only attacking calves, I had all the rest, with their mothers, brought into a

fenced pasture and examined thoroughly. Four more were found with symptoms, which we immediately isolated, and I might add subsequently died. The rest were setoned and treated to hypo-sulphite soda in their water twice daily, with the result that since then (over three months), out of over 100 head, four only have been lost, whereas if they had been left on the range the whole lot would undoubtedly have died, as happened in several cases that I know of.

The carcasses of those having died of the disease should be burned in preference to burying them, or if the latter be done, they should be buried as deeply as possible and covered with quicklime. Too much stress cannot be laid upon the destruction of the carcass immediately. In one instance that I know of in the past summer, a rancher left a carcass that had died of anthrax lying out all night, with the result that a valuable imported sow and her litter made a meal on it, and were found dead the next day with every symptom of gloss anthrax. It will be unnecessary, then, to state that an animal suffering from this disease is totally unfit for food, and causes in man what is known as "Malignant Pustule" and certain death.

The greatest care should be taken at any attempts at *post mortems*, and it should not be tried without rubber gloves or some such protection.

If any animals die in a stable or building, it should be thoroughly disinfected.

Innoculation for anthrax with the weakened virus or vaccine of the *Bacillus* has been proved a success by the labors of M. Pasteur and other pathologists. The reducing of the virus to an attenuated state for vaccinating has to be accomplished with great care and accuracy, an account of which would be tedious, but its success is undoubted. I will conclude this paper by quoting an extract from a report by M. Pasteur, read before the International Medical Congress in 1881, in which he says, after describing the *modus operandi* of obtaining the vaccine:—

"The method I have just explained of obtaining the vaccine of Splenic Fever (Anthrax), was no sooner made known than it was extensively employed to check the splenic affection. In France we lose every year by Splenic Fever animals to the value of 20,000,000 francs (\$4,000,000). I was asked to give a public demonstration of the results already mentioned. This experiment I may relate in a few words. Fifty sheep were placed at my disposal, of which twenty-five were vaccinated. A fortnight afterward the sheep were inoculated with the most virulent Anthracoid microbe. The twenty-five vaccinated sheep resisted the infection; the twenty-five unvaccinated died of Splenic Fever within fifty hours."

Contributors Wanted.

We want wide-awake, practical men and women to write on farm topics. We want your own actual experience, not some other person's. Did you ever raise a pig, sheep, or even a hen? If you did, let us hear how you did it. Was the operation a success, financially, or did the venture turn out like that of the Irishman, who, after estimating the cost of everything, decided that he had made on the pig, but that he had lost a heap on the corn! If you were successful, give the reasons for your good fortune, so that other struggling farmers may be cheered and helped.

If, on the other hand, there was a loss, tell them how it occurred, for much can be learned from our failures if only they are analyzed and the true causes discovered. It should then be both a pleasure and a duty to set these facts before our brother farmers, to act as landmarks to keep the ship of the farm from striking on these sunken rocks, and thus causing leaks, which, though they may not sink the ship, will impede progress and perhaps cause the lightening of the ship by throwing overboard a part of the cargo.

Do your cows give more milk than those of your neighbors? Is your wheat crop better? Can you get the top price for all your farm produce? If you can give us the reasons—let us know in what points your methods differ from those of your neighbors. Remember that an interchange of experience will benefit all. Let us have a big basket of such letters in time for our next issue.

All that is wanted is for a few to start, others will then follow, and in this way the value of the *FARMER'S ADVOCATE*, as a medium for the exchange of ideas on farm topics, will be greatly increased.

Let the *ADVOCATE* become a sort of family table, around which all the members of the 25,000 homes into which the *ADVOCATE* finds its way may come together, discuss their work with one another, and this without leaving their own comfortable firesides."

The "Poultry Monthly," published by the Ferris Publishing Company, Albany, N. Y., is one of the most interesting exchanges upon our list. It is devoted to the interests of poultry and pet stock breeders and fanciers, is a large-sized, well-illustrated magazine, nicely gotten up and furnishing monthly the latest poultry news of the East, and has many eminent poultrymen among its contributors. We can cheerfully recommend it to all interested in poultry.