

DISEASES OF CATTLE

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the human race, owe much to the foundations laid by Pasteur to combat infectious diseases — against much opposition, jealousy and ridicule from powerful members of both the medical and veterinary professions. I think it is fitting that this brief mention of his successful work on anthrax should be included in an article dealing with the disease, which has been a scourge to agriculture and humans for centuries.

The germ causing anthrax is a microscopic, rod-shaped, spore forming organism, known as the anthrax bacillus (*Bacillus Anthracis*.) When it gains a foothold in the animal's body it causes an acute septicemia (blood poisoning) and a characteristic enlargement of the spleen.

Nearly all animals are susceptible to the infection, herbivora especially: Cattle, sheep, horses, goats and wild herbivorous animals. Other animals that are susceptible, but not to the same extent as the herbivora are: Swine, humans, dogs, cats, frogs and birds. Rabbits, guinea pigs and mice are very susceptible and for this reason are often used in laboratories for diagnostic work on anthrax. Mice are a possible means whereby it can be spread. Rats are more resistant to the infection.

The anthrax bacillus being a spore forming organism makes it difficult to eradicate, and accounts for the appearance of the disease periodically in certain localities; these are known as anthrax districts.

The germ having been deposited in the soil from the carcass of an animal that has died from the disease, forms a spore, or seed. If the conditions of temperature and moisture are favorable it remains in this dormant state in the soil for years, ready to develop into the disease-producing anthrax bacillus again when picked up by a susceptible animal, either by way of the digestive tract or through wounds in the skin. Pastures that have been contaminated with anthrax spores are never safe. No satisfactory method of destroying the spores in the soil has been found. Pastures known to be infected should be fenced off.

Anthrax spores are difficult to destroy, they are very resistant to the usual agents that kill most germs, such as, heat, prolonged drying, chemical disinfectants. There are instances on record where spores that were in dry storage for 40 years were still capable of germinating into the deadly bacillus. Likewise, they are resistant to extreme heat, they will withstand boiling for 5 to 10 minutes; a temperature of 275 degrees F. is necessary in some cases before the spores are killed. I think these details of their resistance to destruction are worth knowing by any stockman, for practical reasons, who may have to deal with an outbreak. There is one retarding factor in the life history of anthrax spores; they cannot germinate into the bacillus again in the absence of air. The disease producing bacillus itself has little resistance to heat and drying.

The usual means whereby the infection is spread are: Grazing on infected soil accounts for many cases. Such soil that has been flooded, often carries the infection in the run-off, contaminating pastures over which the water flows or

Probably most cases develop from eating and drinking food and water that have become contaminated with the germ. It can also be contracted by animals in the stable that have not been grazing, by eating grain or roughage to which the infection has gained access. It is sometimes spread by dogs, coyotes and other flesh eating animals and birds that have fed on the carcass, or discharges, of an animal that has died from the disease. A wound in the skin, is another route whereby the infection gains entrance into the system of an animal, or human. It is also possible for an animal that is well to spread the spores in its feces, acting as a carrier. Animal products obtained from cases that are sick or have died from the disease such as bones, bone meal, hides, prepared feeds, wool, hair, fertilizer, are liable to carry the infection. These sources of infection often originate in foreign countries where the disease may be present. The outbreaks in the U.S.A. during the last few months have been traced to imported bone meal and mineral supplements. Ground bone meal has been imported into the U.S.A. unrestricted in some cases, and at best, the requirement was that it be subject to heat of not less than 156 degrees F. As stated above, much higher temperatures are necessary to kill the spores of anthrax.

I have dwelt on these details, which are more or less unknown to stockmen who have not had experience of the condition; they may seem out of range in the everyday field of practical animal husbandry, but they are very important and practical details in the prevention and control of anthrax as has been proved again and again in this and other outbreaks.

(To be continued)

TWO WELL KNOWN AGRICULTURISTS PASS

Western agriculture lost two well known figures in one week at the end of June, Prof. John G. Rayner, Director of Extension at the University of Saskatchewan, Saskatoon, and Col. P. M. Abel, editor of the Country Guide, Winnipeg. Not only did these men die in the same week but they were born within a year of each other and were class-mates in the third graduating class at the Mani-

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toba Agricultural College.

P. M. Abel, known to agricultural people as "Pete", was born in Dutch Guiana in 1890. Coming to Canada, he worked on farms to gain experience and then entered agricultural college when the only agricultural college in Western Canada was at the Tuxedo site on the west side of Winnipeg. Following graduation, he taught at the agricultural School at Claresholm, until enlisting for overseas service in World War I. Again in the second World War, Pete Abel was on active service and was awarded the O.B.E.

It was following the end of World War I that he joined the staff of the "Guide", then the Grain Growers' Guide. While he had not been in good health for some time, he told friends he was feeling better and was active in his journalistic work right up to the time of his death.

Prof. Rayner was one of the best known figures in agricultural extension work, especially in the field of junior activities, in Canada. His death on June 30th came after 32 years as Director of Extension at the University of Saskatchewan. John Rayner was born in England in 1890 and came to Canada as a boy. Following graduation from M.A.C., he entered extension work, being employed first with the Manitoba Department of Agriculture and from 1914 with the Saskatchewan Department of Agriculture. His direct connection with the University of Saskatchewan began in 1918 with an appointment as Assistant Director of extension.

Many of the first Farm Boys' Camps in the west were of Prof. Rayner's organizing and he had much to do with the expansion of the junior club movement. For many years he was secretary of the Saskatchewan Agricultural Societies' Association; he was a keen horticulturalist and was on innumerable agricultural committees.



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