Federal and State responsibilities in connection with the anthrax problem are carried out as follows: Actual handling of outbreaks of anthrax in each State is performed by the State livestock sanitary officials. The Department of Agriculture furnishes the diagnosticians, technical assistance, and advice when requested by State officials and carries on research on the disease.

Federal regulations to prevent the introduction of anthrax infection into the United States through importation of certain animal products are also enforced.

The regulations governing the importation of bonemeal for use in animal feeds or fertilizer are enforced by the Department of Agriculture. Regulations pertaining to the admission of hair and bristles intended for use in manufacturing shaving brushes are enforced by the United States Public Health Service.

From standpoints of economics and public health, anthrax is a serious disease against which every means of suppression needs to be exerted. The problem of control is a common cause to which every livestock owner should contribute. All persons concerned should cooperate to the fullest extent with the local veterinarian and the livestock sanitary and the public health officials who are charged with the responsibility of controlling the disease.

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Malignant Edema

MALIGNANT edema is a wound infection that usually is quickly fatal. It is marked by painful gangrenous swellings and severely toxic symptoms.

It is caused by a spore-forming, rod-shaped germ, Clostridium septicum. The organism resembles the germ that causes blackleg; both grow only in the absence of oxygen. Therefore the infection usually enters the body through wounds caused by puncture or laceration. The infection develops in the injured tissue.

The germs are widely scattered in the top layers of soil. Animals kept in dusty, unsanitary surroundings may get the disease following hypodermic injections, surgical operations, parturition, and accidental wounds.

Horses, cattle, and sheep are most susceptible. Swine, dogs, and cats are rarely affected.

In horses, which are most susceptible, the infection frequently follows punctures caused by nails, splinters, and such. In sheep, it may follow
castration, docking, and shearing. It often occurs in cattle in areas where blackleg infection exists; sometimes it appears with blackleg and the two diseases are often confused. In man it produces a type of gas gangrene following war wounds.

A disease of sheep, known as braxy or bradshot, which occurs in Norway, Scotland, the Faroe Islands, and Iceland, apparently is caused by the malignant edema organism, but the infection is believed to enter the body through the digestive tract instead of through external wounds.

Malignant edema can be transmitted to rabbits, guinea pigs, white rats, mice, and pigeons under experimental conditions.

The first symptoms of malignant edema usually appear 12 to 36 hours after the infection enters the body. There are hot, painful swellings at the points of infection, high fever, loss of appetite, a drop in milk secretion, severe depression, difficult breathing, and convulsions before death. Most affected animals die 1 or 2 days after the symptoms appear.

The clinical diagnosis of malignant edema usually is difficult because it may be mistaken for blackleg, anthrax, hemorrhagic septicemia, or other types of gas edema.

Laboratory tests are the only conclusive method of distinguishing malignant edema from similar types of infection. The following points of difference between malignant edema and blackleg may be of some help in making a tentative diagnosis: Malignant edema affects cattle of all ages. It generally starts from a wound. The gangrenous swellings appear at the point of injury. The swellings, which develop rapidly, are usually extensive and doughy; they pit when they are pressed and discharge a reddish, gelatinlike substance mixed with gas bubbles when they are opened.

Blackleg affects young animals. It is rare in animals more than 2 years old. It occurs from minute, invisible puncture wounds. The swellings appear mostly over the muscles of the hind or front quarters, and emit a crackling sound on pressure. They discharge a frothy, dark-red exudate, with an odor like that of rancid butter, when they are incised.

Medical treatment of an established case of malignant edema that shows advanced symptoms is of little or no value. Such antibiotics as penicillin, Aureomycin, and Terramycin may have some therapeutic value if administered during the early stages of the disease. They should be used only under the supervision of a veterinarian.

Vaccination is an effective way to prevent malignant edema in animals exposed to it. In districts where the soil is believed to be heavily contaminated with its spores, animals should be vaccinated shortly before being placed on pastures.

An immunizing agent known as Clostridium septicum bacterin, prepared from the causative organism, is used for vaccinating. In some districts where blackleg infection also exists in the soil, cattle and sheep are vaccinated with a bivalent bacterin, Clostridium chauvoei-septicus bacterin, which protects the vaccinated animals against both infections.

The danger of exposure can be greatly reduced by giving prompt and proper attention to punctures and penetrating wounds; by sterilizing surgical instruments; by observing strict aseptic surgical procedures; and by housing animals during parturition in clean, dust-free quarters.

Because malignant edema can be transmitted to man, persons handling suspected cases should wear rubber gloves and rubber boots. They should use effective disinfectants to avoid infecting themselves and the premises.

Control measures for checking outbreaks of the disease and preventing its spread to other premises include: Isolation of all animals showing symptoms of the disease; vaccination of apparently well but exposed animals and, if
Tetanus, commonly called lockjaw, is a wound infection disease that is usually accompanied by a fatal toxemia. The toxemia causes contractions of the voluntary muscles, mainly those of the face, neck, body, legs, and tail. Spasms are the result of steady and prolonged contractions of the affected muscles.

Tetanus is caused by a rod-shaped germ, Clostridium tetani, which produces an extremely potent toxin. The germs form highly resistant, large terminal spores, which give the organism a peculiar drumstick appearance. The tetanus germs and spores remain localized at the place of the wound where they enter the body. They multiply and produce the powerful toxin. The poison is absorbed and carried by the blood to all parts of the body. It acts directly on the nervous system. It is so potent that a mere prick with a hypodermic needle contaminated with it may be enough to cause symptoms of tetanus in people.

C. tetani, like the germs that cause blackleg and malignant edema, thrive in the absence of air. They become especially active and dangerous when they are implanted in injured tissue from which the air is excluded. Deep punctured or lacerated wounds contaminated with foreign material or soil—such as may result from nail or splinter punctures, fractured bones, gunshot wounds, castration, and harness and saddle galls—therefore are more apt to produce tetanus than superficial open wounds.

The disease occurs all over the world. It is most common in old farming areas, especially in sections where truck gardens, heavily manured land, and swamps are contaminated with tetanus germs. The organisms or their spores are scattered in the top layers of soil and in street dust and hay. They often are in manure.

The disease is common in people and horses. It may attack other warm-blooded animals.

Horses, mules, and asses, which are highly susceptible, may contract the disease from any type of wound but most frequently from wounds of the feet.

In sheep, which are rather susceptible, the infection sometimes occurs after castration, docking, and shearing; in the umbilical (navel) cord of lambs during birth; or in ewes during